

$$+ 1 = 2 \quad 4 - 6 \div 8 + 0 =$$

$$3 + 5 \div 7 - 9 =$$

National MATHEMATICS Textbook



Grade 2



Papua New Guinea
Department of Education

'FREE ISSUE
NOT FOR SALE'

Issued free to schools by the Department of Education

First Edition

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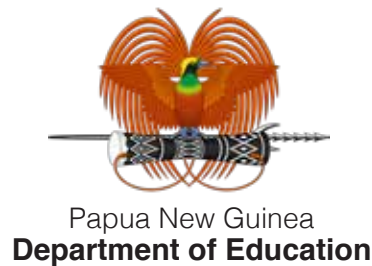
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National Mathematics Textbook

Grade 2



Minister's Message

Dear Grade 2 Students,

I am interested in you and your learning about Mathematics using this National Mathematics Textbook.

This textbook is made for you to learn Mathematics. It is a very important subject.

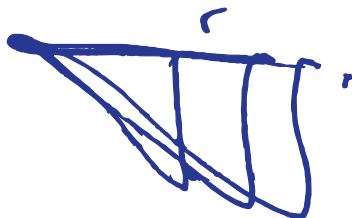
Your teacher will use it to help you learn many new ideas about Mathematics.

I thank many friends like Save the Children and others who have joined the Education Department to develop this textbook.

I encourage you to enjoy and learn Mathematics well.

I wish you happy and fun learning as you use this textbook.

Your Minister for Education,

A handwritten signature in blue ink, appearing to read 'Jimmy Uguro', with a stylized flourish at the end.

Hon. Jimmy Uguro, MP

Secretary's Message

Dear Students,

This is your Mathematics Textbook that you will use in Grade 2. In this textbook, you will find your textbook friends, colourful pictures, and very interesting and enjoyable activities for you to do and learn from each day.

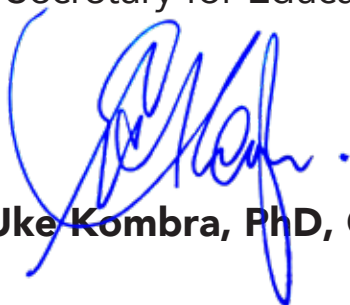
The activities will help you learn about important mathematical ideas and think of ways that will guide you to learn with your teacher.

As young mathematicians, you are encouraged to learn and be smart in solving problems and issues happening around you in your daily life.

I encourage you all to practice what you learn from this Mathematics textbook in your school, on your own, or with your family and friends.

I wish you all the best in studying Mathematics using this textbook.

Your Secretary for Education,



Dr. Uke Kombra, PhD, OBE.

Share ideas with your friend!



Let's find solutions by ourselves!



Let's learn Mathematics, it's fun!

Friends learning together in this textbook



Mero



Naiko



Sare



Gawi



Kapi
(Kapul)



Kekeni



Ambai



Vavi



Yamo



Koko
(Kokomo)

Symbols in this textbook



- Discovered important ideas.



- Important definition or terms.



- Practice by yourself. Fill in your copy.



- New knowledge to apply in daily life.



- Let's do the exercise.



- Let's refer.



- Let's do mathematical activities by students.

$$6 = \square + \square$$

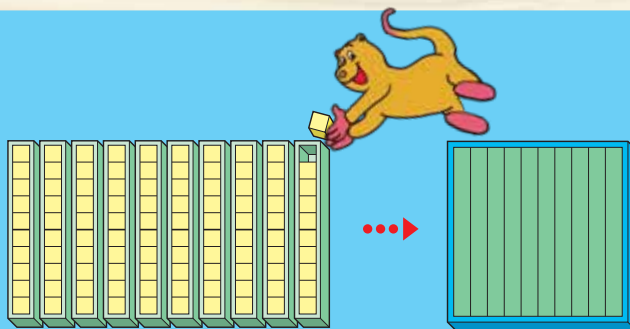
- Let's fill numbers in and complete the expression to get the page number.

What We Learned In Grade 1

Numbers

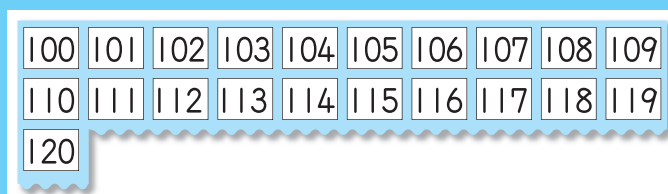
Numbers up to 100

10 sets of 10 is a hundred. → 100



Numbers larger than 100

100 and 12 is 112 (a hundred and twelve).



Measurement

Time



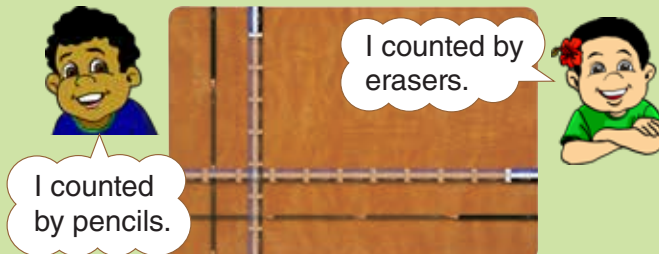
8 o'clock and 13 minutes (13 minutes past 8)

Short hand shows hours, and long hand shows minutes.



Comparing sizes

Comparing length



If we fix the unit for comparison, we can compare their sizes by the numbers of the unit.



Comparing volume

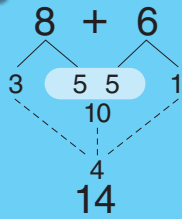
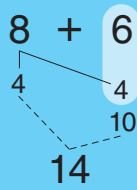
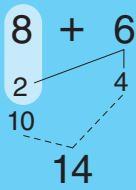


Comparing area



Addition

How to calculate $8 + 6$.

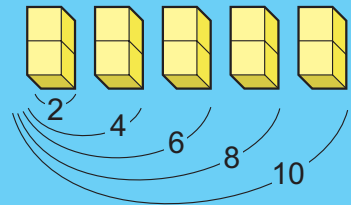


They are all making 10.



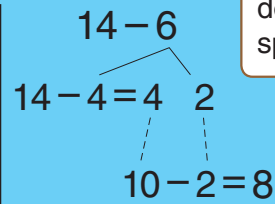
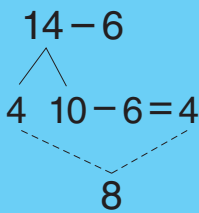
Counting

Count by 2



Subtraction

How to calculate $14 - 6$.



Which number do you prefer for splitting?



The numbers which you can count in 2's are 2, 4, 6, 8, 10, 12, 14, 16, 18, etc.



Shapes

Separating into groups

Let's collect same shapes.



Making shapes



Various shapes are made by using

the shape of .

Data

Exploring how many

We lined up our cards according to the names of foods, then we could easily see which foods are most or least popular.



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Numbers up to 100

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Grade 1

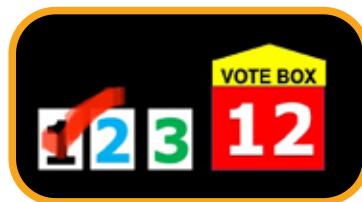


Have you ever seen it?

1



4						
SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		



Sec 56 Lot 10 Mabi Street,

$6 = \square + \square$

Numbers up to 1000



- Let's count the number of students.
How many students are there?

How can we count the number of students?





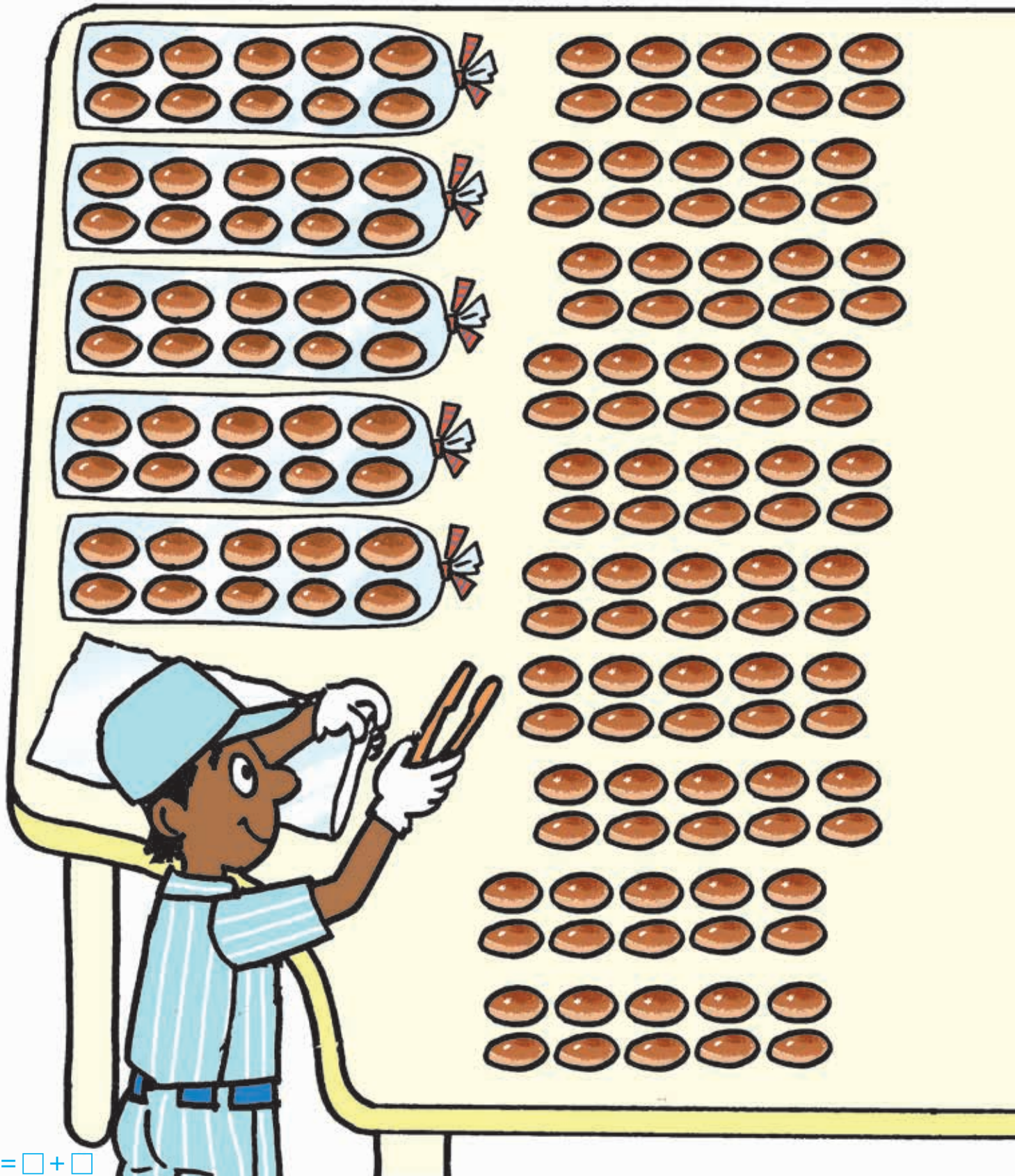
Numbers Larger than 100

1

How many buns are there altogether?

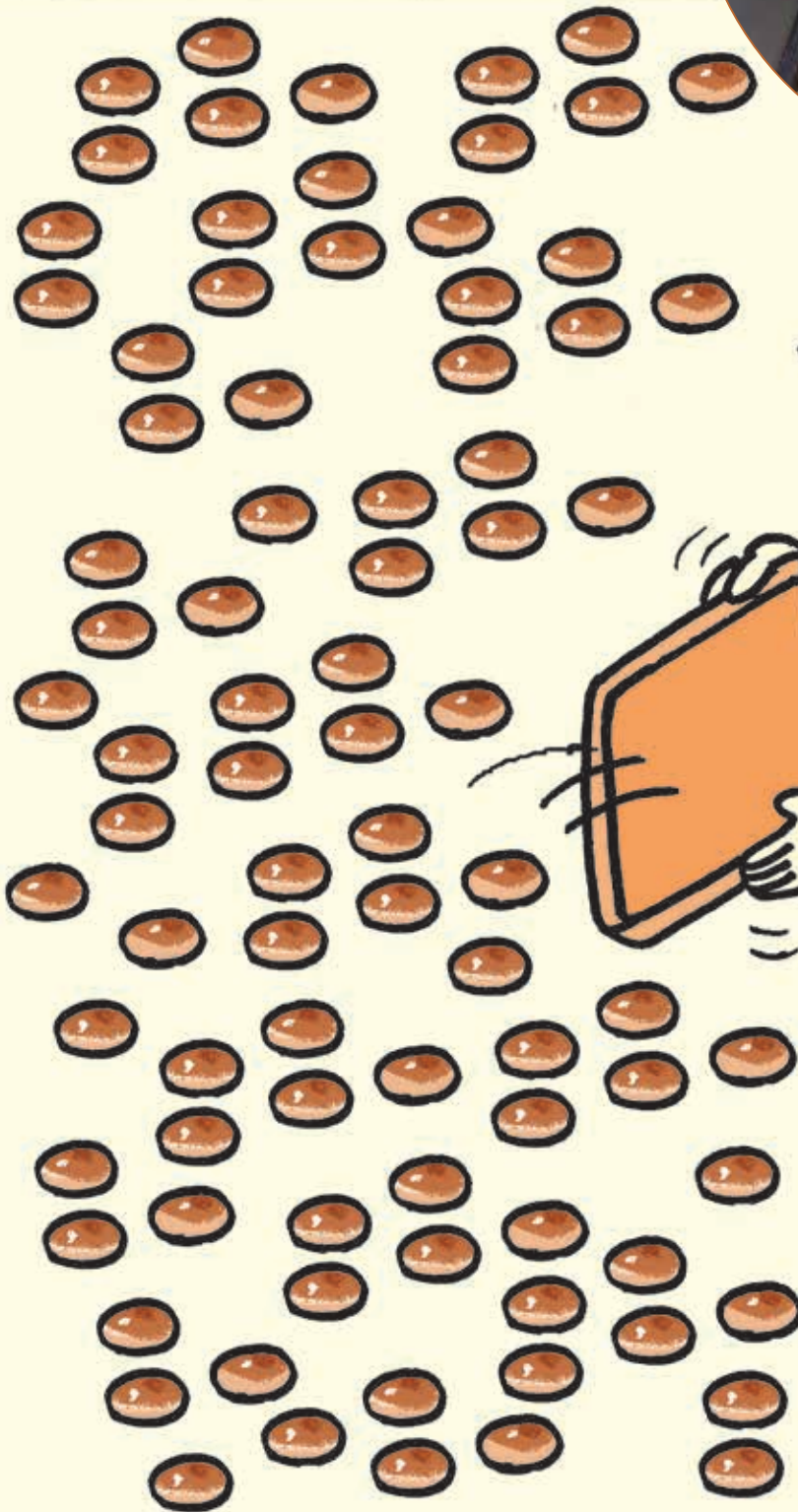


Wow,
so many
buns!



8 = +

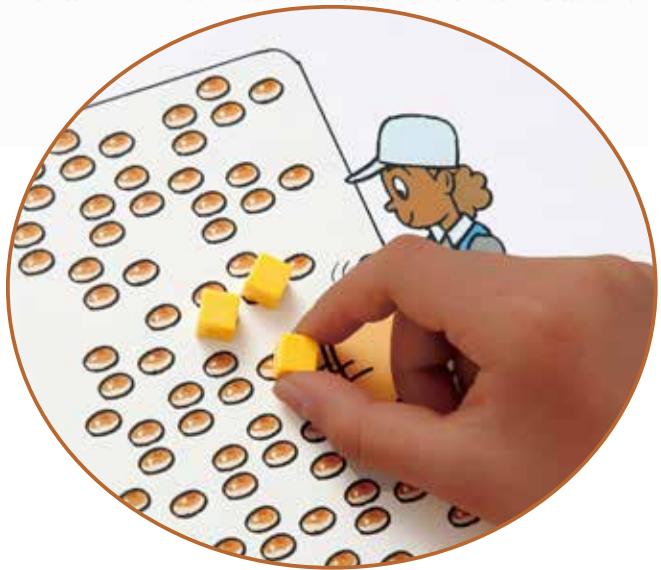
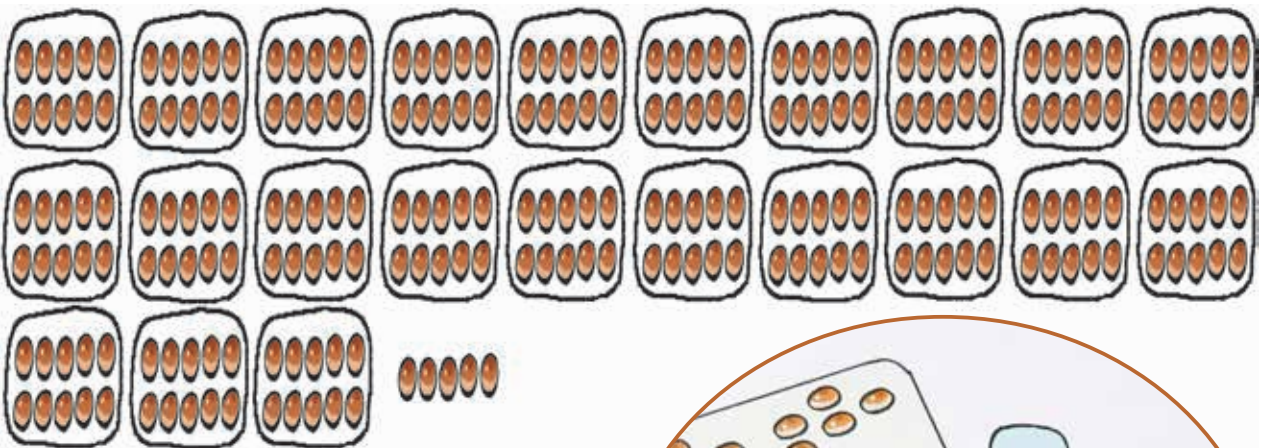
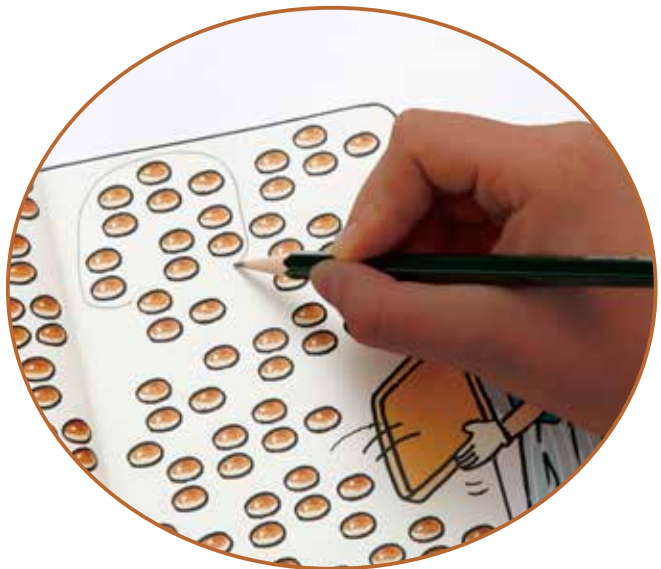
How many
buns are
there on
the table?



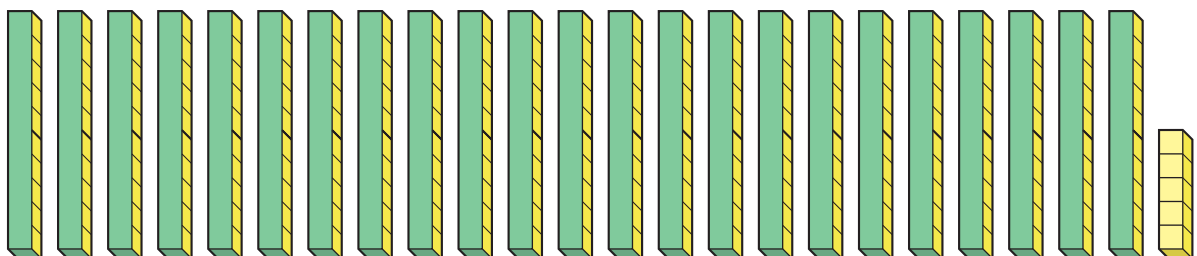
Let's find
an easy
way to
count.



$$\square - \square = 9$$



1 Let's put  in a box of 10.

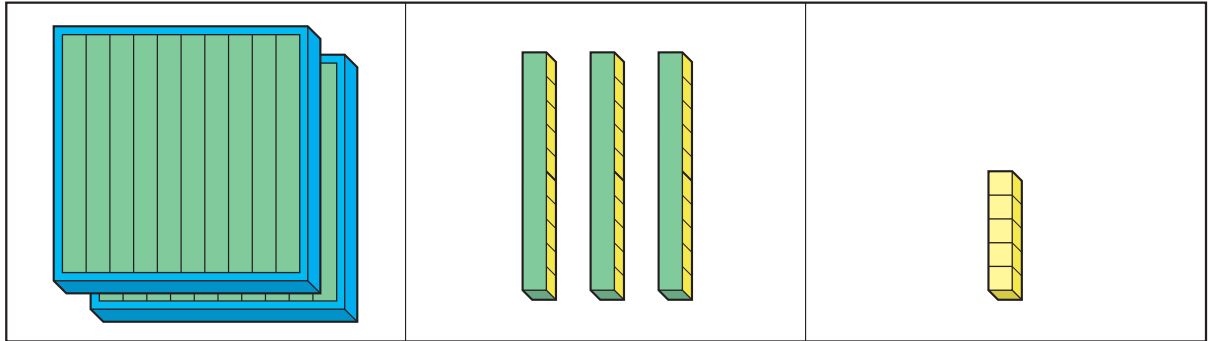
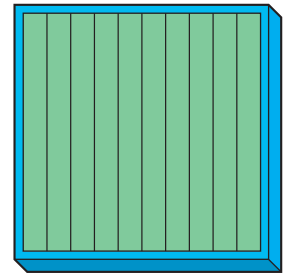


There are boxes of 10 and ones blocks.

$$10 = \square + \square$$

② 10 sets of 10 boxes make 100.

Then, there are sets of 100.



③ How can we say the number?

2 sets of 100 is **two hundred**.

Two hundred, thirty, and five is called **two hundred and thirty five**, and it is written as 235.

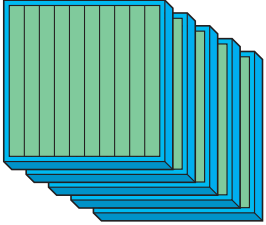
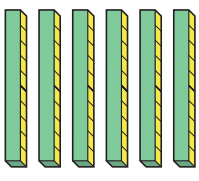


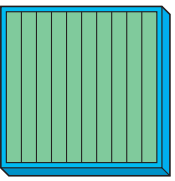
The position where 2 is in 235, is called the **hundreds place**.

Hundreds place	Tens place	Ones place
two hundred	thirty	five
2	3	5

Exercise

1 How many  are there altogether?

①	Hundreds place	Tens place	Ones place
			

②	Hundreds place	Tens place	Ones place
			

2 How many pencils are there?



3 Let's read the following numbers.

① 136

② 379

③ 516

④ 847

4 Let's write the following numbers.

① The number when seven hundred, thirty, and four are added together.

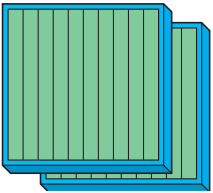
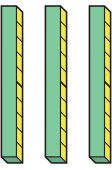
② The number when one hundred, fifty, and seven are added together.

③ The sum of 4 sets of 100, 9 sets of 10, and 5 sets of 1.

④ The sum of 6 sets of 100, 1 set of 10, and 1.

2 How many  are there altogether?

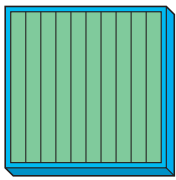
1

Hundreds place	Tens place	Ones place
		

Hundreds	Tens	Ones

The number when two hundred and thirty are added together.

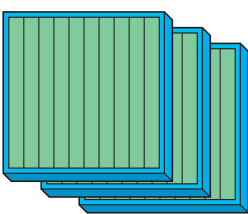
2

Hundreds place	Tens place	Ones place
		

Hundreds	Tens	Ones

The number when one hundred and five are added together.

3

Hundreds place	Tens place	Ones place
		

Hundreds	Tens	Ones

The number of 3 sets of 100.

Exercise

1 Let's read the following numbers.

- ① 820 ② 160 ③ 408 ④ 505 ⑤ 900

2 Let's write the following numbers.

- ① seven hundred and forty. ② eight hundred and sixty.
 ③ one hundred and twenty. ④ five hundred and eight.
 ⑤ one hundred and one. ⑥ six hundred.

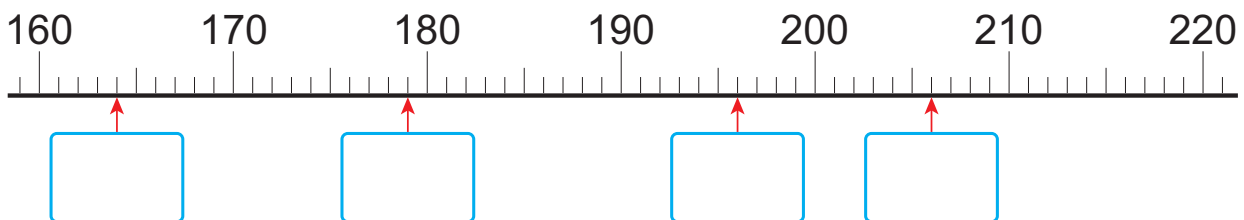
3 Let's write down the following numbers and read them.

- 1** The number that has 7 in the hundreds place, 0 in the tens place, and 2 in the ones place.
- 2** The sum of 3 sets of 100, 4 sets of 10, and 5 sets of 1.
- 3** The sum of 1 set of 100 and 7 sets of 10.
- 4** The sum of 8 sets of 100.

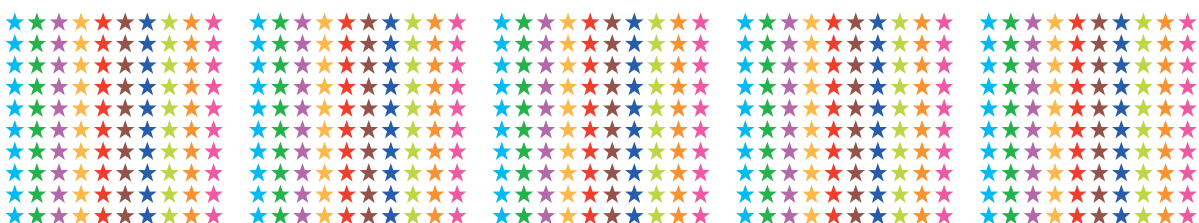
4 Let's fill each with a number.

- 1** — 117 — 118 — 119 — — 121 — — —
- 2** — 870 — 880 — — — 910 — — 930 —
- 3** — 300 — — 500 — — 700 — 800 — —
- 4** — 600 — — 598 — 597 — — — —

5 Let's write the numbers that each ↑ is pointing at.



How many ☆ are there altogether?

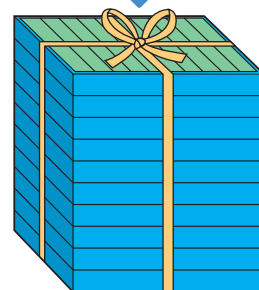
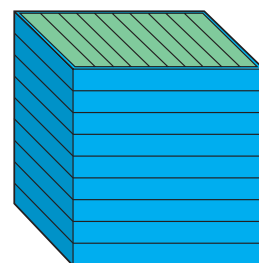


14 = +

6 Each box contains 100  each.

1 How many  are there altogether in 9 boxes of 100.

2 When one more box of 100 is added, there will be 10 boxes. How many  are there altogether?



The sum of 10 sets of 100 is called a **thousand**, and is written as 1000.

1	0	0	0
---	---	---	---

How much larger is 1000 than 999?



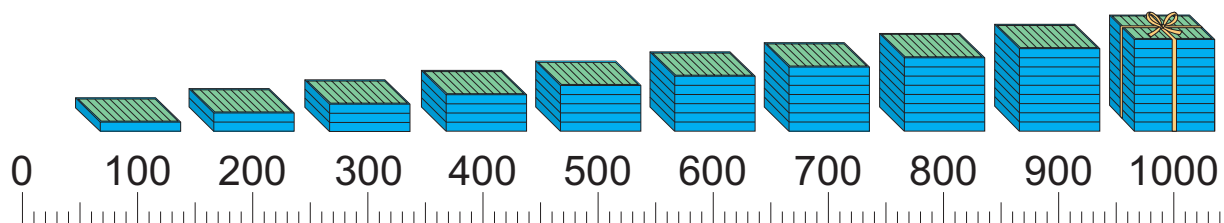
7 Let's write down the following numbers.

1 The number that is 300 larger than 500.

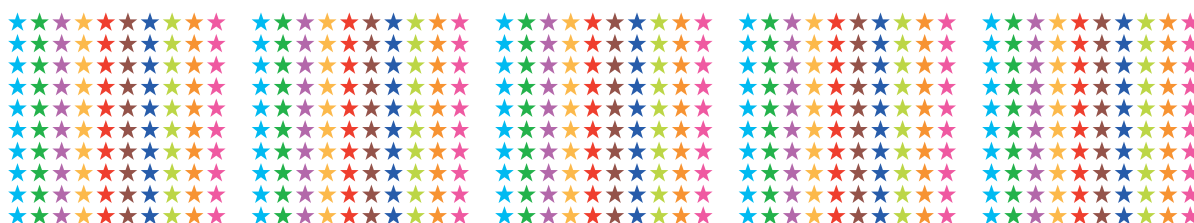
2 The number that is 200 smaller than 700.

3 The number that is 10 larger than 900.

4 The number that is 10 smaller than 1000.



1000



8

Let's look at the number 230.

How many sets of 10 make 230?

How many sets of 10 make 200?



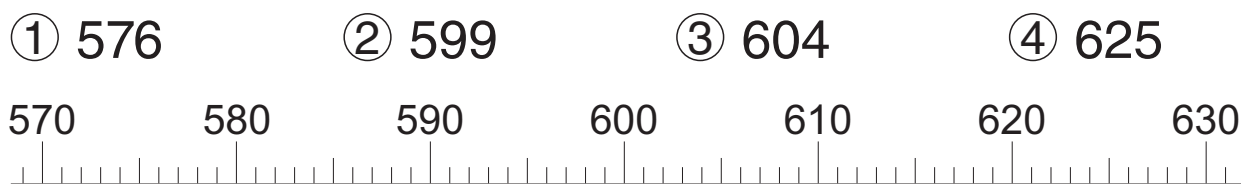
K230



230 < 200 → 20 sets of 10 > sets of 10
 30 → 3 sets of 10

Exercise

1 Let's draw ↑ to the positions of the following numbers on the line below.

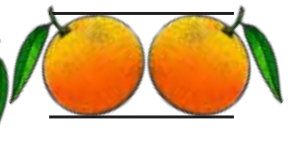
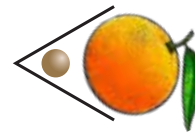
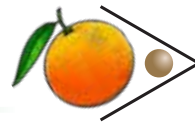


2 Let's write the correct numbers in each .

- ① 560 is the sum of sets of 100 and 6 sets of 10.
- ② 560 is the sum of sets of 10.
- ③ 700 is the sum of sets of 10 or the sum of sets of 100.
- ④ The number that is the sum of 98 sets of 10 is .



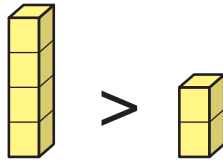
> and < Signs



1

Let's compare the sizes of the numbers.

1



$$4 > 2$$

4 is larger than 2.

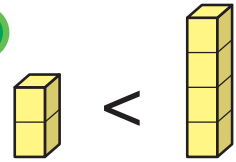
2



$$3 = 3$$

3 is the same size as 3.

3

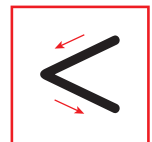
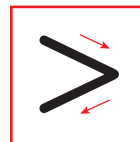


$$2 < 4$$

2 is smaller than 4.



> and < are signs used to represent larger and smaller when comparing sizes. When the size is the same, = is used.

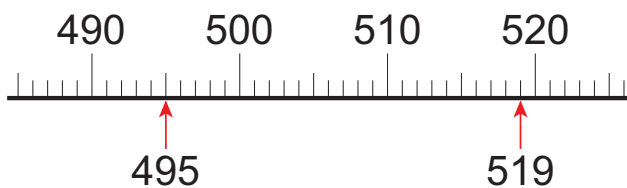


2

Which number is larger? Represent it by using either > or <.

1

$$495 < 519$$

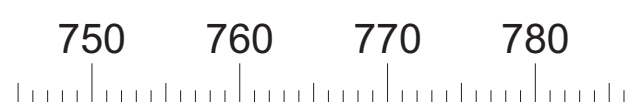


Hundreds	Tens	Ones
4	9	5
5	1	9

Which place value should we look at?

2

$$769 \quad \square \quad 764$$

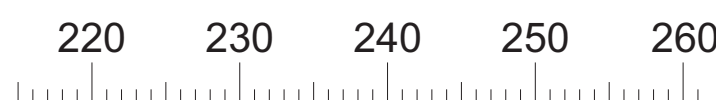


Hundreds	Tens	Ones



3

$$238 \quad \square \quad 253$$



Hundreds	Tens	Ones



Addition and Subtraction

1

I want to buy a school bag for 30 kina and a pair of school shoes for 40 kina.



K30

K40

What is the total cost?



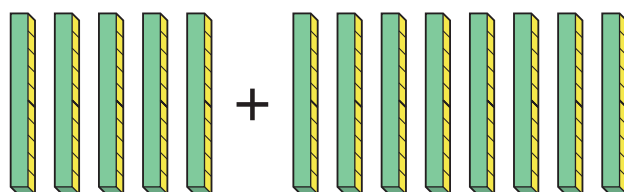
$$30 + 40$$

Thinking about how many 10 kina notes...



2

Let's find the answer for $50 + 80$.



It is more than 100.



3

I had 90 sheets of coloured papers, and used 40 sheets. How many sheets are left?



4

Let's find the answer for $170 - 80$.

Exercise

Let's find the answers.

- ① $20 + 10$ ② $30 + 50$ ③ $90 + 20$ ④ $60 + 60$
- ⑤ $30 - 10$ ⑥ $80 - 50$ ⑦ $130 - 40$ ⑧ $160 - 90$

Finding Numbers

Let's find numbers in your everyday life.



There are lots of different numbers in our town.



Let's find them.

At Manus market, there are prices.



There are numbers for each runner.



Domestic Departures				
Airline	Flight	To	STD	ETD
PNG AIR	PX 7112	Madang	05:30	
PNG AIR	CG 8910	Lihir Island	06:00	
PNG AIR	PX 0100	Lae	06:10	
PNG AIR	PX 0800	Daru	06:20	
PNG AIR	PX 0852	Popondetta	06:30	
PNG AIR	PX 0208	Rabaul	07:00	
PNG AIR	CG 1724	Lae	07:30	
PNG AIR	PX 0180	Mount Hagen	08:15	
PNG AIR	CG 1540	Mount Hagen	08:25	
PNG AIR	CG 7766	Rabaul	08:25	



Madang flight number is PX 7112.



Each box contains 36 packets of noodles.



The flight number is a number that indicates names of the airplanes.



The 36 packets is a number for quantity.



How can we describe the different uses of numbers?

Let's make a poster to show what you found.

Do the prices of Manus items mean their order, or their quantity?



What we found from the numbers in our life.

The numbers which represent the order or position.

Instead of naming, we use the number.

Instead of keys, we use the combinations of numerals.

For representing the time, we use the compositions of numerals.

The numbers which we represent the amount.

For representing the prices, we use the numbers.

For representing the amount of packets, we use the numbers.





1 Let's fill each with a number.

Pages 11 ~ 15



- ① 1000 is the sum of sets of 10.
- ② 1000 is the sum of sets of 100.
- ③ The number when two hundred, fifty, and four are added together is .
- ④ The number when 3 sets of 100, 8 sets of 1 are added together is .

2 Let's fill each with a number.

Page 14



- ① 213 — 214 — 215 — — 217 — — 219 —
- ② 470 — 480 — — — 510 — 520 — 530 —

3 Which number is larger? Use $>$ or $<$.

Page 17



- ① 312 321 ② 602 598 ③ 880 808

4 Let's find the answers.

Page 18



- ① $40 + 20$ ② $70 + 50$ ③ $70 - 40$ ④ $150 - 70$

What time is it?

Grade 1

Do you remember?



①



②



③



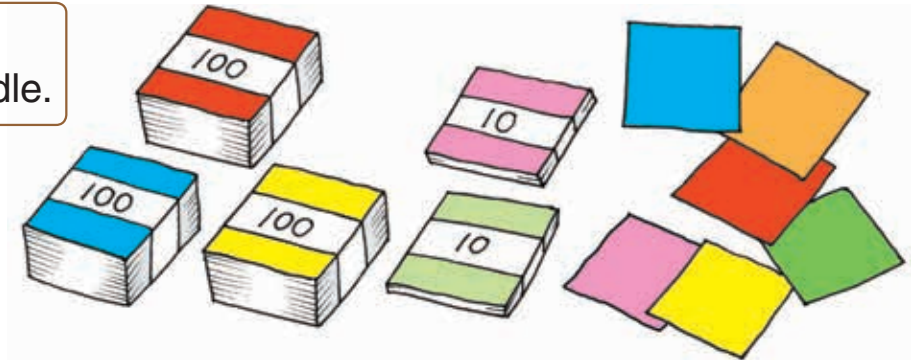


Problems 1



1 How many sheets of coloured paper are there?

100 means 100 sheets in a bundle.



2 Let's look at 480.

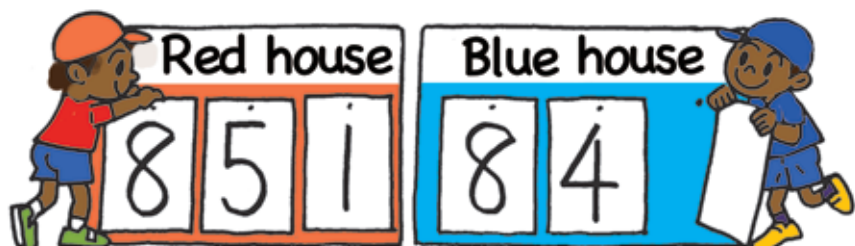
- ① 4 in the hundreds place means that 4 is the value of .
- ② 480 is the sum of sets of 10.
- ③ The number that is 20 more than 480 is .

3 Which number is larger? Let's use $>$ or $<$.

- ① 523 532 ② 803 796 ③ 420 402

4 The number in the ones place of the blue team's points is to be placed.

Taki says that the red team has won. Why does he say so?



Problems 2

- ① Yamo is shopping.

In my purse, I have 5 notes which are either 10 kina or 2 kina.



- ① How much does Yamo have? Following the examples, write the possible numbers of, 10 kina notes and 2 kina notes, and the sum of money.

'Sum' means 'Total'



Number of 10 kina notes	1	2		
Number of 2 kina notes	4	3		
Sum of money	18	26		



Ph
ra
se

"If ..., then ..."

If the number of 10 kina notes is 1, then
the number of 2 kina notes is 4.

If the number of 10 kina notes is 3, then...



- ② Yamo bought a pair of shoes for 25 kina and received change.

Let's discuss which notes she used, and what she received as change.

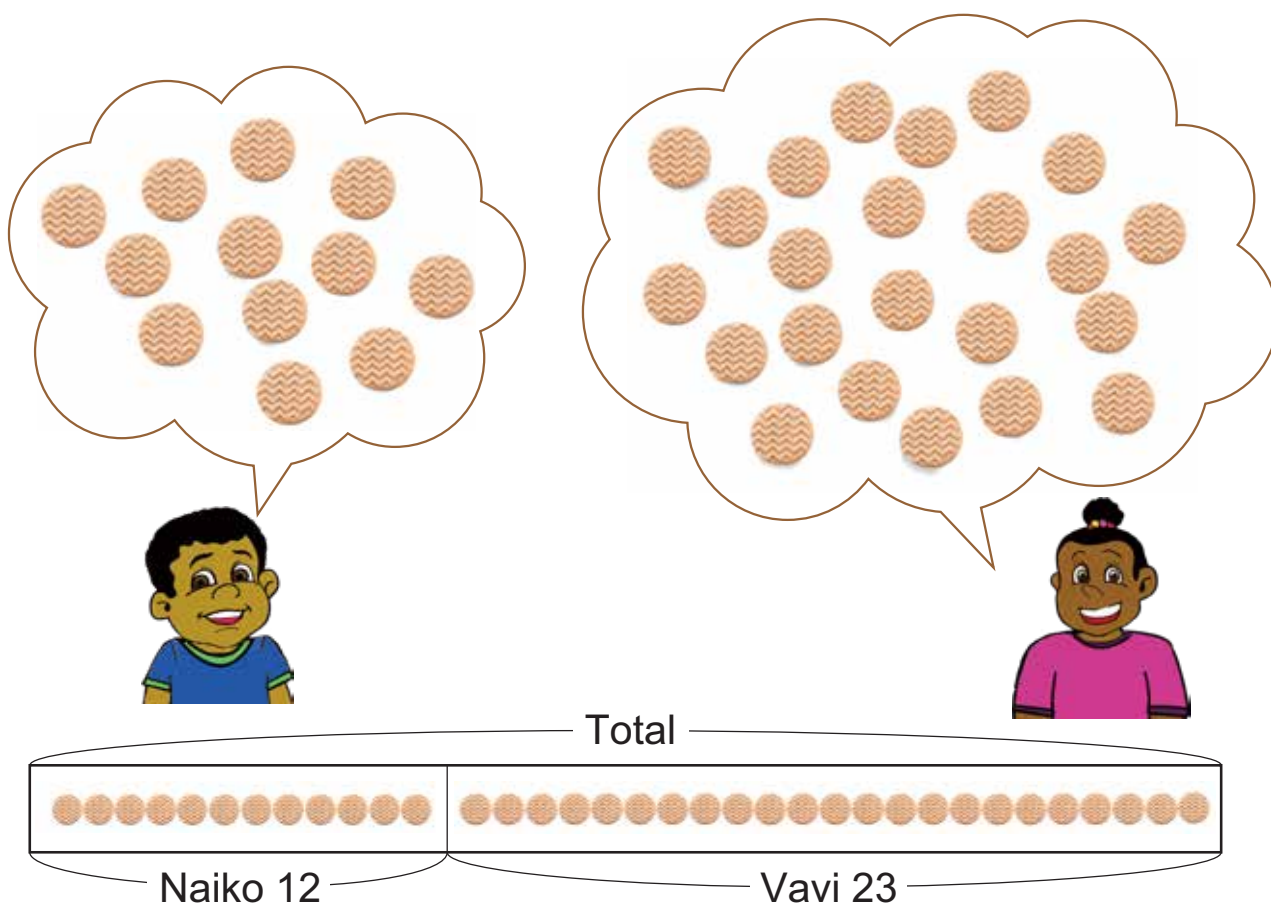
Thinking about How to Calculate



Addition

1

Naiko has 12 cookies, and Vavi has 23 cookies.
How many cookies are there altogether?



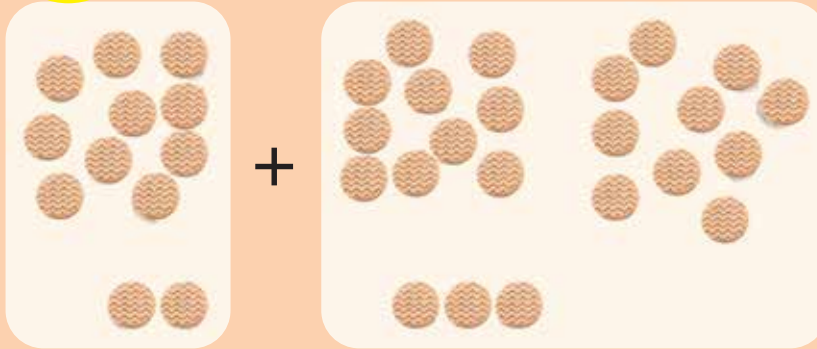
- 1 Write an expression to find the total numbers of cookies.

- 2 How many cookies are there altogether?

$$24 = \square + \square$$



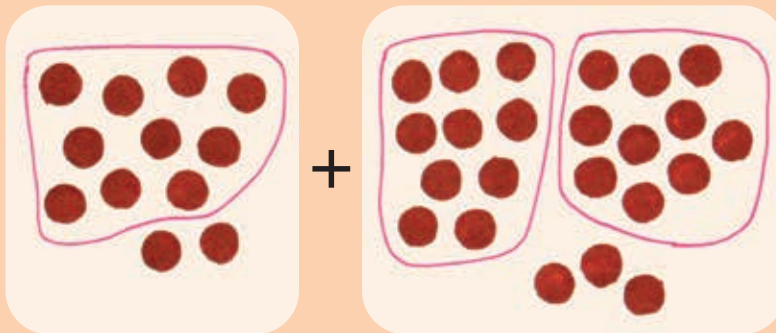
Yamo's idea



I use the groups of 10 cookies, ...



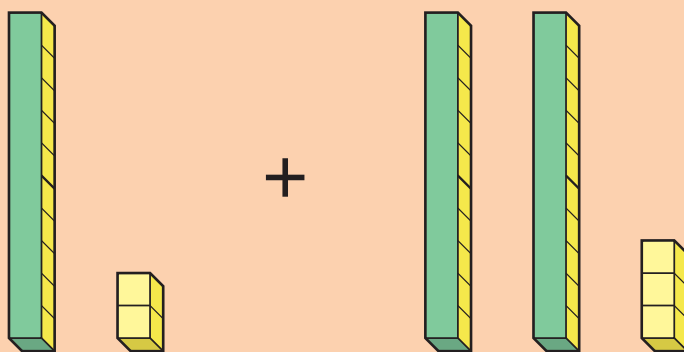
Mero's idea



I use ● to represent a cookie, and circle them in groups of 10.



Ambai's idea



I use blocks.

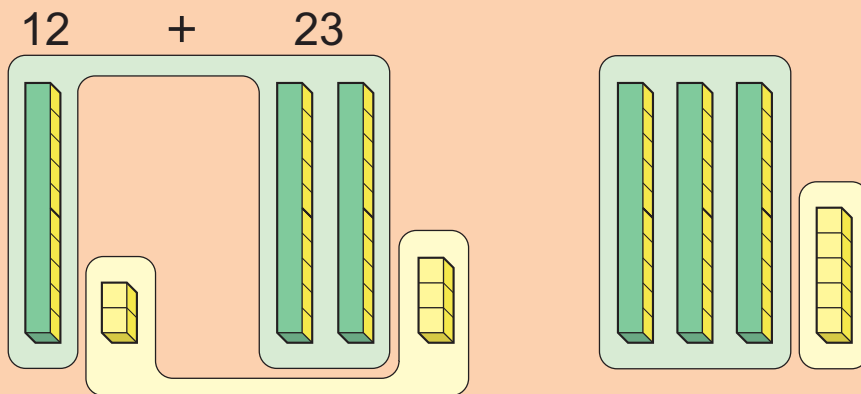


③ What is common among their ideas?

④ Let's think about how to calculate.



