11

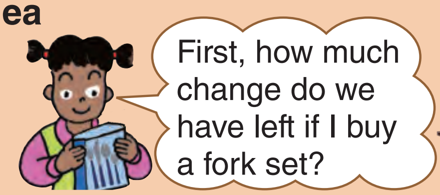
Expressions and Calculations

1 Represent the Expressions

1 Jimmy's mother and sister went shopping with 500 kina. They bought a fork set for 120 kina and a rice cooker for 360 kina at a supermarket. How much change do they have left?

①

Jimmy's sister's idea

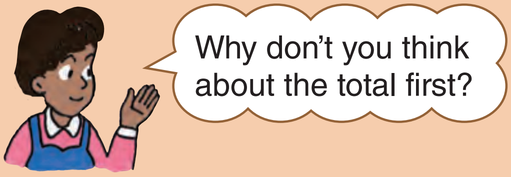


Let's write Jimmy's sister's idea as a mathematical sentence.

$500 - \square = \square$ $\square - 360 = \square$

②

Jimmy's mother's idea



Let's write his mother's idea as a mathematical sentence.

$120 + 360 = \square$ $500 - \square = \square$

Let's think about how to represent an expression and the order of calculations.

③ Let's write Jimmy's sister's idea as a mathematical sentence.

$500 - \boxed{} - \boxed{} = \boxed{}$

④ Let's write Jimmy's mother's idea as a mathematical sentence.

$500 - (\boxed{}) = \boxed{}$

The money that you have Total cost Change

We use ( ) to show a section that is **calculated first**, like the total cost.

$500 - (120 + 360) = 500 - 480$

$500 - (120 + 360) = 20$

2

Head sets that cost 35 kina are sold at a 3 kina discount. If uncle David pays 100 kina, how much change will he get?

Let's find the answer by representing this question as a mathematical sentence.

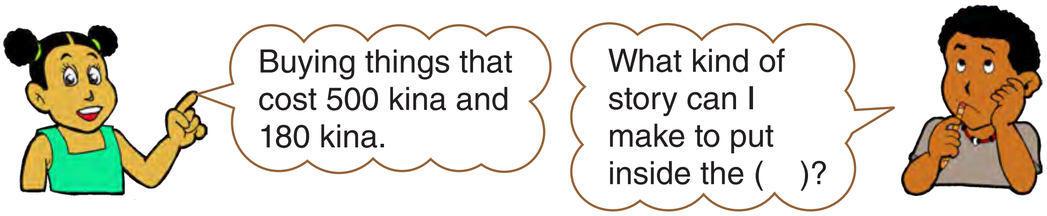
$\boxed{} - (\boxed{}) = \boxed{}$

Amount paid Cost of Head set Change

3

Let's make a mathematical story for the following expressions.

① $700 - (500 + 180)$ ② $500 - (450 - 40)$



Exercise

Let's make mathematical stories for the following expressions.

① $400 - (50 + 300)$ ② $600 - (150 - 110)$

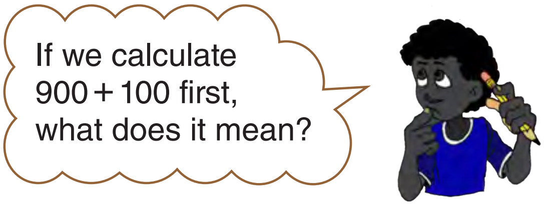
The Order of Calculation

4 Mike's father bought a TV screen for 900 kina and two speakers for 100 kina each.

① Let's write a mathematical expression to find the total cost.

② Let's think about the order of calculation.

$\underbrace{900}_{\text{Cost of a TV screen}} + \underbrace{100 \times 2}_{\text{Cost of speakers}}$



5 The airplane ticket for travelling to Buka is 1200 kina for an adult and half fare for a child. Let's find the total fare for 2 adults and 1 child.

$\underbrace{\boxed{}}_{\text{Ticket fare for 2 adults}} + \underbrace{\boxed{}}_{\text{Ticket fare for 1 child}}$

In an expression that includes addition, subtraction, multiplication and division, multiplication and division are calculated first even if there is no (   ).

Exercise

Let's calculate.

① 12 + 24 ÷ 4　　② 75 − 10 × 6　　③ 8 × 5 + 20 ÷ 5

6 Let’s find the number, but we must be careful about the order of calculation.

$12+15\div(5-2)$

Let’s calculate this expression in numerical order (1), (2) and (3).

$$\underbrace{12+\underbrace{15\div\underbrace{(5-2)}_{(1)}}_{(2)}}_{(3)}$$

$$12+15\div\overset{(1)}{(5-2)}=12+\overset{(2)}{15\div 3}$$

$$=\overset{(3)}{12+5}$$

$$=\boxed{}$$

If you write the expressions in order using an equal sign like the above, the calculations can be easier.