Naiko's idea

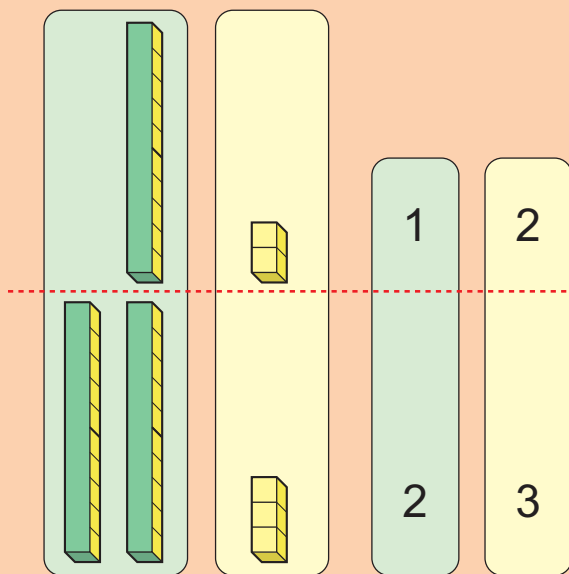


sets of 10 and
ones blocks makes .

$$\begin{array}{c} 3 \\ \overbrace{12 + 23}^{} = \boxed{} \\ \underbrace{}_5 \end{array}$$



Vavi's idea



It is easier to count if
you place the blocks
vertical to each other.

sets of 10 and
single blocks makes .

$$12 + 23 = \boxed{}$$



The number
of sets of 10
is $1 + 2$.

The number of
single blocks
is $2 + 3$.



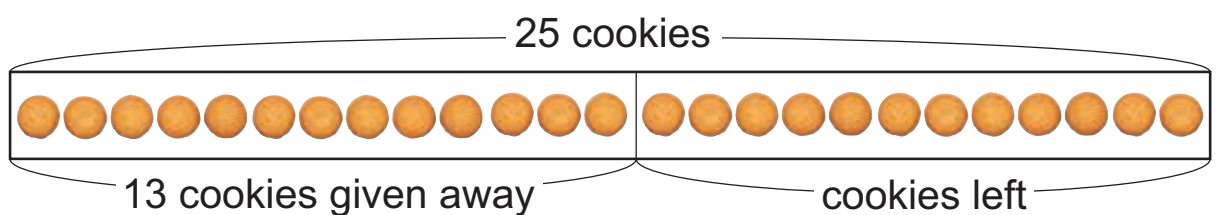


Subtraction



1 Keken made 25 cookies. She gave 13 of them to Raka.

How many cookies are left?



1 Let's write an expression to find the number of cookies left.

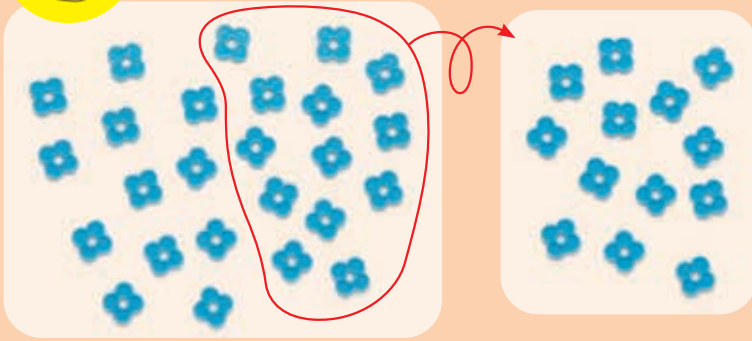
Use diagrams and blocks to think.



2 How many cookies are left?



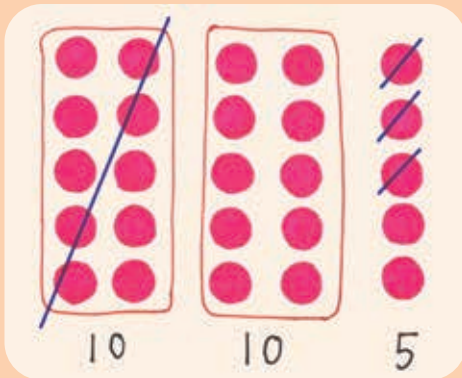
Yamo's idea



I used counters for cookies, and then take away 13.



Mero's idea

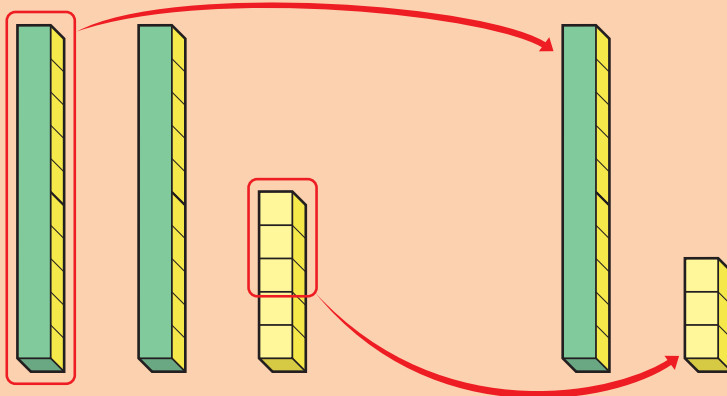


I used ● for the cookies and made groups of 10. Then I removed 13 from there.



Ambai's idea

Amount given to Raka.



I used blocks.

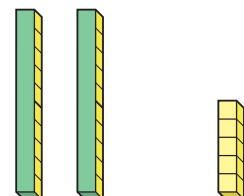


How many blocks are left?

③ Let's think about how to calculate.



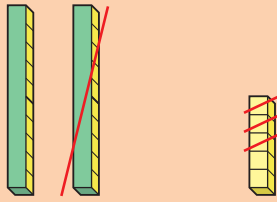
Where should we take away 13 from?



$$28 = \square + \square$$



Naiko's idea



The blocks taken away are canceled.



$$\begin{array}{r} 1 \\ 25 - 13 = \square \\ 2 \end{array}$$

Split 25 into and 5.

Split 13 into 10 and .

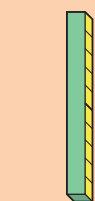
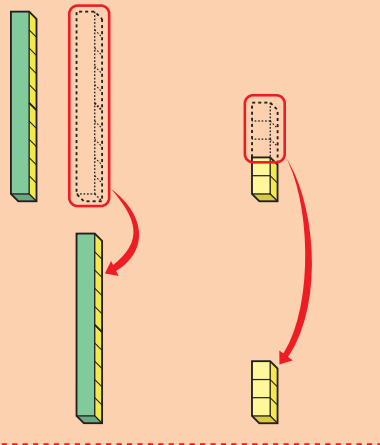
$$20 - 10 = \square$$

$$5 - 3 = \square$$

and makes .



Vavi's idea



$$2 - 1 = 1$$



$$5 - 3 = 2$$

There are sets of 10.

take away 1 is .

5 take away is .

The tens place is , the

ones place is , so the

difference is .

$$25 - 13 = \square$$

She lined up the numbers by places.



Time and Duration

▶▶ We went hiking together on a Saturday.



9:00

The time we met at school.



:

The time we arrived at the bus stop.

Time and Duration

1 Let's say the **times** on the clocks

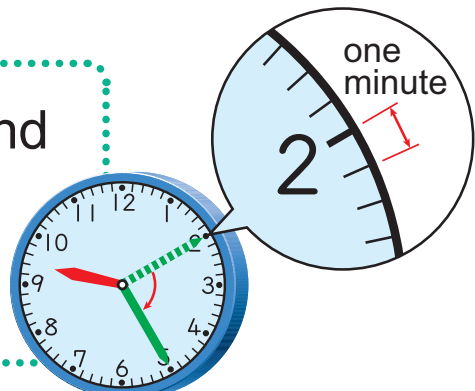
(A), (B), (C), (D), and (E).

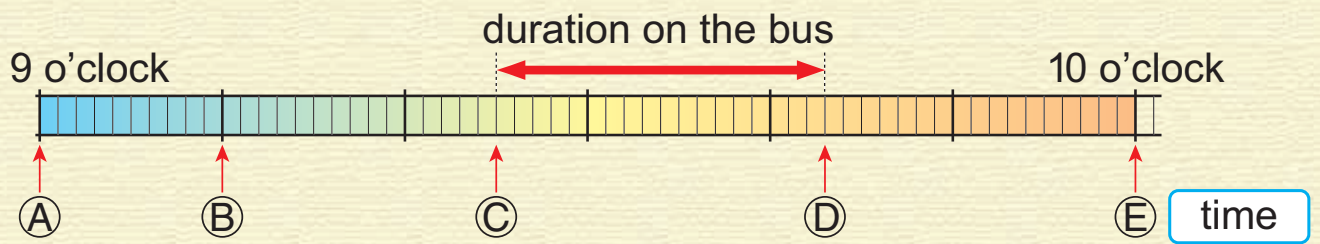
2 How many scales did the long hand move forward between 9:10 and 9:25?

What is the difference between time and duration?



The **duration** for the long hand to move one scale forward, is called **one minute**.





:



:



:

The time the bus departed.

The time the bus arrived at our destination.

The time we started hiking.

3

How many minutes did they spend in the bus?



It takes the long hand 60 minutes to go around the clock. **60 minutes is called one hour.**

It takes one hour for the short hand to move to the next number on the clock.

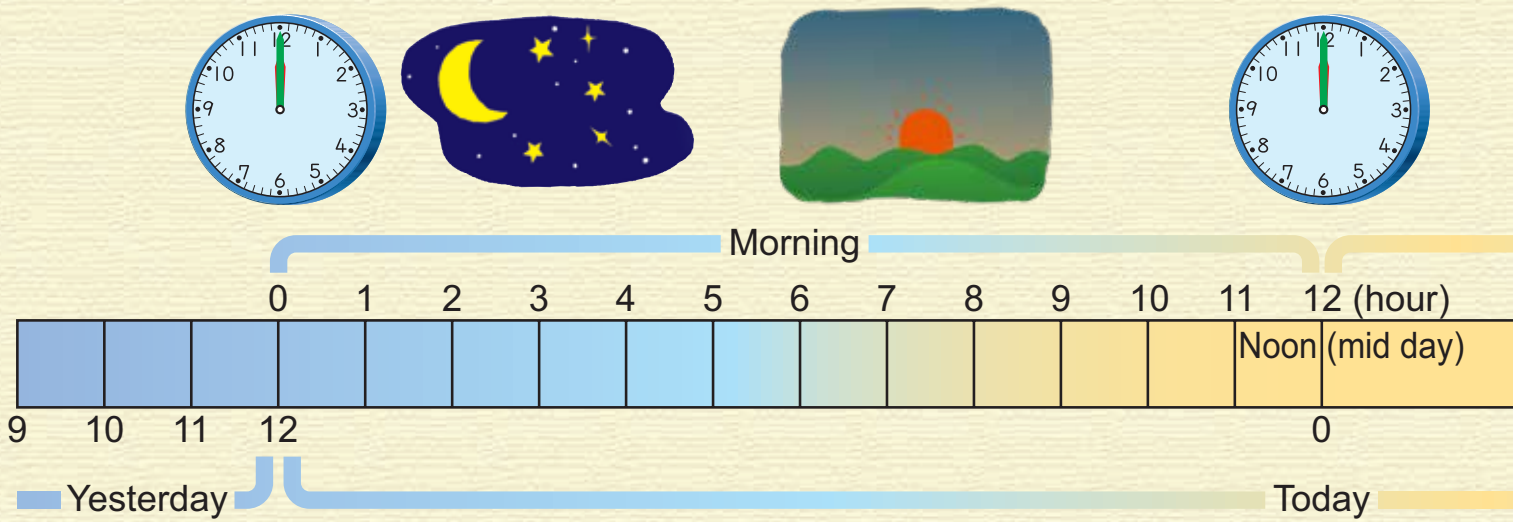
60 minutes = 1 hour

60 minutes is expressed as 1 hour.



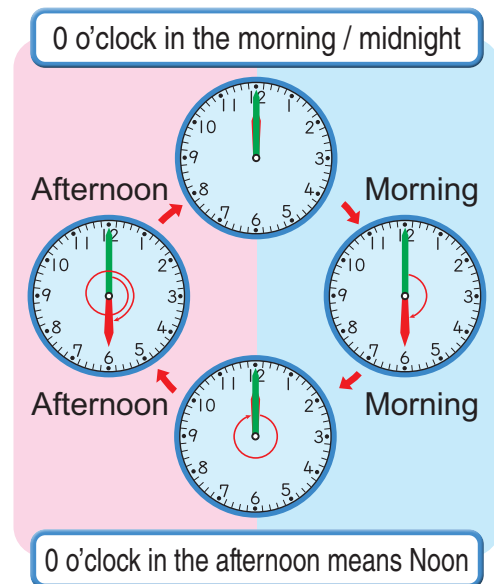
4

How long did it take for them to start hiking after leaving school?



The Duration of One Day in Hours

- 1** Let's see how many hours we have in one day.
- Each day starts at 0 o'clock in the morning. The hour hand goes around the clock twice in a day.



The first round the short hand makes → Morning ... hours

The second round the short hand makes → Afternoon ... hours

24 hours = 1 day

"0 o'clock in the morning" is the same as "12 o'clock in the night". "0 o'clock in the afternoon" is the same as "12 o'clock during the day".





Afternoon

0 1 2 3

1 2 3 4 5 6 7 8 9 10 11 12

Tomorrow

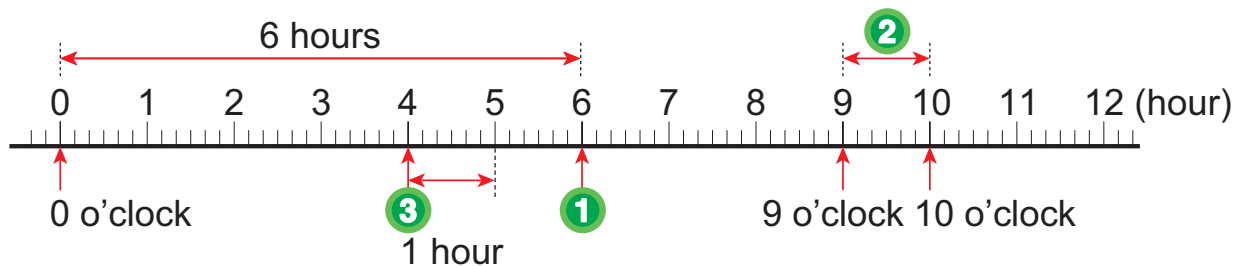


2

Let's say the time on the clocks ①~④, using 'in the morning' or 'in the afternoon'.

3

Looking at the diagram and clock below, give the time and durations for the following questions.



① 6 hours after midnight.

② Duration between 9 and 10 o'clock in the morning.

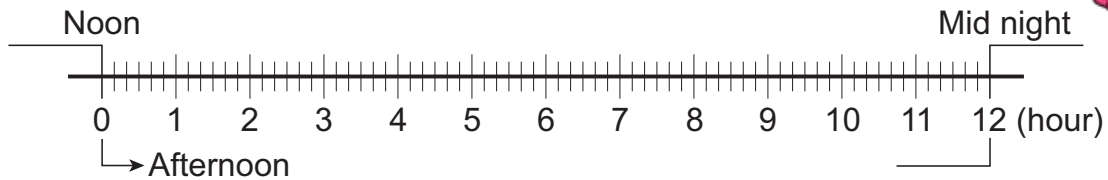
③ 1 hour before 5 o'clock in the morning.



If we divide 1 hour into 6 equal spaces to show on the line, how many minutes does one scale show?



4 Let's answer the following questions by looking at the time on the diagram below.



- 1** What time is 3 hours after 3 o'clock in the afternoon?
- 2** What time is 50 minutes before 1:40 in the afternoon?
- 3** What time is 40 minutes after 10:40 in the afternoon?

5 Which is the correct way to use the words “time” and “duration”?

The duration of my play time was 1 hour.



The time at the beginning of the day is 0 o'clock in the morning.



My sister did not come at the time we promised to meet.

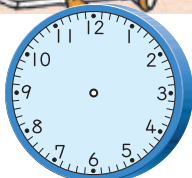


The bus departed at the exact duration on the timetable.



6 Let's indicate the time by drawing the hands of the clocks so that it shows the time of each activity illustrated below.

At 7:30 in the morning, I went to school.



At 0:20 in the afternoon, I ate lunch at school.



At 2:25 in the afternoon, I finished studying.



At 10:00 in the night, I went to bed.



Time Printed on Receipts

GORDONS
TAX INVOICE

TIN NUMBER: 00002052
12/03/2023 4:32:42 PM HELAN

CAFE
BEEF STEW WITH RICE W K21.80 VAT
PLAIN BEEF PIE (CS) W K6.00 VAT

SUB TOTAL K27.80
VAT Included 2.53

TOTAL K27.80
Manual Eftpos K27.80

BSP
Jacksons Airport ATM 1, PORT MORESBY

DATE 18/02/23 TIME 18:48 ATM 230025

CARD NUMBER 464557...0763
AID: A0000000031010 Exp: Visa Debit
SEQ NUM 9288

CHARGE ACCOUNT INQUIRY

PORT MORESBY
TIN: 50022738
No. 05-23020003
2023/2/23 13.08

Description	Qty	Price
US-8002 SOCK 15.90	1	15.90
AG308 BK	1	49.90
MJ 1464 BK	1	69.90
	1	69.90
Subtotal:	3	135.70
Total After Tax:		135.70

Air Niugini
ECONOMY DESTINATIONS

LYNN / ISWALITO MS

FROM PORT MORESBY 0730 FLIGHT PX 290

TO MANUS ISLAND 0850 DATE 04 APR

SEAT 8B GATE BOARD TIME 0700

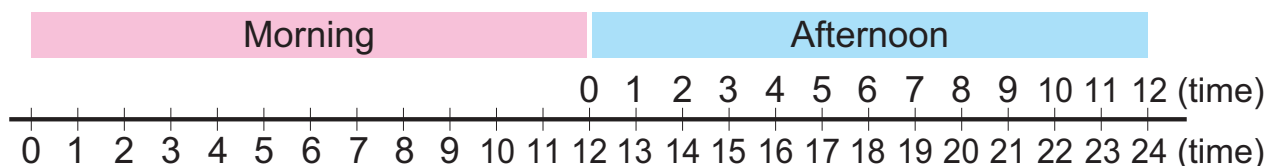
7 Anne noticed that time is shown on the receipts and a boarding card.

- Let's read the times printed on each receipt.
- When will the plane depart; in the morning or in the afternoon?



1 o'clock in the afternoon
is the same as 13 o'clock.

3 What time in the afternoon is 20 o'clock?





1 Let's fill the with numbers or words.

Pages 30 ~ 32



- ① 1 day = hours
- ② 60 minutes = hour
- ③ 0 o'clock in the morning is the same as o'clock in the afternoon.
- ④ Noon is the same as o'clock in the morning, and also the same as o'clock in the afternoon.
- ⑤ The duration of time for the long hand to move one scale forward on the clock is called .
- ⑥ The duration for the long hand to go round the clock once is .
- ⑦ The short hand goes round the clock times in a day.
- ⑧ The duration for the short hand to go round the clock once is .

2 The clock on the right is showing 15 minutes past 9.

Pages 33 ~ 34



- ① What time will it be 20 minutes later?
- ② How long will it be till 10 o'clock?

(1) Let's find the answers.

Grade 1

Do you remember?



- ① $2 + 3$
- ② $5 + 5$
- ③ $9 + 5$
- ④ $4 + 8$

(2) There are 7 red balloons and 6 white balloons.

How many balloons are there altogether?

Expression : Answer balloons



Problems 1



- 1** Let's write down the following times from the shortest to the longest.

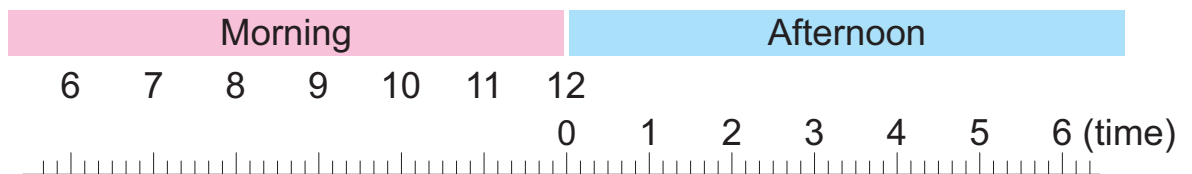
15 hours

1 day

3 hours 45 minutes

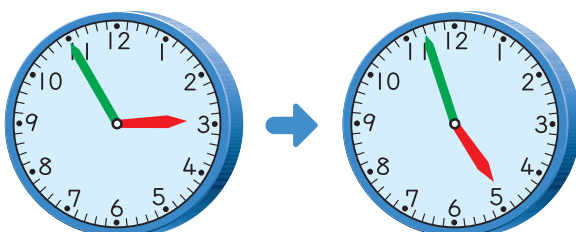
60 minutes

- 2** Let's use the clock and the diagram below to answer the following questions.



- ① How long is it between 1 and 4 o'clock in the afternoon?
- ② What time is 3 hours after 11 o'clock in the morning?
- ③ What time is 2 hours before 1 o'clock in the afternoon?
- ④ How long is it between 20 minutes past 9 and 10 minutes past 10 in the morning?

- 3** Regina went shopping with her mother. They left home at 2:55 in the afternoon. After they were done with their shopping, they returned home at 4:57 in the afternoon. How long were they shopping?





Problems 2



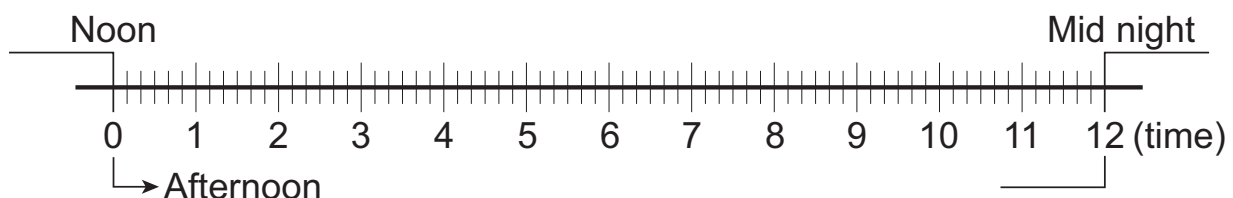
- ① Kate wrote in her diary of what she did after school.

After school, I went home and then visited my grandmother. After that, when I returned home, it had already been 2 hours since I left school.

While at home, I studied for 1 hour, helped prepare dinner for 20 minutes, had dinner for 40 minutes while enjoying talking with my family, watched TV for 1 hour, played the game player for 30 minutes, took a shower for 20 minutes, and lastly prepared for the next day for 10 minutes. When I looked at the time it was exactly 9 o'clock.



- ① What time did Kate start watching TV? Use the scale below to help you.
- ② What time did Kate leave school? Use the scale below to help you.





Have you ever seen it?

4



How much
will it be if I buy
three candies?



Addition in Vertical Form

▶▶ Let's go on a field trip by bus!



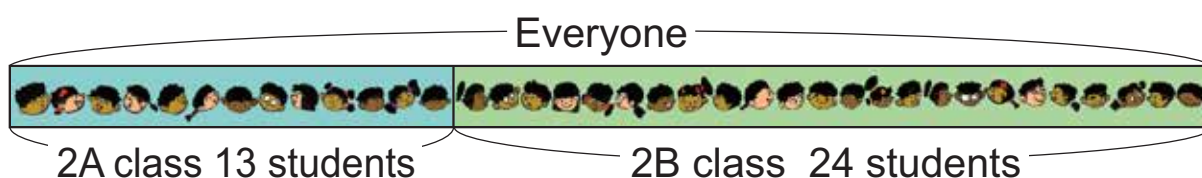
Adding 2-digit Numbers

1

There are 13 students from 2A class and 24 students from 2B class going on a field trip together by bus.

The bus can carry 40 passengers.

Can everyone fit into one bus?



$$40 = \square + \square$$



How many 2A and 2B students are there altogether?

- 1 Write an expression.

- 2 Let's think about the total number.



If I replace the number of students with blocks...

How about using places?



③ $13 + 24$ can be written vertically by putting numbers in the same places in the same columns. This is called the

$$\begin{array}{r} 13 \\ + 24 \\ \hline \end{array}$$

Vertical Form. Let's think about how to calculate using vertical form.

Kim

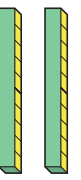
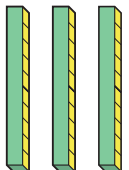
$$\begin{array}{r} 13 \\ + 24 \\ \hline 30 \\ + 7 \\ \hline 37 \end{array}$$

Enoch

$$\begin{array}{r} 13 \\ + 24 \\ \hline 7 \\ + 30 \\ \hline 37 \end{array}$$

Joan

$$\begin{array}{r} 13 \\ + 24 \\ \hline 37 \end{array}$$

Tens place	Ones place
 1	 3
 2	 4
 3	 7

How to Add $13 + 24$ Using Vertical Form

$$\begin{array}{r} 13 \\ + 24 \\ \hline \end{array} \rightarrow \begin{array}{r} 13 \\ + 24 \\ \hline 37 \end{array}$$

$$1 + 2 = 3 \quad 3 + 4 = 7$$

Align numbers according to their place value.

Add numbers in the ones place, and numbers in the tens place.

Math sentence : $13 + 24 = 37$

Answer : 37 people



Everyone can fit in one bus.

Exercise

Let's find the answers using vertical form.

- ① $31 + 57$ ② $26 + 43$ ③ $15 + 62$ ④ $65 + 31$
 ⑤ $18 + 40$ ⑥ $32 + 20$ ⑦ $50 + 36$ ⑧ $20 + 70$

2 Let's think about how to find the answer for $2 + 41$ using vertical form.

1 Which one is the correct way to write?



$$\begin{array}{r} 2 \\ + 41 \\ \hline \end{array}$$

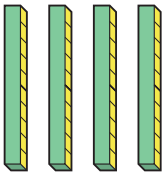
$$\begin{array}{r} 2 \\ + 41 \\ \hline \end{array}$$

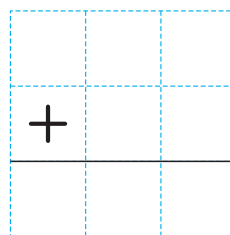


About how many is $2 + 41$?



2 Use the vertical form to find the answer.

Tens place	Ones place
	
	



In vertical form, the same place values are written in the same column, and numbers in the same place are added.



Exercise

Let's find the answers using vertical form.

① $4 + 23$

② $7 + 82$

③ $91 + 8$

④ $65 + 3$

3

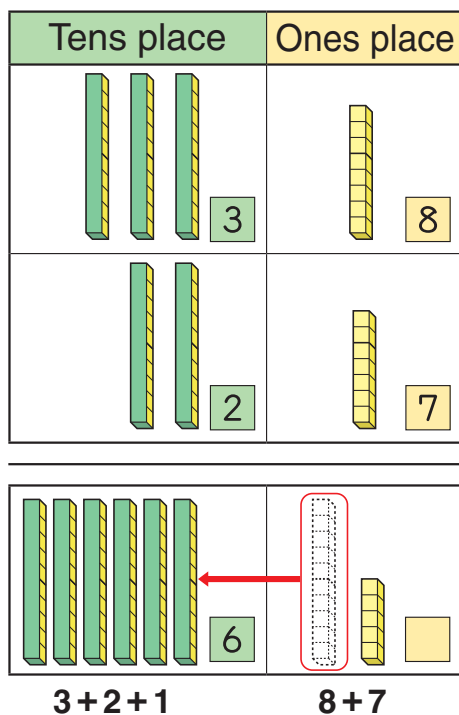
There are 38 picture books and 27 reference books in Bogu's classroom.

How many books are there altogether?



1 Write an expression.

2 Let's think about how to calculate.



How is this different from adding $13 + 24$?



Adding the ones place is $8 + 7$...



When we add numbers in a column, and when the total is more than 10, the group of 10 is formed and moved to the tens place. This is called **carrying or regrouping**.

3 Let's think about how to add using vertical form.

	3	8
+	2	7

Which place should we start?



$$44 = \square + \square$$

Kim

$$\begin{array}{r} 38 \\ + 27 \\ \hline 50 \\ + 15 \\ \hline 65 \end{array}$$

Enoch

$$\begin{array}{r} 38 \\ + 27 \\ \hline 15 \\ + 50 \\ \hline 65 \end{array}$$

Joan

$$\begin{array}{r} 38 \\ + 27 \\ \hline 15 \\ + 5 \\ \hline 65 \end{array}$$



How to Add $38 + 27$ Using Vertical Form

①

$$\begin{array}{r} 38 \\ + 27 \\ \hline \end{array}$$

Write the same place values in the same column. Add the ones place first.

②

$$\begin{array}{r} 38 \\ + 27 \\ \hline 15 \end{array}$$

$8 + 7 = 15$
The ones place is .
Carry 1 ten to the tens place.

③

$$\begin{array}{r} 38 \\ + 27 \\ \hline 15 \\ 65 \end{array}$$

1 ten was carried, so $3 + 2 + 1 = 6$.
The tens place is .

Math sentence : $38 + 27 = 65$ Answer : 65 books



When adding two-digit numbers, start with the ones place.

How to Write the Carried Number in Vertical Form

I wrote 1 here.



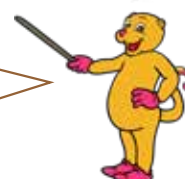
$$\begin{array}{r} 38 \\ + 27 \\ \hline 65 \end{array}$$

$$\begin{array}{r} 38 \\ + 27 \\ \hline 65 \end{array}$$



I wrote 1 here.

Find out a way so that you don't forget the carried 1.



4

Find the answer for
 $14 + 29$ using vertical
 form.

+		



5

Let's find mistakes in the vertical form, correct it,
 and find the answers.

① $27 + 65$

$$\begin{array}{r} 27 \\ + 65 \\ \hline 82 \end{array}$$

+		



② $56 + 3$

$$\begin{array}{r} 56 \\ + 3 \\ \hline 86 \end{array}$$

+		



Exercise

Let's find the answers using vertical form.

① $28 + 16$

② $47 + 27$

③ $59 + 36$

④ $15 + 56$

⑤ $43 + 38$

⑥ $18 + 78$

⑦ $24 + 19$

⑧ $49 + 13$

6

How can we find the answer for $27 + 53$ using vertical form?

	2	7
+	5	3

7

How can we find the answer for $35 + 6$ using vertical form?

+		

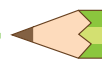


Where should we write 6?

8

How can we find the answer for $7 + 23$ using vertical form?

+		



Exercise

Let's find the answers using vertical form.

- | | | | |
|-------------|-------------|-------------|-------------|
| ① $72 + 18$ | ② $35 + 45$ | ③ $16 + 24$ | ④ $33 + 17$ |
| ⑤ $54 + 7$ | ⑥ $77 + 9$ | ⑦ $6 + 89$ | ⑧ $5 + 15$ |



1 Let's find the answers using vertical form.

Pages 42 ~ 47



① $84 + 15$

② $23 + 60$

③ $31 + 42$

④ $76 + 11$

⑤ $36 + 2$

⑥ $19 + 18$

⑦ $28 + 63$

⑧ $45 + 37$

⑨ $71 + 19$

⑩ $8 + 44$

⑪ $56 + 4$

⑫ $5 + 25$

Be careful about carrying.



2 Tintin caught 7 talapias and Giles caught 12 talapias.
How many talapias did they catch altogether?

Page 43



3 Carol picked 17 flowers and Shama picked 23 flowers. How many flowers did they pick altogether?

Page 47



4 Emily had 58 cards. Her friend gave her 7 more. How many cards does she have now?

Page 47





Addition with 3-digit Answers



- 1** Children prepared for a party. They made 74 paper rings yesterday, and 65 paper rings today. How many paper rings did they make altogether?

1 Write an expression.

2 Let's think about how to calculate.

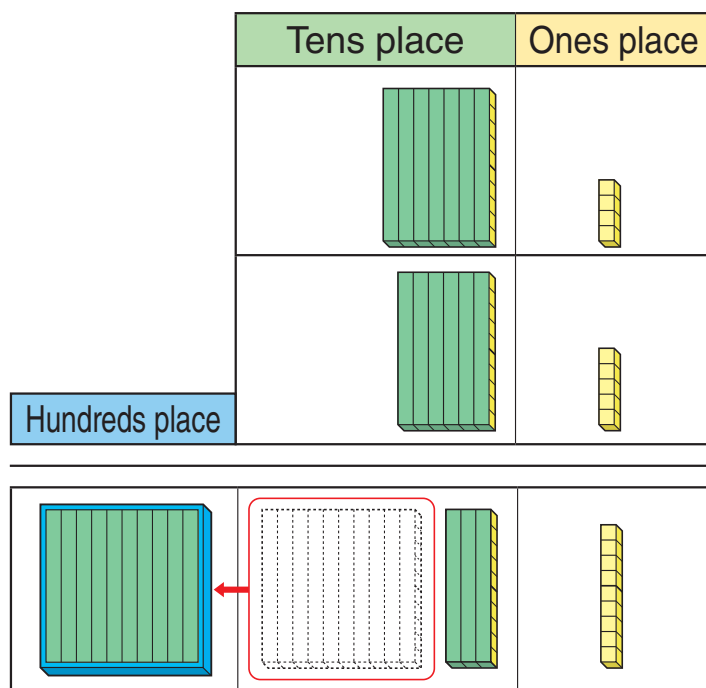
3 Let's explain how to calculate using vertical form.



Vavi's idea

$$\begin{array}{r} 74... \\ 65... \end{array} \quad \begin{array}{l} 70 + 4 \\ 60 + 5 \end{array}$$

130 and 9 makes 139



③ Carry 10 tens to hundreds place as 1 hundred.

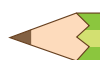
② $7 + 6$

① $4 + 5$

$$\begin{array}{r} 74 \\ + 65 \\ \hline 9 \end{array}$$



$$\begin{array}{r} 74 \\ + 65 \\ \hline 139 \end{array}$$



Exercise

Let's find the answers using vertical form.

① $93 + 86$

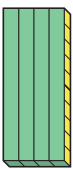
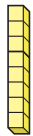
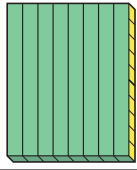
② $63 + 71$

③ $67 + 80$

④ $20 + 90$

2

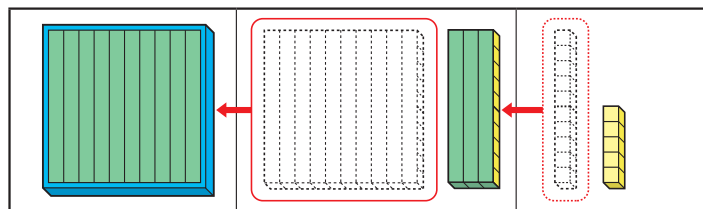
Let's explain how to calculate $48 + 87$ using vertical form.

	Tens place	Ones place
		
		
Hundreds place		

$$\begin{array}{r} 48 \\ + 87 \\ \hline 15 \end{array}$$



$$\begin{array}{r} 48 \\ + 87 \\ \hline 135 \end{array}$$



- ③ Carry 10 tens to hundreds place as 1 hundred. ② Carry 10 ones to tens place as 1 ten. ① $8 + 7$



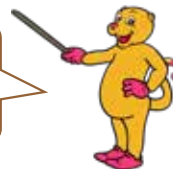
It's the same as adding the numbers in the ones and tens place separately and then adding the two results.

$$\begin{array}{r} 48 \\ + 87 \\ \hline 15 \\ 12 \\ \hline 135 \end{array}$$

3

Let's think about how to calculate $37 + 67$ using vertical form.

What will the number in the tens place become?



+		



Exercise

Let's find the answers using vertical form.

- ① $35 + 96$ ② $88 + 44$ ③ $36 + 89$ ④ $58 + 62$
 ⑤ $27 + 78$ ⑥ $32 + 69$ ⑦ $15 + 85$ ⑧ $6 + 97$



Addition of 3-digit Numbers

1

300 sheets of paper were placed on top of 400 sheets of paper.



- 1** How many sheets of paper are there altogether?

Let's think in sets of 100...



Expression :

Answer :

sheets

- 2** If 300 more sheets of paper were placed on top of the stack, how many sheets of paper will be there altogether?

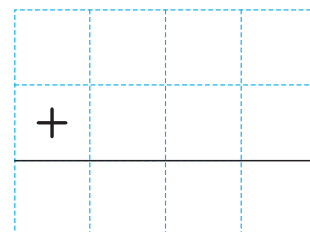
Expression :

Answer :

sheets



When adding numbers with carrying, we are carrying...



Exercise

Let's add.

① $100 + 400$

② $200 + 600$

③ $700 + 200$

④ $100 + 900$

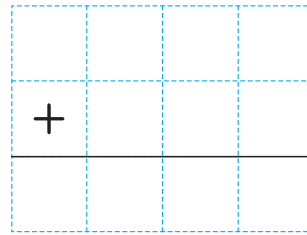
⑤ $600 + 400$

⑥ $200 + 800$

2

Let's calculate $628 + 7$.

The ones place is $8 + 7$,
so 1 ten is carried to
the tens place.

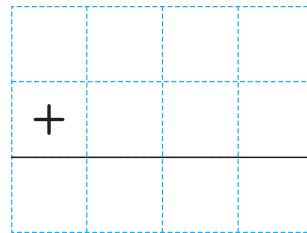


I've learnt how to
calculate $28 + 7$.

3

Let's calculate $234 + 57$.

I know how to
calculate $34 + 57$.



We should add the
numbers in the
same place values.

4

Find the mistakes in the vertical forms, and write
the correct answers in the ().

① $327 + 4$

$$\begin{array}{r} 327 \\ + 4 \\ \hline 727 \end{array}$$

()

② $649 + 13$

$$\begin{array}{r} 649 \\ + 13 \\ \hline 652 \end{array}$$

()

Exercise

Let's find the answers using vertical form.

① $345 + 7$

② $286 + 4$

③ $121 + 9$

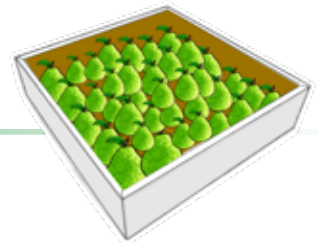
④ $463 + 29$

⑤ $616 + 66$

⑥ $748 + 43$



Rules of Addition



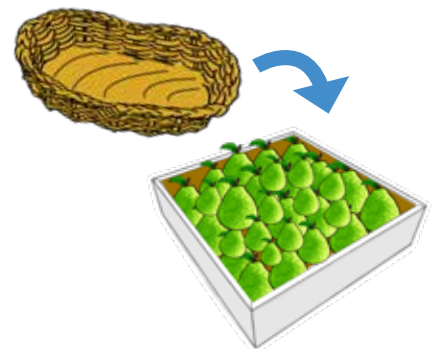
- 1** There are 38 guavas in a box and 16 guavas in a basket.

How many guavas are there altogether?

- 1** Let's put the guavas from the basket into the box.

$$\begin{array}{|c|} \hline 38 \\ \hline \end{array} + \begin{array}{|c|} \hline 16 \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array}$$

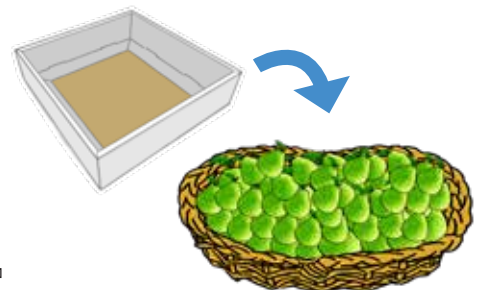
augend addend sum



- 2** Let's put the guavas from the box into the basket.

$$\begin{array}{|c|} \hline 16 \\ \hline \end{array} + \begin{array}{|c|} \hline 38 \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array}$$

augend addend sum



When adding numbers, the sum remains the same even if the two numbers are switched.

$$38 + 16 = 16 + 38$$

The sums are the same, so we can connect them by “=”.



2 Let's add the following, and switch the numbers to check your answers.

- ① $24 + 31$ ② $45 + 16$ ③ $50 + 38$ ④ $9 + 76$

3 Let's add $32 + 7 + 3$.



Kekeni's idea

After I calculate $32 + 7$,
I then add 3 to the sum.

$$\begin{array}{r} 32 \\ + 7 \\ \hline 39 \end{array}$$

$$\begin{array}{r} 39 \\ + 3 \\ \hline \square \end{array}$$



Naiko's idea

$7 + 3 = 10$, so I add 10
to 32.

$$\begin{array}{r} 32 \\ + 10 \\ \hline \square \end{array}$$



In addition you can change the order of calculation.

$$(32 + 7) + 3 = 32 + (7 + 3)$$



You calculate the numbers in the () first.



Exercise

Let's find the easier way to calculate.

① $45 + 18 + 2$

② $58 + 13 + 27$

③ $23 + 68 + 12$

④ $6 + 37 + 44$



Which two numbers should you add first to solve in a simpler way?



- 1** Let's summarise how to add $67 + 28$ using vertical form.

Page 45

+		



- (1) In ones place $7 + 8$ makes 15.

Ones place is . Carry to the tens place.

- (2) In the tens place, $6 + 2 + \text{ } = 9$

- (3) The answer is, .

- 2** Let's find the answers using vertical form.

Pages 42 ~ 52



- | | | | |
|---------------|---------------|-------------|--------------|
| ① $36 + 32$ | ② $43 + 34$ | ③ $2 + 53$ | ④ $40 + 47$ |
| ⑤ $38 + 25$ | ⑥ $57 + 19$ | ⑦ $35 + 58$ | ⑧ $17 + 43$ |
| ⑨ $18 + 9$ | ⑩ $49 + 4$ | ⑪ $8 + 47$ | ⑫ $5 + 75$ |
| ⑬ $600 + 300$ | ⑭ $500 + 500$ | ⑮ $527 + 6$ | ⑯ $325 + 35$ |

- 3** Let's find the easier way to calculate.

Page 54



- ① $56 + 22 + 8$ ② $4 + 37 + 26$ ③ $54 + 32 + 26$

- (1) Find the answers to the following.

Grade 1

Do you remember ?



- ① $8 - 5$ ② $10 - 9$ ③ $14 - 8$ ④ $12 - 3$

- (2) There were 13 talapias in a water tank. 5 talapias were caught.
How many talapias are left?

Expression :

Answer : talapias



Problems 1



1 Let's find the answers using vertical form.

- | | | | |
|---------------|---------------|-------------|--------------|
| ① $14 + 63$ | ② $45 + 24$ | ③ $30 + 56$ | ④ $42 + 39$ |
| ⑤ $36 + 47$ | ⑥ $19 + 65$ | ⑦ $22 + 18$ | ⑧ $54 + 16$ |
| ⑨ $32 + 97$ | ⑩ $67 + 73$ | ⑪ $69 + 58$ | ⑫ $29 + 73$ |
| ⑬ $400 + 300$ | ⑭ $900 + 100$ | ⑮ $516 + 8$ | ⑯ $853 + 17$ |

2 At Tina's school, there are two classes of grade 2.

There are 32 children in 2A class, and 28 children in 2B class.

How many children are there in grade 2 altogether?



3 If you buy a school uniform for 58 kina and a backpack for 65 kina, what will be the total cost?



K58



K65

4 Let's find the mistakes in the following, and write the correct answers in the ().



$$\begin{array}{r} 27 \\ + 43 \\ \hline 60 \end{array}$$

()

$$\begin{array}{r} 81 \\ + 58 \\ \hline 149 \end{array}$$

()

$$\begin{array}{r} 6 \\ + 35 \\ \hline 95 \end{array}$$

()

$$\begin{array}{r} 12 \\ + 19 \\ \hline 211 \end{array}$$

()

Problems 2

- 1 Lyn made paper birds on Friday, Saturday, and Sunday.

Friday	Saturday	Sunday
Today, I made paper birds.	Today, I made 39 more paper birds than yesterday.	Today, I made 87 more paper birds than yesterday.
		

- 1 If Lyn made 24 paper birds on Friday, solve the following questions.

- (1) How many did she make on Saturday?
- (2) How many did she make on Sunday?

- 2 Elijah wrote the following expression.

$$39 + 87$$

What is Elijah trying to find out? Explain.

Subtraction in Vertical Form

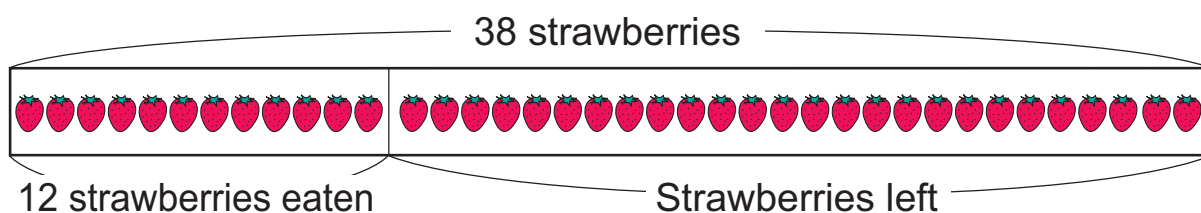


Subtraction of 2-digit Numbers

1

Sam and his friends picked 38 strawberries.

They ate 12 of them. How many are left?



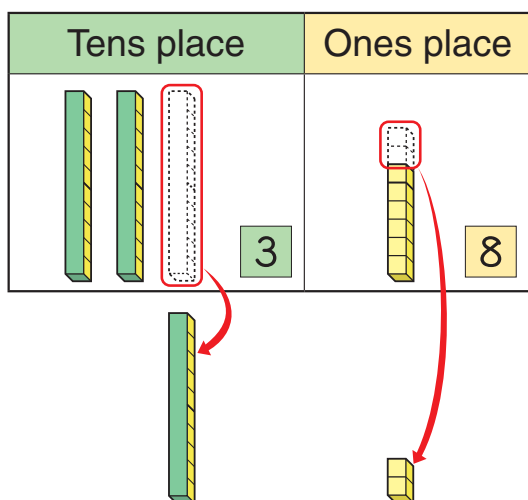
1

Write an expression.

2

Let's think about how to subtract with the vertical form, just as with addition.

	3	8
—	1	2



How to Subtract $38 - 12$ Using Vertical Form

$$\begin{array}{r} 38 \\ - 12 \\ \hline \end{array}$$



$$\begin{array}{r} 38 \\ - 12 \\ \hline 26 \end{array}$$

$$3 - 1 = 2$$

$$8 - 2 = 6$$

Write the numbers in each column.

Subtract the numbers in the same column.

2 Subtract $29 - 6$ using vertical form.

—		



3 Let's think about how to find answers for the following using vertical form.

1 $34 - 14$

—		

2 $68 - 64$

—		

3 $48 - 8$

—		



Exercise

Let's find the answers using vertical form.

① $76 - 32$

② $59 - 45$

③ $36 - 24$

④ $56 - 40$

⑤ $58 - 5$

⑥ $98 - 18$

⑦ $43 - 42$

⑧ $30 - 20$

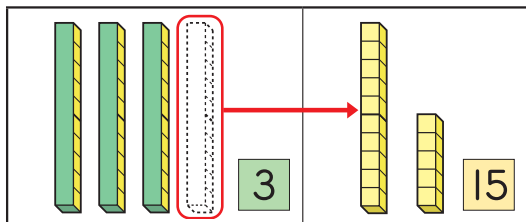
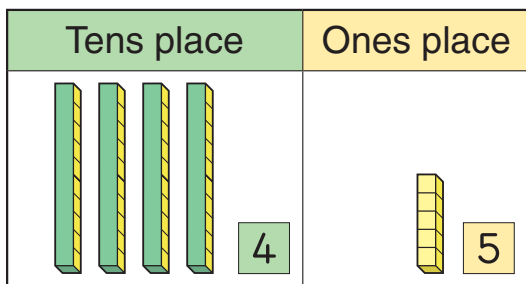
⑨ $45 - 5$

4 There were 45 postage stamps.
I used 27 of them.

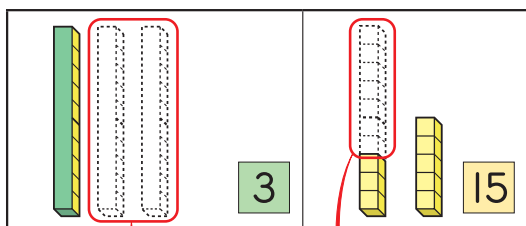
How many are left?

1 Write an expression.

2 Let's think about how to calculate.

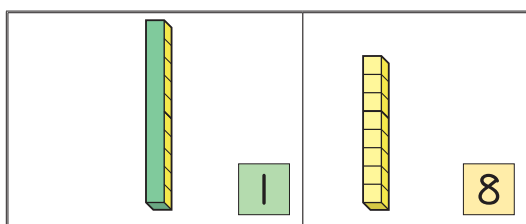
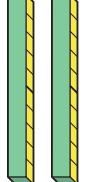


① Borrow 1 ten as 10 ones.



② $3 - 2$

③ $15 - 7$



Let's compare with $38 - 12$.



The ones place is $5 - 7...$



As shown on the left, you can move 1 from the tens place to the ones place as 10 ones. This is called **borrowing**.

3 Let's think about how to find the answer using vertical form.

	4	5
-	2	7

How to Subtract 45 – 27 Using Vertical Form

	Ones place	Tens place
①	②	③
$\begin{array}{r} 45 \\ - 27 \\ \hline \end{array}$	$\begin{array}{r} 3 \ 10 \\ 45 \\ - 27 \\ \hline 8 \end{array}$	$\begin{array}{r} 3 \ 10 \\ 45 \\ - 27 \\ \hline 1 \ 8 \end{array}$
Write the numbers in each column.	Borrow 1 ten as 10 ones, so $15 - 7 = 8$. The ones place of the answer becomes .	1 ten has been borrowed to the ones place, so $3 - 2 = \text{$.

Math sentence : $45 - 27 = 18$ Answer : 18 postage stamps

5 Let's find the answer for $53 - 26$ using vertical form.

—		



6 Let's think about how to subtract using vertical form.

① $70 - 23$

	7	0
—	2	3

How should I subtract the ones place?



② $34 - 26$

	3	4
—	2	6

What would the answer in the tens place be?



Exercise

Let's find the answers using vertical form.

- | | | | |
|-------------|-------------|-------------|-------------|
| ① $41 - 19$ | ② $72 - 33$ | ③ $81 - 16$ | ④ $66 - 28$ |
| ⑤ $70 - 56$ | ⑥ $40 - 24$ | ⑦ $50 - 33$ | ⑧ $80 - 48$ |
| ⑨ $26 - 18$ | ⑩ $54 - 45$ | ⑪ $73 - 67$ | ⑫ $90 - 88$ |

- 7** Think about how to calculate.
 $35 - 8$ using vertical form.



Align numbers in
the place values.

—		



Exercise

Let's find the answers using vertical form.

- ① $92 - 8$ ② $51 - 9$ ③ $40 - 7$ ④ $60 - 5$

Remember to borrow
from the tens place.



- 1** Let's find answers using vertical form.

Pages 59 ~ 62



- ① $74 - 31$ ② $95 - 55$ ③ $69 - 37$
④ $83 - 54$ ⑤ $30 - 17$ ⑥ $42 - 39$
⑦ $23 - 7$ ⑧ $80 - 3$ ⑨ $28 - 9$

- 2** There are 32 children in
Tyron's class.
3 of them are absent today.
How many are present?

Page 62





Subtracting from Numbers that are Larger than 100

- 1** There were 129 sheets of coloured paper.
Boi used 73 sheets. How many were left?

1 Write an expression.

2 Let's think about how to subtract.



Mero's idea

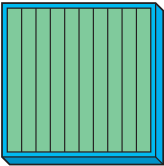
129 can be split into
100 and 29.
 $100 - 70 = 30$,
 $30 - 3 = 27$, $29 + 27 = 56$



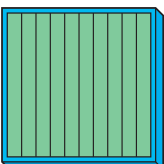
Yamo's idea

129 can be split into
120 and 9.
 $120 - 70 = 50$,
 $9 - 3 = 6$, $50 + 6 = 56$

3 Explain how to subtract using vertical form.

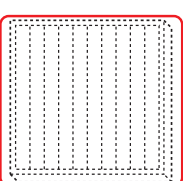
Hundreds place	Tens place	Ones place
		



		
---	---	---



① $9 - 3$

		
---	---	---

② Borrow 1
hundred as
10 tens.

③ $12 - 7$

$$\begin{array}{r} 129 \\ - 73 \\ \hline \end{array}$$



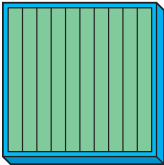
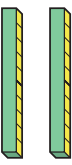
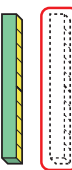
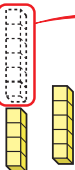
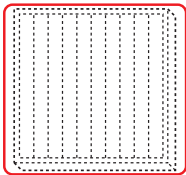
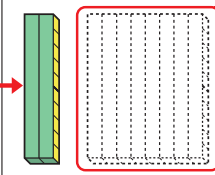
$$\begin{array}{r} 129 \\ - 73 \\ \hline 6 \end{array}$$



$$\begin{array}{r} 10 \\ 129 \\ - 73 \\ \hline 56 \end{array}$$

2

Let's explain how to calculate $125 - 86$ using vertical form.

Hundreds place	Tens place	Ones place
		
		
	① Borrow 1 ten as 10 ones.	② $15 - 6$
		
	The tens place becomes 1.	
		
③ Borrow 1 hundred as 10 tens.	④ $11 - 8$	

We cannot subtract 6 from 5 in the ones place.

The tens place becomes $1 - 8$...

Vertical form for $125 - 86$:

$$\begin{array}{r} 125 \\ - 86 \\ \hline \end{array}$$

Vertical form for $125 - 86$ showing borrowing:

$$\begin{array}{r} 10 \quad 10 \\ 125 \\ - 86 \\ \hline \end{array}$$

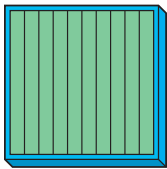
Exercise

Let's find the answers using vertical form.

- ① $132 - 41$ ② $109 - 53$ ③ $146 - 60$ ④ $132 - 47$
 ⑤ $156 - 78$ ⑥ $171 - 82$ ⑦ $146 - 59$ ⑧ $120 - 61$

3

Let's explain how to calculate $105 - 78$ using vertical form.

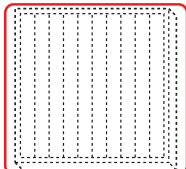
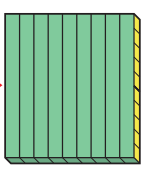
Hundreds place	Tens place	Ones place
		

We cannot borrow from the 0 in the tens place.



$$\begin{array}{r} 105 \\ - 78 \\ \hline \end{array}$$



		
---	---	---

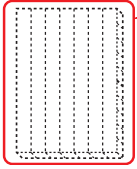
① Borrow 1 hundred as 10 tens.

② Borrow 1 ten as 10 ones.

③ $15 - 8$

$$\begin{array}{r} 9 10 \\ \cancel{10} \cancel{10} \\ - \cancel{0} 5 \\ \hline 7 8 \end{array}$$



			
--	---	---	---

④ $9 - 7$

$$\begin{array}{r} 9 10 \\ \cancel{10} \cancel{10} \\ - \cancel{0} 5 \\ \hline 7 8 \end{array}$$

4

Let's subtract $102 - 87$ using vertical form.



Exercise

Let's find the answers using vertical form.

① $106 - 59$

② $103 - 44$

③ $101 - 83$

④ $100 - 39$

⑤ $102 - 7$

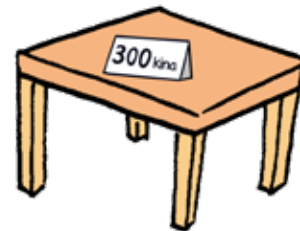
⑥ $108 - 9$



Subtraction of 3-digit Numbers

1

We would like to buy the table that costs 300 kina.



1

Tuli has five 100 kina notes.

How much will he be left with after buying the table?

This is similar to addition on page 51.



Expression :

Answer :

kina

2

Musa has ten 100 kina notes. How much will she have left if she bought the table?

Expression :

Answer :

kina

From which place value do we need to borrow from?



—				



Exercise

Let's calculate the following.

① $900 - 500$

② $500 - 200$

③ $600 - 300$

④ $700 - 100$

⑤ $800 - 500$

⑥ $1000 - 200$

2 Let's calculate $753 - 6$.



We've learned how to subtract $53 - 6$.

—			



We need to borrow 1 ten from the tens place.

3 Let's calculate $546 - 27$.



The number we are subtracting is 2-digits!

—			



But we know how to calculate $46 - 27$.

4 Let's find the mistakes in the vertical forms, and write the correct answer in the ().

1 $608 - 3$

$$\begin{array}{r} 608 \\ - 3 \\ \hline 308 \\ (\quad) \end{array}$$

2 $524 - 17$

$$\begin{array}{r} 524 \\ - 17 \\ \hline 517 \\ (\quad) \end{array}$$

Exercise

Let's find the answers using vertical form.

① $536 - 5$

② $273 - 4$

③ $115 - 8$

④ $354 - 32$

⑤ $282 - 63$

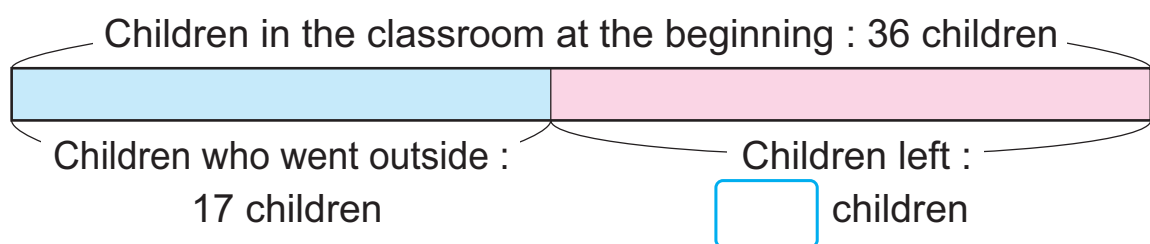
⑥ $230 - 24$



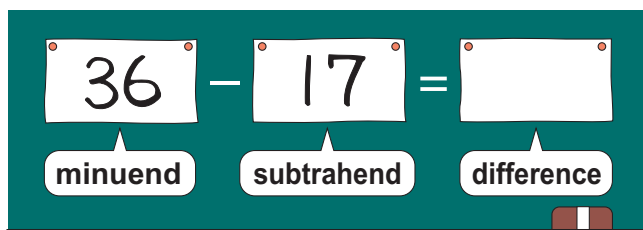
Relation between Addition and Subtraction

- 1** There were 36 children in the classroom. 17 of them went outside to play.

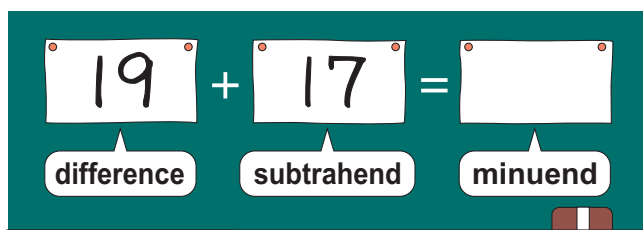
How many were left?



- 1** Let's find the answer.



- 2** If 17 of the children outside came back, how many children will be in class?



This method can be used for checking answers in subtraction.



Exercise

Let's calculate, and check the answers using the method above.

- ① $76 - 51$ ② $32 - 26$ ③ $45 - 8$ ④ $50 - 7$



What Kind of Calculation is This?

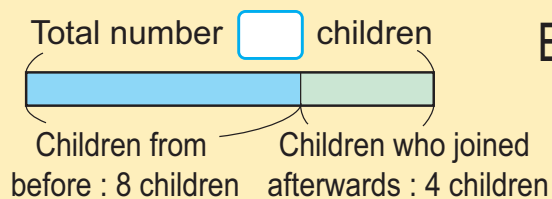
1

Let's compare the two problems.

1

- Ⓐ 8 children were playing together. 4 other children joined them.

How many children were playing altogether?

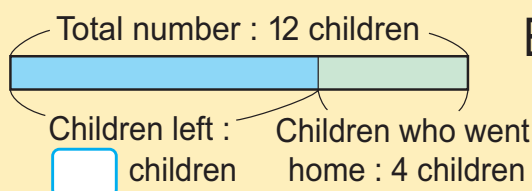


Expression :

Answer : children

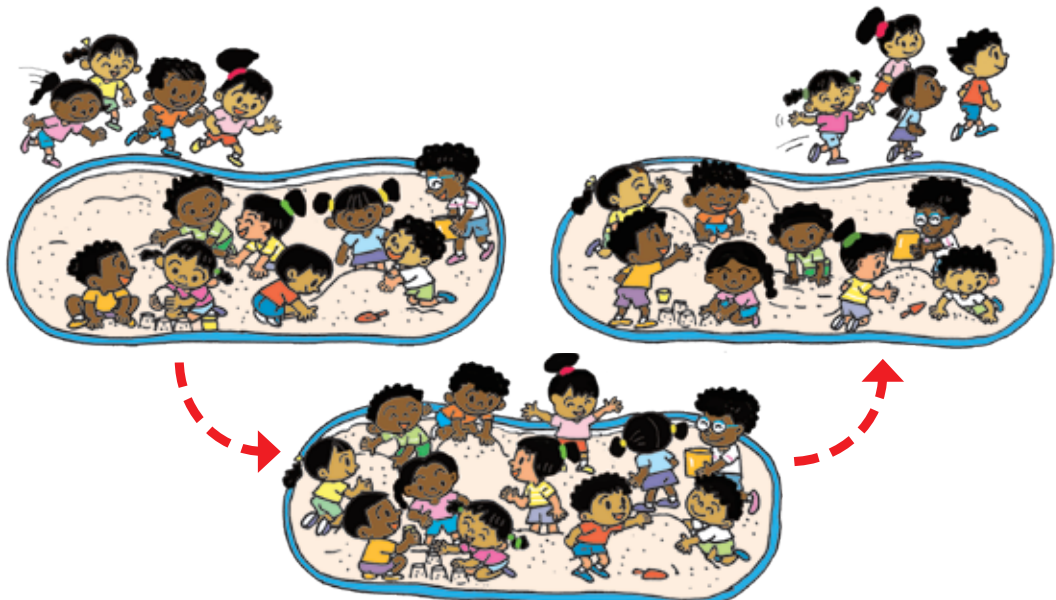
- Ⓑ There were 12 children playing together, 4 of them went home.

How many were left?



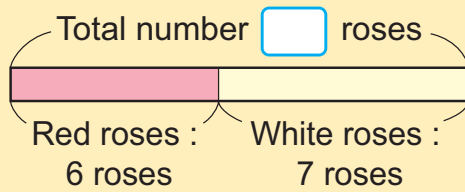
Expression :

Answer : children



2

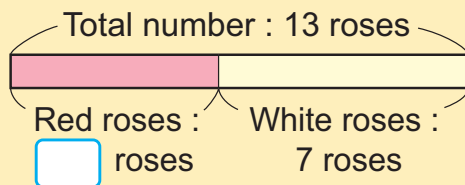
- Ⓐ There are 6 red roses and 7 white roses.
How many roses are there altogether?



Expression :

Answer : roses

- Ⓑ There are 13 roses and 7 of them are white.
The rest are red.
How many red roses are there?



Expression :

Answer : roses

How are they related to each other?





- 1** Let's summarise how to calculate $73 - 26$ using the vertical form.

Page 61



- (1) Borrow tens from the tens place, so that the ones place will become - 6 =

-		



- (2) In tens place, calculate - 2 =
- (3) The answer is .

- 2** Let's subtract in vertical form and check the answers.

Pages 59 ~ 68



- | | | | |
|---------------|----------------|--------------|--------------|
| ① $58 - 32$ | ② $33 - 11$ | ③ $87 - 19$ | ④ $44 - 26$ |
| ⑤ $80 - 17$ | ⑥ $44 - 8$ | ⑦ $132 - 41$ | ⑧ $123 - 63$ |
| ⑨ $148 - 75$ | ⑩ $154 - 86$ | ⑪ $105 - 48$ | ⑫ $106 - 9$ |
| ⑬ $400 - 300$ | ⑭ $1000 - 500$ | ⑮ $324 - 7$ | ⑯ $671 - 19$ |

- 3** Nora had 32 candies. She gave 14 of them to her brother. How many candies does she have left?

Page 61



Which is longer?

Grade 1

Do you remember?



① A

B

② A

B



Problems 1



1 Let's subtract in vertical form and check the answers.

- | | | | |
|--------------|--------------|--------------|--------------|
| ① $67 - 42$ | ② $59 - 30$ | ③ $96 - 16$ | ④ $98 - 19$ |
| ⑤ $90 - 38$ | ⑥ $52 - 46$ | ⑦ $82 - 7$ | ⑧ $30 - 3$ |
| ⑨ $162 - 81$ | ⑩ $134 - 95$ | ⑪ $104 - 27$ | ⑫ $105 - 9$ |
| ⑬ $425 - 7$ | ⑭ $812 - 3$ | ⑮ $768 - 49$ | ⑯ $340 - 31$ |

2 The school shoes cost 53 kina and the school bag costs 120 kina. Which is more expensive, and by how much?



3 There are 71 children in grade 2 at Alau's school. 39 of them are girls. How many boys are there?

Tell me the mistakes.

4 Let's find the mistakes, and write the correct answers in the ().



- | | | | |
|---|---|--|---|
| ① | ② | ③ | ④ |
| $\begin{array}{r} 71 \\ -47 \\ \hline 34 \end{array}$ | $\begin{array}{r} 65 \\ -43 \\ \hline 12 \end{array}$ | $\begin{array}{r} 94 \\ -6 \\ \hline 34 \end{array}$ | $\begin{array}{r} 168 \\ -97 \\ \hline 131 \end{array}$ |
| () | () | () | () |



Problems 2



- ① What numbers were eaten by insects? Write how to solve the problem.

Example

$$\begin{array}{r} \text{(b)} \quad 5 \\ - \quad | \quad \text{(a)} \\ \hline 7 \quad | \end{array}$$

(a) is a number that makes

$$5 - \text{(a)} = 1, \text{ so (a) is 4.}$$

(b) is a number that makes

$$\text{(b)} - 1 = 7, \text{ so (b) is 8.}$$

①

$$\begin{array}{r} 9 \quad | \\ - \quad \text{(a)} \quad 7 \\ \hline 6 \quad \text{(b)} \end{array}$$

②

$$\begin{array}{r} 6 \quad \text{(a)} \\ - \quad | \quad 2 \\ \hline \text{(b)} \quad 8 \end{array}$$

- ② Make more of these problems. Exchange them with your friends and solve them.

How to make a problem

- ① Make a correct calculation.
- ② Decide which numbers to replace the .
- ③ Do the problem yourself to check if it can be solved.

Example 1

$$\begin{array}{r} 38 \\ + 26 \\ \hline 64 \end{array}$$



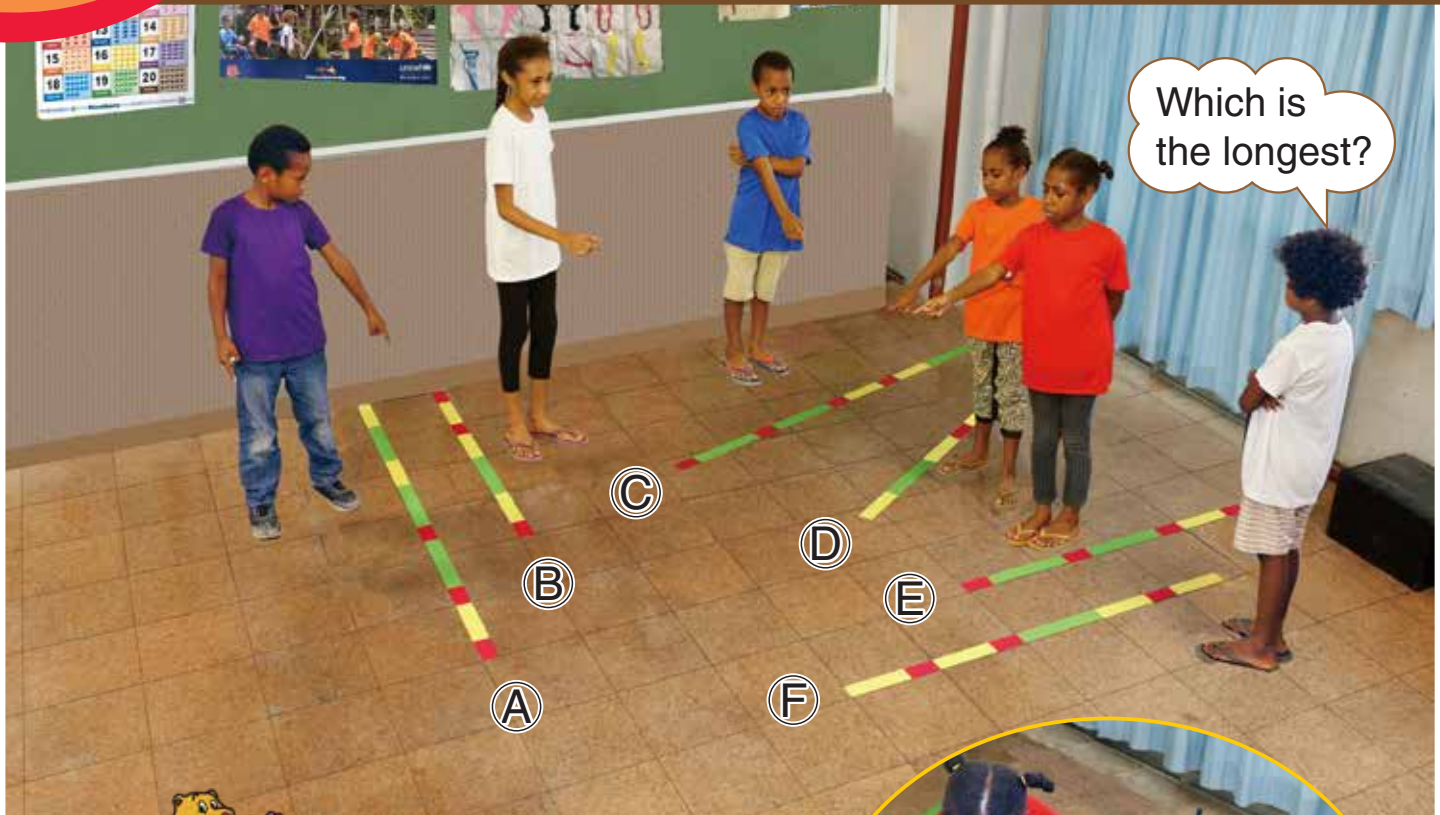
$$\begin{array}{r} \text{ } 8 \\ + 2 \text{ } \\ \hline 64 \end{array}$$

Example 2

$$\begin{array}{r} 87 \\ - 29 \\ \hline 58 \end{array}$$



$$\begin{array}{r} 8 \text{ } \\ - \text{ } 9 \\ \hline 58 \end{array}$$



Let's compare yours with a friend.

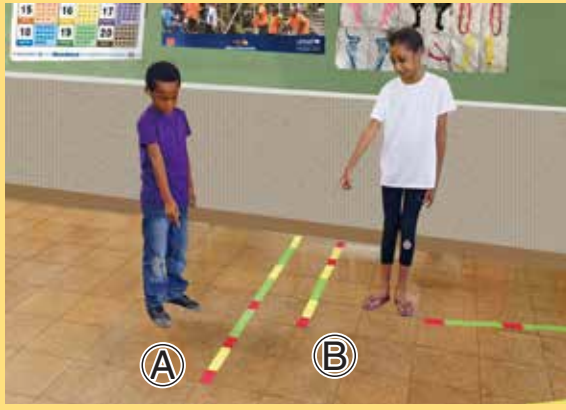
- ▶▶ Let's play a game with rock-paper-scissors using tapes, A, B and C.



Do rock-paper-scissors; if you win with  , you get tape A, if you win with  , you get tape B and if you win with  , you get tape C. Stick the A, B, C tapes together when you collect them.



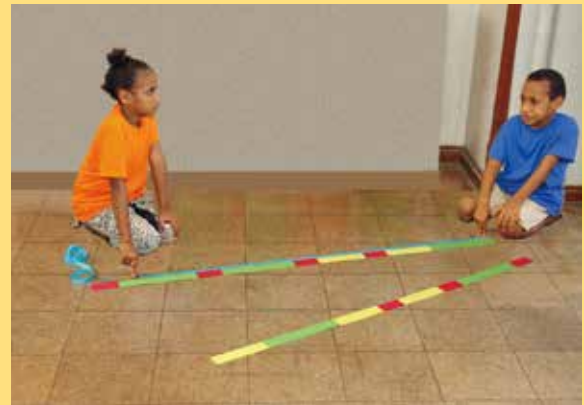
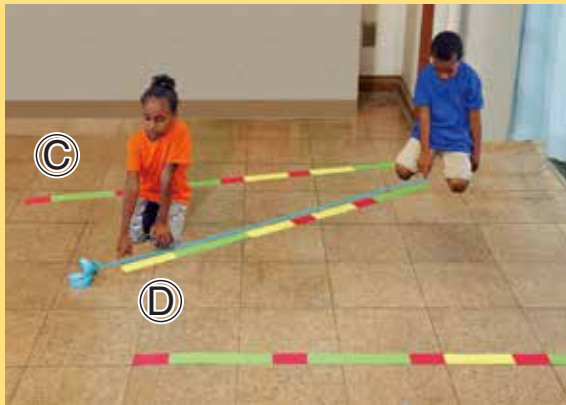
Ⓐ and Ⓑ



Let's think about ways to compare length.

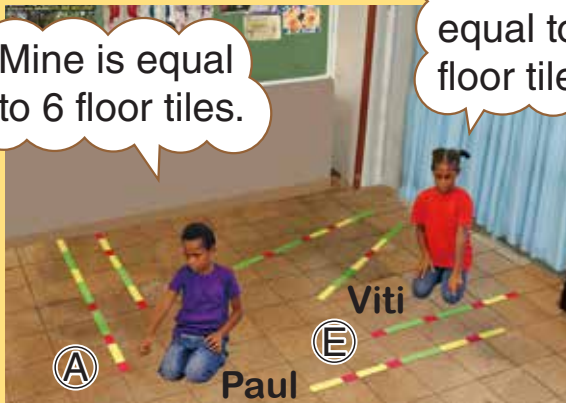


Ⓒ and Ⓓ



Ⓐ and Ⓔ and Ⓒ

Mine is equal to 6 floor tiles.



Mine is equal to 4 floor tiles.

Mine is equal to 17 pieces of red tape. Mine is the longest.



How to Compare

1

Is Steven's tape longer than Paul's?

It's easy to compare whether Paul's or Viti's tape is longer.



Paul



Equal to 18 pieces of red tape

Steven



Equal to 17 pieces of red tape



Length can be compared by using the same unit measure of length. You can show length by the number of that unit.

2

We put an exercisebook and a box of water-colour paints on a grid paper.

1

How many squares is the length and width of the book and the box?

2

By how many squares is the length of the book longer than the length of the box?



Length is the longer side.



3

Let's cut the grid paper to **make a tool for measuring length**. Let's use the tool to measure various objects.





How to Represent Lengths

1

Let's measure the width of an envelop using the scales on the grid paper.

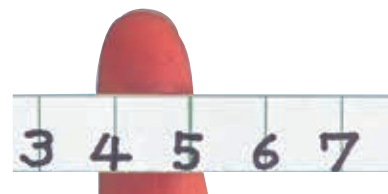


There is a **unit** called '**centimetre**' to measure length.

The lines of the grid paper are 1 centimetre apart.

1 centimetre is written as 1 **cm**.

1 cm 1 cm



Units are the size of the basic measures.

cm is used in many countries as a unit of length.



How many cm is the width of the postcard?



Exercise

Let's measure the lengths of different things.



2 Measure the lengths of the tapes and lines shown below.

1  cm

2  cm

3  cm

4  cm

3 Which is the best way to measure?



4 Let's find objects that are about 10 cm long.



If the length is a little longer than 10 cm, we could say "10 cm and a little more".

But when I say "a little more", will it mean the same amount as my friends?



5 How long is this wood? Let's discuss.



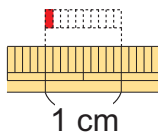
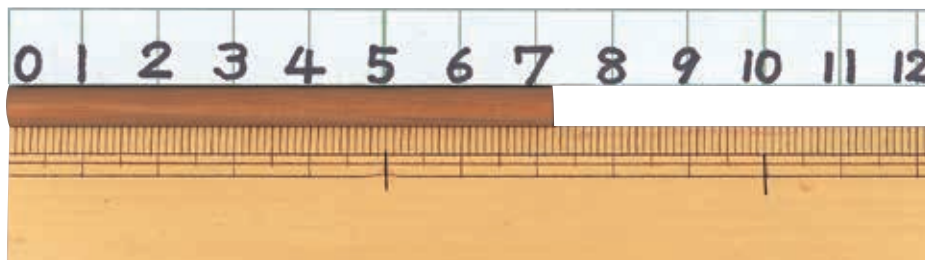
How can we measure the lengths that are not exact?

It would be better if there are smaller units.



If you use a **ruler**, you can also measure the lengths which fall between the units.

The length of the stick is a little longer than 7 cm.
How many smaller units does it fill beyond the 7 cm?



How many smaller units
is 1 cm divided into?

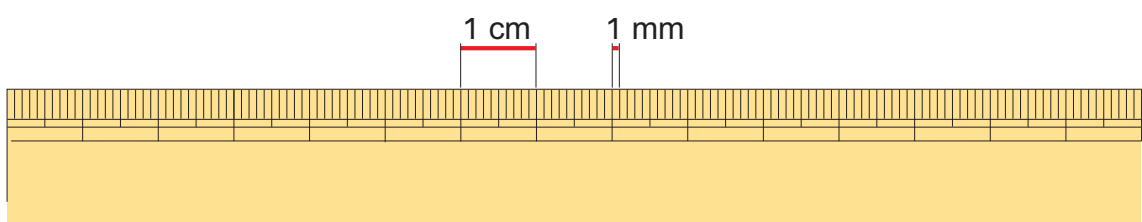


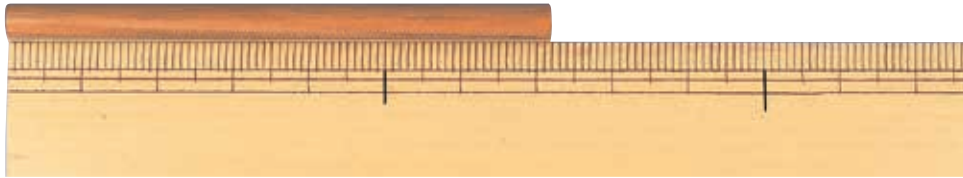
The length of 1 cm equally divided into 10, is called 1 **millimetre**, and is written as 1 **mm**.

1 mm 1 mm

Millimetre (mm) is another unit of length.

$$1 \text{ cm} = 10 \text{ mm}$$





The length of the stick is 7 cm 2 mm.

We can read this as “seven centimetres and two millimetres”.

6 Let's measure the lengths of the tapes and lines shown below.

- 1
- 2
- 3
- 4

7 Let's draw lines of the following lengths.

- 1 8 cm
- 2 11 cm 5 mm
- 3 15 cm 8 mm



① Draw two points.



② Draw a line between the two points.

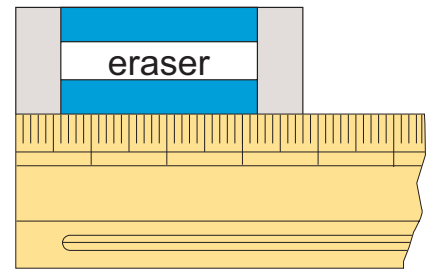
Exercise

Guess the lengths of various objects, and then measure them.

This is probably about 30 cm.



8 Measure the length of the side of an eraser.

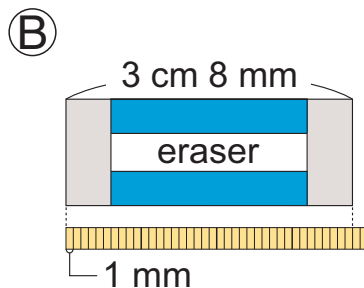


1 How many cm and mm is it?

2 How many mm is it?

Ⓐ 3 cm = mm, so if we add 8 mm to it,
we will get mm.
3 cm 8 mm = mm

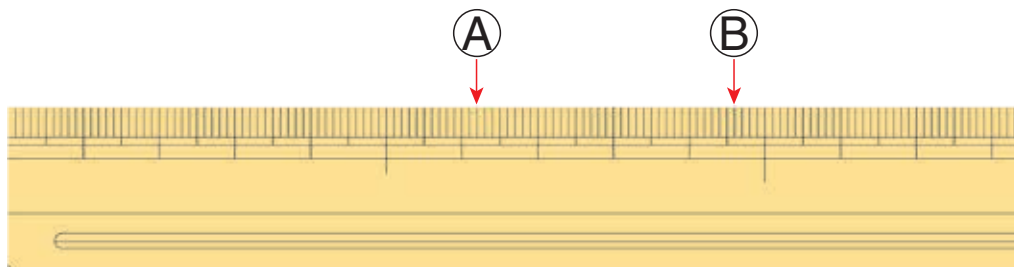
3 cm	8 mm
	mm



There are 38 of 1 mm units,
so it will be mm.

Exercise

What are the lengths from the left edge of the ruler below to Ⓐ and Ⓑ in terms of centimetre and millimetre? How long are they in mm?



Ⓐ cm mm = mm

Ⓑ cm mm = mm



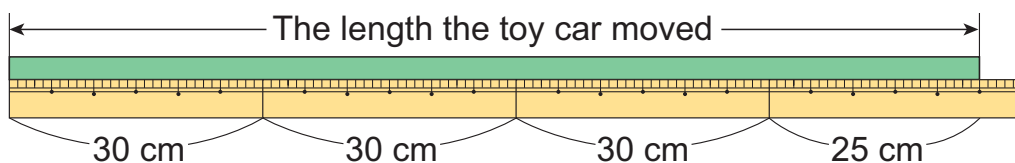
Metres

- We played a racing game using toy cars that move forward.



1

Karen measured how far her car moved by tracing the length using a tape. She measured three times with the 30 cm ruler, and had 25 cm more.

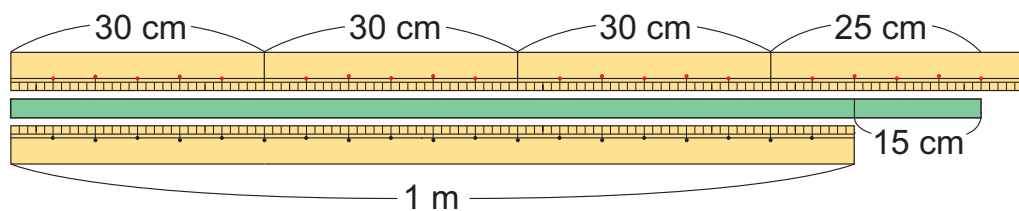


By how many cm did the toy car move forward?



100 cm is called 1 **metre**, and is written as 1 **m**.
Metre (m) is another unit of length.

$$1 \text{ m} = 100 \text{ cm}$$



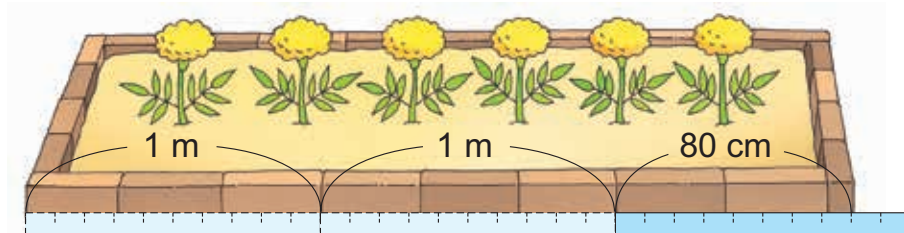
It is useful to use a 1 m ruler when measuring long objects.

$$115 \text{ cm} = 1 \text{ m } 15 \text{ cm}$$

	m	cm
	1	15

2 We measured the length of a flower bed as follows. How many metres and centimetres is the length?

How many centimetres is it?

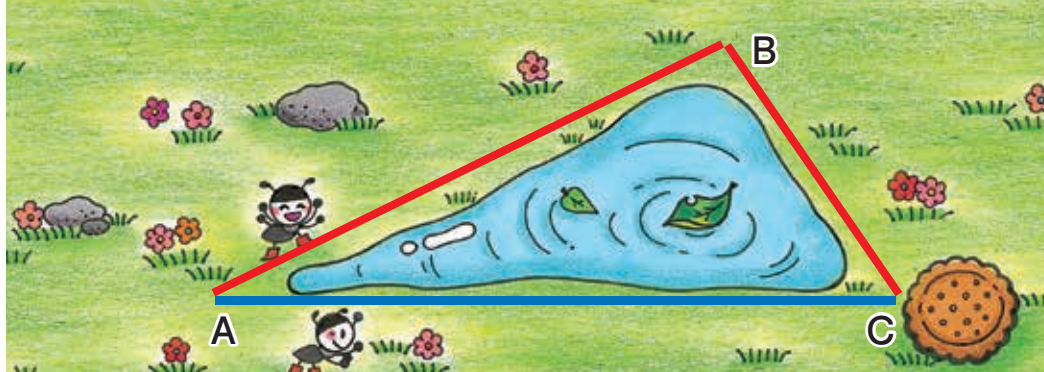


Exercise

Let's cut a tape that you think is 1 m long.

Line up your tapes and see whose is closest to 1 m.



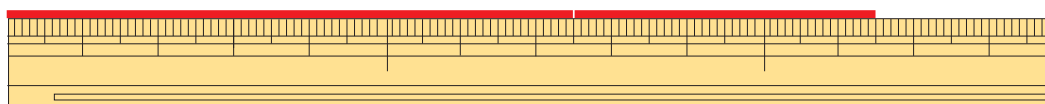


Let's Find the Lengths

1 An ant crawled from A to C.

1 What is the total length of the lines A B C?

$$7 \text{ cm } 5 \text{ mm} + 4 \text{ cm}$$



Vavi's idea

I will add lengths with same units together.

7 cm and 4 cm make 11 cm

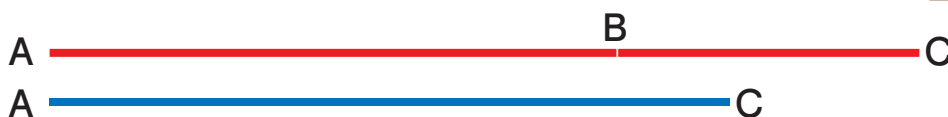
11 cm and 5 mm make cm mm.



Naiko's idea

cm	mm
7	5
+ 4	

2 What is the difference between the lengths of the lines A B C and A C?



Measure and find the difference.



Exercise

1 An 18 cm elastic band was stretched to the length of 35 cm. How much was it stretched?

2 Let's find the answers.

1 12 cm + 25 cm

2 23 cm 6mm – 16 cm

2 Let's think about how to calculate the following.

Ⓐ $16\text{ cm } 8\text{ mm} + 1\text{ cm } 5\text{ mm}$

Ⓑ $18\text{ cm } 4\text{ mm} - 2\text{ cm } 6\text{ mm}$

1 Explain the ideas for Ⓐ below, and complete the calculation.



Kekeni's idea

$16\text{ cm } 8\text{ mm}$ is 168 mm .
 $1\text{ cm } 5\text{ mm}$ is 15 mm .
Therefore, the problem can be solved by doing $168 + 15$.

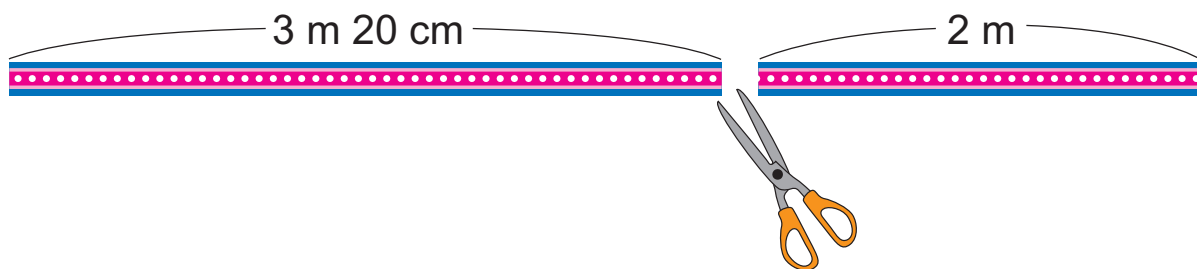


Mero's idea

$16\text{ cm} + 1\text{ cm} = 17\text{ cm}$.
 $8\text{ mm} + 5\text{ mm} = 13\text{ mm}$.
Therefore, the problem can be solved by doing $17\text{ cm} + 1\text{ cm } 3\text{ mm}$.

2 Let's calculate Ⓑ using Kekeni's and Mero's ideas.

3 A tape was cut into two pieces. The lengths of the two pieces are shown below.



1 What was the original length of the tape?

$3\text{ m } 20\text{ cm} + 2\text{ m}$



Kekeni's idea

I will add the numbers with the same units with each other.

3 m and 2 m make 5 m.

5 m and 20 cm make m cm.



Mero's idea

m	cm
3	20
+ 2	

- ② What is the difference between the lengths of the two tapes?



Exercise

- ① There is a rope 13 m long and a rope 2 m long. How many metres is the difference between the two ropes?

- ② Let's find the answers.

① $13 \text{ cm } 7 \text{ mm} + 2 \text{ cm } 3 \text{ mm}$

② $26 \text{ cm } 3 \text{ mm} - 4 \text{ cm } 5 \text{ mm}$

③ $24 \text{ m} + 15 \text{ m}$

④ $23 \text{ m } 50 \text{ cm} - 15 \text{ m}$



Tape Measure

Write scales for 1 cm, 10 cm, and 1 m in different colours.



- ④ Make a long ruler with a paper ribbon, and measure the lengths of many different objects.



- ① First, guess their lengths.
② Then, measure the lengths to prove the actual length.



1 Let's measure the lengths of the lines below.

A 

B 

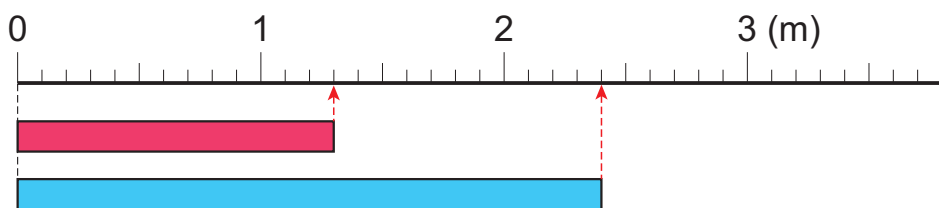
Pages 77 ~ 81



- ① How many centimetres and millimetres is each line?
- ② How many millimetres is each line?

2 Find out the lengths of the tapes below.

Page 83



- ① How many metres and centimetres are the red tape and the blue tape?
- ② How many centimetres are the red tape and the blue tape?

We asked 14 children what their favourite animals were.

Grade 1

Do you remember ?



- ① Which is the most popular animal? How many children chose that animal?
- ② How many children like rabbits?





Problems 1



1 Write the correct units in the .

- ① The thickness of an exercise book. 3
- ② The width of a classroom. 7
- ③ The length of a desk. 60
- ④ The height of a school building. 20

2 Arrange the following lengths in order, from the longest.

3 m

7 cm

2 m 80 cm

3 Let's find the answers.

- ① $7\text{ cm } 2\text{ mm} + 5\text{ cm}$
- ② $23\text{ cm } 8\text{ mm} - 8\text{ cm}$
- ③ $13\text{ cm } 4\text{ mm} + 2\text{ cm } 7\text{ mm}$
- ④ $27\text{ cm } 5\text{ mm} - 5\text{ cm } 7\text{ mm}$
- ⑤ $32\text{ m } 12\text{ cm} + 12\text{ m}$
- ⑥ $8\text{ m } 6\text{ cm} - 6\text{ m}$

4 Answer the following questions about the lengths of lines A and B.



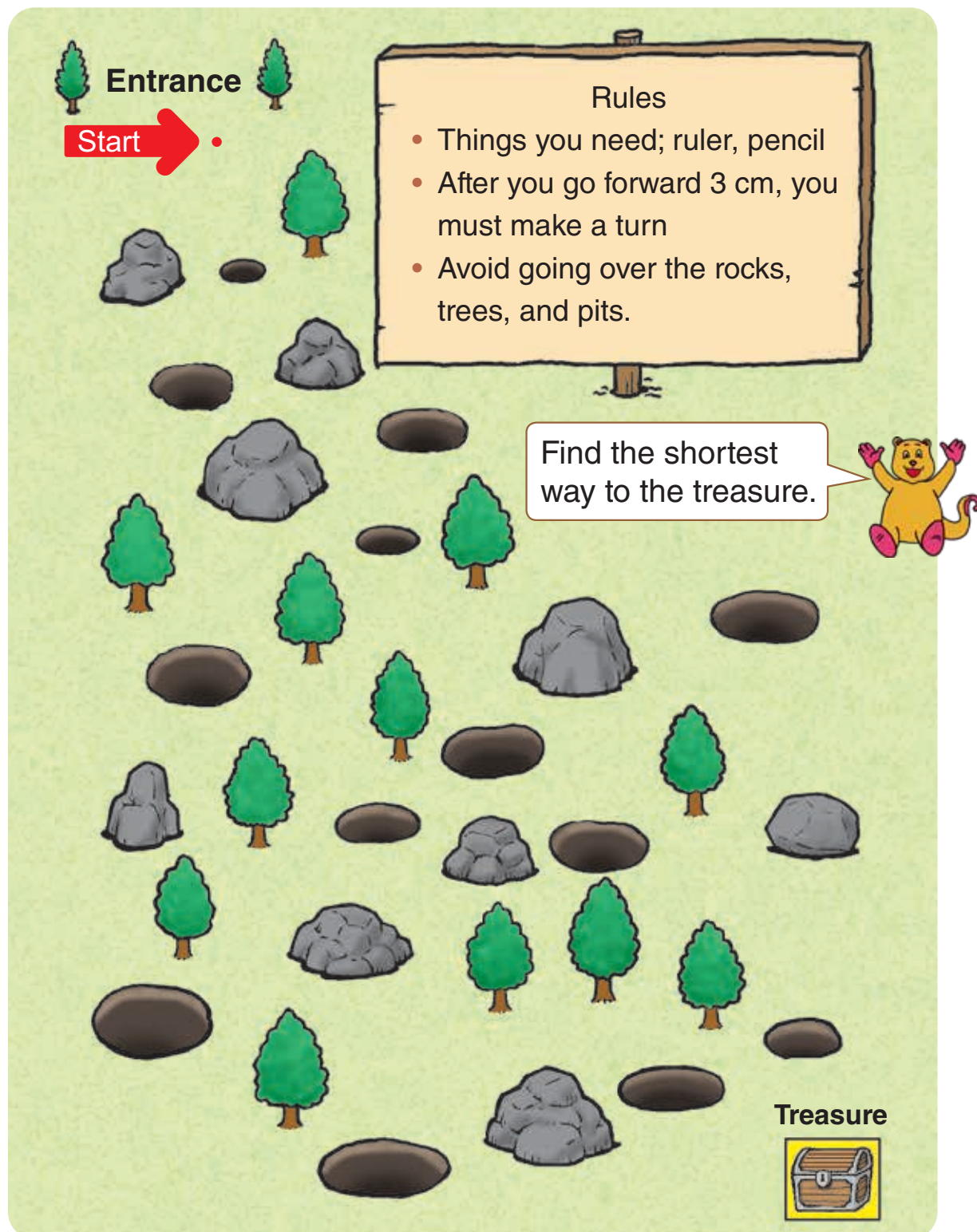
- ① Which is longer, A or B, and by how much?
- ② If lines A and B are joined together, what will be its total length?



Problems 2



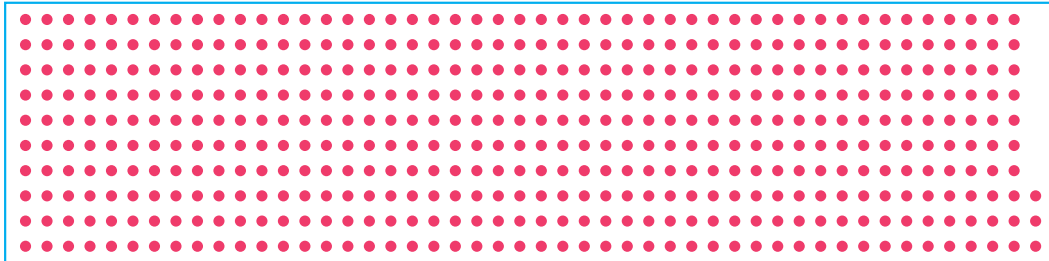
- 1 Draw lines according to the rules.



Find out the length of the route that you think is the shortest.



1 Find out the number of • in the .



- ① How many groups of 10 can you make?
- ② How many groups of 100 can you make?
- ③ How many • are there altogether?

2 What time is it?



①



②



③



④



3 Let's find the answers using vertical form.



- | | | | |
|---------------|---------------|-------------|--------------|
| ① $62 + 17$ | ② $34 + 55$ | ③ $5 + 73$ | ④ $44 + 28$ |
| ⑤ $31 + 59$ | ⑥ $56 + 7$ | ⑦ $87 + 26$ | ⑧ $64 + 38$ |
| ⑨ $200 + 500$ | ⑩ $800 + 200$ | ⑪ $863 + 7$ | ⑫ $545 + 47$ |

4 Let's find the answers using vertical form.



- ① $78 - 43$ ② $80 - 68$ ③ $63 - 56$ ④ $23 - 9$
⑤ $146 - 83$ ⑥ $134 - 65$ ⑦ $105 - 27$ ⑧ $100 - 36$
⑨ $900 - 300$ ⑩ $1000 - 600$ ⑪ $450 - 8$ ⑫ $681 - 23$

5 I am reading a book of 108 pages.



I finished reading 89 pages. How many pages are remaining for me to read?



6 Let's measure the lengths of the lines.



How long are they in centimetres and millimetres?

And, how long are they in millimetres?



7 What are the correct units of length for the following objects?



- ① The length of a classroom. ② The thickness of a textbook.



Tables and Graphs



Introduction of Tables and Graphs

- Choose one of the chores you do at home.



Taking out rubbish



Laundry



Shopping



Washing



Dishwashing



Cooking

1

In Timo's class, everyone chose one chore and put their choices on the blackboard.

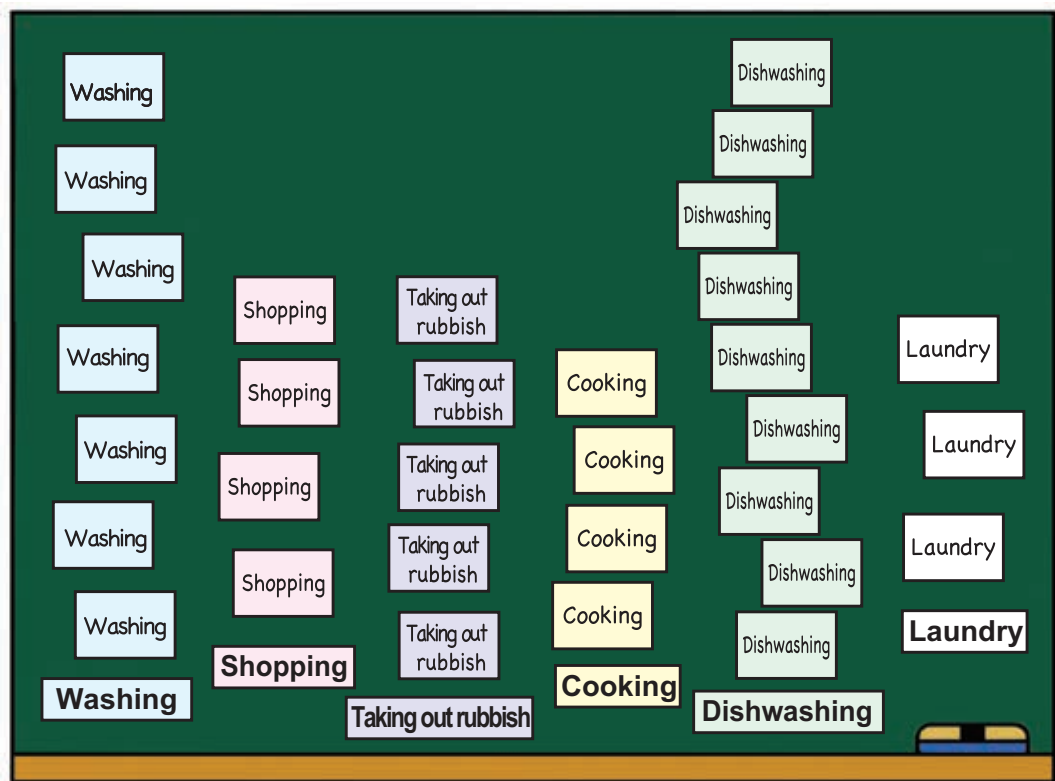


1

How can you count the number of children for each chore?



How did you count in grade 1?



2 The cards were arranged as shown.

Discuss how to arrange the cards so you can see what chores everyone is doing.



How about putting the cards at the bottom in a straight line?

I want to line up the cards from top to bottom.



3 Fill in the **table** with the number of children for each chore.



Choice of Chores

Chores	Washing	Shopping	Taking out rubbish	Cooking	Dishwashing	Laundry
Number of children	7					

Choice of Chores

Chores	Washing	Shopping	Taking out rubbish	Cooking	Dishwashing	Laundry
Number of children	7	4	5	4	9	3

- 4 Draw the number of children for each chore as a ○ on the **graph** below.

Is it better to show the data in the table or in the graph?



Choice of Chores

○					
○					
○					
○					
○					
○					
○					
Washing	Shopping	Taking out rubbish	Cooking	Dishwashing	Laundry

- 5 Which chore was chosen most by the children?
How many children chose that chore?
- 6 How many more children chose to do dishwashing than taking out the rubbish?
- 7 What would you do to make the graph easier to read?



What about drawing the thicker horizontal line above the 5 number of students?

How about writing the number of students, like 1, 2, 3, ..., along the vertical line of the graph?





Problems 2



- ① Nancy recorded the weather for the month of January in her town.

- ① What could you do to make the chart easier to read?
Let's consider how to represent the data in the graph.

- ② Compare with the graph on page 95 and answer the questions.

(1) What type of weather had the same number of days?

(2) What type of weather had the biggest difference between the two graphs? What did you find out? Write it down.

(3) Write down your ideas in your exercise book, and discuss it with your friends.

The Weather in January

○			
○			
○			
○			
○			
○			
○			
○			
○			
○			
○			
○			
○			
○			
○	○		
○	○		
○	○		
○	○		
○	○	○	
○	○	○	○
Sunny	Cloudy	Rainy	Windy



Have you ever seen it?

8



5 dL



2 Litres



Carbonated drink

1000 ml

Which one can contain more?



2L



1L

Amount of Water

My water bottle fills 5  cups.

Mirriam



My water bottle fills 6  cups. Mine is more than yours.

Bauba



Comparing the Amounts of Water

1

Over the phone, Mirriam and Bauba are discussing whose water bottle can hold more water.

1

Can we say Bauba's water bottle holds more water?

Why is that?

2

How can you compare the amounts of water correctly?

How did we compare length?





How to Measure the Amount of Water

Amount of water can be measured by using a **unit measuring cup**.



There is a unit called **litre** to express amount of water. 1 litre is written as 1 **L**.



The two unit measuring cups in the picture above can each hold 1 L.

L is used as a unit of volume such as the amount of liquid in many countries.



1

The amount of water contained in these containers were measured by 1 L measuring cups. How many litres are there?

1

Plastic bottle



L

2

Bucket



L



How Many Litres Can They Hold?

Make a 1 L measuring cup out of a milk box, and measure the amount of liquid from these items.



What can I do when there isn't a whole litre?





Smaller Measuring Cups



1

The amount of water in the thermos was measured using a 1 L measuring cup.



It is 1 L and a bit more.

How can we measure the amount that is less than 1 L?



To measure the amount that is less than 1 L, we can use a 1 decilitre measuring cup.

2

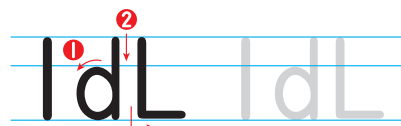
Let's fill a 1 L measuring cup with water using a 1 decilitre measuring cup. How many 1 decilitre measuring cups will we need?



When 1 L is divided into 10 equal units of amount, the amount of one unit is called 1 **decilitre**.

1 decilitre is written as 1 **dL**.

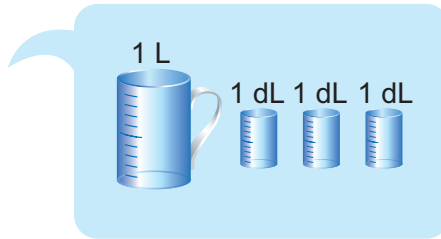
Decilitre (dL) is another unit of amount.



$$1 \text{ L} = 10 \text{ dL}$$

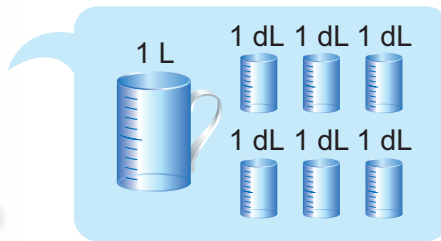
3 Measure the amounts of water in the thermos and the kettle.

1



L dL

2



L dL

4 Measure the amounts of water in various containers using 1 L and 1 dL measuring cups.



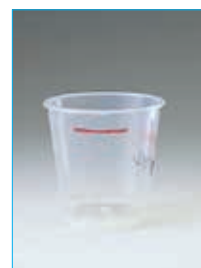
Amounts of Water

Container	Amount
Thermos	5 dL
Pot	1 L 2 dL

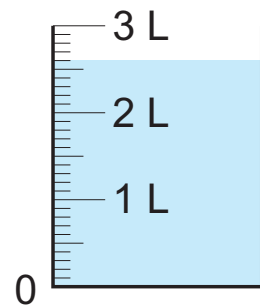


Making a 1 dL Measuring Cup

Fill the 1 dL cup with water, pour the water into a container, and mark off the level of water.



5 Let's find the amount of milk in the container on the right.



1 How many L and dL are there?

2 L and 6 dL smaller marks

L dL.

The smaller marks indicate dL.



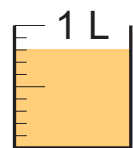
2 How many dL are there?

2 L = dL, so when it is added with 6 dL, the total will become dL.

2 L	6 dL
	dL

Finding Amount

1 There is a plastic bottle containing 6 dL of juice, and another plastic bottle containing 8 dL of juice.



1 How many L and dL are there altogether?

6 dL + 8 dL

1 L is 10 dL...



2 What is the difference between the two bottles?

Exercise

Let's find the answers.

① 2 L + 3 L

② 9 dL - 4 dL

③ 5 dL + 7 dL

- 2** There is 2 L 4 dL of juice in the glass bottle, and there is 1 L 8 dL of juice in the plastic bottle.



- 1** How many L and dL are there altogether?

Write an expression.

- 2** Let's think about how to calculate.



Mero's idea

2 L 4 dL is ... dL

1 L 8 dL is ... dL



I changed the two amounts of juice into dL.



Yamo's idea

2 L	4 dL
+ 1 L	8 dL
L	dL

I put numbers with the same units in the same column and added.



- 3** Let's think about the difference between the two bottles.

Can we use the same ideas as in addition?



Exercise

Let's find the answers.

① 3 L 6 dL + 1 L 8 dL

② 4 L 7 dL + 2 L 3 dL

③ 6 L 3 dL - 1 L 3 dL

④ 7 L - 3 L 5 dL



Very Small Amount of Water

There is a unit called **millilitre** which expresses amount smaller than L or dL.



1 millilitre is written as 1 **mL**.

1 mL 1 mL

- 1 Collect various containers that have mL to show the amounts.



L is sometimes written as *ℓ*.



- 2 Find out the amount of juice in a 1000 mL box.

- 1 Measure using a 1 L measuring cup.
- 2 Measure using a 1 dL measuring cup.
How many cups will it fill?

$$1 \text{ L} = 1000 \text{ mL}$$

$$1 \text{ dL} = 100 \text{ mL}$$





- 1** Which measuring cup, 1 L or 1 dL, is better for measuring the amount of water needed to fill in the following containers?



Page 101



① Bowl



② Washbowl



- 2** Fill in the .

Pages 100, 104



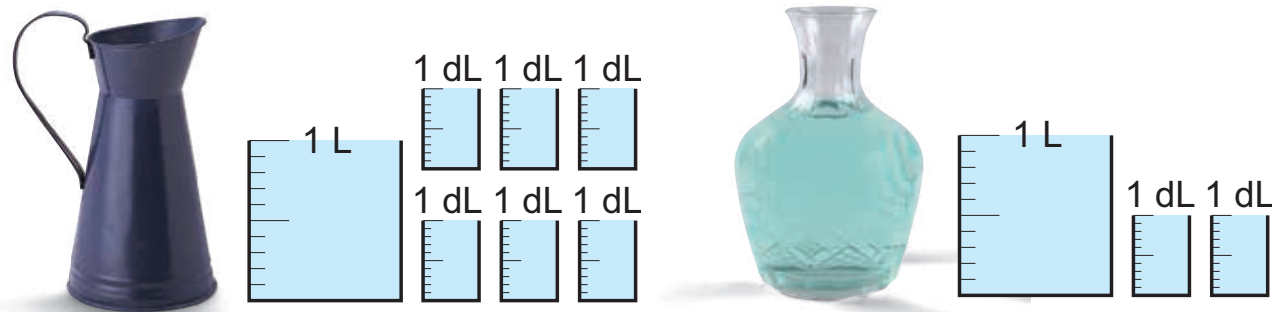
① 1 L = dL

② 1 L = mL

③ 1 dL = mL

- 3** Water is contained in the two containers.

Page 103



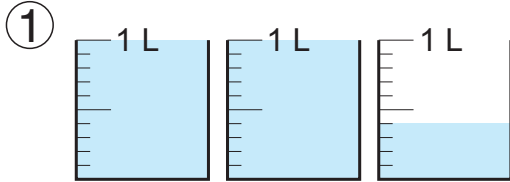
- ① How many litres and decilitres are there altogether?
② What is the difference?



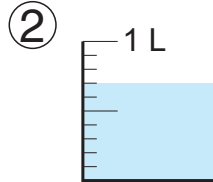
Problems 1



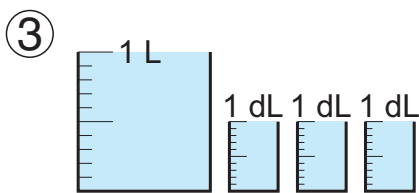
1 How much is the amount of liquid?



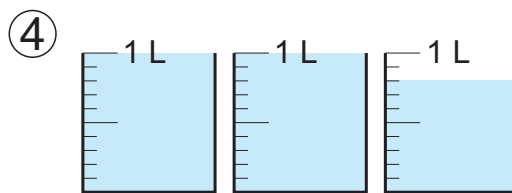
L dL



dL



L dL = dL



L dL = dL

2 Which amount is larger? Use < or >.

① 1 L 4 dL 13 dL

② 2 L 21 dL

③ 3 L 2 dL 31 dL

④ 1 L 3 dL 1000 mL

3 Let's find the answers.

① 4 dL + 3 dL

② 2 L 3 dL + 1 L 2 dL

③ 7 dL + 1 L

④ 9 dL - 4 dL

⑤ 3 L 6 dL - 1 L 5 dL

⑥ 1 L 4 dL - 4 dL

⑦ 4 L 5 dL + 1 L 6 dL

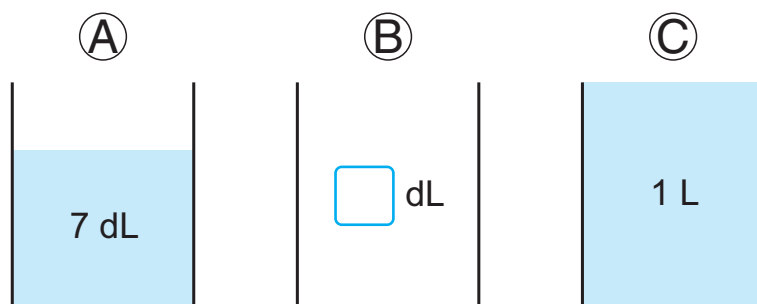
⑧ 3 dL + 2 L 8 dL

⑨ 4 L - 1 L 2 dL

4 What is similar when comparing the amount of liquid and length?

Problems 2

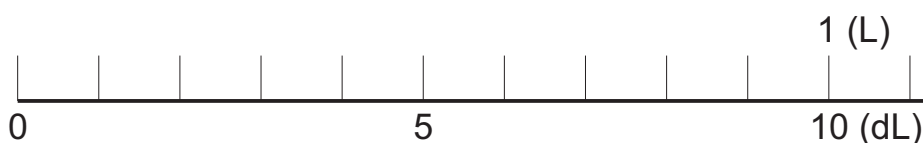
- ① There is water in the containers ①, ②, and ③.



The containers hold water as follows.

- Amount of ① < Amount of ②
- Amount of ② < Amount of ③
- The amount of ① is 7 dL
- The amount of ③ is 1 L

- ① On the number line, mark where ① and ③ are.
Mark where ② can possibly be.



- ② Here is additional information about ②.

$$\text{Amount of ③} < 9 \text{ dL}$$

How much water is in container ②?

Write down your ideas in your exercise books, and discuss with your friends.

Addition and Subtraction

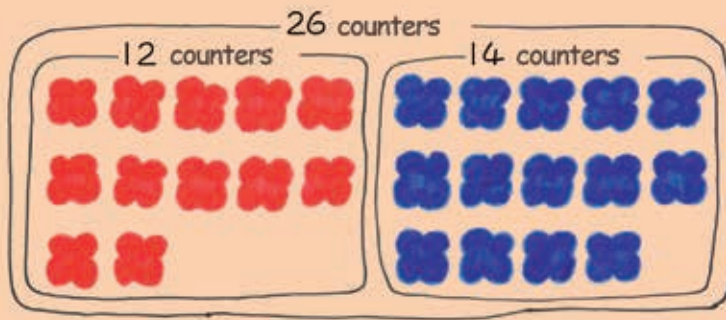
►► Draw diagrams for the following additions.

1 There are 12 red counters and 14 blue counters.
In total, there are 26 counters.

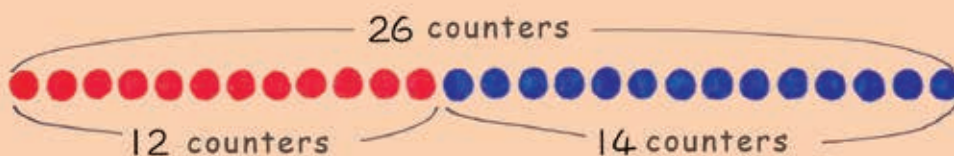
1 Draw a diagram to show the situation.



Manu's diagram



Enilia's diagram

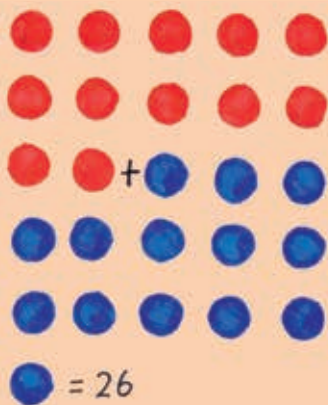


David's diagram

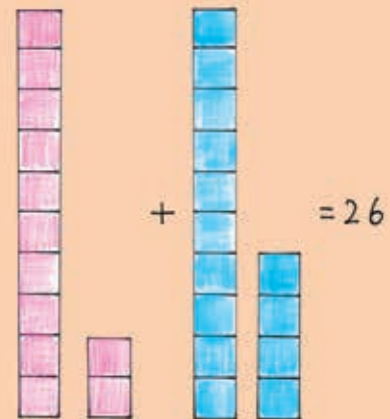




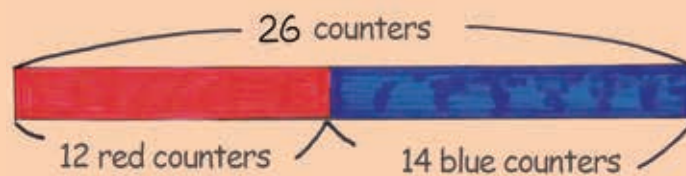
Basil's diagram



Joy's diagram



Timmy's diagram



2 Let's talk about the good points of each diagram.

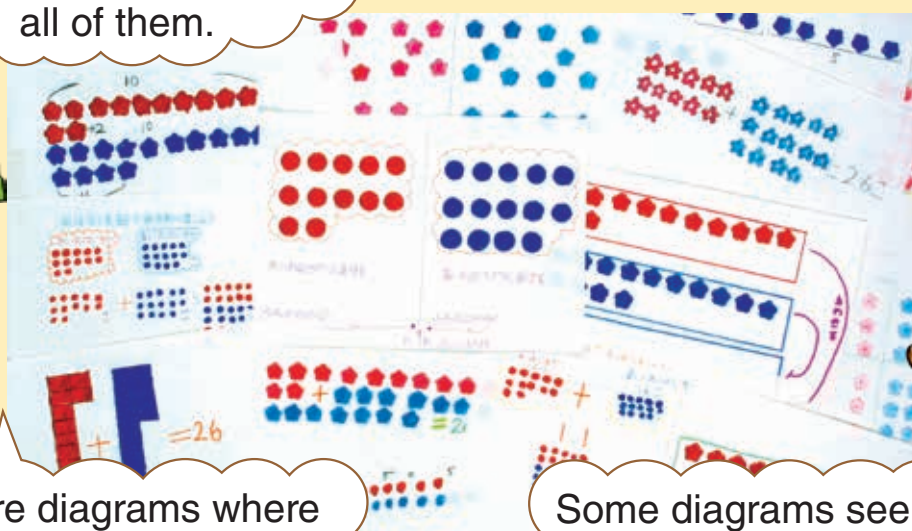


It's easy to see the three numbers in all of them.

Some diagrams are easy to see the groups of 10.



There are diagrams where you don't have to draw counters one by one.

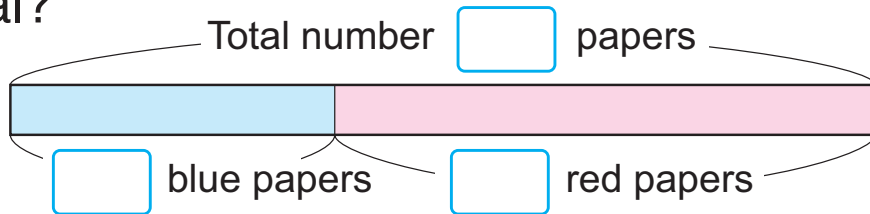


Some diagrams seem useful even with larger numbers.

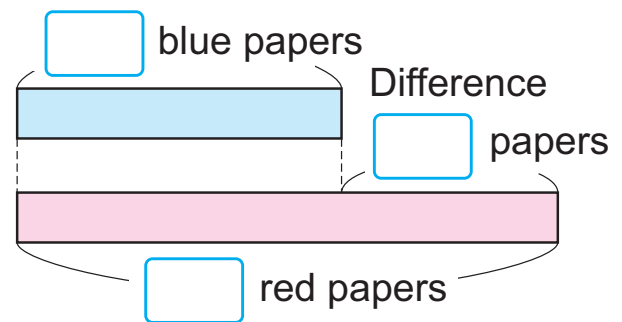
- 2** There are 38 blue papers and 63 red papers.



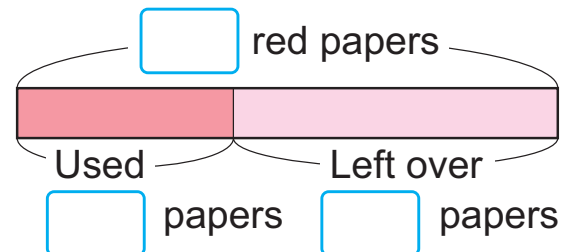
- 1** How many papers are there in total?



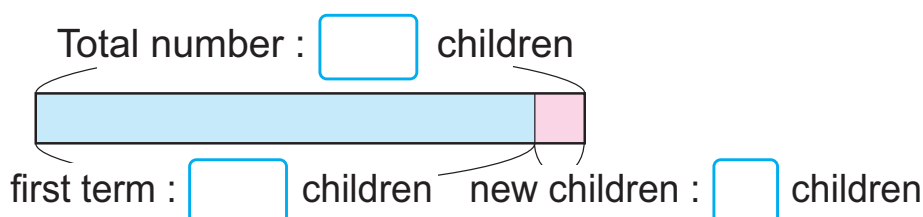
- 2** Which colour, red or blue, is more, and by how many?



- 3** I used 25 red papers. How many red papers are left?

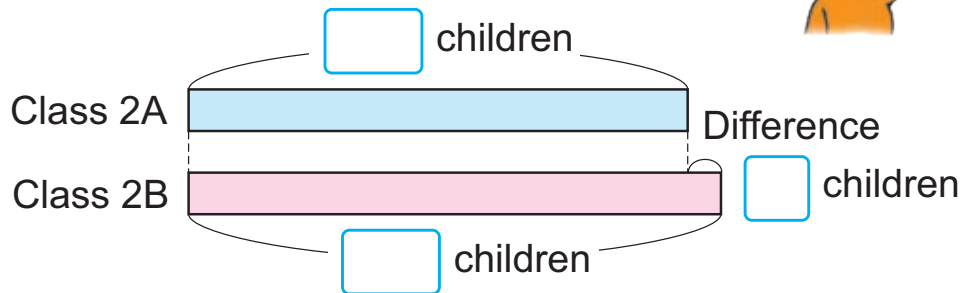


- 3** In the first term, there were 29 children in Ms. Theckla's class. 3 new children joined the class in the second term. How many children are there altogether?



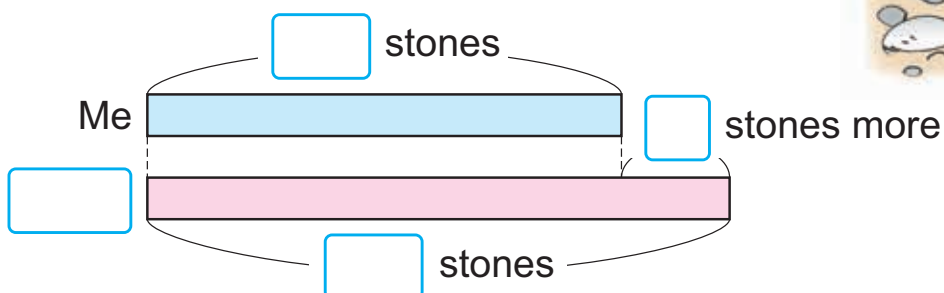
- 4** Class 2A has 29 children and class 2B has 31 children.

- 1** What is the difference between the two classes?



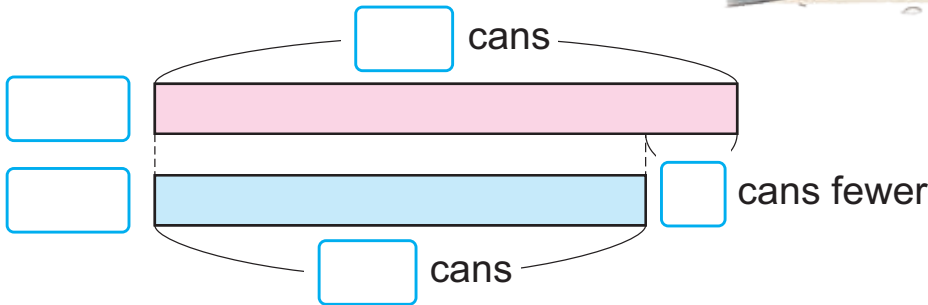
- 2** How many fewer children are there in class 2A than class 2B?
- 3** How many more children are there in class 2B than class 2A?

- 5** I picked 18 beautiful stones. The teacher said he picked 4 more stones than me. How many stones did the teacher pick?



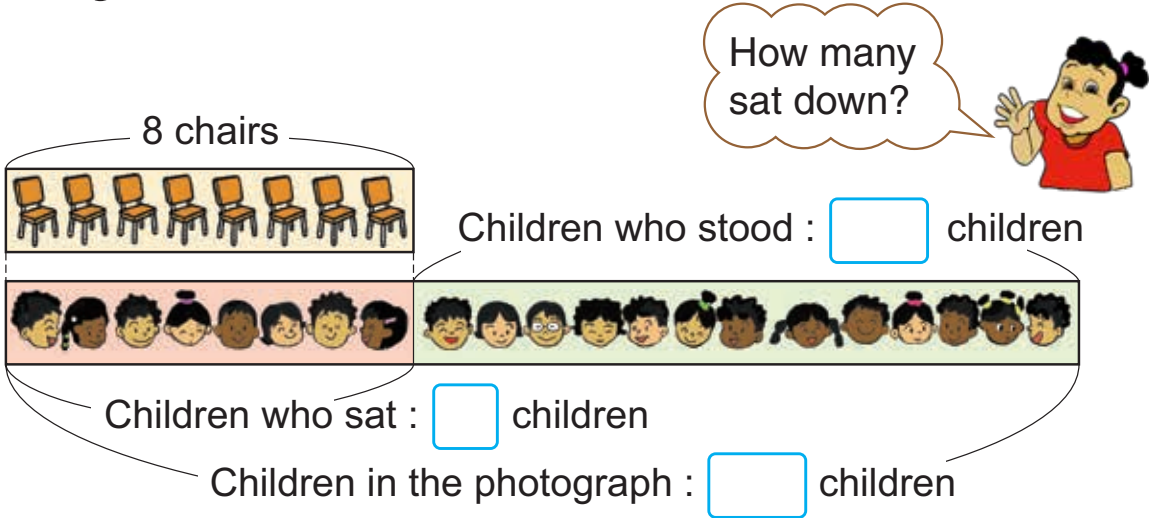
6

I picked 31 empty cans.
Sagi says she picked 5 cans less than me.
How many cans did Sagi pick?



7

We took a group photograph together.
There were 8 chairs for the children, and 13 children stood up.
How many children were in the photograph altogether?



112 = +

8

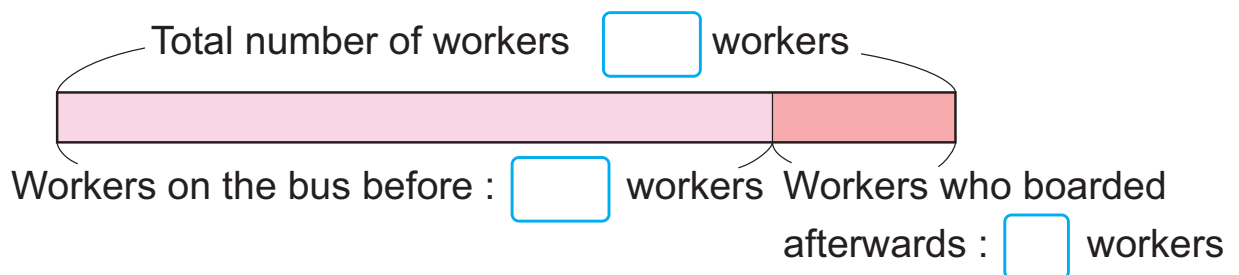
There were 27 people on the company bus.

Some more workers came on board, and there were 34 workers in total.

How many more workers came on board?



It says "in total", so it's probably addition.



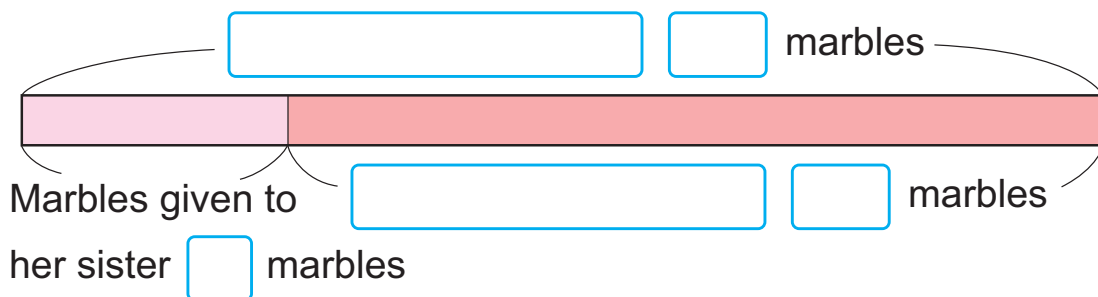
- 1 By expressing the number of workers who boarded afterwards as workers, write a math sentence using .

- 2 Fill in the numbers you know, and find how many more workers came on board.

- 9** Freda had some marbles.
She gave 6 to her sister.
She counted the marbles,
and there were 18 left.
How many did she have
at the beginning?



It says "marbles she has left", so it's probably subtraction.

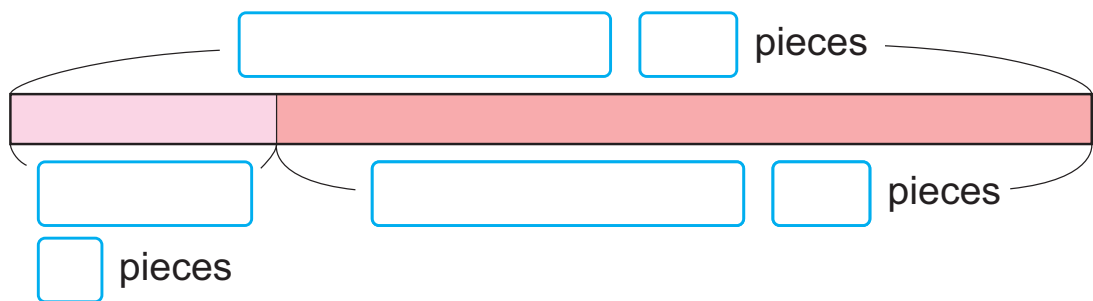


- By expressing the number of marbles Freda had at the beginning as $\square$ marbles, write a math sentence using $\square$.
- Fill in the numbers you know, and find how many marbles she had at the beginning.

10

Ali had 110 pieces of stickers. He gave some to his friend, so the number of stickers left became 83.

How many did he give to his friend?



- 1 By expressing the number of stickers he gave to his friend as pieces, write a math sentence using .

- 2 Complete the diagram, and find the number of stickers given to his friend.

11

There are 17 blue ribbons and 24 red ribbons.
In total, there are 41 ribbons.

1 We made problems using these numbers.



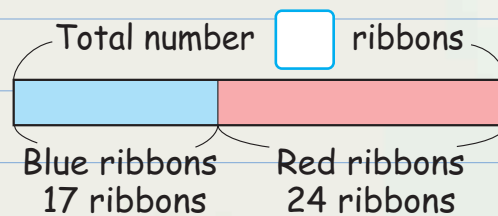
Problem made by Vavi

I made a problem that asks for the total number.



There are 17 blue ribbons and 24 red ribbons.

How many ribbons are there in total?



Expression : $17 + 24$



Problem made by Gawi

I made a problem that asks for the number of red ribbons.

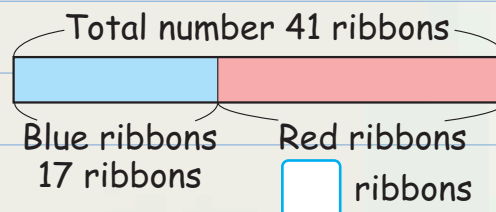


There are blue ribbons and red ribbons.

The total number of ribbons is 41.

There are 17 blue ribbons.

How many red ribbons are there?



Expression : $41 - 17$

- 2 Let's make math problems in the same way and share in the class.

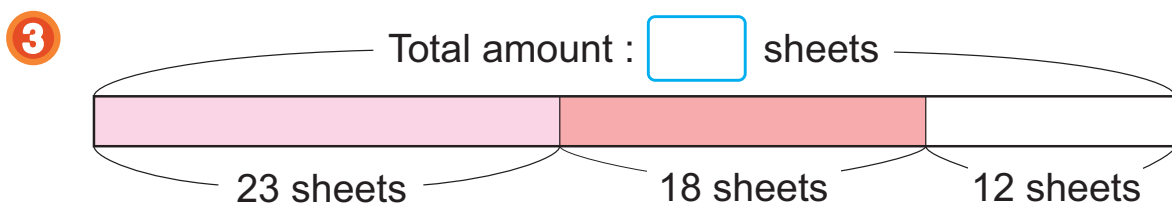
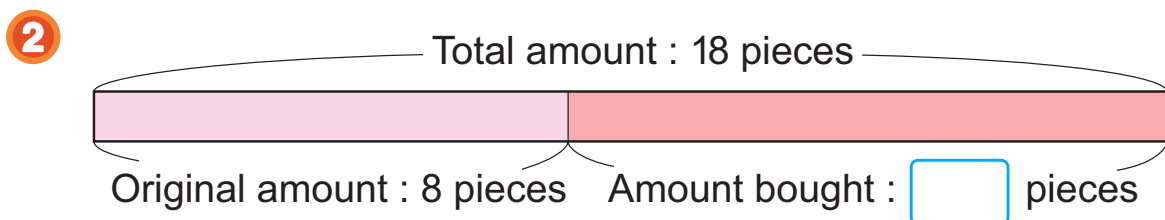
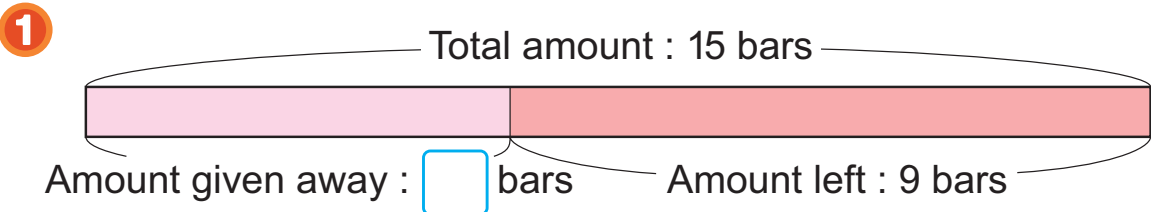
I made a problem that asks for the number of blue ribbons.



Use a diagram to explain.



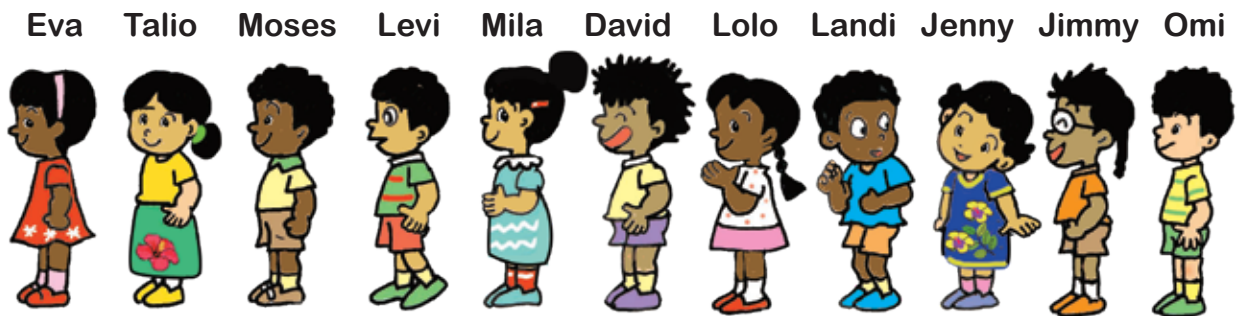
- 12 Let's make problems based on the diagrams below.



13

Children are standing in a straight line.

Solve the problems below.



1 Levi is the fourth person from the front. Jenny is fifth behind Levi. What is Jenny's position from the front?

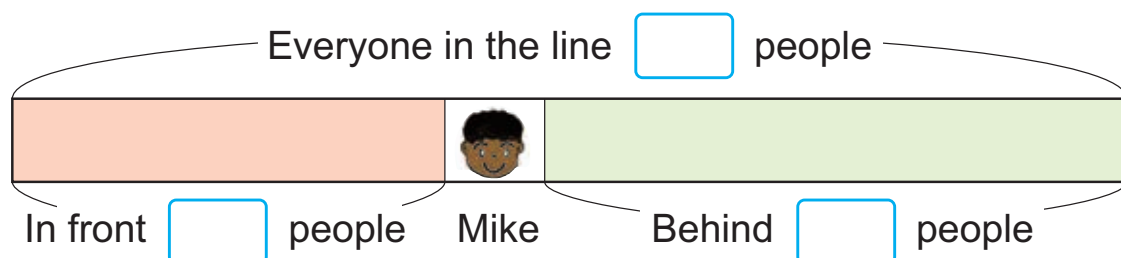
2 There are 9 children in front of Jimmy. What number is Jimmy's position from the front?

3 Mila is the fifth person from the front, and is also the seventh from the back. How many children altogether in the line?

14

In Mike's line, there are 6 people in front of Mike, and 8 people behind him.

How many people are there in his line?





Mathematics Practices in Papua New Guinea

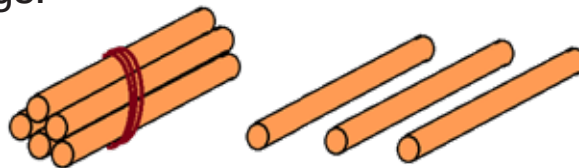
TRADITIONAL WAYS OF COUNTING

In traditional times our ancestors had their own way of counting things. Some counted using stones and sticks to show the number of things while others used parts of the body to represent numbers. Many places did not have many numbers to use so they used groups to tally large number of things. In most parts of Papua New Guinea, the traditional numbers did not go above ten except for a few places so they used groups to represent the exact number of things.

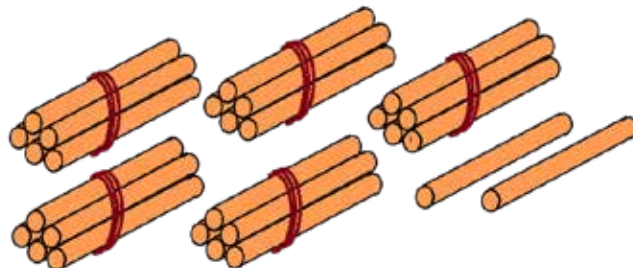
Counting in 5s

Some people used groups of 5 to represent numbers and count easily.

They used a bundle of 5 sticks and 3 single sticks to represent 8 pigs.

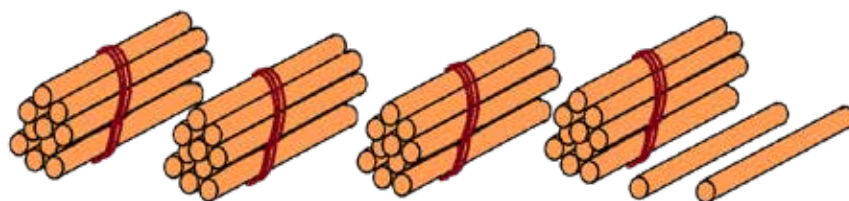


The same idea could be used to count even larger numbers like 27, as 5 bundles of 5 sticks and 2 sticks to represent 27 fish.



Most of the provinces in Papua New Guinea used groups of 10 to represent and count large numbers.

The number of 42 chickens could be represented or counted as 4 bundles of **10 sticks** and **2 sticks**.

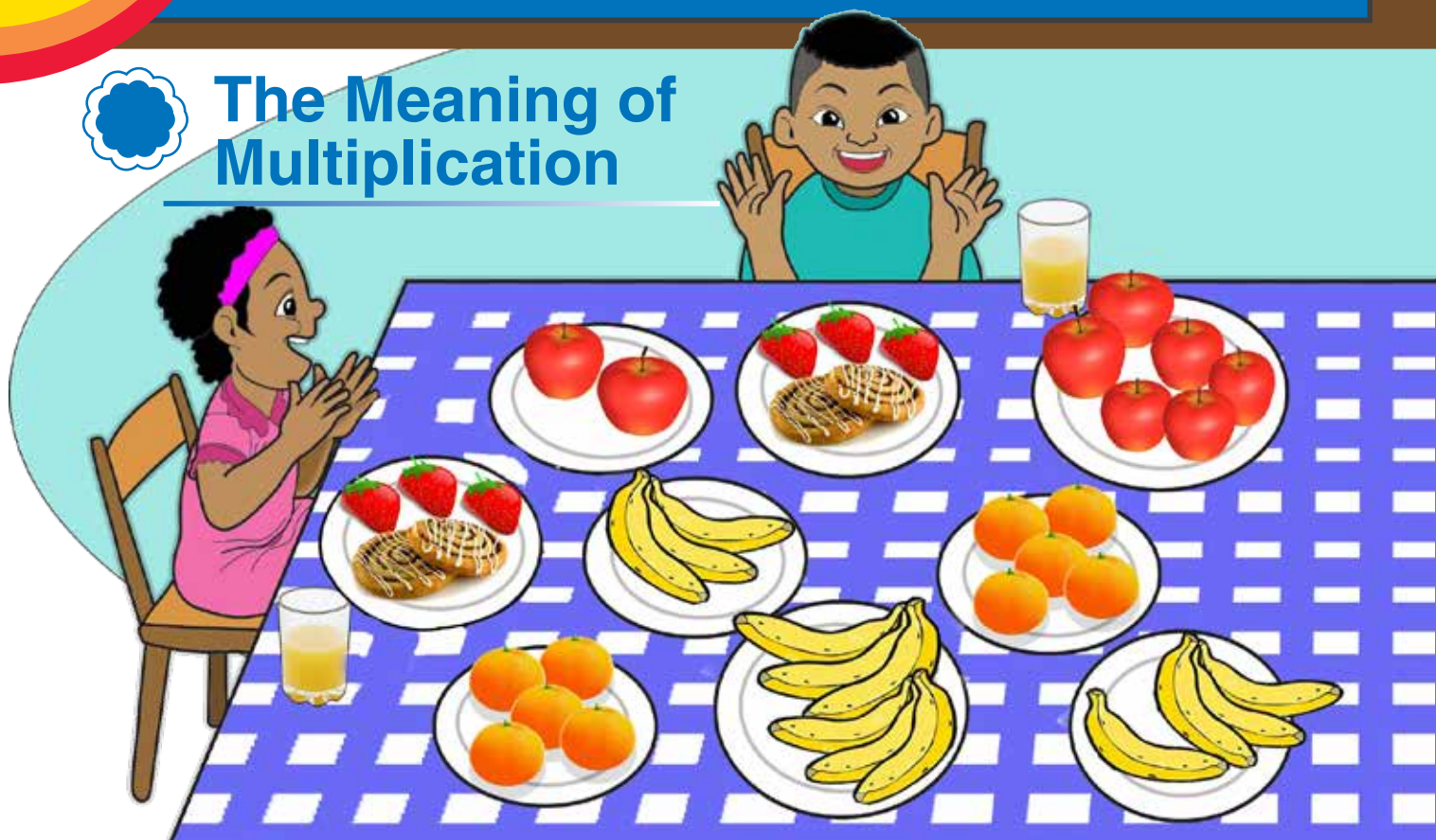


How did your ancestors count in the old days?

Multiplication (1)



The Meaning of Multiplication



1 The party has started.

- 1** How many apples are there?
- 2** How many oranges are there?
- 3** What is the difference between the numbers of apples and oranges on each plate?



The total number of oranges is represented as

4 plates of 5 oranges each make

20 oranges .

It's easy to say because each plate has the same number of oranges.





- ④ Let's look for things where there is the same number on each plate like oranges and represent the total number.

The total number of cakes is represented as

plates of 2 cakes each make cakes .

The total number of is represented as

plates of each make .

The total number of is represented as

plates of each make .

2

Let's find the total number when there are sets of the same number.

1

3 boxes of cupcakes.



boxes

cupcakes each

make

cupcakes .

2

6 packs of fish.



packs

fish each

make

fish .

3

5 bags of lollies.



bags

lollies each

make

lollies .

4

2 plates of guavas.



plates

guavas each

make

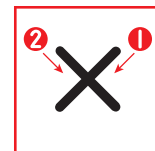
guavas .



The total number of cakes is expressed as
 5 plates of 2 cakes each make 10 cakes.

This is written as $5 \times 2 = 10$ and read as
 “5 multiplied by 2 equals to 10”.

5	×	2	=	10
Number of plates		Number of cakes for each plate		Total number



This kind of calculation
 is called **multiplication**.

It's the same as
 $2 + 2 + 2 + 2 + 2$.



3

How many biscuits are there?



□	×	□	=	□
Number of bags		Number of biscuits for each bag		Total number



Multiplication is the calculation that is used to
 get a total when there is the same number for
 each set.

Let's write a multiplication sentence by looking for something with the same number in each set.



$$\square \times \square = \square$$

$$\square \times \square = \square$$

$$\square \times \square = \square$$

$$\square \times \square = \square$$

$$124 = \square - \square$$



$$\boxed{} \times \boxed{} = \boxed{}$$

$$\boxed{} \times \boxed{} = \boxed{}$$

$$\boxed{} \times \boxed{} = \boxed{}$$

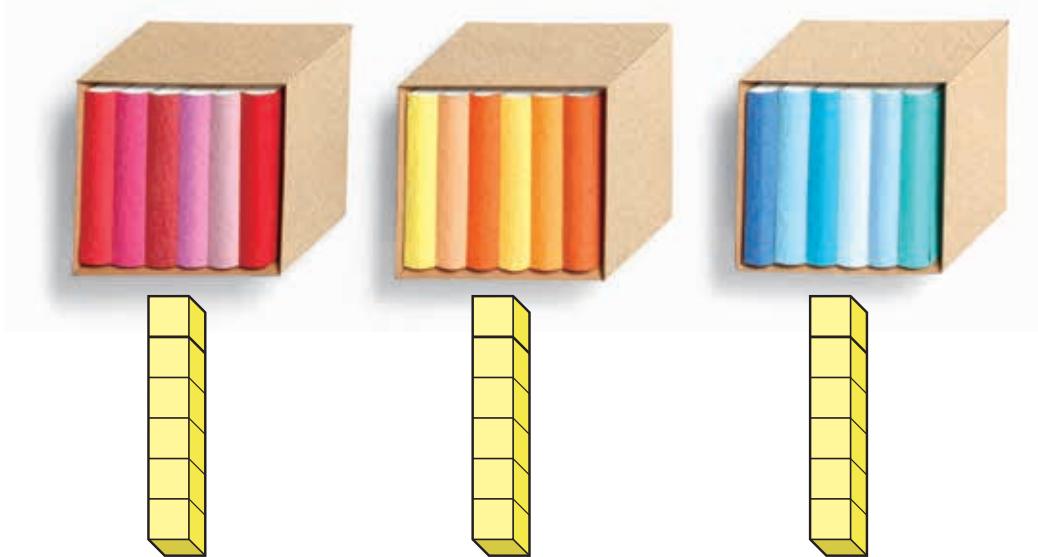
Are there other examples?



$$\boxed{} + \boxed{} = 125$$

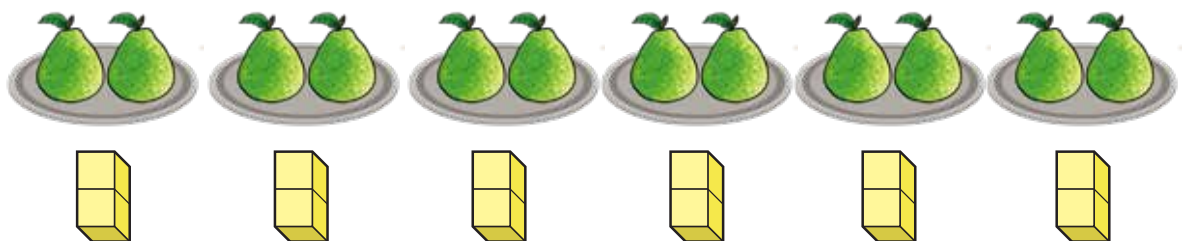
5 How many are there? Put the blocks in order and write a multiplication sentence to show it.

1 Books



$$\square \times \square = \square$$

2 Guavas



$$\square \times \square = \square$$

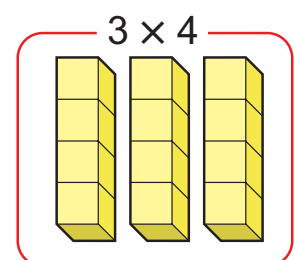
6 Let's line up the blocks in order to show the following multiplication expressions.

1 3×7

2 5×2

3 8×4

4 2×5



7 Put the same number of lemons into some bags.
In what ways can you put them into the bags?

Let's write a multiplication sentence.

1 When there are 12 lemons.



If 2 lemons are put in each bag, 6 bags will be made.
A Math sentence will be...

$$\square \times \square = \square$$

If there are 3 in each bag, what happens?



There can be many other ways.



2 When there are 24 lemons.



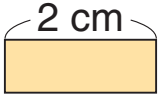
If there are 4 lemons in each bag...



$$\begin{array}{l} \square \times \square = \square \\ \square \times \square = \square \\ \square \times \square = \square \\ \square \times \square = \square \end{array}$$

Many multiplication sentences can be made if there are 24 lemons.



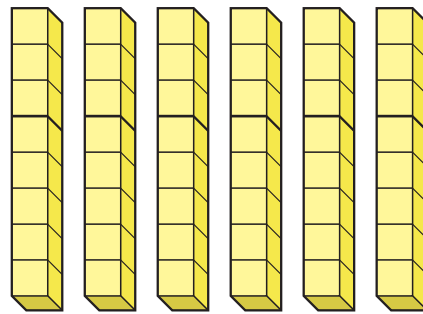
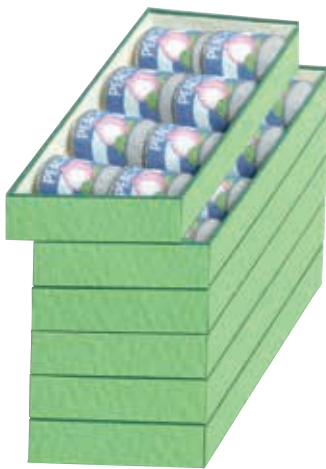
- 8** There are some pieces of tape . What are the lengths of 1 piece, 2 pieces and 3 pieces of tape in cm?

1 piece		$1 \times 2 = 2$
2 pieces		$2 \times \square = \square$
3 pieces		$3 \times \square = \square$

Let's measure using a ruler.



- 9** There is the same number of cans in each box.



$\square$	$\times$	$\square$	$=$	$\square$
Number of boxes		Number of cans for each box		Total number

- Let's write an expression to get the total number of cans.
- What do we multiply by 8 to find the total?
- How many cans are there? The answer to 6×8 is equal to the answer to $8 + 8 + 8 + 8 + 8 + 8$.

It's hard to add 8 for 6 times.





Problems 1



1 Let's represent these problems using multiplication.

- ① How many dL of juice are there?



packs of dL juice in each pack make dL .

Math sentence $\times$ =

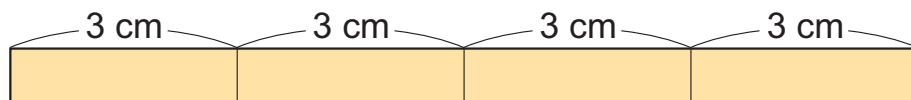
- ② How many fishes are there altogether?



packs of fish in each pack make fish .

Math sentence $\times$ =

- ③ How long is this tape in cm?



pieces of cm each piece make cm .

Math sentence $\times$ =

2 There are 6 cookies in each box.

- ① Let's write an expression to get the total number of cookies.
② What do we multiply by 6 to find the total?
③ How many cookies are there?

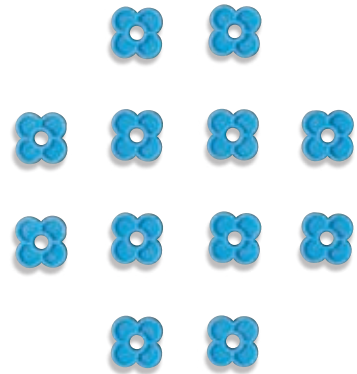




Problems 2

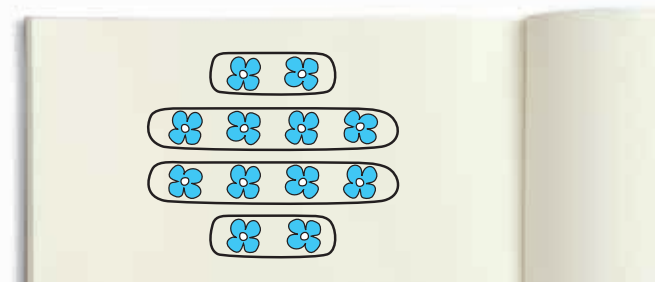


- ① Line up the counters like the figure on the right.



Timothy made the expression,
 $2 + 4 + 4 + 2$ to find out the number
 of counters on the right.

He drew it like the figure on the
 right.

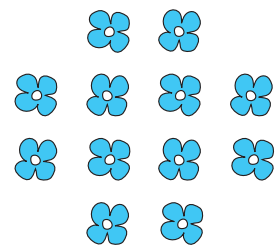


- ① Timothy made the following expression.

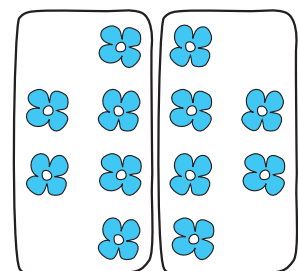
$$4 \times 3$$

How did he come to this expression?

Draw a figure on the right like Timothy.



- ② Margaret wants to count the counters
 like the figure on the right.
 Write the expression that she made.



Expression

- ③ Make various addition and multiplication for finding the
 number of counters.



The order for Multiplication



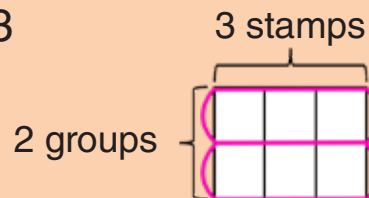
1

Vavi and Naiko are looking at a sheet of stamps on the table. There are 6 stamps. Let's make a math expression.



Vavi's idea

The expression is 2×3

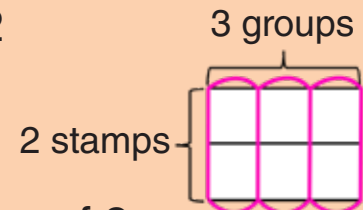


2 groups of 3
 $3 + 3 = 6$



Naiko's idea

The expression is 3×2



3 groups of 2
 $2 + 2 + 2 = 6$

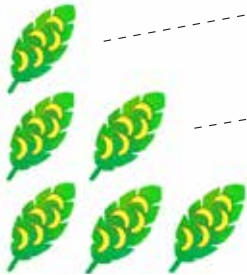


The number given by "Multiplying 2 by 3" is the same as the number given by "Multiplying 3 by 2". In other words, 2 groups of 3 and 3 groups of 2 give the same answer.

In multiplication, "2 times 3" and "3 times 2" give the same answer. In short, 2×3 is equal to 3×2 .

2

There are 5 bananas on each leaf. Let's find the total number of bananas, when the number of leaves increases from 1 to 5. Let's read the sentence.



$$1 \times 5 = 5$$

1 multiplied by 5 equals 5

$$2 \times 5 = \boxed{}$$

2 multiplied by 5 equals 10

$$\boxed{} \times \boxed{} = \boxed{}$$

3

Let's consider the following pictures. Let's read the sentence.



$$5 \times 1 = 5$$

5 multiplied by 1 equals 5

$$\boxed{} \times \boxed{} = \boxed{}$$

$$\boxed{} \times \boxed{} = \boxed{}$$

1

Let's think about the difference compared to 2.



Kekeni's idea



In the case of 2, $2 \times 5 = 10$
2 multiplied by 5 equals 10.



Gawi's idea



In the case of 3, $5 \times 2 = 10$
5 multiplied by 2 equals 10.



In 2, second number is always 5. However, in 3, first number is always 5.

We learned even if we switch 1st and 2nd numbers, the answer does not change.





“2 multiplied by 5” and “5 multiplied by 2” give the same answer. In multiplication sentence for the following picture, 1st number can be the number of banana per leaf, 2nd number can be the number of leaves, or vice versa.


$$\begin{array}{ccccc} \boxed{2} & \times & \boxed{5} & = & \boxed{10} \\ \text{Number of leaves} & & \text{Number of bananas for each leaf} & & \text{Total number} \end{array}$$

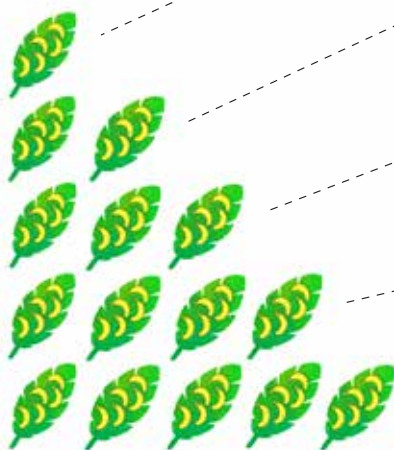
“2 multiplied by 5 equals 10”

$$\begin{array}{ccccc} \boxed{5} & \times & \boxed{2} & = & \boxed{10} \\ \text{Number of bananas for each leaf} & & \text{Number of leaves} & & \text{Total number} \end{array}$$

“5 multiplied by 2 equals 10”

4

Let's find the total number of bananas in the following picture. We put 1st number as the number of bananas per leaf, 2nd number as the number of leaves.



$$5 \times 1 = 5$$

5 multiplied by 1 equals 5

$$\boxed{} \times \boxed{} = \boxed{}$$

$$\boxed{} \times \boxed{} = \boxed{}$$

$$\boxed{} \times \boxed{} = \boxed{}$$

$$\boxed{} \times \boxed{} = \boxed{}$$

In **2** and task **4**, 1st and 2nd number is opposite. But the answer is the same. So, both multiplication sentences are okay!



Multiplication (2)

▶▶ Let's make a multiplication table.



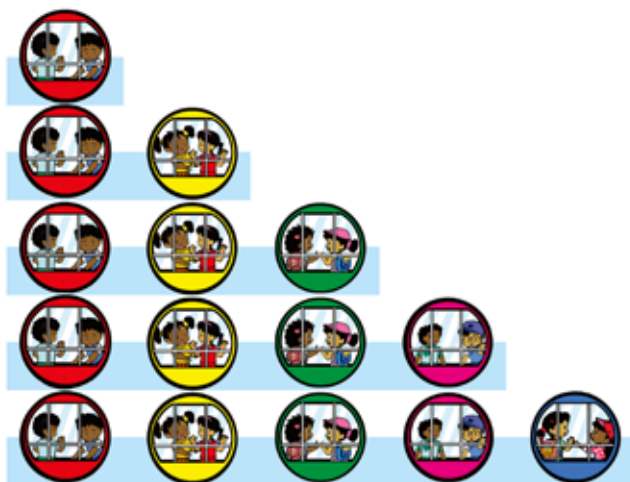
The Multiplication Table of 2

1

2 children are in each capsule of the Ferris wheel.

1

Calculate the total number of children as the number of capsules increases from 1 to 5.



$2 \times 1 = \square$

$2 \times 2 = \square$

$2 \times 3 = \square$

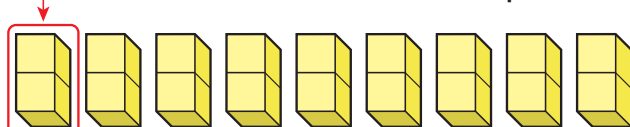
$2 \times 4 = \square$

$2 \times 5 = \square$

2

Calculate the total number of children as the number of capsules increases from 6 to 9.

Number of children for each capsule



5 sets

$2 \times 6 = \square$

$2 \times 7 = \square$

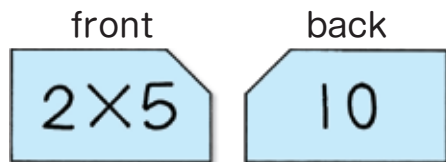
$2 \times 8 = \square$

$2 \times 9 = \square$



$2 \times 9 = 18$ is read as “**Two times nine are eighteen**” or “**Two nines are eighteen**”. This way of reading multiplication sentence as a set of the same numbers such as 2s is called the **multiplication table of 2**.

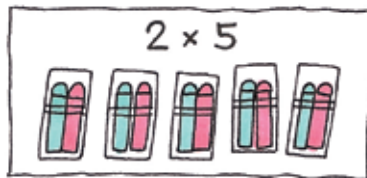
- 2** Let's make multiplication cards for the multiplication table of 2 and practice with them.



The Multiplication Table of 2

$2 \times 1 = 2$	... Two ones are	2
$2 \times 2 = 4$	... Two twos are	4
$2 \times 3 = 6$	... Two threes are	6
$2 \times 4 = 8$	... Two fours are	8
$2 \times 5 = 10$	... Two fives are	10
$2 \times 6 = 12$	... Two sixes are	12
$2 \times 7 = 14$	... Two sevens are	14
$2 \times 8 = 16$	... Two eights are	16
$2 \times 9 = 18$	... Two nines are	18

- 3** Draw a picture for the multiplication table of 2.



Decide your own multiplication sentence and draw a picture!



- 4** Let's write a multiplication sentence.

1



2



- 5** Let's make a math story for 2×7 .

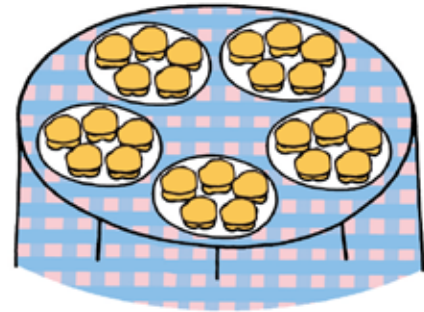


Each child makes paper planes. How many paper planes can be made by children?

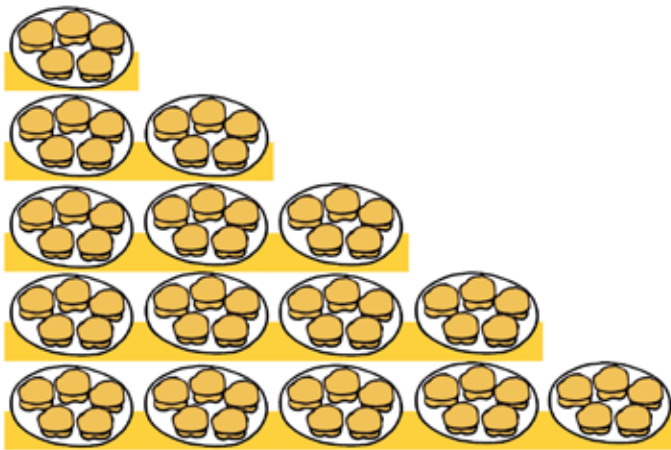


The Multiplication Table of 5

1 There are 5 meatpies on each plate.



1 Let's find the total number of meatpies as the number of plates increases from 1 to 5.



$5 \times 1 = \square$

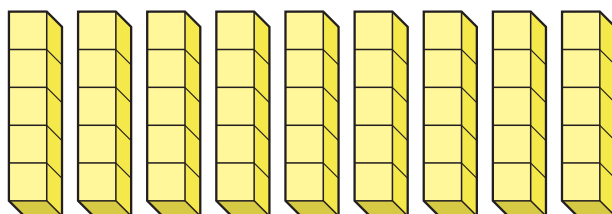
$5 \times 2 = \square$

$5 \times 3 = \square$

$5 \times 4 = \square$

$5 \times 5 = \square$

2 Let's find the total number of meatpies as the number of plates increases from 6 to 9.



$5 \times 6 = \square$

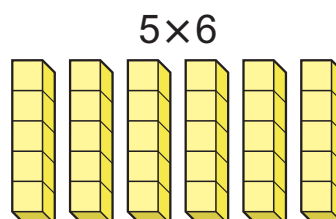
$5 \times 7 = \square$

$5 \times 8 = \square$

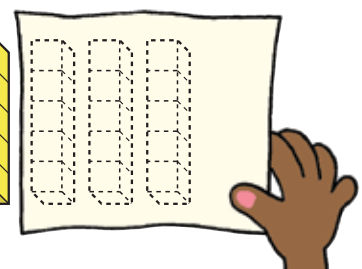
$5 \times 9 = \square$



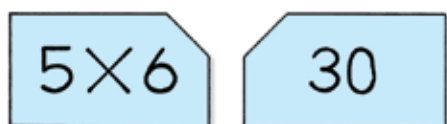
Slide a sheet of paper over the columns to show them one by one.



5×6



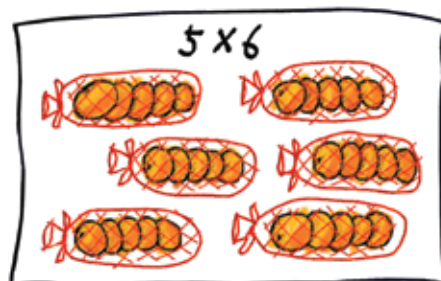
- 2** Let's make multiplication cards for the multiplication table of 5 and practice with them.



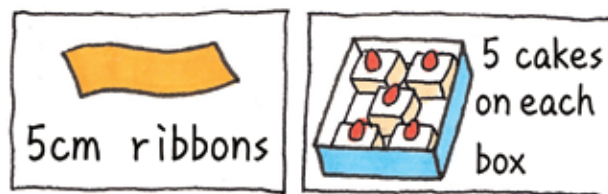
The Multiplication Table of 5

$5 \times 1 = 5$	... Five ones are	5
$5 \times 2 = 10$	... Five twos are	10
$5 \times 3 = 15$	... Five threes are	15
$5 \times 4 = 20$	... Five fours are	20
$5 \times 5 = 25$	... Five fives are	25
$5 \times 6 = 30$	... Five sixes are	30
$5 \times 7 = 35$	... Five sevens are	35
$5 \times 8 = 40$	... Five eights are	40
$5 \times 9 = 45$	... Five nines are	45

- 3** Let's draw a picture for the row of 5.

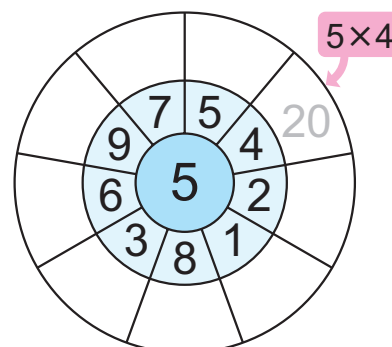


- 4** Let's make a math story using the multiplication table of 5.



What is the total length in cm of pieces of cm ribbons?

- 5** Let's write the answer by multiplying each number in the center by the number around the circle.





The Multiplication Table of 3

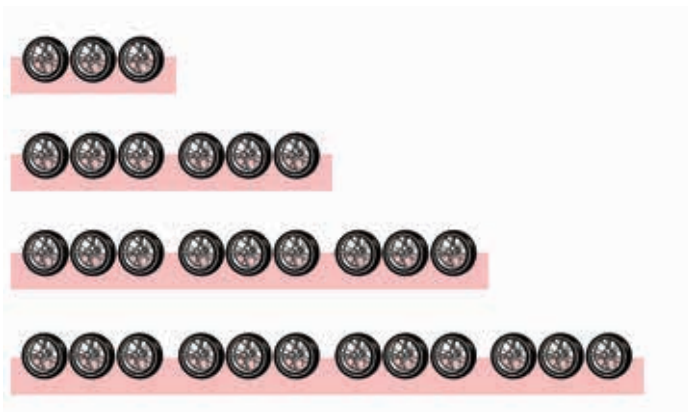
1

There are many tricycles.



1

Let's find the total number of wheels as the number of tricycles increases from 1 to 4.



$3 \times 1 = \boxed{}$

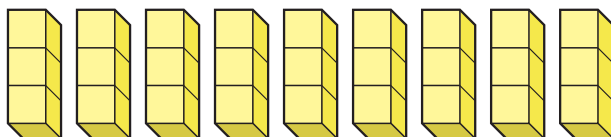
$3 \times 2 = \boxed{}$

$3 \times 3 = \boxed{}$

$3 \times 4 = \boxed{}$

2

Let's find the total number of wheels as the number of tricycles increases from 5 to 9.



$3 \times 5 = \boxed{}$

$3 \times 6 = \boxed{}$

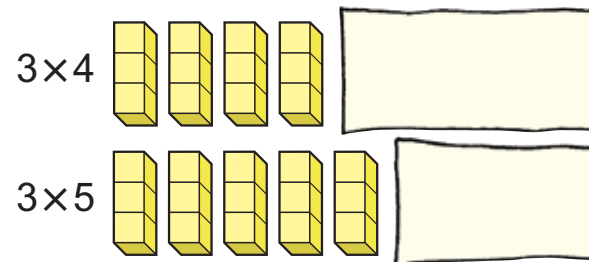
$3 \times 7 = \boxed{}$

$3 \times 8 = \boxed{}$

$3 \times 9 = \boxed{}$

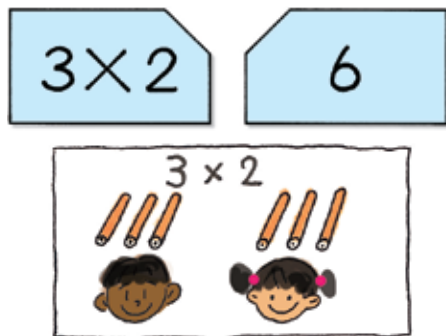
3

If one more tricycle is added, how many more wheels are added?



2

Let's make multiplication cards for the multiplication table of 3 and draw pictures to show them.



The Multiplication Table of 3

$3 \times 1 = 3$	... Three ones are	3
$3 \times 2 = 6$	... Three twos are	6
$3 \times 3 = 9$	... Three threes are	9
$3 \times 4 = 12$	... Three fours are	12
$3 \times 5 = 15$	... Three fives are	15
$3 \times 6 = 18$	... Three sixes are	18
$3 \times 7 = 21$	... Three sevens are	21
$3 \times 8 = 24$	... Three eights are	24
$3 \times 9 = 27$	... Three nines are	27

3

How many are there?
Let's answer by using the multiplication table.

1 Soaps in boxes



Three (times) four is twelve. There are twelve soaps in the boxes.



2 Sweet scones



3 Stickers



4

There are 3 capsicums on each plate.
How many capsicums will be there on 6 plates?





The Multiplication Table of 4

1

Let's make cars.

Put 4 wheels for each car.



- 1 Let's find the total number of wheels as the number of cars increases from 1 to 4.



$4 \times 1 = \boxed{}$



$4 \times 2 = \boxed{}$



$4 \times 3 = \boxed{}$



$4 \times 4 = \boxed{}$

- 2 Let's find the total number of wheels as the number of cars increases from 5 to 9.

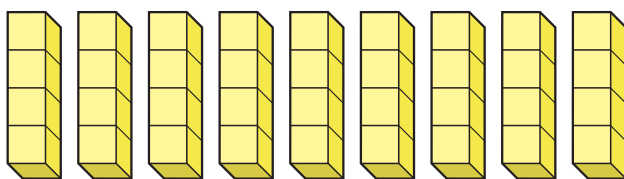
$4 \times 5 = \boxed{}$

$4 \times 6 = \boxed{}$

$4 \times 7 = \boxed{}$

$4 \times 8 = \boxed{}$

$4 \times 9 = \boxed{}$



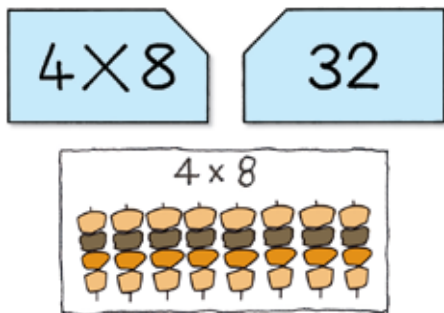
The number we multiply is called the multiplier.

The number to be multiplied is called the multiplicand.

4	×	6	=	24
Multiplier		Multiplicand		Answer

2

Let's make multiplication cards for the multiplication table of 4 and draw pictures to show them.



The Multiplication Table of 4

$4 \times 1 = 4$	... Four ones are	4
$4 \times 2 = 8$	... Four twos are	8
$4 \times 3 = 12$	... Four threes are	12
$4 \times 4 = 16$	... Four fours are	16
$4 \times 5 = 20$	... Four fives are	20
$4 \times 6 = 24$	... Four sixes are	24
$4 \times 7 = 28$	... Four sevens are	28
$4 \times 8 = 32$	... Four eights are	32
$4 \times 9 = 36$	... Four nines are	36

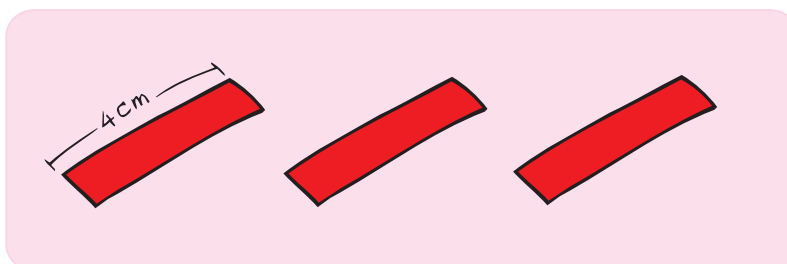
3

When the multiplicand 6 increases by 1 from 4×6 to 4×7 , by how much does the answer increase by?

Multiplier		Multiplicand		Answer
4	$\times$	6	$=$	24
		increases by 1	$\downarrow$	$\downarrow$ increases by
4	$\times$	7	$=$	

4

What is the length of three 4 cm tapes put together?





Flash Card Games

Write multiplication expressions and answers for the multiplication table of 2, 3, 4 and 5 on each card to play the card game.

3×9
27

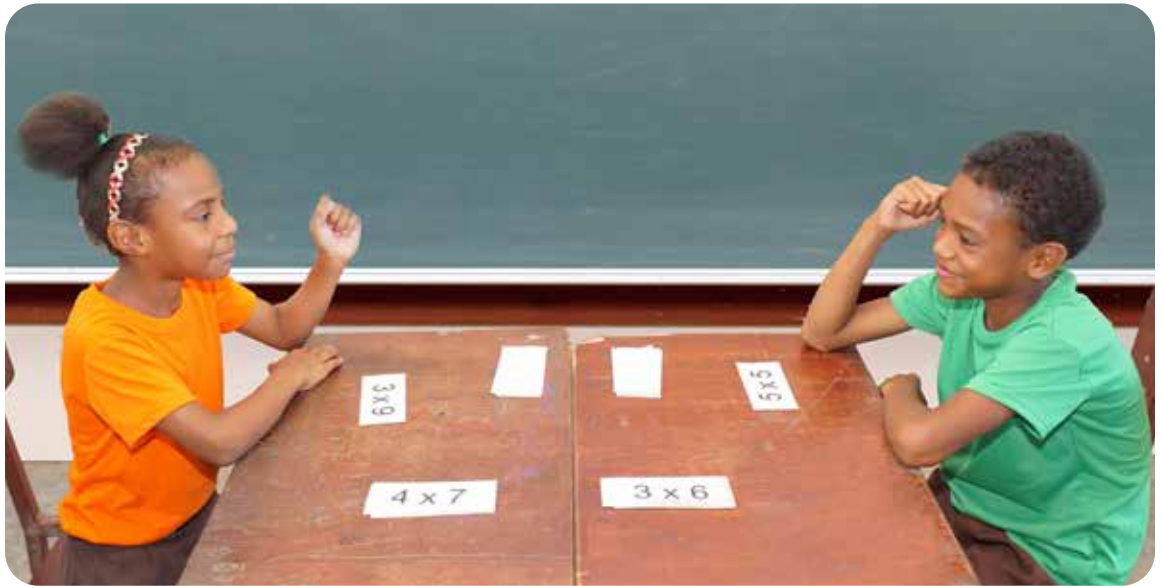
- 1 Pick up answers.



- 2 Matching cards (1)



3 Comparing cards



Which is larger, 2×8 or 4×5 ?

How about 5×6 or 3×9 ?



In what case,
are the answers
the same?

4 Matching cards (2)



If you pick up the 24 and 4×6 cards, can you keep them?



1 Let's do multiplications.

Pages 134 ~ 141



① 2×2

② 5×3

③ 3×7

④ 3×6

⑤ 2×8

⑥ 5×7

⑦ 5×9

⑧ 4×1

⑨ 3×2

⑩ 3×3

⑪ 4×6

⑫ 2×7

⑬ 4×8

⑭ 3×9

⑮ 4×5

⑯ 2×9

⑰ 5×2

⑱ 4×4

⑲ 5×4

⑳ 2×5

㉑ 5×6

㉒ 3×8

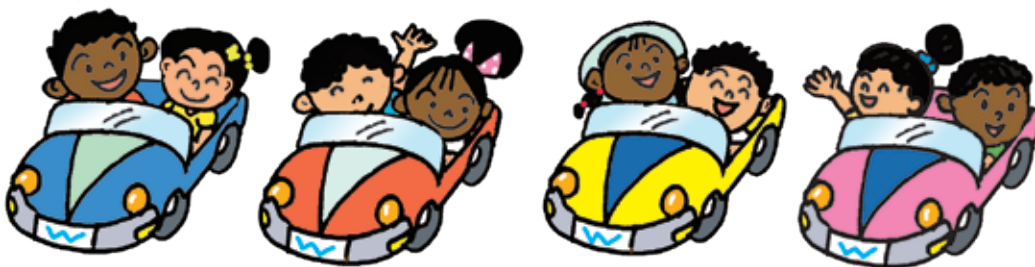
㉓ 4×2

㉔ 2×1

2 2 children are riding in each bumper car.

There are 4 cars. How many children are there altogether?

Page 134



3 There are 3 eggplants in each bag. How many eggplants are there in 7 bags?

Page 138



4

Let's write down what you have learned in the multiplication table.

Pages 134 ~ 141



Multiplicand Multiplier	1	2	3	4	5	6	7	8	9
2		4							
3					15				
4							28		
5			15						

- ① Let's change the order of the multiplier and make another multiplication table.

Multiplicand Multiplier	1	2	3	4	5	6	7	8	9
4									
2									
3									
5									

- ② Change the order of the multiplier by yourself and develop the multiplication table.

Multiplicand Multiplier	1	2	3	4	5	6	7	8	9

Multiplication (3)



The Multiplication Table of 6



1 There are 6 pieces of cheese in each pack. How many pieces of cheese are there in 3 packs?

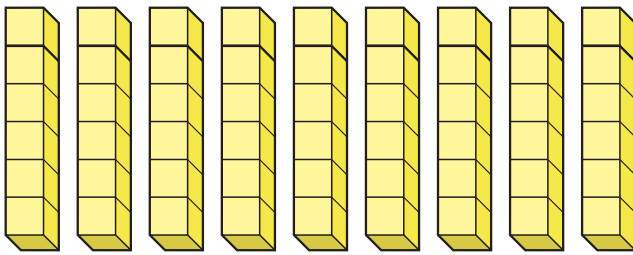
1 Let's write the multiplication expression.

2 Let's find the answer.

6 in each box and 3 boxes, so...



2 Let's make a multiplication table of 6.



1 Let's write the answers.

2 When the multiplicand increases by 1, by how much does the answer increase?

$6 \times 1 = \square$

$6 \times 2 = \square$

$6 \times 3 = \square$

$6 \times 4 = \square$

$6 \times 5 = \square$

$6 \times 6 = \square$

$6 \times 7 = \square$

$6 \times 8 = \square$

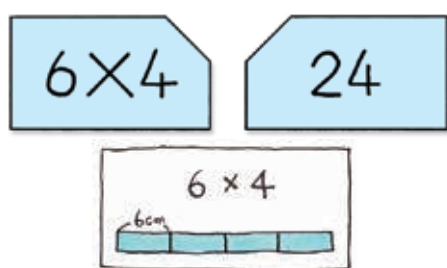
$6 \times 9 = \square$

Multiplier		Multiplicand		Answer
6	$\times$	2	$=$	12
		$\downarrow$		$\downarrow$
6	$\times$	3	$=$	



In multiplication, if the multiplicand increases by 1, the answer increases only by the multiplier.

- 3** Let's make multiplication cards for the multiplication table of 6 and draw pictures to show them.



The Multiplication Table of 6

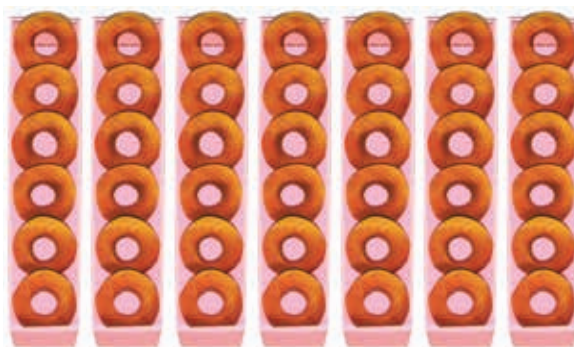
$6 \times 1 = 6$	... Six ones are	6
$6 \times 2 = 12$	... Six twos are	12
$6 \times 3 = 18$	... Six threes are	18
$6 \times 4 = 24$	... Six fours are	24
$6 \times 5 = 30$	... Six fives are	30
$6 \times 6 = 36$	... Six sixes are	36
$6 \times 7 = 42$	... Six sevens are	42
$6 \times 8 = 48$	... Six eights are	48
$6 \times 9 = 54$	... Six nines are	54

- 4** Let's find the following by multiplication.

1 The total number of fish



2 The total number of doughnuts



- 5** How can we find the total number?
Let's think about the expression to find the answers.

1



2





The Multiplication Table of 7

1

There are 7 pens in each box.
How many pens are there in
4 boxes?



1

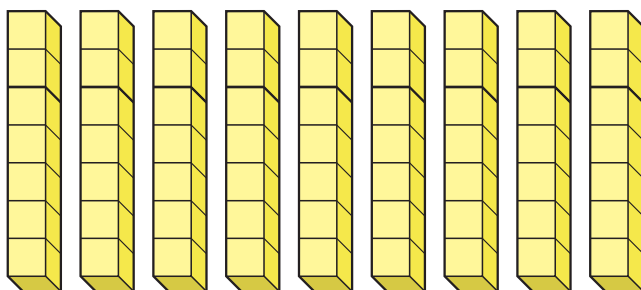
Let's write a multiplication expression.

2

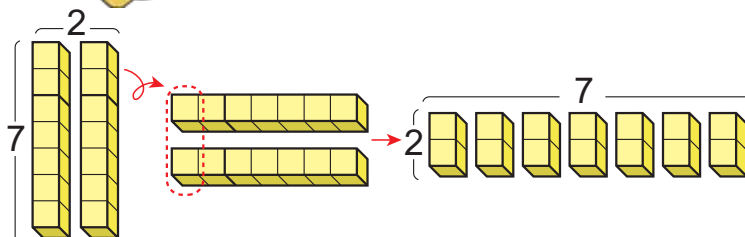
Let's find the answer.

2

Let's make a multiplication table of 7 using what
you have learned about the multiplication table
and the rule about how much the answer
increases as the multiplicand increases by 1.



For the multiplication table of 7,
the answer increases by .



The answer to 7×2 is the same as
the answer to 2×7 .
The answer to 7×3 is the same as
the answer to 3×7 .
So, we can make a table up to 7×6 .



$$7 \times 1 = \boxed{}$$

$$7 \times 2 = \boxed{}$$

$$7 \times 3 = \boxed{}$$

$$7 \times 4 = \boxed{}$$

$$7 \times 5 = \boxed{}$$

$$7 \times 6 = \boxed{}$$

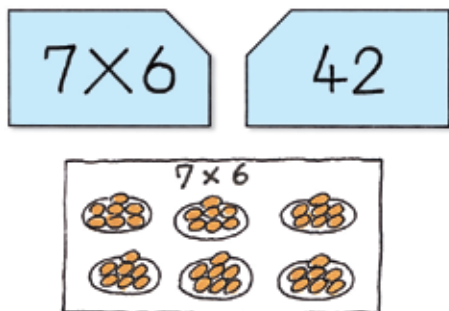
$$7 \times 7 = \boxed{}$$

$$7 \times 8 = \boxed{}$$

$$7 \times 9 = \boxed{}$$

3

Let's make multiplication cards for the multiplication table of 7 and draw pictures to show them.



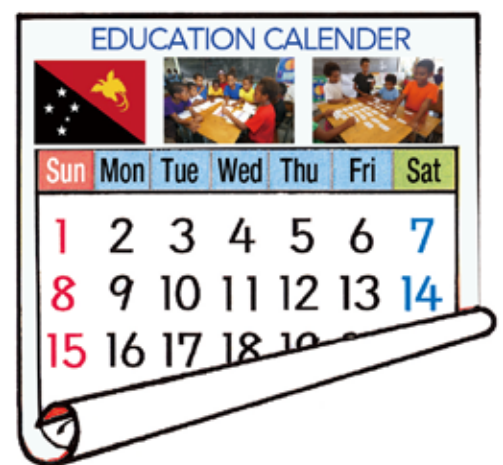
The Multiplication Table of 7

$7 \times 1 = 7$	... Seven ones are	7
$7 \times 2 = 14$	... Seven twos are	14
$7 \times 3 = 21$	... Seven threes are	21
$7 \times 4 = 28$	... Seven fours are	28
$7 \times 5 = 35$	... Seven fives are	35
$7 \times 6 = 42$	... Seven sixes are	42
$7 \times 7 = 49$	... Seven sevens are	49
$7 \times 8 = 56$	... Seven eights are	56
$7 \times 9 = 63$	... Seven nines are	63

4

There are 7 days in a week.

How many days are there in 3 weeks?



5

Glen cannot understand the answer to 7×6 . How should you teach him? Let's explain to him using the expression.

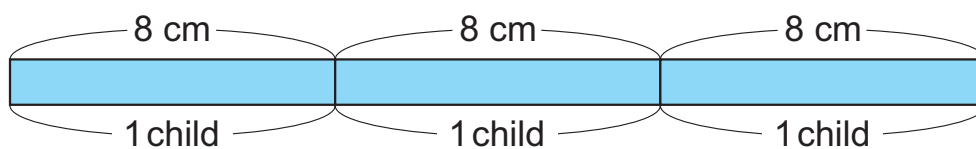


The Multiplication Table of 8

1

Each child receives a tape that is 8 cm long.

How many cm are needed for 3 children?

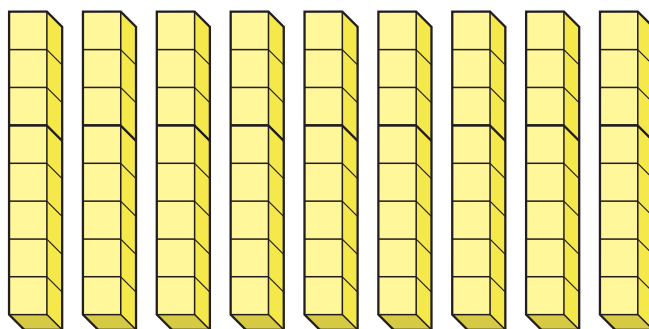


1 Let's write a multiplication expression.

2 Let's find the answer.

2

Let's make a multiplication table of 8 by using what you have learned and the rule of multiplication.



$8 \times 1 = \boxed{}$

$8 \times 2 = \boxed{}$

$8 \times 3 = \boxed{}$

$8 \times 4 = \boxed{}$

$8 \times 5 = \boxed{}$

$8 \times 6 = \boxed{}$

$8 \times 7 = \boxed{}$

$8 \times 8 = \boxed{}$

$8 \times 9 = \boxed{}$



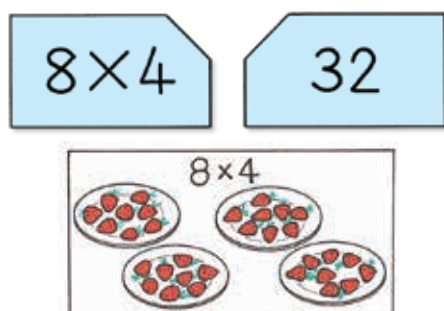
When the multiplicand increases by 1, the answer is...

The answer to 8×3 is equal to the answer to 3×8 , right?



3

Let's make multiplication cards for the multiplication table of 8 and draw pictures to show them.



The Multiplication Table of 8

$8 \times 1 = 8$	... Eight ones are	8
$8 \times 2 = 16$	... Eight twos are	16
$8 \times 3 = 24$	... Eight threes are	24
$8 \times 4 = 32$	... Eight fours are	32
$8 \times 5 = 40$	... Eight fives are	40
$8 \times 6 = 48$	... Eight sixes are	48
$8 \times 7 = 56$	... Eight sevens are	56
$8 \times 8 = 64$	... Eight eights are	64
$8 \times 9 = 72$	... Eight nines are	72

4

Each child receives 8 sheets of coloured papers. How many sheets of papers are needed for 6 children?



5

Mike noticed something when he was reviewing the multiplication table of 3 and 5. Guess what he thought about and write your answer in your exercise book.

$3 \times 1 = \square$	$5 \times 1 = \square$
$3 \times 2 = \square$	$5 \times 2 = \square$
$3 \times 3 = \square$	$5 \times 3 = \square$
$3 \times 4 = \square$	$5 \times 4 = \square$
$3 \times 5 = \square$	$5 \times 5 = \square$
$3 \times 6 = \square$	$5 \times 6 = \square$
$3 \times 7 = \square$	$5 \times 7 = \square$
$3 \times 8 = \square$	$5 \times 8 = \square$
$3 \times 9 = \square$	$5 \times 9 = \square$



The Multiplication Table of 9

1

A softball team has 9 players.

How many players are there in 4 teams?

1

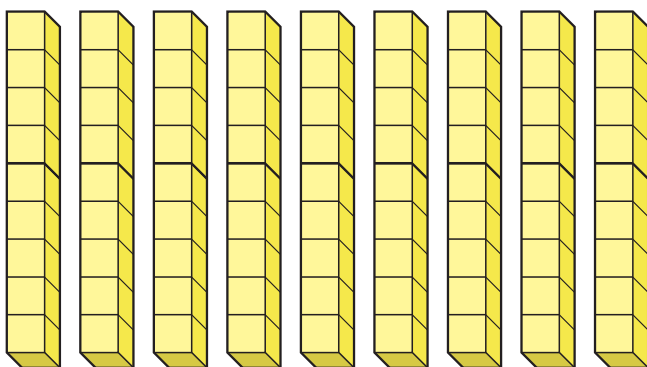
Let's write a multiplication expression.

2

Let's find the answer.

2

Let's make a multiplication table of 9 by using what you have learned and the rule of multiplication.



$9 \times 1 = \square$

$9 \times 2 = \square$

$9 \times 3 = \square$

$9 \times 4 = \square$

$9 \times 5 = \square$

$9 \times 6 = \square$

$9 \times 7 = \square$

$9 \times 8 = \square$

$9 \times 9 = \square$

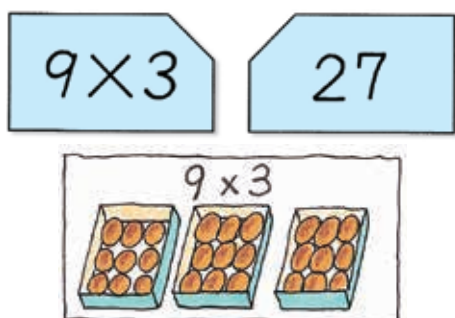


We can find answers from what we have already learned, except 9×1 and 9×9 .

When the multiplicand increases by 1, the answer is...



3 Let's make multiplication cards of the multiplication table of 9 and draw pictures to show them.



The Multiplication Table of 9

$9 \times 1 = 9$	... Nine ones are	9
$9 \times 2 = 18$	... Nine twos are	18
$9 \times 3 = 27$	... Nine threes are	27
$9 \times 4 = 36$	... Nine fours are	36
$9 \times 5 = 45$	... Nine fives are	45
$9 \times 6 = 54$	... Nine sixes are	54
$9 \times 7 = 63$	... Nine sevens are	63
$9 \times 8 = 72$	... Nine eights are	72
$9 \times 9 = 81$	... Nine nines are	81

4 Let's make a math story of multiplication by looking at the picture below.



The Secret of $9 \times \square$

Tell everyone what you see in the multiplication table for 9.

How are the numbers in the answers lined up?



9
18
27
36
45
54
63
72
81

If we add the number in the ones place and the number in the tens place, the answers are...





The Multiplication Table of 1

1

A family has a birthday party.
They prepared 3 candies,
2 oranges and 1 piece of cake
for each person. How many of these
food items do they need for 4 people?



Candies	3	×	4	=	
Orange	2	×	4	=	
Cake		×		=	

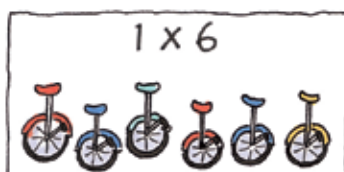
2

Let's make a multiplication table of 1.



3

Let's make multiplication
cards of 1 and draw
pictures to show them.



The Multiplication Table of 1

$1 \times 1 = 1$... One one is	1
$1 \times 2 = 2$... One two is	2
$1 \times 3 = 3$... One three is	3
$1 \times 4 = 4$... One four is	4
$1 \times 5 = 5$... One five is	5
$1 \times 6 = 6$... One six is	6
$1 \times 7 = 7$... One seven is	7
$1 \times 8 = 8$... One eight is	8
$1 \times 9 = 9$... One nine is	9



What Kind of Calculation is This?



- 1** There are 8 strawberries on each plate. There are 3 plates.

How many strawberries are there?



What do we know?

What do we want to know?



- 2** There are 9 doughnuts in the box.

If you eat 7, how many are left?

- 3** There are 9 oranges in the basket and 4 oranges on the plate.

How many oranges are there?

- 4** Pencils are given to 7 children. Each child receives 3 pencils.

How many pencils are there in total?



1 Let's do multiplication.

Pages 146 ~ 154



① 6×2

② 8×3

③ 7×1

④ 1×2

⑤ 6×7

⑥ 9×4

⑦ 8×7

⑧ 9×9

⑨ 8×5

⑩ 1×5

⑪ 7×3

⑫ 6×8

⑬ 6×5

⑭ 1×8

⑮ 9×6

⑯ 9×5

⑰ 9×8

⑱ 7×9

⑲ 9×3

⑳ 1×4

㉑ 9×1

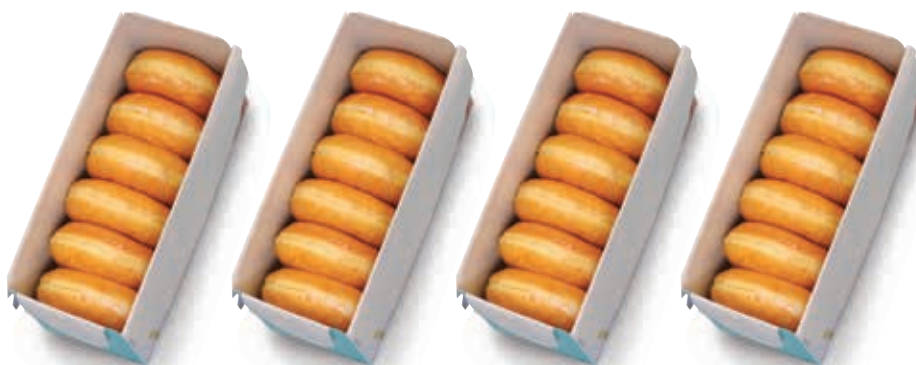
㉒ 7×7

㉓ 6×3

㉔ 8×1

2 There are 4 boxes of doughnuts. There are 6 doughnuts in each box. How many doughnuts are there?

Page 146





Problems 1



1 Let's do multiplication.

① 6×6

② 1×3

③ 8×4

④ 9×2

⑤ 7×5

⑥ 6×1

⑦ 1×7

⑧ 6×9

⑨ 8×9

⑩ 8×6

⑪ 9×7

⑫ 7×8

2 We bought 8 bags of oranges. There are 5 oranges in each bag.

How many oranges are there?

① Let's draw a diagram.

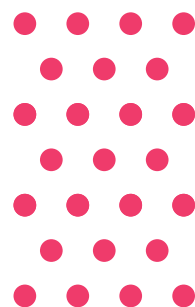
② Let's write an expression and find the answer.

3 Let's find an easier way to calculate the number of ●.

①



②



4 Let's make a math story for 7×3 by using "cookie" and "plate".



Problems 2

- ① Rie and her friends are looking at the multiplication tables of 3 and 7, and are talking about them.

$3 \times 1 = 3$	$7 \times 1 = 7$
$3 \times 2 = 6$	$7 \times 2 = 14$
$3 \times 3 = 9$	$7 \times 3 = 21$
$3 \times 4 = 12$	$7 \times 4 = 28$
$3 \times 5 = 15$	$7 \times 5 = 35$
$3 \times 6 = 18$	$7 \times 6 = 42$
$3 \times 7 = 21$	$7 \times 7 = 49$
$3 \times 8 = 24$	$7 \times 8 = 56$
$3 \times 9 = 27$	$7 \times 9 = 63$

- ① Kila and Wesley noticed something. What did they notice? Guess what they thought about and write your ideas in your exercise book.



All the numbers from 1 to 9 are used in the ones place in the multiplication table of 3.

Two answers in the multiplication table of 7 can be added to make 70.



- ② Gibson said, “I can understand the multiplication table of 10 by looking at the multiplication tables above”. What did he notice? Write your ideas in your exercise book.

Multiplication (4)



Multiplication Table

Let's colour in the table on page 215.

- 1** Let's make the multiplication table and discover its secrets.



- 1** Let's make the multiplication table.

		Multiplicand								
		1	2	3	4	5	6	7	8	9
Multiplier	1									
	2		4						16	
	3									
	4									
	5									
	6					30				
	7									
	8									
	9									

- 2** Let's look for secrets in the multiplication table.

16 is the answer to $2 \times 8 = 16$



How do the answers increase?

In which places are the answers the same?



How are the numbers lined up?



- ③ Let's talk about what you have discovered in the multiplication table.



Yamo's discovery



In the answers to the multiplication table of 5, the ones place goes from 0 to 5 again and again.



Vavi's discovery

	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81



Mero's discovery

	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

- ④ What did Vavi and Mero notice? Let's write in your exercise book.



There are many secrets.



It looks like there are still more secrets.



In this 3D multiplication table, the number of coins matches the answer for each multiplication.





Multiplication Games

1 Let's play the multiplication game ① on page 216 by remembering the multiplication table.

1 Let's fill the blanks in the table below.

	4	7	9	3	6	8
8						
4						
9						
5						
7						
6						

2 Let's play the game.



Use empty boxes to make a dice.



2

Let's play the multiplication game ② on page 217 by remembering the multiplication table.

1

Let's think about ways on how to win the game.



You should not write 25 because it only appears once in the table.

I should write 12 because it appears 4 times in the table.

**2**

Let's find the answers that appear only once in the multiplication table, such as 25.

3

Let's find the answers that appear four times, such as 12.

4

Let's start the game.

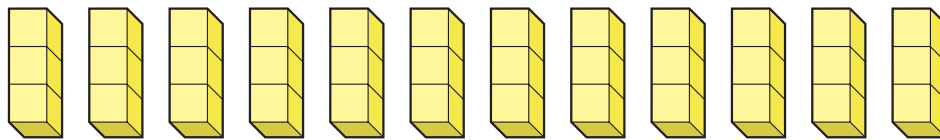




Multiplication more than 9×9

1

Blocks are lined up as shown below.



Let's find the total number of these blocks.

1 Ketsin made the multiplication expression below.

Let's fill the with a number.

$$3 \times \boxed{}$$

2 Let's think about how to find the number by using what you have learned before.



Mero's idea

In the multiplication table, the answer in the multiplication table of 3 will increase by 3 from $3 \times 1 = 3$.

So the answers keep increasing even if it gets past 3×9 .

$$3 \times 9 = 27$$

$$3 \times 10 = 30$$

$$3 \times 11 = \boxed{}$$

$$3 \times 12 = \boxed{}$$

+3

2

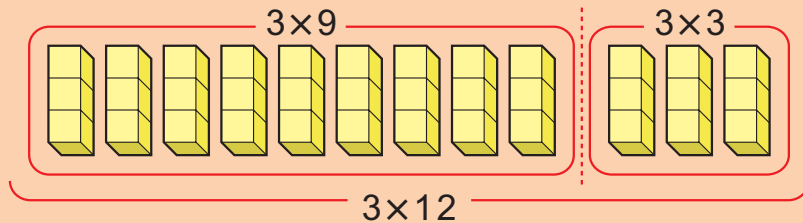
Let's think about how to calculate.

1 Ambai and Naiko made the expression 3×12 .

Let's explain their ideas.



Ambai's idea

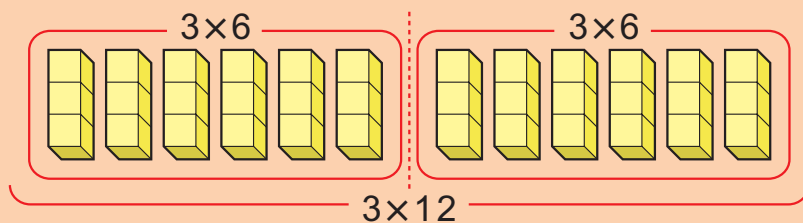


When the answers to 3×9 and 3×3 are added, it will be the answer of 3×12 .

So $27 + 9 = 36$



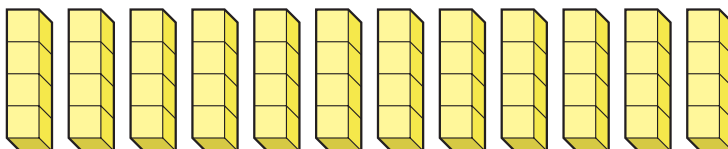
Naiko's idea



When the blocks are divided into 6 columns, the answer to 3×12 will be two times the answer to 3×6 .

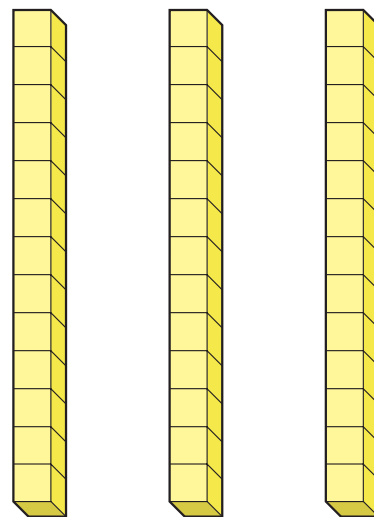
So $3 \times 6 = 18$, $18 + 18 = 36$

2 Let's think about how to calculate 4×12 .



- 3** Blocks are lined up as shown on the right.

Let's find the total number of the blocks.



- 1** Nobin made the multiplication expression below.

Let's fill the with a number.

$$\boxed{} \times 3$$

- 2** Let's think about how to find the number by using what you learned before.



Yamo's idea

In multiplication, if we change the order of the multiplicand and the multiplier, the answer is the same. So we can find the answer to 3×13 . Start with the multiplication table of 3,

$$3 \times 12 = 36$$

$$3 \times \boxed{} = \boxed{}$$

So $\boxed{} \times 3 = \boxed{}$

4

Let's think about how to calculate.

1

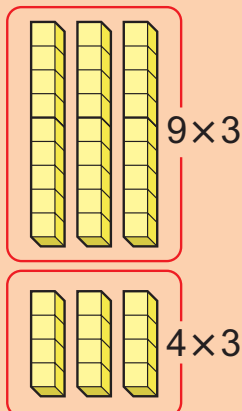
Vavi and Gawi thought about the expression 13×3 . Explain their ideas.



Vavi's idea

She is using what she noticed in the multiplication table. For example, when the answers to the multiplication table of 3 and of 4 are added, the answer will be an answer to the multiplication table of 7.

So when the multiplication table of 9 and of 4 are added, the answer will be the answer to 13×3 .

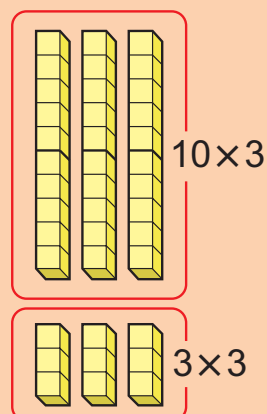


Gawi's idea

Split 13 to 10 and 3. 10×3 is 3 times 10, so it is 30.

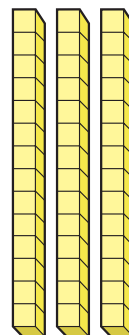
$$3 \times 3 = 9$$

$$\text{So } 30 + 9 = 39$$



2

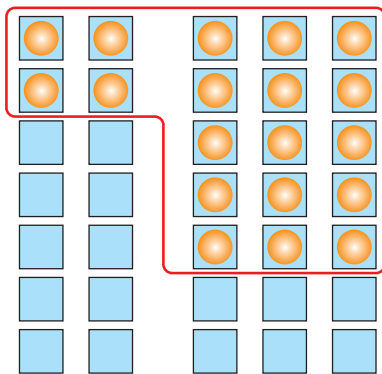
Let's think about how to calculate 14×3 .



Taking Seats

- 5** There are 19 people in the airplane. They use seats for 2 or 3 people in a row.

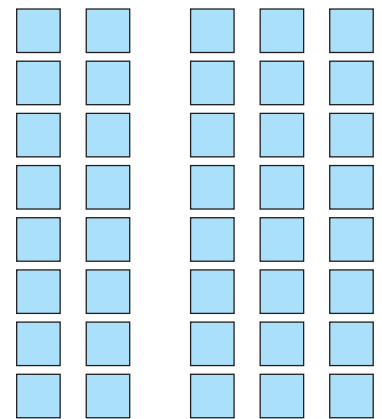
We want to make sure no one sits alone.



We can sit by 3×5 and 2×2 .



Isn't there another way of taking seats?



Seats for 3 people are and seats for 2 people are .

$3 \times$ and $2 \times$.

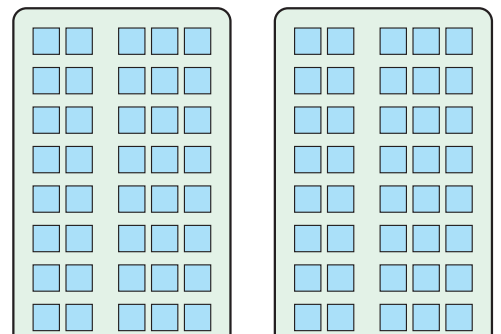


If we combine seats for 2 people and seats for 3 people like this, we can enjoy traveling without making any person sit alone.

Really?
With any number of people?



- 6** Let's see when the number of people is different.





Problems 1



- 1** The tables below are part of the multiplication table.
Where would you place the tables ①, ②, ③ and ④ in the multiplication table below: (a), (b), (c) and (d)? And let's explain your reason.

①

12	14	16	18
18	21	24	27
24	28	32	36
30	35	40	45

②

12	18	24	30
14	21	28	35
16	24	32	40
18	27	36	45

③

4	6	8	10
6	9	12	15
8	12	16	20
10	15	20	25

④

36	42	48	54
42	49	56	63
48	56	64	72
54	63	72	81

		Multiplicand								
		1	2	3	4	5	6	7	8	9
Multiplier	1	1	2	3	4	5	6	7	8	9
	2	2	(a)				(b)			
	3	3								
	4	4								
	5	5	(c)				(d)			
	6	6								
	7	7								
	8	8	(c)				(d)			
	9	9								

- 2** Let's find all the multiplication expressions that give an answer of 24.

- 1 Moses is trying to make a bigger multiplication table.

	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10										a	b	c
11										d	e	f
12										g	h	i

He needs to fill the cells marked 'a' to 'i'.

How can he fill these cells in the table?

Complete the table above by using what you learned before.

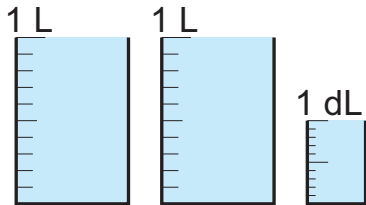
And let's see how you filled the table.



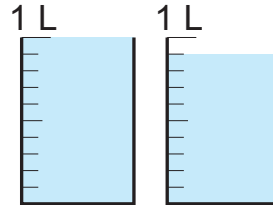
1 How much water is there?



①



②



2 Let's do multiplication.



① 2×4

② 5×1

③ 3×7

④ 2×3

⑤ 6×9

⑥ 8×2

⑦ 7×6

⑧ 6×4

⑨ 8×7

⑩ 9×5

⑪ 3×6

⑫ 5×5

⑬ 4×3

⑭ 8×8

⑮ 1×9

⑯ 7×2

⑰ 4×6

⑱ 1×6

⑲ 3×9

⑳ 9×8

3 There are 6 apples in each plastic bag. You bought 7 plastic bags of apples.

How many apples did you buy in total?



4 Let's make a math story for 8×6 by using the words "plate" and "candy".



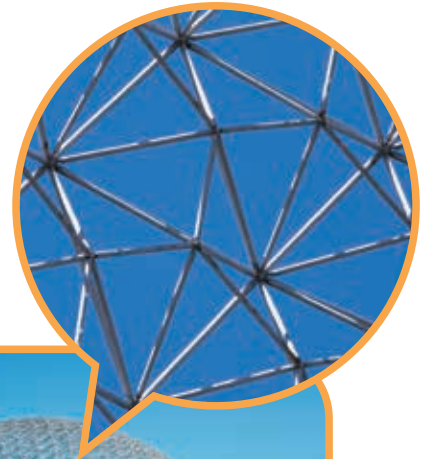


Have you ever seen it?

14



Louvre Museum (France)



Crossroad (Chuou-ku, Tokyo)



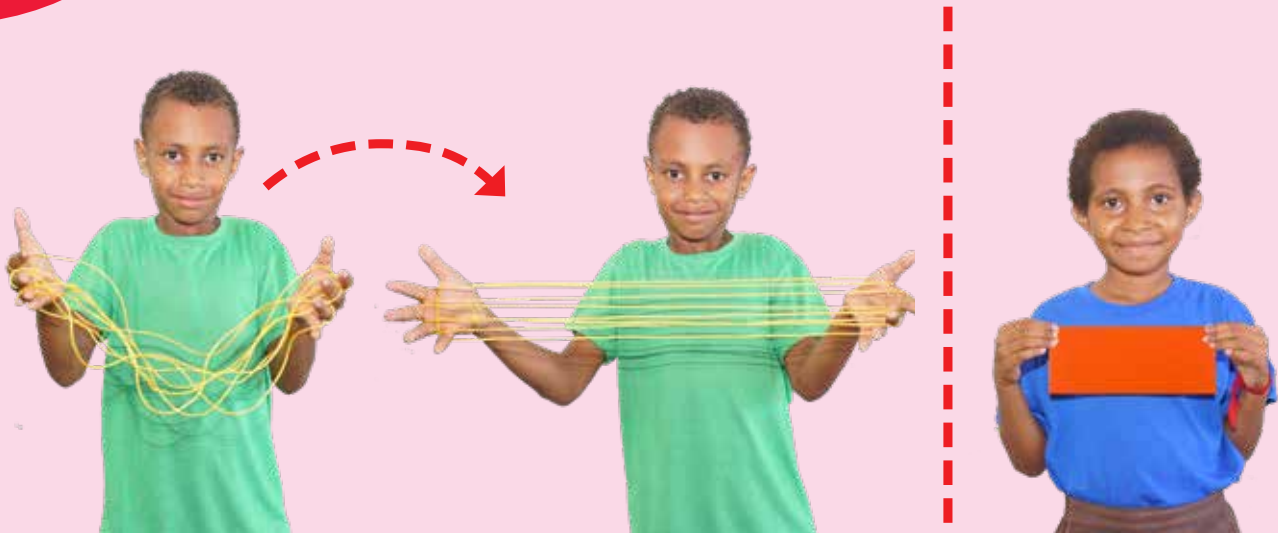
Biosphere (Canada)



"Cloud Above Slope" Museum
(Matsuyama City, Ehime)



Rice paddy
(Urausu town, Hokkaido)



Straight Lines

1

Let's make a straight line.

①

Stretch a string or an elastic band.

②

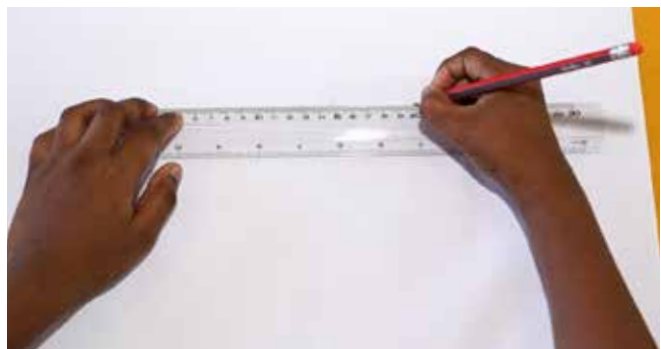
Fold a piece of paper.



The line that is like a piece of string pulled tight is called a **straight line**.

2

Let's draw a straight line using a ruler and check that the line is straight by comparing it to a tight string.





Triangles and Quadrilaterals

1

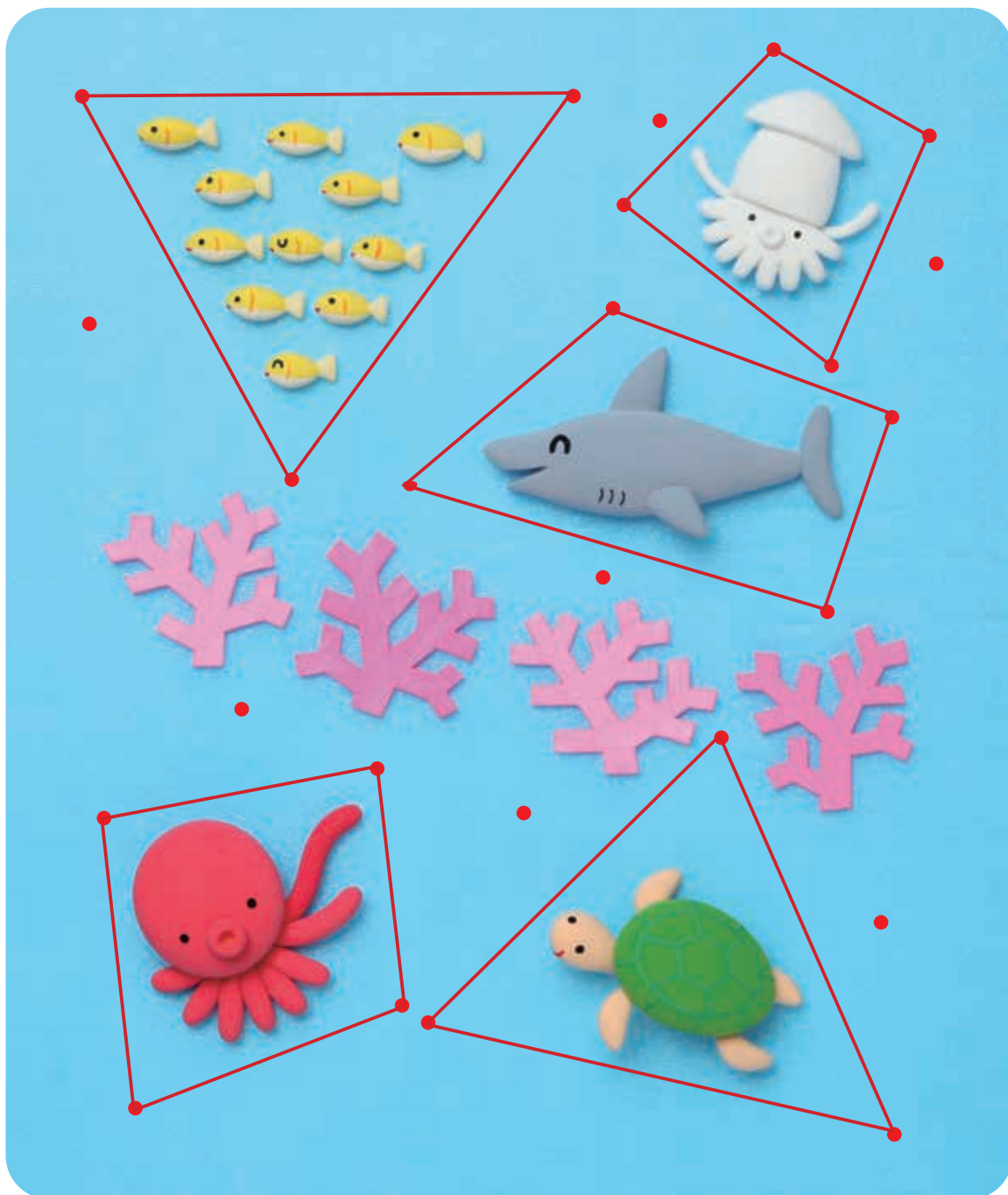
Let's connect the dots using straight lines to enclose the living things in the sea.

Try to enclose each living thing with fewer lines. For example,



Avoid the corals.

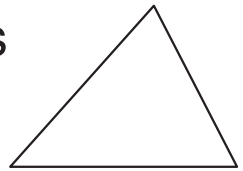




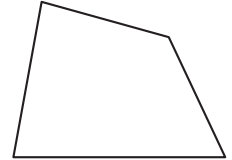
2 Let's separate the shapes that are made by straight lines into 2 groups.



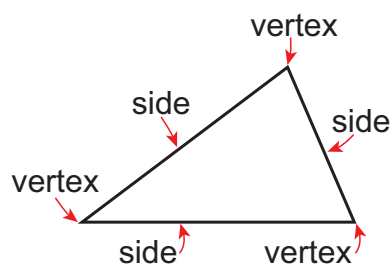
The shape enclosed by 3 straight lines is called a **triangle** (or **triangular**).



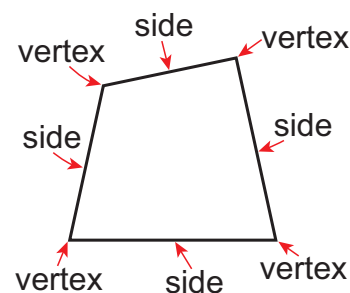
The shape enclosed by 4 straight lines is called a **quadrilateral** (or **quadrangular**).



The corner point of triangles and quadrilaterals is called a **vertex** and the straight line that connects two vertices is called a **side**.



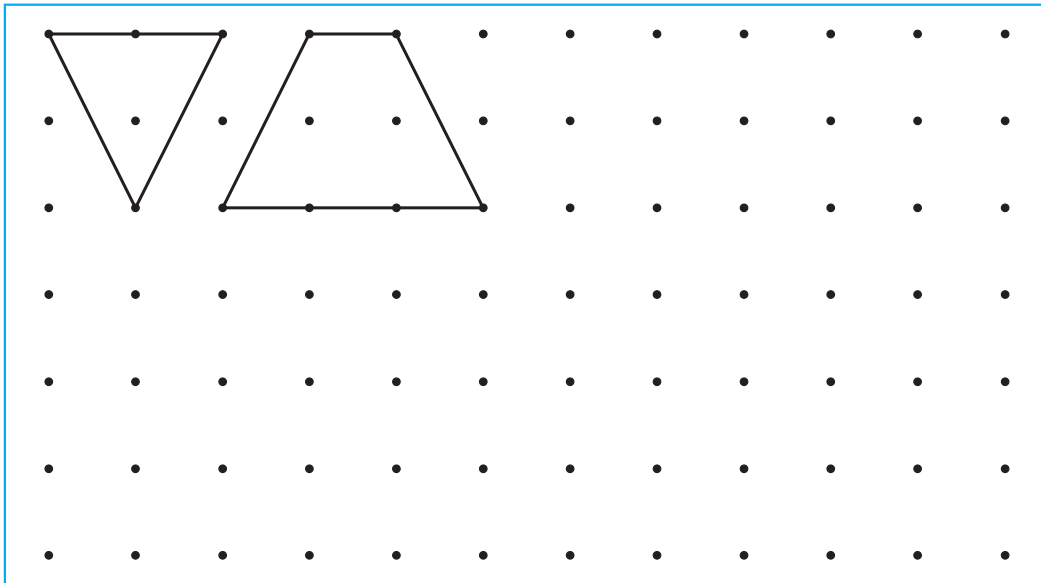
In a triangle, the number of sides is , the number of vertices is .



In a quadrilateral, the number of sides is , the number of vertices is .

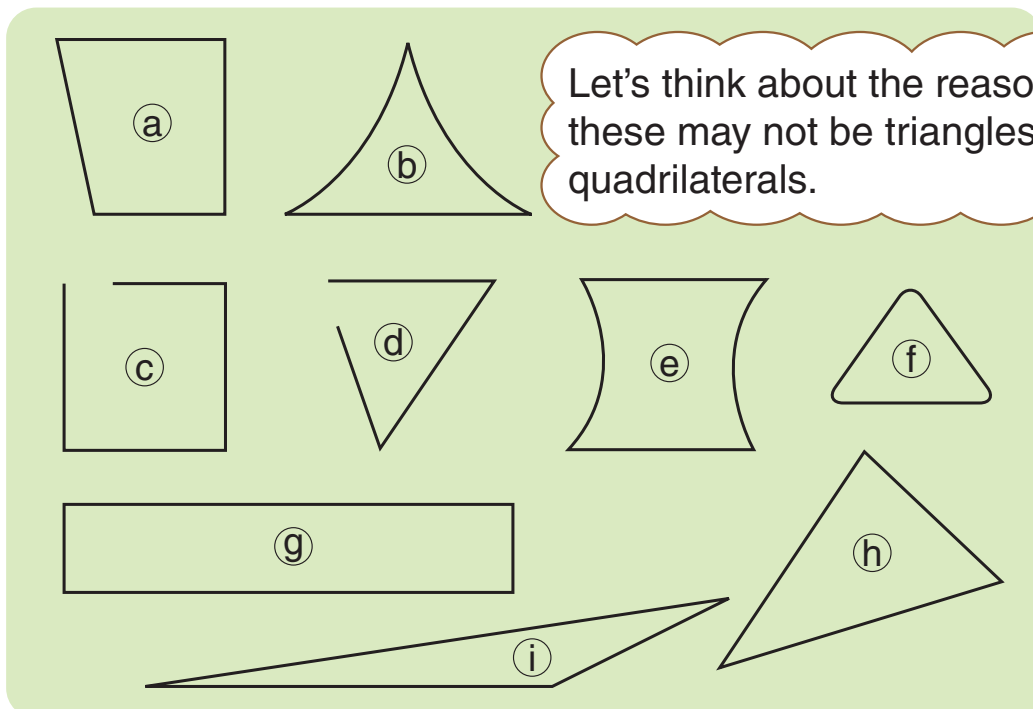
3

Let's draw a variety of triangles and quadrilaterals by connecting dots with straight lines.



4

Let's find the triangles and quadrilaterals.



Let's think about the reasons why these may not be triangles or quadrilaterals.



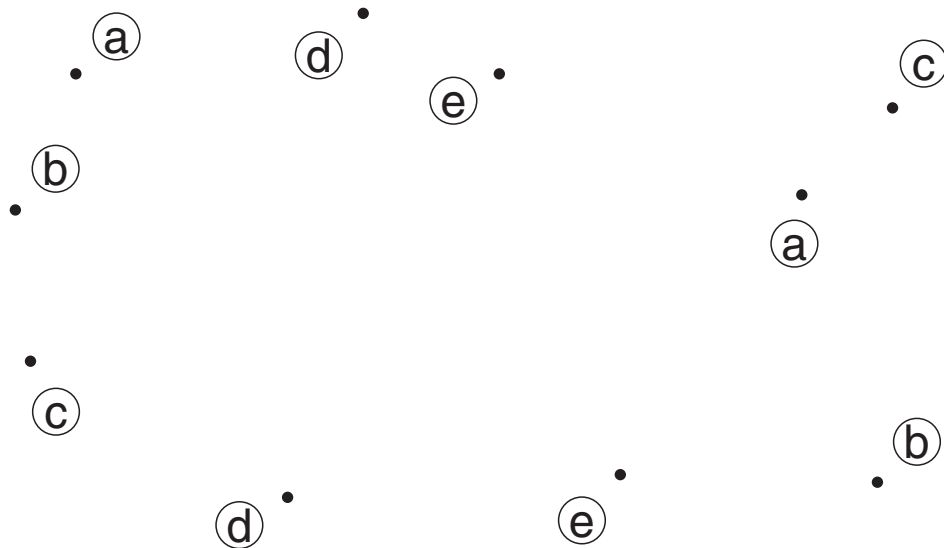
Triangles

Quadrilaterals

Exercise

Let's connect the dots with the same letters with a straight line using a ruler.

And let's colour the triangles and quadrilaterals.

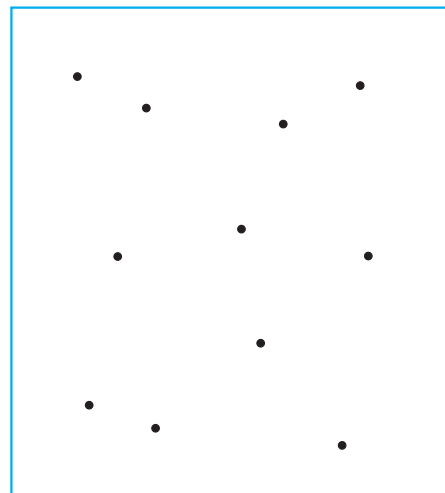


'Capture the Dots' Game

- ① To be played by 2 to 3 persons.
- ② Draw a straight line to connect dots when you win by playing rock, scissors and paper.
- ③ When a triangle is made, colour the inside.
- ④ The person who makes the most triangles wins.

Prepare

Make many dots on the paper.

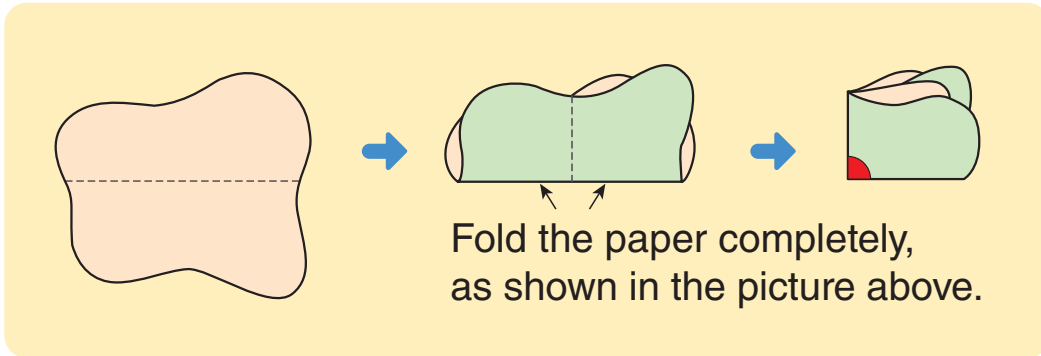




Right Angles

1

Let's fold a sheet of paper as shown below.



The corner that is formed by folding the paper in **1** is called a **right angle**.

2

Let's find right angles around you.



The paper corner does not fit in some places.

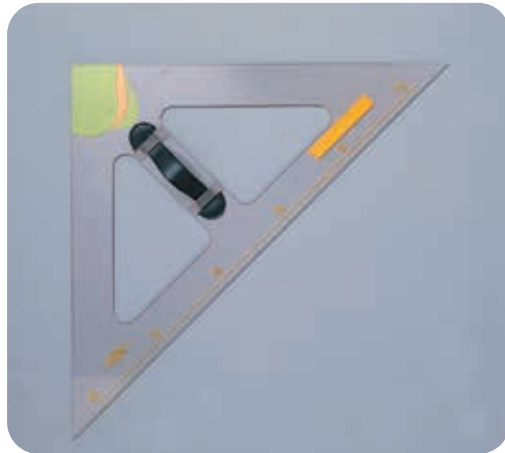
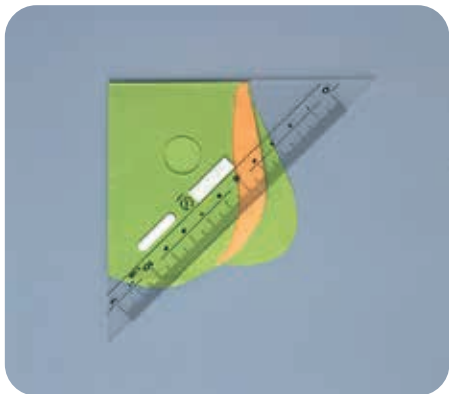
There are lots of corners.



3

Is there a right angle in a set-square?

Let's check and see.



4

Let's draw right angles by using a set-square.

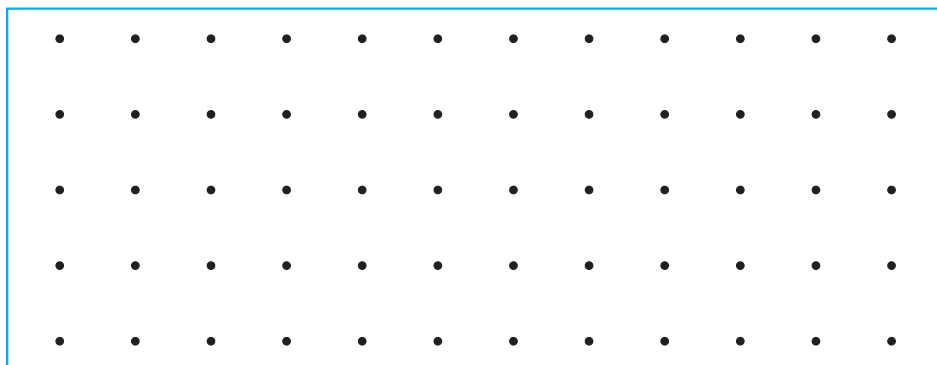


Draw a Right Angle

Let's draw various right angles by connecting the dots below.



Let's check the right angles by using a set-square.

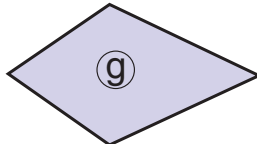
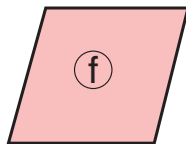
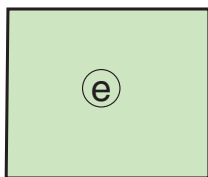
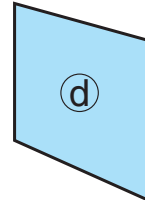
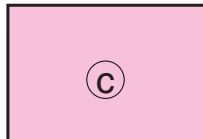
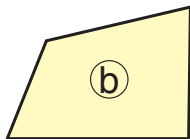
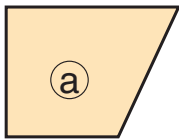




Rectangles and Squares

1

Let's find quadrilaterals in which all 4 corners are right angles.



Use the set-square to check the right angles.



A quadrilateral in which all 4 corners are right angles is called a **rectangle**.



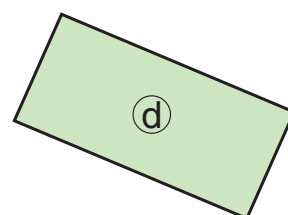
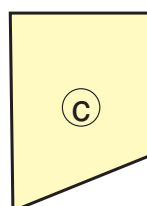
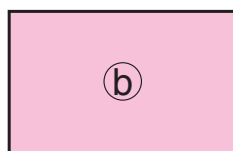
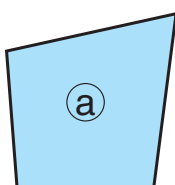
2

Let's look for things shaped like rectangles.



Exercise

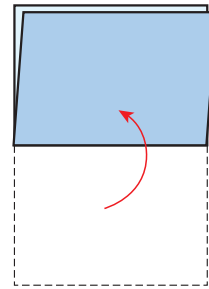
Which of these are rectangles?



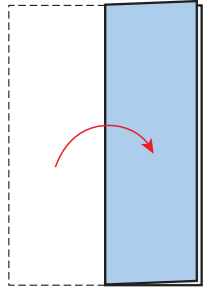
3

Let's compare the lengths of the opposite sides of a rectangle.

A



B



The lengths of the opposite sides of a rectangle are the same.

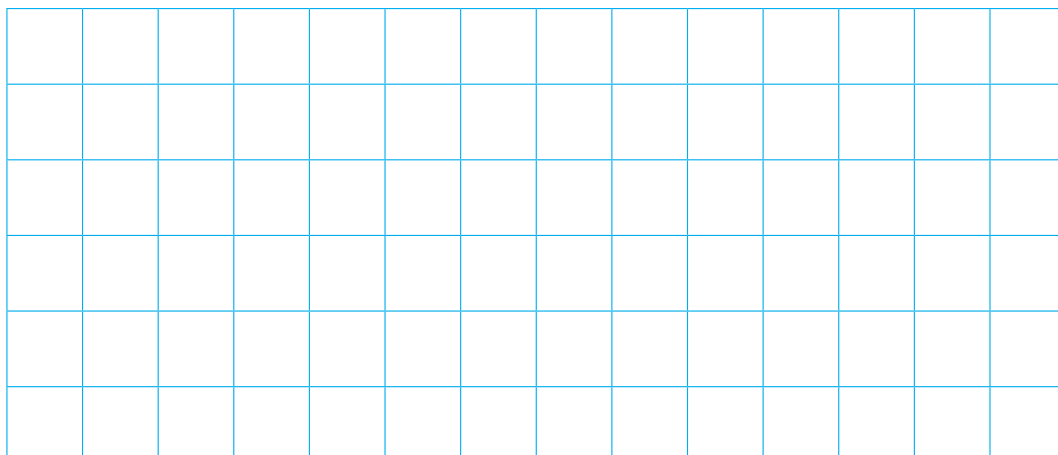
Can you draw 3 rectangles that do not overlap each other?



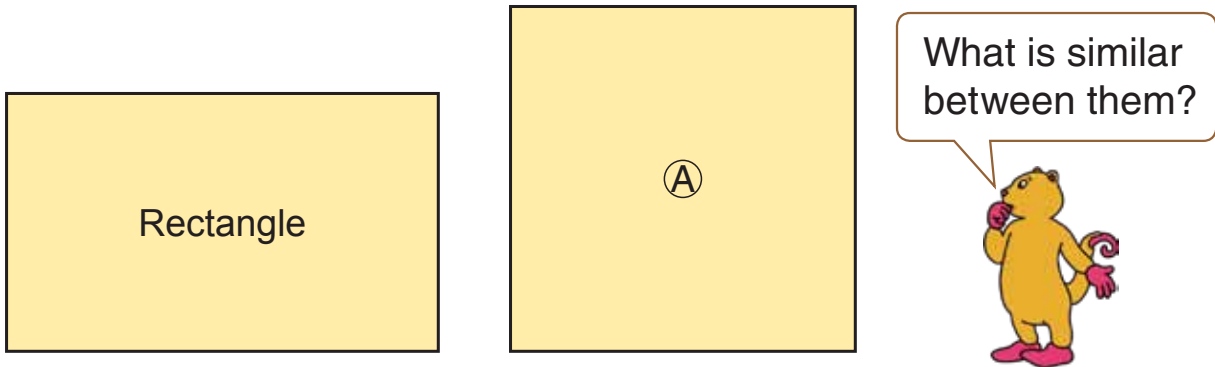
4

Let's draw rectangles of various sizes.

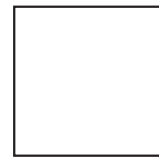
- 1 The lengths of the sides are 3 cm and 6 cm.
- 2 The lengths of the sides are 1 cm and 7 cm.
- 3 The lengths of the sides are 5 cm and 4 cm.



- 5 What is the difference between a rectangle and quadrilateral A?



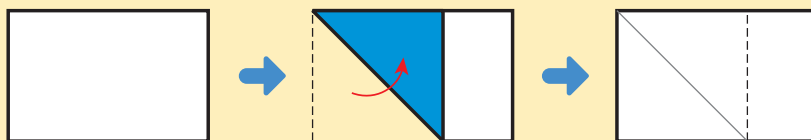
A quadrilateral in which all 4 corners are right angles and all 4 sides are the same length is called a **square**.



- 6 Let's look for things shaped like squares.



- 7 Let's make a square out of a rectangle.

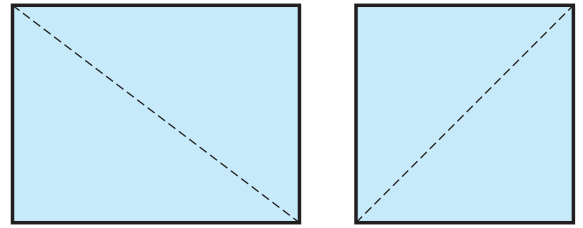




Right Triangles

1

Let's cut pieces of paper shaped like rectangles and squares



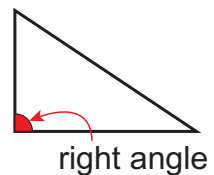
along the dotted lines as shown in the diagram.

1 Let's think about the shape of the corners.

2 What kind of shape is this?

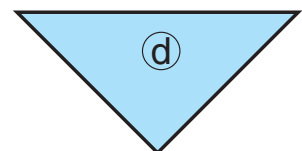
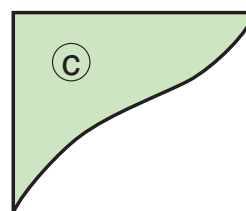
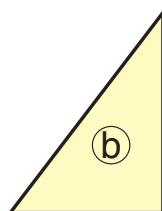
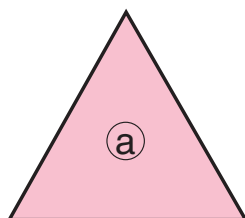


A triangle that has a right angle is called a **right triangle**.



2

Which ones are right triangles? Let's check using a set-square.

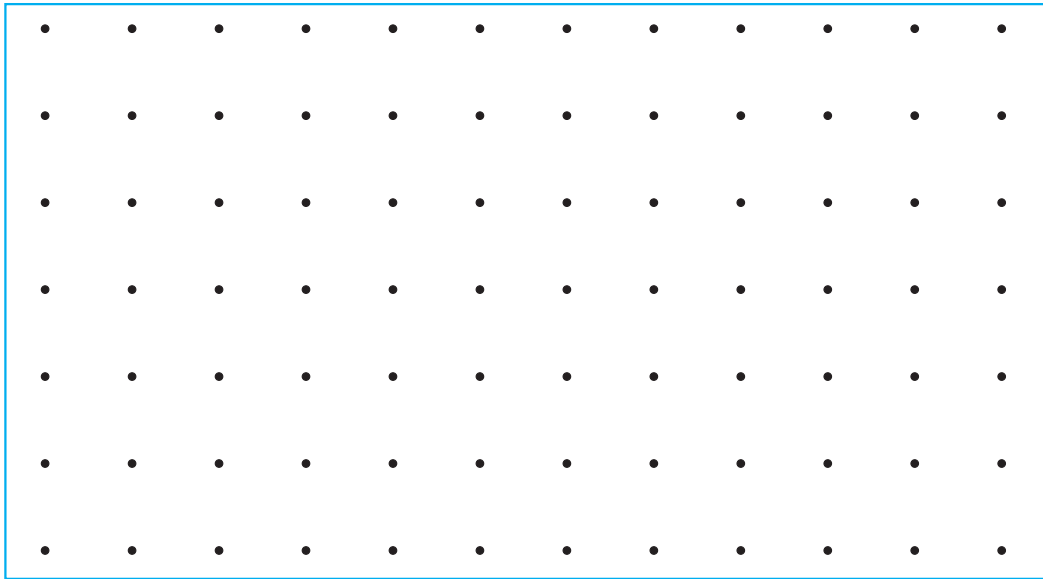


Can you guess before using a set-square?



3

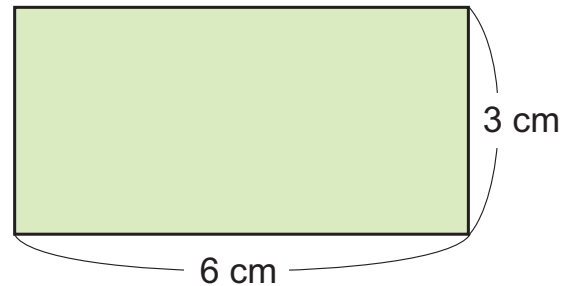
Let's connect these dots using straight lines to make rectangles, squares and right triangles.



4

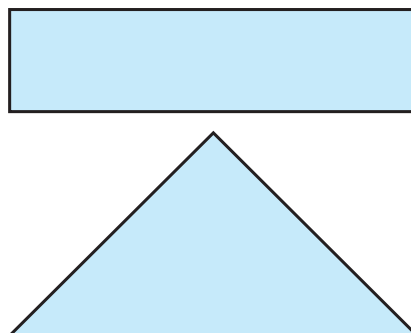
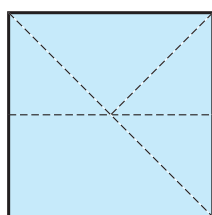
Cut a sheet of paper shaped like the rectangle as shown below to make the following shapes.

- 1 2 rectangles
- 2 2 squares
- 3 4 right triangles



5

Cut a square paper as shown below and make a rectangle, a square and a right triangle.

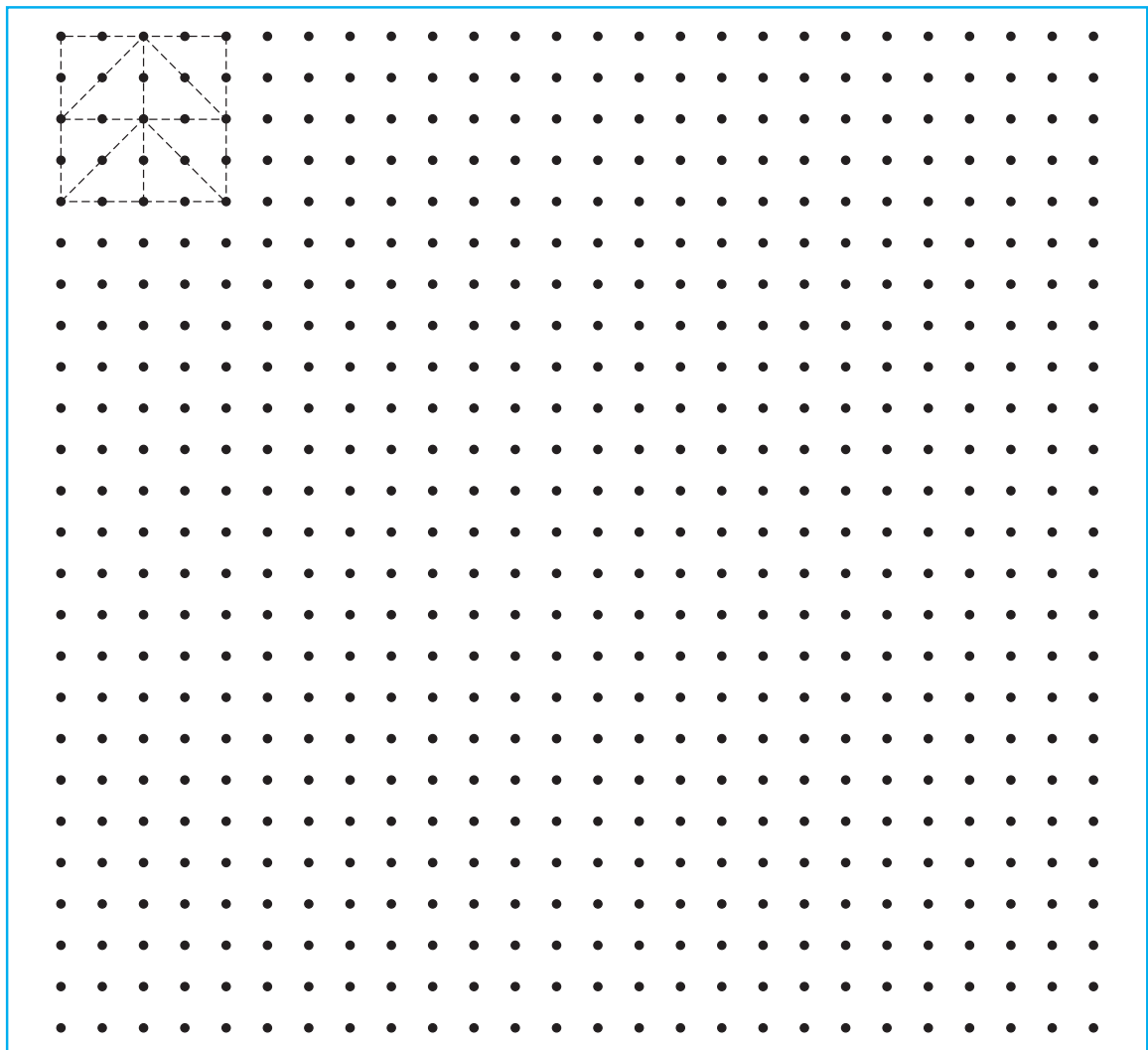
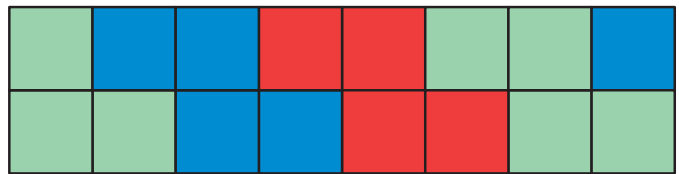
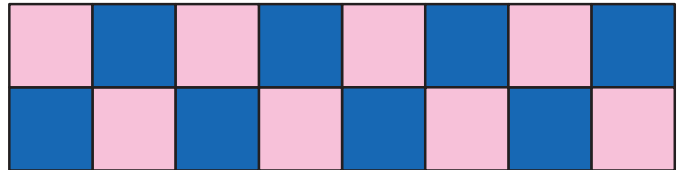
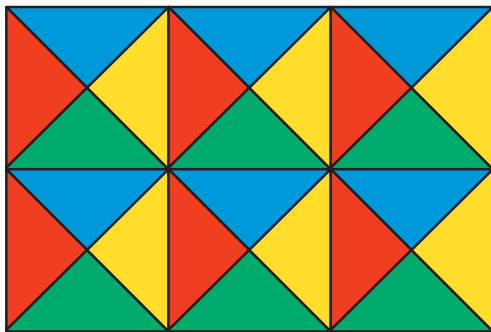




Making Patterns

1

Let's make a beautiful pattern by drawing a rectangle, square or right triangle using the dots below.





1 Let's fill the with a number.

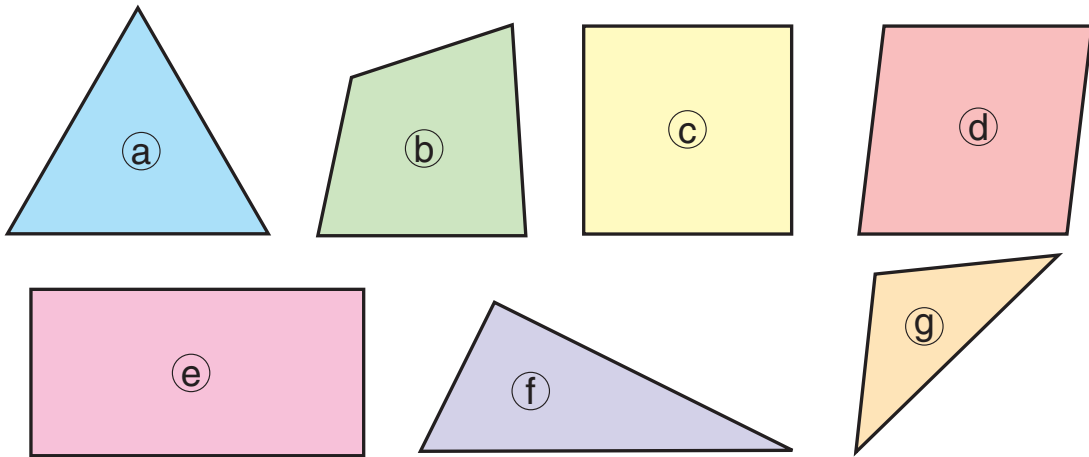
Page 175



- ① There are sides and vertices in a triangle.
- ② There are sides and vertices in a quadrilateral.

2 Which shapes are rectangles, squares and right triangles?

Pages 180, 182, 183



Let's fill the with a number.

Grade 2

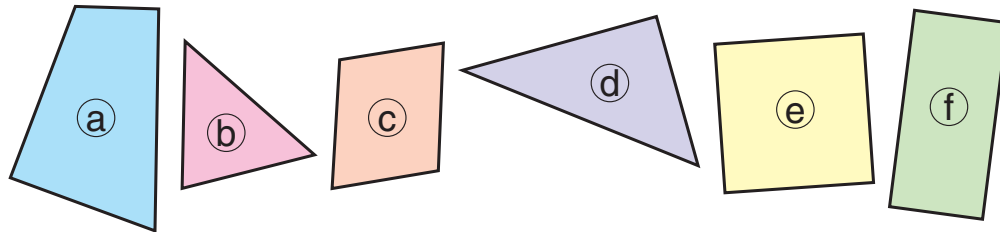
Do you remember?



- ① 1000 is sets of 10.
- ② 1000 is sets of 100.
- ③ The number that is made by three hundred, twenty and five is .
- ④ The number that is made by 6 sets of hundred, and 9 sets of one is .

Problems 1

1 Which of these are rectangles, squares and right triangles?

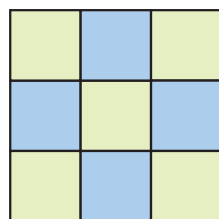


2 What are the following shapes?

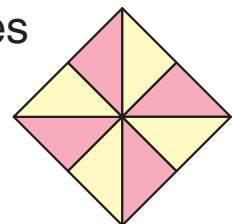
- ① A quadrilateral in which all the corners are right angles.
- ② A quadrilateral in which all the corners are right angles and all the sides are the same.
- ③ A triangle with a right angle.

3 How many of the following shapes are there in each pattern?

① Squares

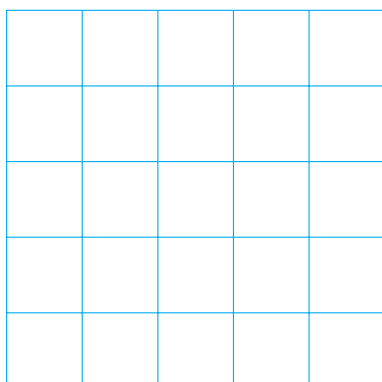


② Right triangles

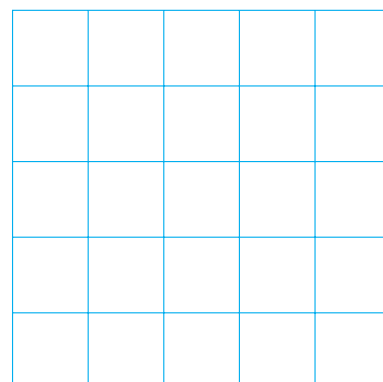


4 Let's draw the following shapes.

① Right triangle



② Square with 3 cm sides



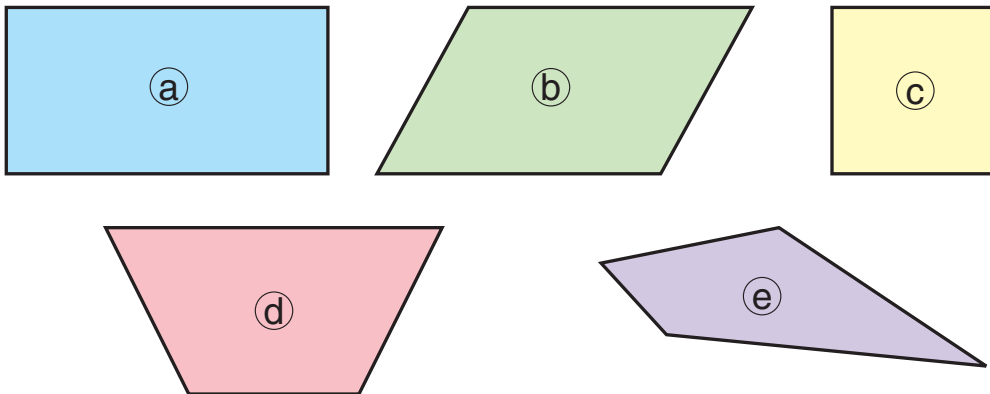


Problems 2



- 1 Separate the quadrilaterals (a) to (e) into two groups.

Let's explain how Eddy and Sandy divide the quadrilaterals into each group.



Eddy's group's idea

(a) (c)	(b) (d) (e)
---------	-------------

Explain

Sandy's group's idea

(c)	(a) (b) (d) (e)
-----	-----------------

Explain

Numbers up to 10000

Do you remember how to count numbers up to 1000?



▶▶ Count the number of grains of rice on a plate.



How many sets of 100 are there?

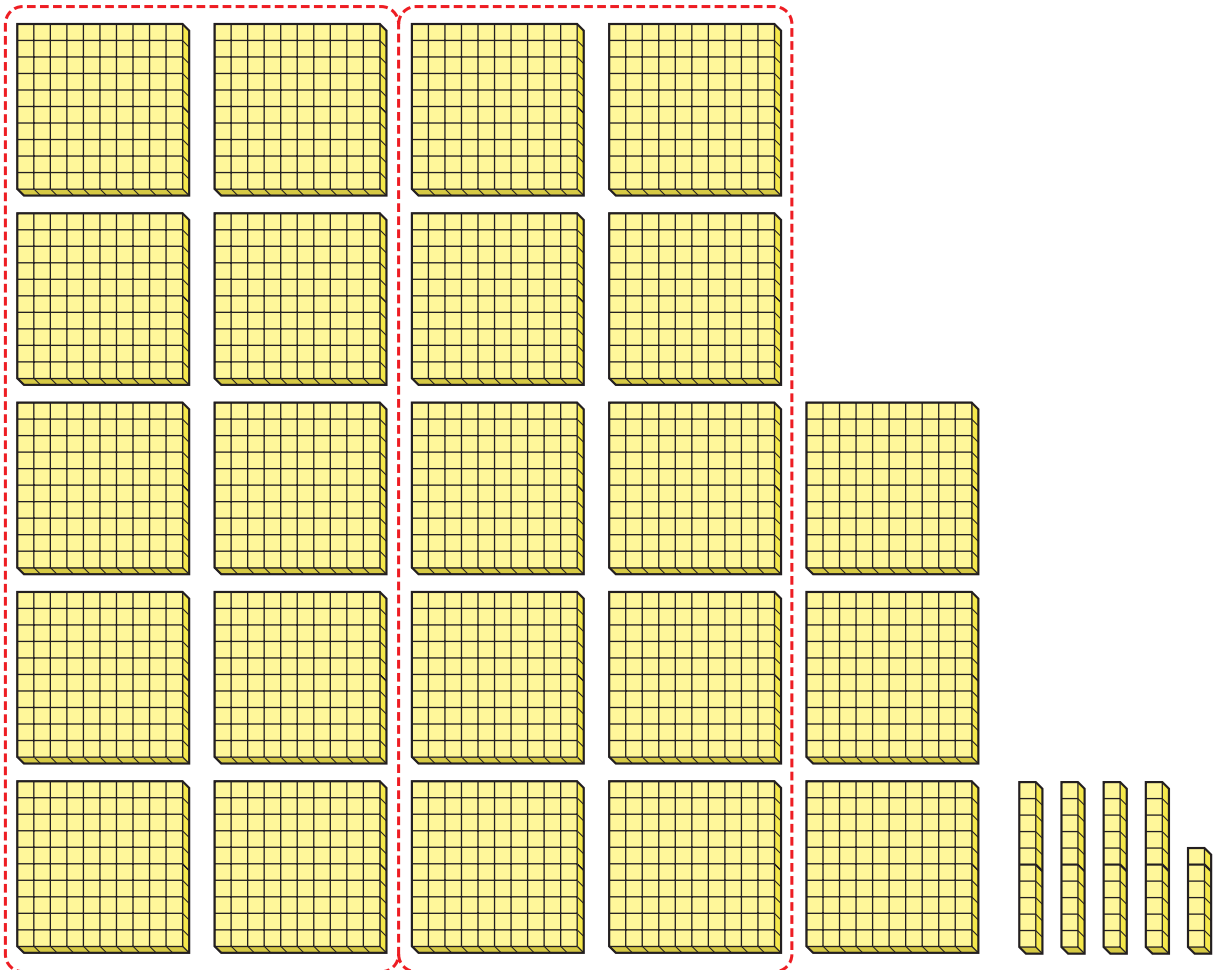
10 sets of 100 makes 1000.
How many sets of 1000 are there?



1 How many  are there as shown below?

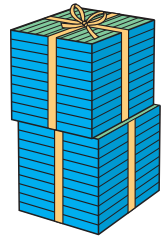
1 How many sets of 100 are there?

2 How many sets of 1000 can they make?



$$190 = \square - \square$$

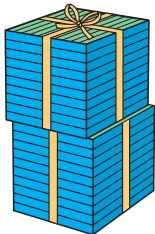
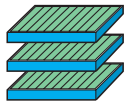
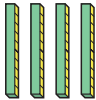
When there are 2 sets of 1000, we call it **two thousand**.



- 3 What can you say about the total number of grains of rice?



The position where 2 is in 2346, is called the **thousands place**.

Thousands place	Hundreds place	Tens place	Ones place
			
two thousand	three hundred	forty	six
2	3	4	6

The number that is made from the sum of two thousand, three hundred, forty and six is called **two thousand three hundred and forty-six**. And it is written as **2346**.

- 2 How many sheets of paper are there?

1



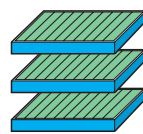
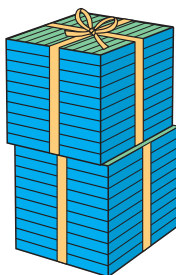
- 2 3 sets of 1 thousand and 9 sets of 1 hundred.
3 5 sets of 1 thousand and 7 sets of ten.

Thousands place	Hundreds place	Tens place	Ones place
1			
2			
3			

3 Count the number of .

1 How many are there?

2 How many sets of 100 are there to get 2300?



Thousands place	Hundreds place	Tens place	Ones place

4 Let's say the following numbers.

1 The number that is made from 7 sets of 1000.

2 The number that is made from 60 sets of 100.

5 Let's read the numbers below.

1 6472

2 3085

3 1509

4 7003

6 Let's write in numerals.

1 Three thousand seven hundred and forty-five

2 Seven thousand and twenty-eight

3 Three thousand and one

4 Five thousand

7 Let's write the following sets of numbers in numerals.

1 The number that is the sum of 3 sets of 1000, 9 sets of 100, 2 sets of 10 and 7 sets of 1.

2 The number that is the sum of 6 sets of 1000 and 2 sets of 10.

3 The number that is the sum of 9 sets of 1000 and 1 set of 1.

4 The number that is the sum of 18 sets of 100.

8

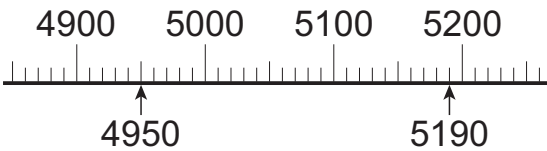
Which number is larger? Let's show it by using $>$ or $<$.

Which place do you compare first?



1

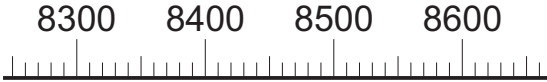
4950 5190



Thousands	Hundreds	Tens	Ones

2

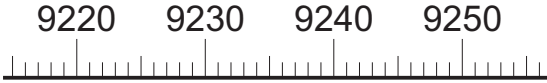
8340 8610



Thousands	Hundreds	Tens	Ones

3

9253 9238



Thousands	Hundreds	Tens	Ones

4

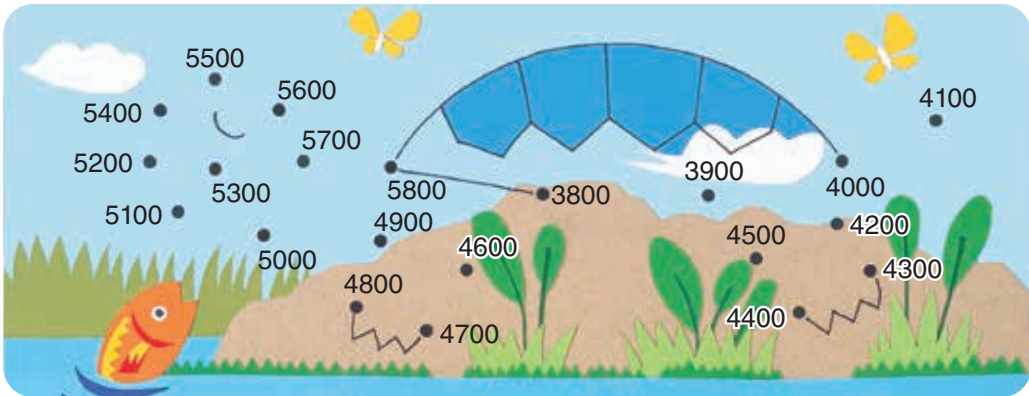
5769 5764



Thousands	Hundreds	Tens	Ones

9

Let's draw lines to connect these numbers from the smallest to the largest.

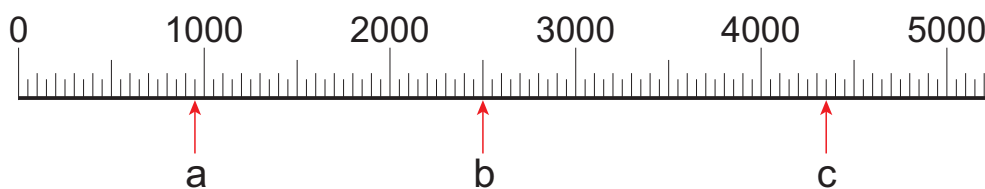


10 Let's find the answers using the number line below.

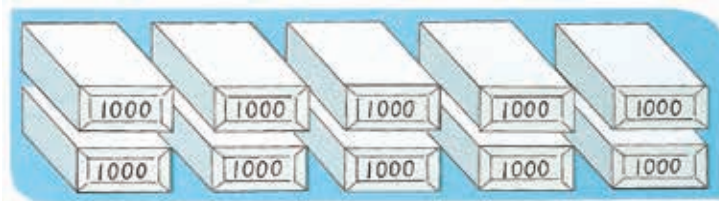
1 Let's read the numbers at a, b and c on the line shown.

2 Let's draw $\uparrow$ at the point on the line that shows 3200.

3 Let's write the number that is 800 larger than 3200. And let's write the number that is 300 smaller than 3200.



11 How many sheets of paper are there?

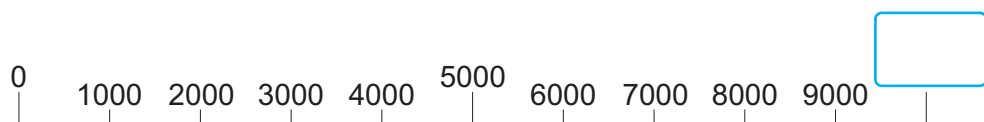


A thousand, two thousand, three thousand, ..., nine thousand, what's next?



The number for 10 sets of 1000 is called **ten thousand** and is written as 10000.

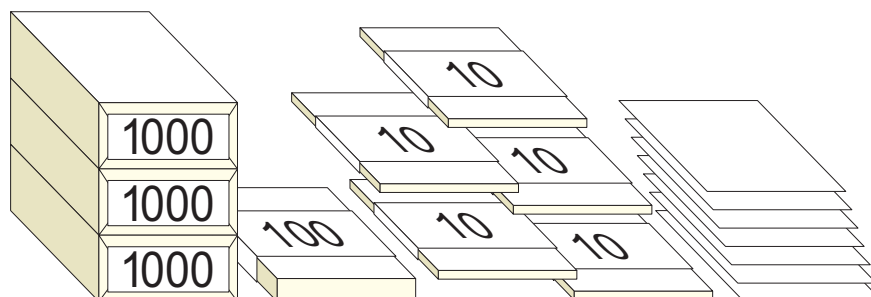
This is shown on the number line as, .





- 1** How many sheets of paper are there?

Page 191



- 2** Let's read the following numbers.

Page 192



- ① 7492 ② 2018 ③ 6501 ④ 8001

- 3** Let's write the following numbers.

Pages 192, 194



- ① The number that is the sum of 7 sets of 1000, 5 sets of 100 and 4 sets of 1.
- ② The number that is the sum of 50 sets of 100 and 50 sets of 1.
- ③ The number that is 1000 larger than 8000.
- ④ The number that is 500 smaller than 4000.

- 4** For the number 5800, write the correct numbers in the below.

Pages 192, 194



- ① 5 means that there are 5 sets of .
- ② This is a number that is made from sets of 100.
- ③ The number that is 200 larger than 5800 is the number that is made from sets of 1000.



Problems 1



1 Let's write the numbers below.

- ① The number that is the sum of 8 sets of 1000 and 4 sets of 100 and 6 sets of 1.
- ② The number that is the sum of 43 sets of 100 and 60 sets of 1.
- ③ The number that is 1000 larger than 5000.
- ④ The number that is 200 smaller than 7000.

2 For the number 7400, let's write the correct numbers in the below.

- ① 7 means that there are 7 sets of .
- ② This is a number that is sets of 100.
- ③ The number that is 400 smaller than 7400 is sets of 1000.

3 Let's write the correct numbers in the to make the answer 7620.

- ① The number that is sets of 10.
- ② The number that is the sum of sets of 1000 and sets of 100 and sets of 10.
- ③ The number that is the sum of sets of 1000 and sets of 10.
- ④ The number that is the sum of sets of 100 and sets of 10.



Problems 2



- ① Various numbers can be made from 4 number cards of 0, 1, 2 and 3.

0

1

2

3

- ① Let's write the smallest number.

(1) What is the numeral of the thousands place in this number? Let's explain why you choose this numeral as the number in the thousands place?

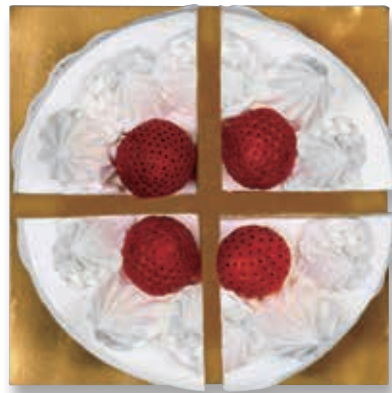
(2) What is the numeral of the hundreds place of this number? Let's explain why you chose this numeral as the number in the hundreds place?

- ② Let's write the second smallest number.



Have you ever seen it?

16



It's a fried fish!



I cannot divide them equally.



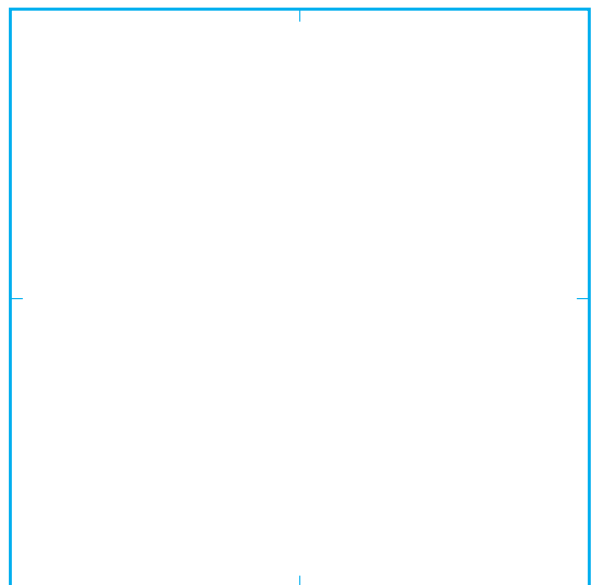
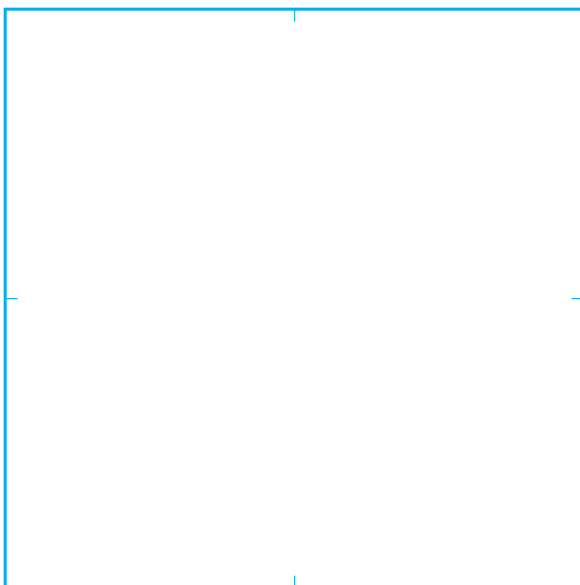
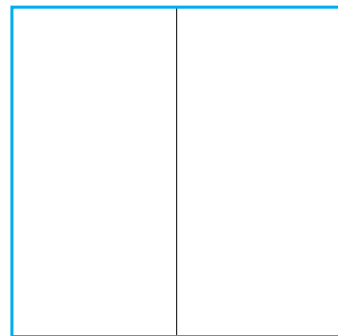
Representation of Fractions

1

Fold a sheet of square paper into two parts of the same size. There are various ways to fold the square paper.

Let's draw straight lines for folding.

Example



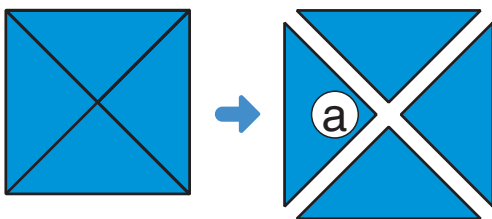


When a whole is divided into two equal parts, one part of it is called **one half** and is written as $\frac{1}{2}$.

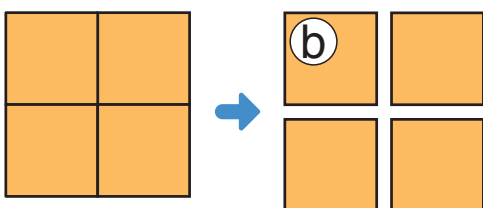
$$\frac{1}{2} \begin{matrix} 3 \\ 1 \\ 2 \end{matrix}$$

2 Divide the square paper into 2 parts of the same size.

1 Fold the square paper two times and divide into parts of the same size.



The size of the right triangle ① is 1 of parts of the original size of square paper.



The size of the square ② is 1 of parts of the original size of square paper.



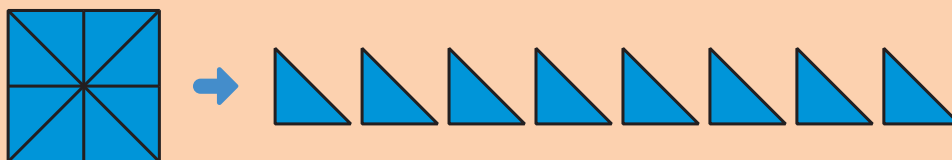
One part of a thing that is divided into 4 equal parts is called **one quarter** (or **one fourth**) and is written as $\frac{1}{4}$. Numbers like $\frac{1}{2}$ and $\frac{1}{4}$ are called **fractions**.

- 2** Fold the square paper in **1** one more time and cut into equal parts. How can we say the size which is 1 of how many parts of the original size of the square paper?
Let's explain your reasoning.

You can picture the shape if a folded line is drawn on the square paper before cutting.



Yamo's idea



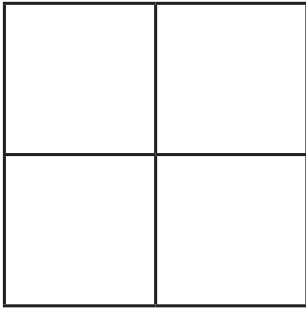
Fold the square paper made in **1** into half and open it. There are 8 triangles. Cut them up and put them on top of each other. They are all of the same size.

The size of the  is $\frac{1}{8}$ of the original square paper.

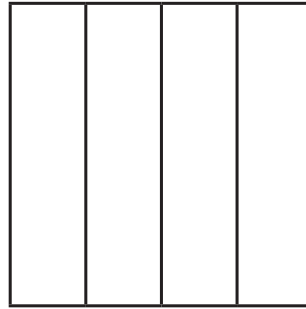
- 3** What happens to the other square paper after it is folded?

3 Let's colour $\frac{1}{4}$ of the original size.

1

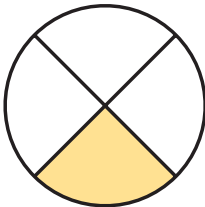


2

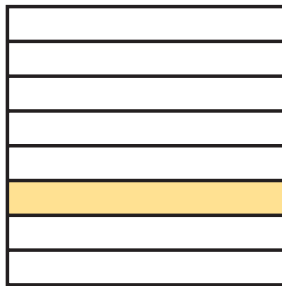


4 What fraction is the coloured part?

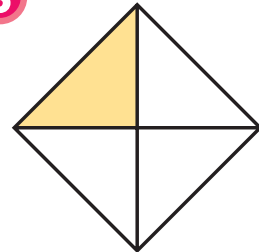
1



2



3



5 Miko and Emi found tapes at their homes.

They cut $\frac{1}{2}$ of the total length of each tape.

The next day in school, they decided to exchange the tapes. Then they got confused.

What made them confused?

Let's discuss

what they need

to do.

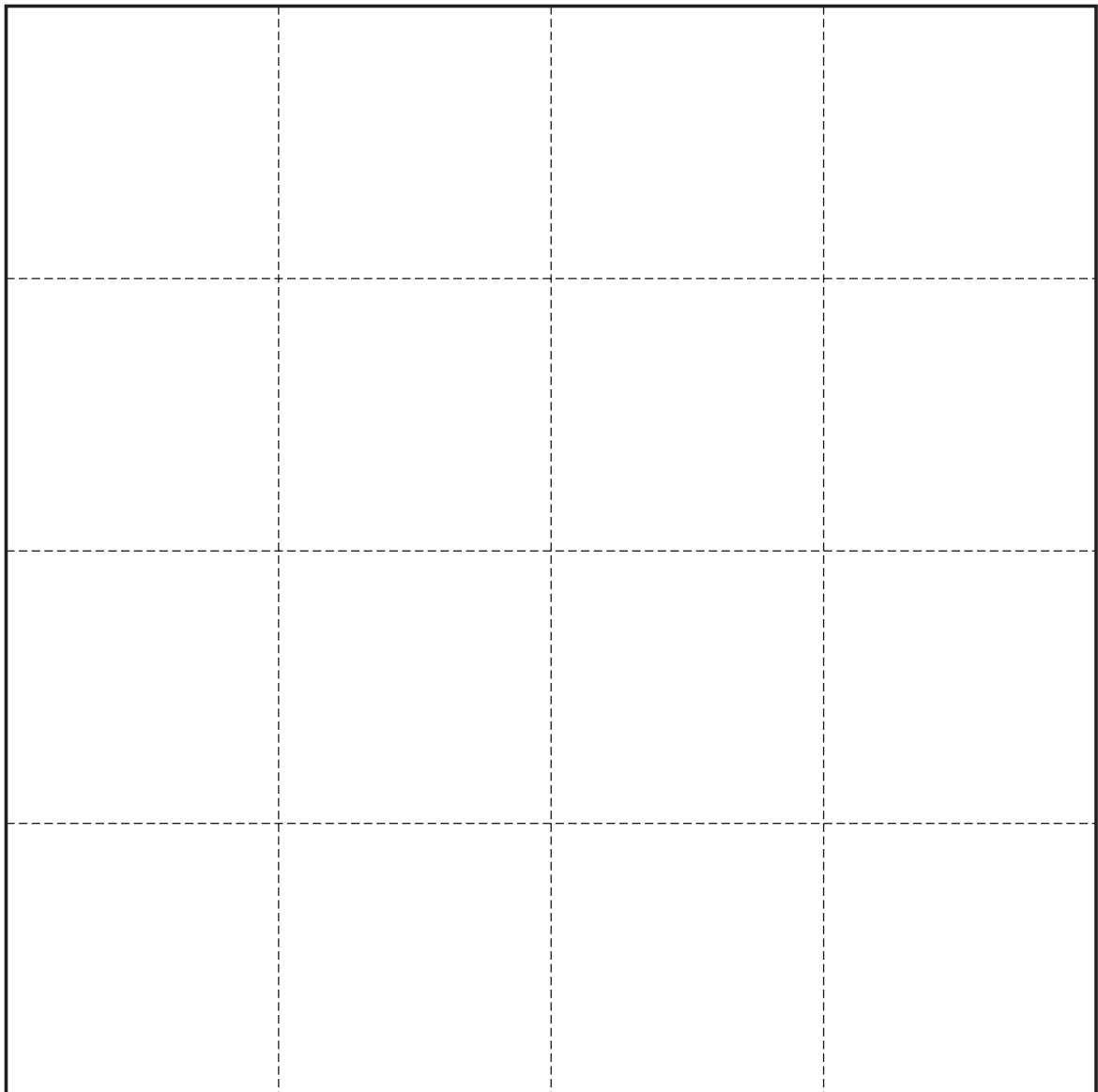




Problems



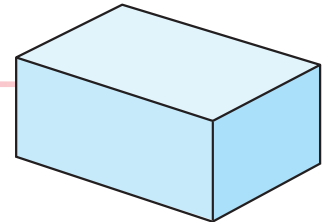
- 1 Think about dividing the square paper into 4 equal parts.
How can we make sure the size of each $\frac{1}{4}$ part of the square is of equal size?
Let's fold and then, draw the folding lines.



Shapes of Boxes



Make a Nice Box



- 1 Let's make a nice box.
- 1 Let's trace the flat parts of the box.

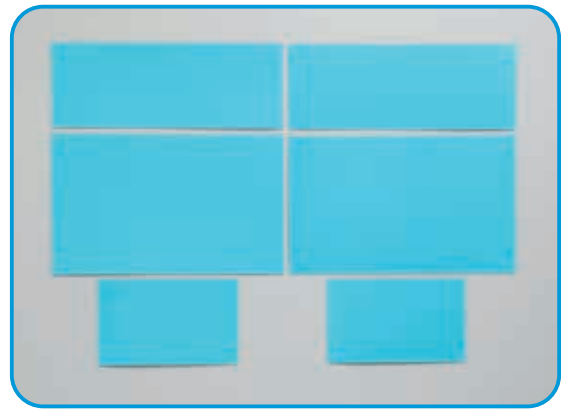


What is the shape of the flat parts? Let's look for the number and the size of those parts.

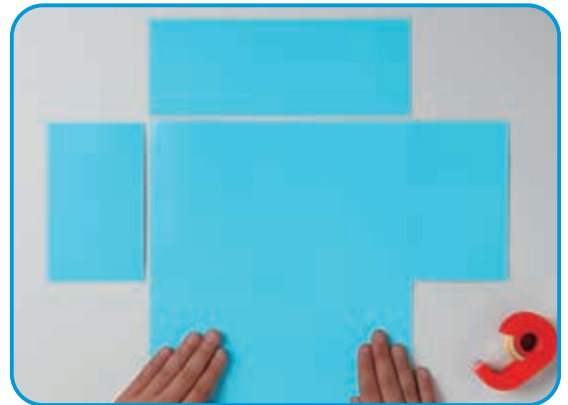


The flat part of a box is called a **face**.

② Let's cut out each face.



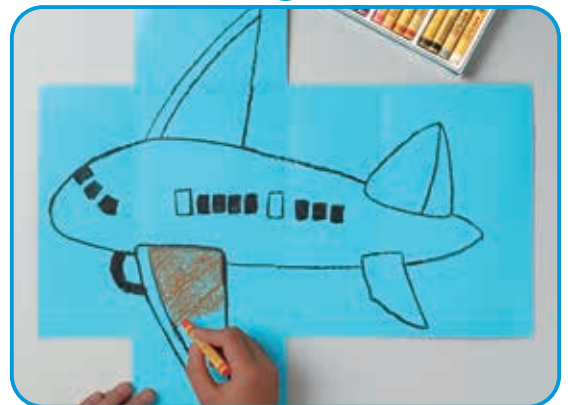
③ Let's connect the faces using tape, and make a figure out of the opened box.



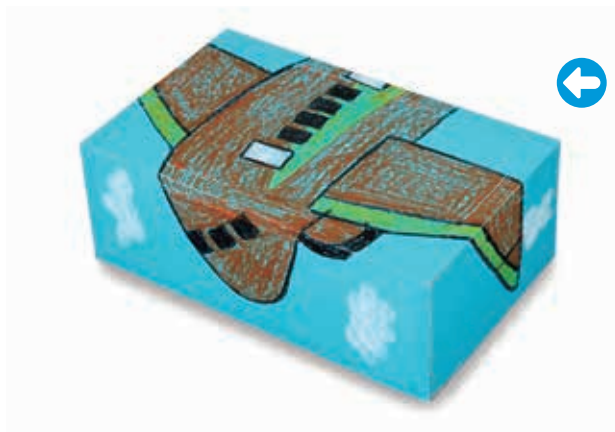
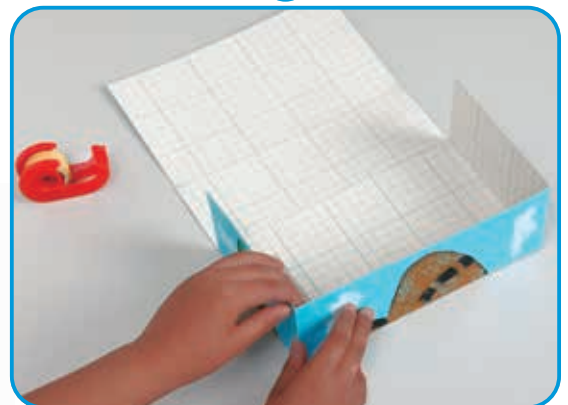
④ Let's draw pictures.



Let's draw a picture or pattern on the faces.



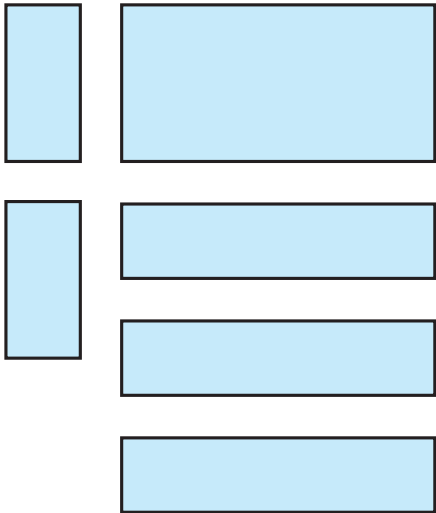
⑤ Let's fold the paper to make a box.



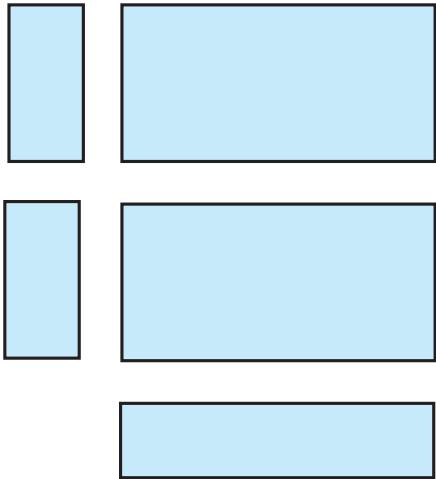
2

Let's find which set of papers from (a) to (d) will be a proper box after it is folded.

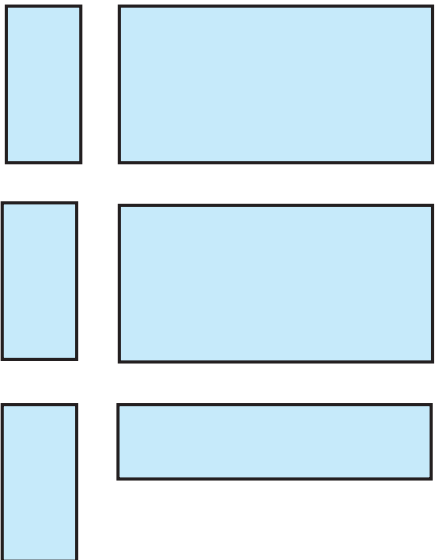
(a)



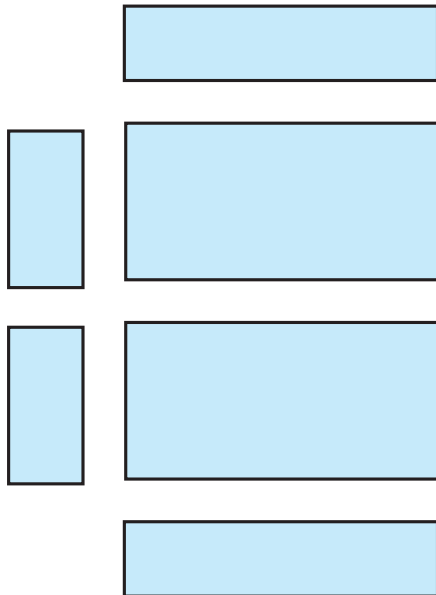
(b)



(c)



(d)

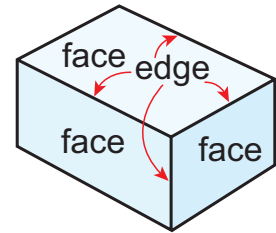


3

Let's think about the shape of the box.



Each straight line which is the boundary between two faces is called an **edge (side)**.

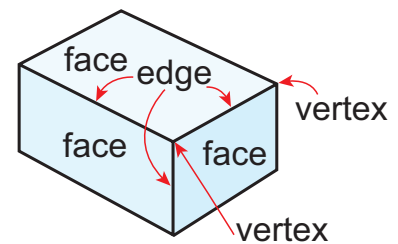


1

How many edges are there?



The point where 3 edges (sides) meet is called a **vertex**.



2

How many vertices are there?

4

Let's think about the shape of the dice.

1

What kind of quadrilateral is each face?

2

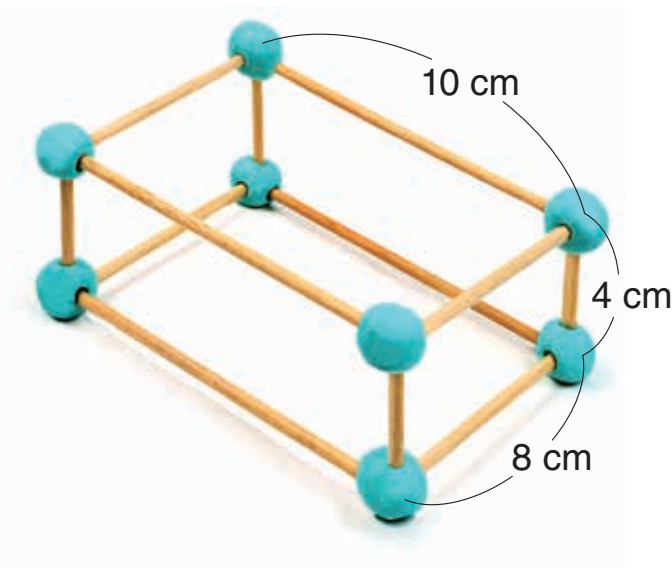
How many edges are there?

3

How many vertices are there?



5 Make a box with sticks and balls of clay.



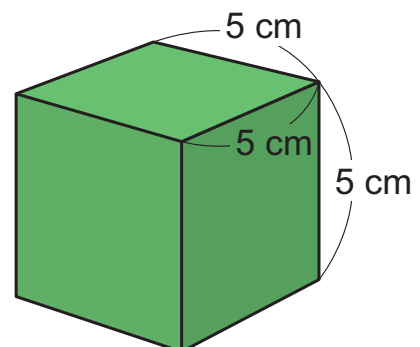
- 1** What are the lengths of sticks in cm and how many sticks are needed?

Lengths of sticks (cm)	Number of sticks
cm	sticks
cm	sticks
cm	sticks

- 2** How many balls of clay do you need?

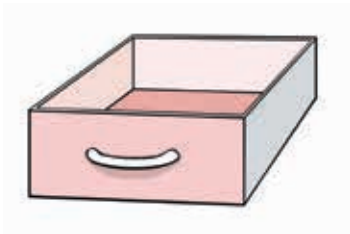
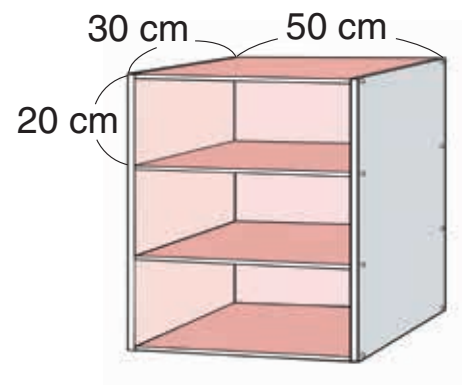
Exercise

The box on the right is made of sticks and balls of clay. How many sticks are needed? How many balls of clay are needed?

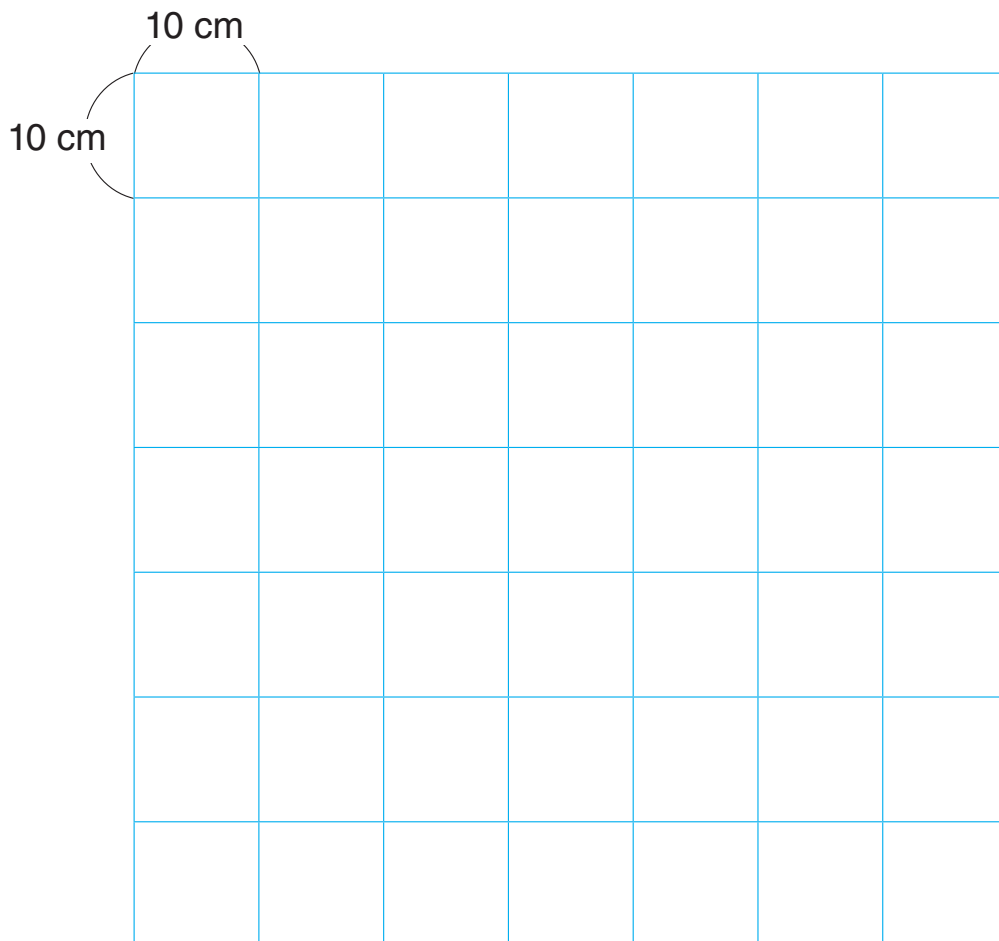


Making Drawer

- 6** There is a chest drawer as shown on the right.
 Let's think of drawers that will fit in the slots without a top.



How can you cut all the faces needed to make the drawer from the thick paper below? Let's draw the faces that you want to cut out.



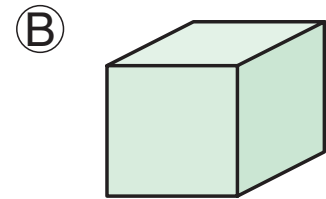
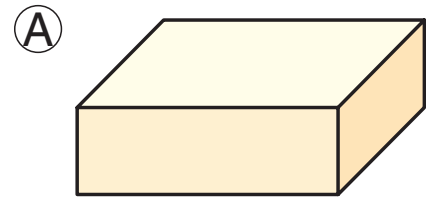


Problems

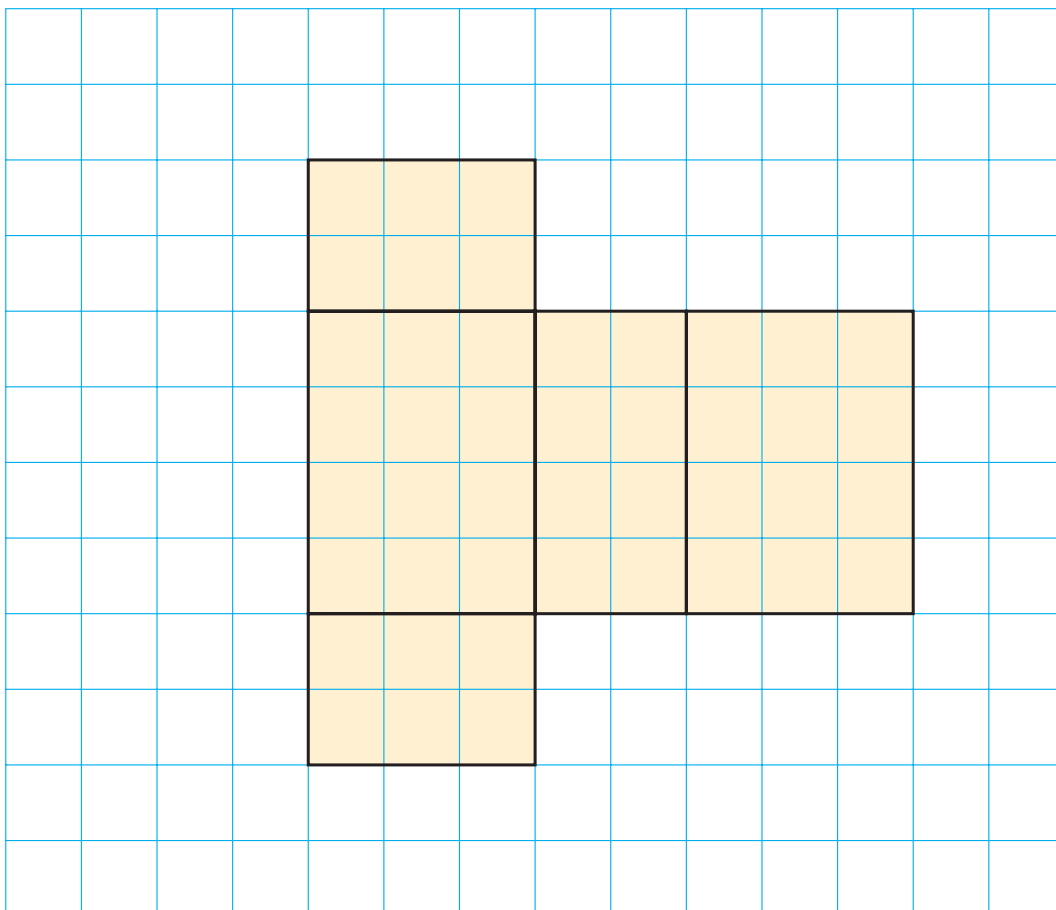


1 Let's answer the following questions about the shapes of these boxes.

- ① How many faces are there?
- ② How many edges are there?
- ③ How many vertices are there?
- ④ What are the shapes of the faces?



2 The drawing below shows a box that has been opened and flattened. One face is missing. Let's add the face that is needed to make a box.



Summary of the Grade 2

1

Let's make various numbers using the 4

number cards marked 1, 3, 5 and 9.



For example,
I can make

3 1 5 9

And let's make the following numbers.

The largest number

--	--	--	--

The smallest number

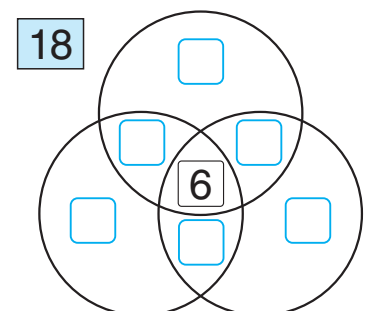
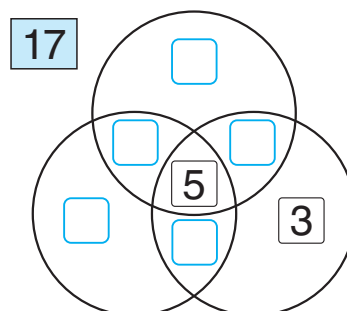
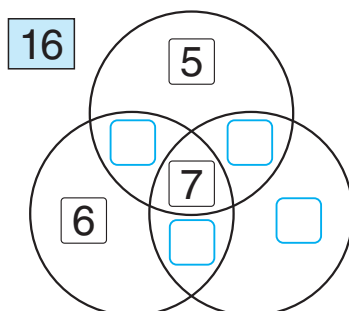
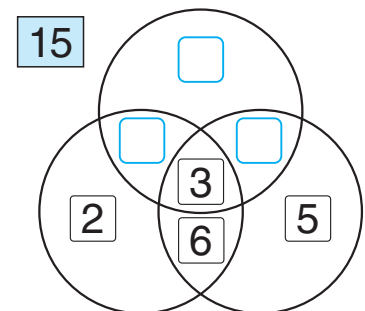
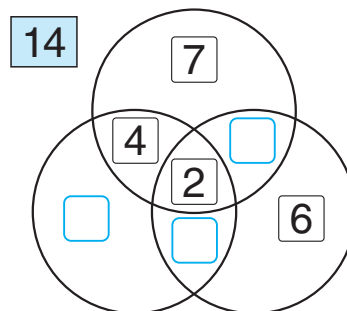
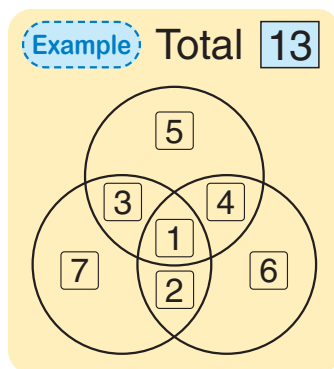
--	--	--	--

The third smallest number

--	--	--	--

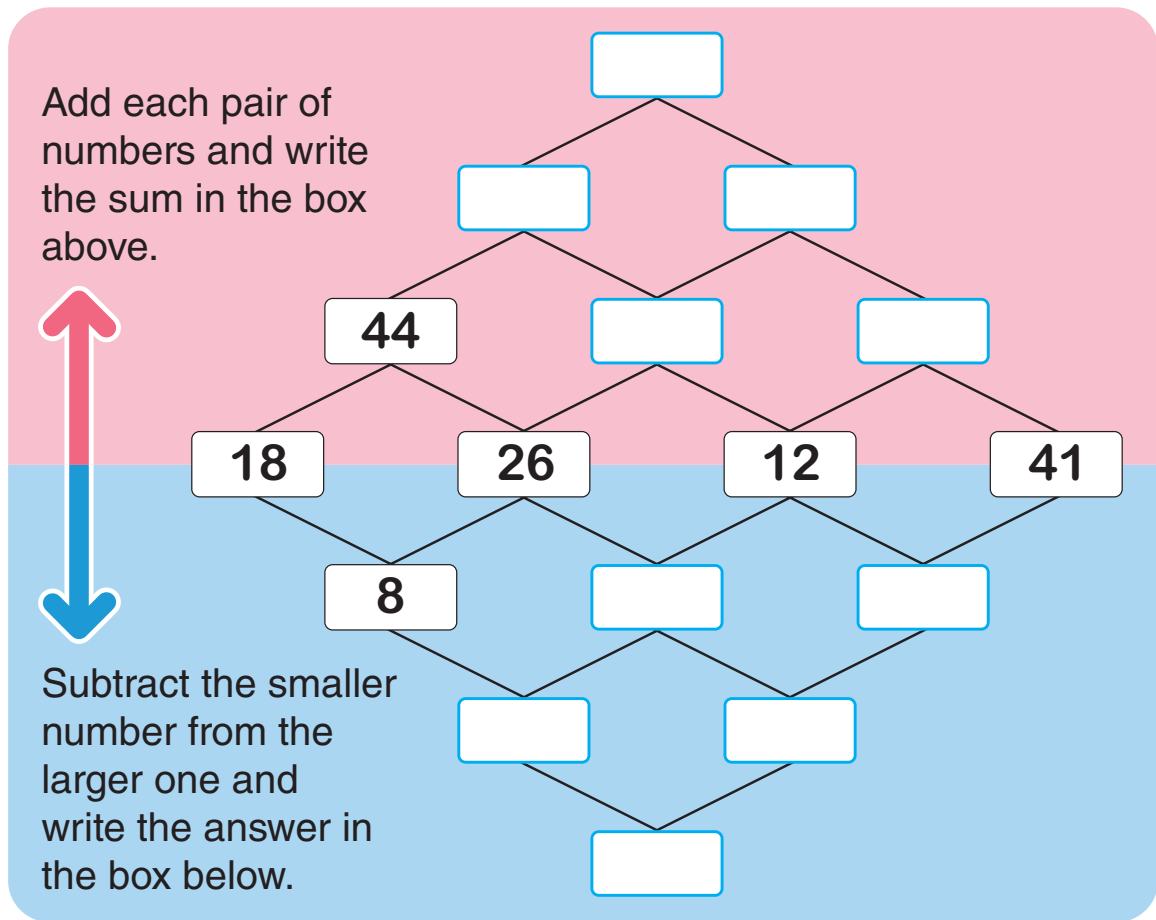
2

Fill the with a number to make the total of 4 numbers in each circle that is the same when using the numbers 1, 2, 3, 4, 5, 6 and 7 only once.



3

Let's find the answers.



4

Let's write 4 multiplication sentences where all answers have different numbers.

	×		=		
	×		=		
	×		=		
	×		=		

$3 \times 6 = 18$, $3 \times 9 = 27$,
 $5 \times 7 = 35$, $4 \times 9 = 36$.
 Oops! 3 is used twice.



$3 \times 6 = 18$,
 $3 \times 9 = 27$,
 $5 \times 7 = 35$.
 I can still use
 0, 4, 6 and 9.

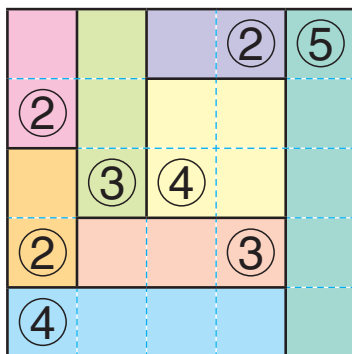


That means
 I can finish with
 $8 \times 8 = 64$.



- 5** Trace some of the dotted lines to make quadrilaterals. A number is corresponding to the number of squares. Look at the example, make quadrilaterals, and colour them.

Example



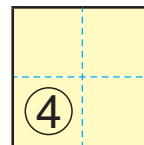
The spaces that are marked with

④ are shape of;

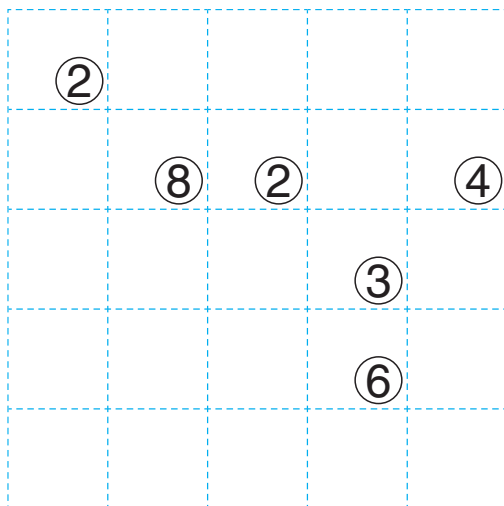
1×4 or 4×1



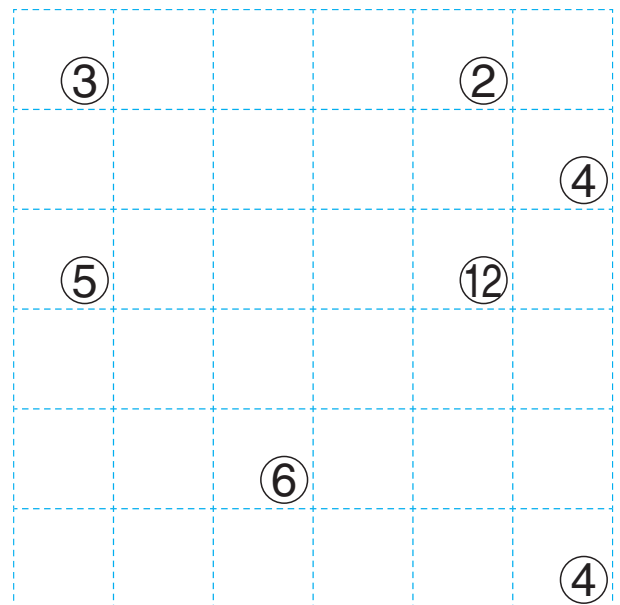
2×2



1

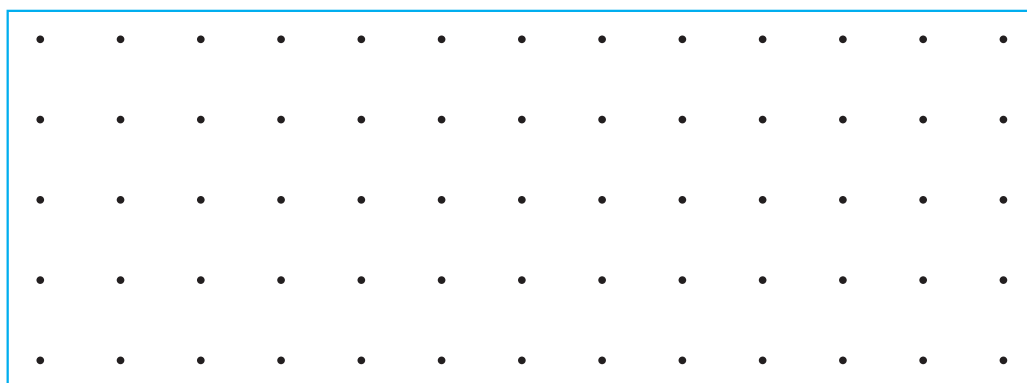


2



Write some questions by yourself and ask your friend.

- 6** Let's draw three different triangles and quadrilaterals by connecting dots with straight lines.



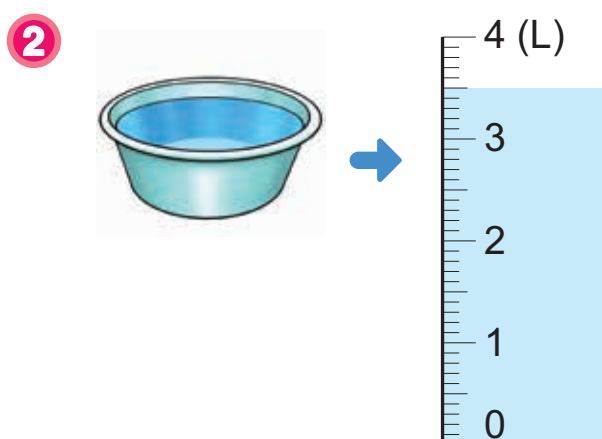
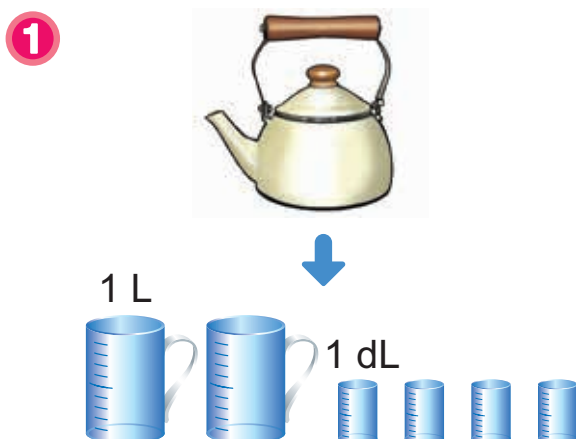
- 7** How long are lines **1** and **2** shown below, in total cm mm?

How long is the total length in mm?



- 8** A volume of the water was measured.

How much water is it in L and dL? And how much water is it in dL?



Multiplication Table



	Multiplicand								
	1	2	3	4	5	6	7	8	9
	1	2	3	4	5	6	7	8	9
	2	4	6	8	10	12	14	16	18
	3	6	9	12	15	18	21	24	27
	4	8	12	16	20	24	28	32	36
	5	10	15	20	25	30	35	40	45
	6	12	18	24	30	36	42	48	54
	7	14	21	28	35	42	49	56	63
	8	16	24	32	40	48	56	64	72
	9	18	27	36	45	54	63	72	81

Colour the answers using different colours as follows. Use grey if the number in the ones place is 0, and yellow if the number is 1.

When the multiplier is 1, there are 9 different colours.



If the multiplier is 5, how many colours will be used?



Multiplicand									
	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18

Multiplication Game ①

Ⓐ	4	7	9	3	6	8	
Ⓑ	8	32					
4				12			
9			81				
5						40	
7			63				
6					36		

Die for Ⓐ



Die for Ⓑ



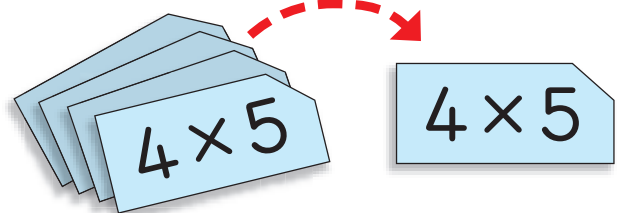
- ① Multiply the numbers in row Ⓐ by the numbers in column Ⓑ and write the answers in the squares. Then cover the answers by 30 counters.
- ② Roll the 2 dice at the same time. Multiply the 2 numbers and say the answer. When the answer is correct, you can remove a counter from that square.
- ③ If there is no counter on the square you choose, you have to put one of your counters on it.
- ④ Decide the number of times to roll the dice and play in turns.
- ⑤ A person who gets the most counters wins.

Multiplication Game ②

Enjoy with all your classmates.

- ① Fill in any number from the multiplication table into the table of 16 squares.
- ② A person chooses a card from a complete set of multiplication cards.
- ③ Do the multiplication on the card and write a ○ on the answer if it is in the table you have made.
- ④ Repeat. A person gets 1 point when four of ○ are lined up from top to bottom, from left to right, or from top right to bottom left.
- ⑤ Choose 40 cards in all. A person who gets the most points wins.

1	56	4	6
14	7	25	42
81	5	3	2
28	32	20	16



5	3	2
32	20	16



1	56	4	6
14	7	25	42
81	5	3	2
28	32	20	16

1 point

First Time

Second Time

Third Time

Fourth Time

- Let's try with a table of 25 squares.



What number should I write at the center of the table?

Answers

Chapter 1 Exercise: Page 21

1 ① 100 ② 10 ③ 254 ④ 308

2

① 213 214 215 216 217 218 219 220

② 470 480 490 500 510 520 530 540

3 ① $312 < 321$ ② $602 > 598$ ③ $880 > 808$

4 ① 60 ② 120 ③ 30 ④ 80

Chapter 1 Do you remember?: Page 21

① 9 : 25 ② 11 : 30 ③ 1 : 52

Chapter 1 Problems 1: Page 22

1 326 sheets

2 ① 100 ② 48 ③ 500

3 ① $523 < 532$ ② $803 > 796$ ③ $420 > 402$

4 The number in the hundreds place is the same for both. When we compare the numbers in the tens place, the red team's number is larger.

Chapter 1 Problems 2: Page 23

① ①	Number of 10 kina notes	1	2	3	4
	Number of 2 kina notes	4	3	2	1
	Sum of money	18	26	34	42

② She paid with 3 notes of 10 kina, and received a change of 5 kina.

She paid with 2 notes of 10 kina and 3 notes of 2 kina and received a change of 1 kina.

Chapter 3 Exercise: Page 36

1 ① 24 ② 1 ③ 12 ④ 12, 0

⑤ 1 minute ⑥ 1 hour ⑦ 2 ⑧ 12 hours

2 ① 9 : 35 ② 45 minutes

Chapter 3 Do you remember?: Page 36

(1) ① 5 ② 10 ③ 14 ④ 12

(2) $7 + 6 = 13$ 13 balloons

Chapter 3 Problems 1: Page 37

1 60 minutes, 3 hours 45 minutes, 15 hours, 1 day

2 ① 3 hours ② 2:00 in the afternoon

③ 11:00 in the morning ④ 50 minutes

3 2 hours 2 minutes

Chapter 3 Problems 2: Page 38

1 ① 7:00 in the afternoon

② 3:00 in the afternoon

Chapter 4 Exercise: Page 48

1 ① 99 ② 83 ③ 73 ④ 87

⑤ 38 ⑥ 37 ⑦ 91 ⑧ 82

⑨ 90 ⑩ 52 ⑪ 60 ⑫ 30

2 19 talapias

3 40 flowers

4 65 cards

Chapter 4 Exercise: Page 55

	6	7
+	2	8
	9	5

1 (1) 5, 1 (2) 1 (3) 95

2 ① 68 ② 77 ③ 55 ④ 87

⑤ 63 ⑥ 76 ⑦ 93 ⑧ 60

⑨ 27 ⑩ 53 ⑪ 55 ⑫ 80

⑬ 900 ⑭ 1000 ⑮ 533 ⑯ 360

3 ① 86 ② 67 ③ 112

Chapter 4 Do you remember?: Page 55

(1) ① 3 ② 1 ③ 6 ④ 9

(2) $13 - 5 = 8$ Answer 8 talapias

Chapter 4 Problems 1: Page 56

1 ① 77 ② 69 ③ 86 ④ 81

⑤ 83 ⑥ 84 ⑦ 40 ⑧ 70

⑨ 129 ⑩ 140 ⑪ 127 ⑫ 102

⑬ 700 ⑭ 1000 ⑮ 524 ⑯ 870

2 60 children

3 123 kina

4 ① 70 Carried number is not added.

② 139 1 ten is added to the tens place where there is no carried number indeed.

③ 41 A number 6 is written in the wrong column.

④ 31 Calculation in the tens place is not correct.

Chapter 4 Problems 2: Page 57

- ① ① 63 paper birds ② 150 paper birds

② (Example)

She is trying to find out how many more paper birds did she make on Sunday than the number of paper birds she made on Friday.

Chapter 5 Exercise: Page 62

- ① ① 43 ② 40 ③ 32
④ 29 ⑤ 13 ⑥ 3
⑦ 16 ⑧ 77 ⑨ 19

② 29 children

Chapter 5 Exercise: Page 71

	7	3
-	2	6
	4	7

- ① (1) 1, 13, 7 (2) 6, 4 (3) 47
② ① 26 $26 + 32 = 58$ ② 22 $22 + 11 = 33$
③ 68 $68 + 19 = 87$ ④ 18 $18 + 26 = 44$
⑤ 63 $63 + 17 = 80$ ⑥ 36 $36 + 8 = 44$
⑦ 91 $91 + 41 = 132$ ⑧ 60 $60 + 63 = 123$
⑨ 73 $73 + 75 = 148$ ⑩ 68 $68 + 86 = 154$
⑪ 57 $57 + 48 = 105$ ⑫ 97 $97 + 9 = 106$
⑬ 100 $100 + 300 = 400$
⑭ 500 $500 + 500 = 1000$
⑮ 317 $317 + 7 = 324$ ⑯ 652 $652 + 19 = 671$

③ 18 candies

Chapter 5 Do you remember?: Page 71

- ① A
② A

Chapter 5 Problems 1: Page 72

- ① ① 25 $25 + 42 = 67$ ② 29 $29 + 30 = 59$
③ 80 $80 + 16 = 96$ ④ 79 $79 + 19 = 98$
⑤ 52 $52 + 38 = 90$ ⑥ 6 $6 + 46 = 52$
⑦ 75 $75 + 7 = 82$ ⑧ 27 $27 + 3 = 30$
⑨ 81 $81 + 81 = 162$ ⑩ 39 $39 + 95 = 134$
⑪ 77 $77 + 27 = 104$ ⑫ 96 $96 + 9 = 105$
⑬ 418 $418 + 7 = 425$ ⑭ 809 $809 + 3 = 812$
⑮ 719 $719 + 49 = 768$ ⑯ 309 $309 + 31 = 340$

② School bag is 67 kina more expensive.

③ 32 boys

④ ① 24 Forgetting the borrowing

② 22 Subtracting although there is no borrowing

③ 88 Writing 6 in the wrong place

④ 71 Wrong calculation in the tens place

Chapter 5 Problems 2: Page 73

① Example (a) 4, (b) 8

① (a) 2, (b) 4 ② (a) 0, (b) 4

② Example

$$\begin{array}{r} 45 \\ + 28 \\ \hline 73 \end{array}$$

4	
+	
	8
7	3

$$\begin{array}{r} 76 \\ - 48 \\ \hline 28 \end{array}$$

7	
-	
	8
2	8

Chapter 6 Exercise: Page 87

① ① A 7 cm 5 mm, B 10 cm

② A 75 mm, B 100 mm

② ① Red tape; 1 m 30 cm, Blue tape 2 m 40 cm

② Red tape; 130 cm, Blue tape 240 cm

Chapter 6 Do you remember?: Page 87

① Dogs ② 3 children

Chapter 6 Problems 1: Page 88

① ① mm ② m ③ cm ④ m

② 3 m, 2 m 80 cm, 7 cm

③ ① 12 cm 2 mm ② 15 cm 8 mm

③ 16 cm 1 mm ④ 21 cm 8 mm

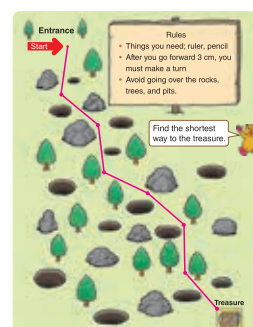
⑤ 44 m 12 cm ⑥ 2 m 6 cm

④ A 8 cm 4 mm, B 8 cm 2 mm

① A is longer 2 mm ② 16 cm 6 mm

Chapter 6 Problems 2: Page 89

① 21 cm



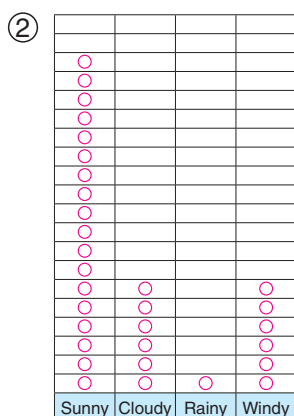
Chapter 6 Review: Page 90

- ① ① 47 groups ② 4 groups ③ 473 dots
- ② ① 3 o'clock ② 8:20 ③ 11:45 ④ 5:33
- ③ ① 79 ② 89 ③ 78 ④ 72
⑤ 90 ⑥ 63 ⑦ 113 ⑧ 102
⑨ 700 ⑩ 1000 ⑪ 870 ⑫ 592
- ④ ① 35 ② 12 ③ 7 ④ 14
⑤ 63 ⑥ 69 ⑦ 78 ⑧ 64
⑨ 600 ⑩ 400 ⑪ 442 ⑫ 658
- ⑤ 19 pages
- ⑥ ① 12 cm, 120 mm ② 7 cm 6 mm, 76 mm
- ⑦ ① m ② mm

Chapter 7 Problems 1: Page 95

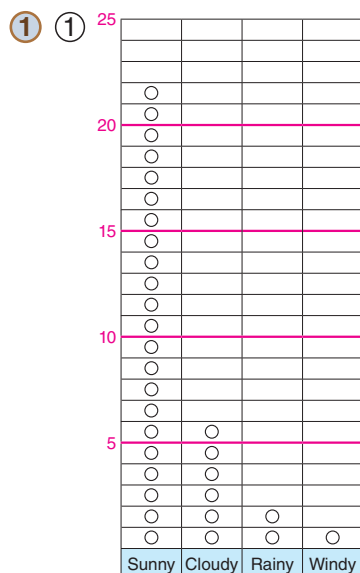
- ①

Sunny	Cloudy	Rainy	Windy
18 days	6 days	1 days	6 days



- ③ Sunny days are more than 12 days.

Chapter 7 Problems 2: Page 96



- ② (1) Cloudy
(2) Windy 5 days
(3) There are more sunny days.

The graph shows the decreasing order from left to right.

Chapter 8 Exercise: Page 105

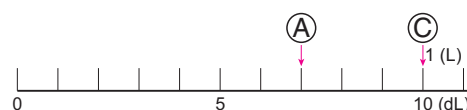
- ① ① dL measurement cup
② 1 L measurement cup
- ② ① 10 ② 1000 ③ 100
- ③ ① 2 L 8 dL ② 4 dL

Chapter 8 Problems 1: Page 106

- ① ① 2 L 4 dL ② 7 dL
③ 1 L 3 dL = 13 dL ④ 2 L 8 dL = 28 dL
- ② ① 1 L 4 dL > 13 dL ② 2 L < 21 dL
③ 3 L 2 dL > 31 dL ④ 1 L 3 dL > 1000 mL
- ③ ① 7 dL ② 3 L 5 dL ③ 1 L 7 dL
④ 5 dL ⑤ 2 L 1 dL ⑥ 1 L
⑦ 6 L 1 dL ⑧ 3 L 1 dL ⑨ 2 L 8 dL
- ④ Express both amount and length in number, both have units.

Chapter 8 Problems 2: Page 107

- ① ① 8 dL or 9 dL



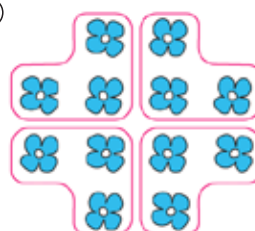
- ② 8 dL, ⑧ is more than 7 dL and less than 9 dL

Chapter 10 Problems 1: Page 129

- ① ① 5 packs, 2 dL, 10 dL $5 \times 2 = 10$
② 3 packs, 5 fish, 15 fish $3 \times 5 = 15$
③ 4 pieces, 3 cm, 12 cm $4 \times 3 = 12$
- ② ① 5×6 ② 5 times ③ 30 cockles

Chapter 10 Problems 2: Page 130

- ① ①



- ② $2 \times 6 = 12$
 ③ $2 \times 6 = 12$, $2 \times 4 + 4$, $2 + 4 + 4 + 2$

Chapter 11 Exercise: Page 144

- ① ① 4 ② 15 ③ 21 ④ 18
 ⑤ 16 ⑥ 35 ⑦ 45 ⑧ 4
 ⑨ 6 ⑩ 9 ⑪ 24 ⑫ 14
 ⑬ 32 ⑭ 27 ⑮ 20 ⑯ 18
 ⑰ 10 ⑱ 16 ⑲ 20 ⑳ 10
 ㉑ 30 ㉒ 24 ㉓ 8 ㉔ 2

- ② 8 children
 ③ 21 eggplants

④ ①

Multiplier	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45

②

Multiplicand Multiplier	1	2	3	4	5	6	7	8	9
4	4	8	12	16	20	24	28	32	36
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
5	5	10	15	20	25	30	35	40	45

- ③ Example;

Multiplicand Multiplier	1	2	3	4	5	6	7	8	9
5	5	10	15	20	25	30	35	40	45
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36

Chapter 12 Exercise: Page 156

- ① ① 12 ② 24 ③ 7 ④ 2
 ⑤ 42 ⑥ 36 ⑦ 56 ⑧ 81
 ⑨ 40 ⑩ 5 ⑪ 21 ⑫ 48
 ⑬ 30 ⑭ 8 ⑮ 54 ⑯ 45
 ⑰ 72 ⑱ 63 ⑲ 27 ⑳ 4
 ㉑ 9 ㉒ 49 ㉓ 18 ㉔ 8

- ② 24 doughnuts

Chapter 12 Problems 1: Page 157

- ① ① 36 ② 3 ③ 32 ④ 18
 ⑤ 35 ⑥ 6 ⑦ 7 ⑧ 54

- ⑨ 72 ⑩ 48 ⑪ 63 ⑫ 56

- ② ① Omission ② $8 \times 5 = 40$ 40 oranges

- ③ ① $8 \times 2 + 7$, $3 \times 7 + 2$, $5 \times 3 + 4 \times 2$

Answer 23 dots

- ② $4 \times 4 + 3 \times 3$, $7 \times 3 + 4$, $4 \times 7 - 3$

Answer 25 dots

- ④ Example; There are 7 cookies on each dish.

There are 3 dishes. How many cookies are there altogether?

Chapter 12 Problems 2: Page 158

- ① ① Omission

- ② Find answer of multiplication table of 10 is to add the answer of multiplication table of 3 and answer of multiplication table of 7.

Chapter 13 Problems 1: Page 168

- ① (a) ③ : Starting from $2 \times 2 = 4$, and increasing by 2s toward the right.
 (b) ① : Starting from $2 \times 6 = 12$, and increasing by 2s toward the right.
 (c) ② : Starting from $6 \times 2 = 12$, and increasing by 6s toward the right.
 (d) ④ : Starting from $6 \times 6 = 36$, and increasing by 6s toward the right.

- ② 3×8 , 4×6 , 6×4 , 8×3

Chapter 13 Problems 2: Page 169

- ① $a = 100$, $b = 110$, $c = 120$, $d = 110$, $e = 121$,
 $f = 132$, $g = 120$, $h = 132$, $i = 144$

Chapter 13 Review: Page 170

- ① ① 2 L 1 dL (21 dL) ② 1 L 9 dL (19 dL)

- ② ① 8 ② 5 ③ 21 ④ 6
 ⑤ 54 ⑥ 16 ⑦ 42 ⑧ 24
 ⑨ 56 ⑩ 45 ⑪ 18 ⑫ 25
 ⑬ 12 ⑭ 64 ⑮ 9 ⑯ 14
 ⑰ 24 ⑱ 6 ⑲ 27 ⑳ 72

- ③ 42 apples

- ④ Example; There are 8 candies on each dish.

There are 6 dishes. How many candies are there altogether?

Chapter 14 Exercise: Page 186

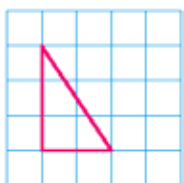
- 1 ① 3 sides, 3 vertices
② 4 sides, 4 vertices
- 2 Rectangle (e), Square (c), Right triangle (f)

Chapter 14 Do you remember?: Page 186

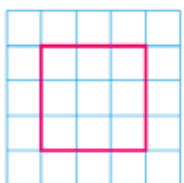
- ① 100 ② 10 ③ 325 ④ 609

Chapter 14 Problems 1: Page 187

- 1 Rectangle (f), Square (e), Right triangle (d)
- 2 ① Rectangles ② Squares
③ Right triangles
- 3 ① 14 squares ② 16 right triangles
- 4 ① Example;



- ② Example;



Chapter 14 Problems 2: Page 188

- 1 Eddy's group's idea
Explanation; (a) and (c) are the shapes whose 4 corners are all right angles.
- Sandy's group's idea
Explanation; The shape (c) is the only shape in which all 4 sides are the same length.

Chapter 15 Exercise: Page 195

- 1 3157 sheets
- 2 ① Seven thousand four hundred ninety two
② Two thousand eighteen
③ Six thousand five hundred and one
④ Eight thousand and one
- 3 ① 7504 ② 5050 ③ 9000 ④ 3500
- 4 ① 1000 ② 58 ③ 6

Chapter 15 Problems 1: Page 196

- 1 ① 8406 ② 4360 ③ 6000 ④ 6800
- 2 ① 1000 ② 74 ③ 7

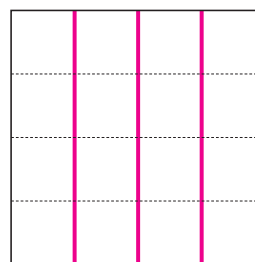
- 3 ① 762 ② 7, 6, 2
③ 7, 62 ④ 76, 2

Chapter 15 Problems 2: Page 197

- 1 ① 1023
(1) 1 because it is the second smallest number after 0.
(2) 0 because it is the smallest number of the remaining 3 numbers (0, 2, and 3)
- ② 1032

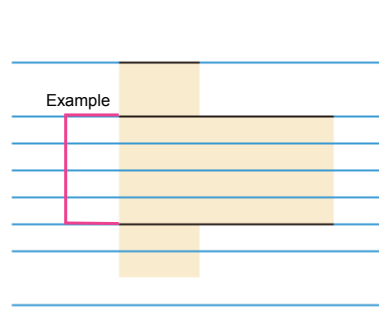
Chapter 16 Problems: Page 203

- 1 Example;



Chapter 17 Problems: Page 210

- 1 ① 6 faces ② 12 edges ③ 8 vertices
④ (A): rectangle (B): square
- 2



Glossary

Borrowing is when the top digit is smaller than the bottom and 1 is moved from tens place to ones place as 10 when we subtract in a column. . . . 60

Carrying is when we add numbers in a column, and when the total is more than 10, group of 10 is formed and moved from ones' place value to the tens place value. 44

Centimetre (cm) is a unit of length. It is used to measure shorter distance.

Decilitre (dL) is another unit of volume. 1 dL is when 1 L is divided into 10 equal units of amount, the amount of one unit is called 1 decilitre. . . . 100

Duration is how long it takes for something to last. 30

Edge (side) is the boundary or straight line between two faces of a box. 207

Face is the flat part of a box. 204

Fraction is when a whole is divided into different equal parts and each part is represented by numbers like $\frac{1}{2}$ and $\frac{1}{4}$. The numbers at the top represent part taken from the whole and the number at the bottom is the number of parts the whole is divided into. 201

Graph is also a tool used to organize data, it is made up of bars, lines or points to show relationship within the data. 94

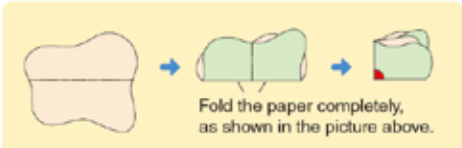
Hundreds place is the position where 2 is in 235. It tells us there are 2 groups of 100 in this number 235. 11

Litre (L) is used as unit of volume. Litre expresses amount of water. 99

Metre (m) is another unit of length. 100 cm is called 1 metre. 82

Millilitre (mL) is a smaller amount of volume which expresses amounts smaller than L or dL.	104
Millimetre (mm) is a unit of length. It is used to measure very small measurement.	79
Multiplicand is the number to be multiplied with.	140
Multiplication is the calculation that is used to get a total when there is the same number for each set.	123
Multiplier is the number we multiply.	140
One half is one part of a whole when a whole is divided into two equal parts.	200
One hour is 60 minutes. It means the duration for the long hand of the clock has moved 60 scales forward.	31
One minute is 60 seconds. It means the duration for the long hand on the clock to move one scale forward.	30
One quarter (or one fourth) is one part of a whole when it is divided into 4 equal parts.	201
Quadrilateral (or quadrangular) is a shape enclosed by 4 straight lines.	175
Rectangle is a quadrilateral in which all 4 corners are right angles.	180
Regrouping is also carrying. When adding in column and if sum of digits is greater than 9, we regroup and carry the extra 10s to the next value to the left.	44

Right angle is when a corner forms a L shape. It is formed by two walls meeting or by folding the paper as shown. 178



Right triangle is a triangle that has a right angle. 183

Ruler is a tool use to measure length which fall between units such as cm or mm. 79

Side is the straight line that connects two vertices. 175

Square is a quadrilateral in which all 4 corners are right angles and all 4 sides are the same length. 182

Straight line is like a piece of string pulled tight. 172

Table is a tool used to organize data, it is made up of columns and rows. . . 93

Ten thousand is the number for 10 sets of 1000. It is the digit represented by 1 and four zeros, 10 000. 194

Thousand is the sum of 10 sets of 100. It is represented by the number 1 with three zeros, makes it 1000. 15

Thousands place is the position where 2 is in 2346, it tells us there are 2 sets of 1000. 191

Time is like a clock that helps us know when different things happen. . . . 30

Triangle (or triangular) is a shape enclosed by 3 straight lines. 175

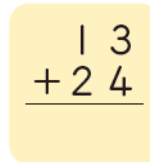
Unit is size of the basic measure. 77

Unit measuring cup is used to measure quantities and it comes in standard units. 99

Vertex are corner points of triangles and quadrilaterals. 175

Vertex is the point where edges (sides) meet. 207

Vertical form is putting numbers in the same place values in the same columns. For example, $13 + 24$ written in vertical form looks like this:


$$\begin{array}{r} 13 \\ + 24 \\ \hline \end{array}$$

. 42

24 hours is 1 day. It means the duration of one day. 32

National Mathematics Grade 2 Textbook Development Committee

The National Mathematics Textbook was produced under the Department of Education and Gakkotosho Joint Project for the development of Mathematics teaching materials. The textbook was developed by Curriculum Development Division (CDD) under Department of Education in partnership with Global Partnership for Education (GPE) - Save the Children as Grant Agent through the Program for Boosting Education Standards Together in PNG (BEST PNG Program). The following stakeholders have contributed to develop, manage, write, validate and make quality assurance for development and quality of the Textbook and Teacher's Manual for the students and teachers of Papua New Guinea.

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