The Order of Calculation

① An expression is usually calculated in order from the left.

② If a (　　) is included, do the calculation inside the (　　) first.

③ If the $+$, $-$, $\times$ and $\div$ are mixed, do multiplication and division first.

Exercise

Let’s calculate.

① $12\div2+3$

② $12\div(2+3)$

③ $(5+4)\times(6-2)$

④ $5+4\times(6-2)$

⑤ $90-50\div(4+6)$

⑥ $(90-50)\div4+6$

② Rules for Calculations

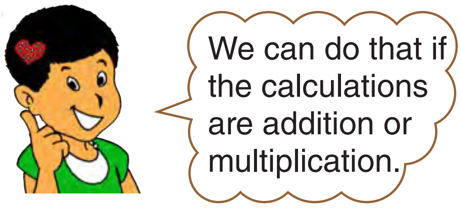
1 Calculate the following expressions Ⓐ, Ⓑ, Ⓒ and Ⓓ in an easier way. Let's think about why we can calculate them as shown below.

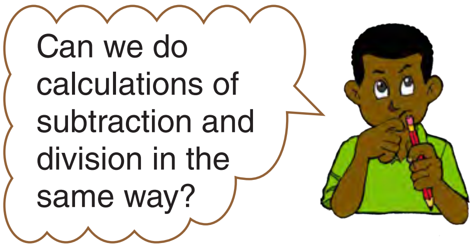
Ⓐ 5 + 397 ➡ 397 + 5

Ⓑ 389 + 234 + 266 ➡ 389 + (234 + 266)

Ⓒ 55 × 248 ➡ 248 × 55

Ⓓ 18 × 25 × 4 ➡ 18 × (25 × 4)





Addition

① When 2 numbers are added, the sum is the same even if the order of numbers is reversed.

■ + ▲ = ▲ + ■

② When 3 numbers are added, the sum is the same even if the order of addition is changed.

(■ + ▲) + ● = ■ + (▲ + ●)

Multiplication

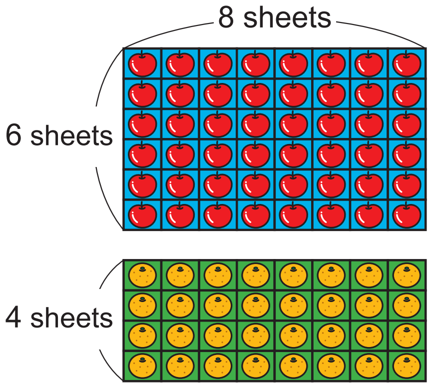
① When 2 numbers are multiplied, the product is the same even if the multiplicand and the multiplier are reversed.

■ × ▲ = ▲ × ■

② When 3 numbers are multiplied, the product is the same even if the order of multiplication is changed.

(■ × ▲) × ● = ■ × (▲ × ●)

2 There are 2 sheets of stickers shown on the right.
How many stickers are there altogether?



Mero's idea

6×☐+4×☐=48+☐

=☐

Yamo's idea

(6+☐)×8=☐×8

=☐

3 A store sold mattresses for 200 kina each and gives a 20 kina discount for each mattress, so I bought 6 mattresses.
How much is the total cost? Let's represent this as expressions using 2 methods.

Ⓐ ☐ − ☐

Original cost of 6 mattresses — Total discount for 6 mattresses

Ⓑ ☐ × ☐

Discount cost for each mattress — Number of mattress

(■+▲)×●=■×●+▲×●

(■−▲)×●=■×●−▲×●

Exercise

Let's calculate.

① (4+16)×3

② 5 ×(14−9)

③ 25×4+15×4

④ 30×7−28×7

③ Calculation of Whole Numbers

▶▶ Let's summarise how to do calculations of whole numbers.

It is good to calculate in vertical form.

$$\begin{array}{r} 215 \\ +\,143 \\ \hline 358 \end{array} \qquad \begin{array}{r} 328 \\ -\,215 \\ \hline 113 \end{array}$$

Addition and subtraction should be calculated according to the place value column.

In multiplication it is good to separate the multiplier according to the place values.

$$\begin{array}{r} 123 \\ \times\ \ 32 \\ \hline 246 \\ 369\ \\ \hline 3936 \end{array}$$

$$\begin{array}{r} 23 \\ 14\,\overline{)322} \\ 28\ \\ \hline 42 \\ 42 \\ \hline 0 \end{array}$$

In division, we divide, multiply, subtract and bring down and repeat.

Addition and Subtraction

1 There are 613681 boys and 586534 girls in grade 4.

How many ten thousand students are there approximately?

① What is the total number of children in the fourth grade?

Expression : ☐

	6	1	3	6	8	1
+	5	8	6	5	3	4

There are many place values. So you should calculate by order according to their place values.

② Which is the largest number, boys or girls? What is the difference?

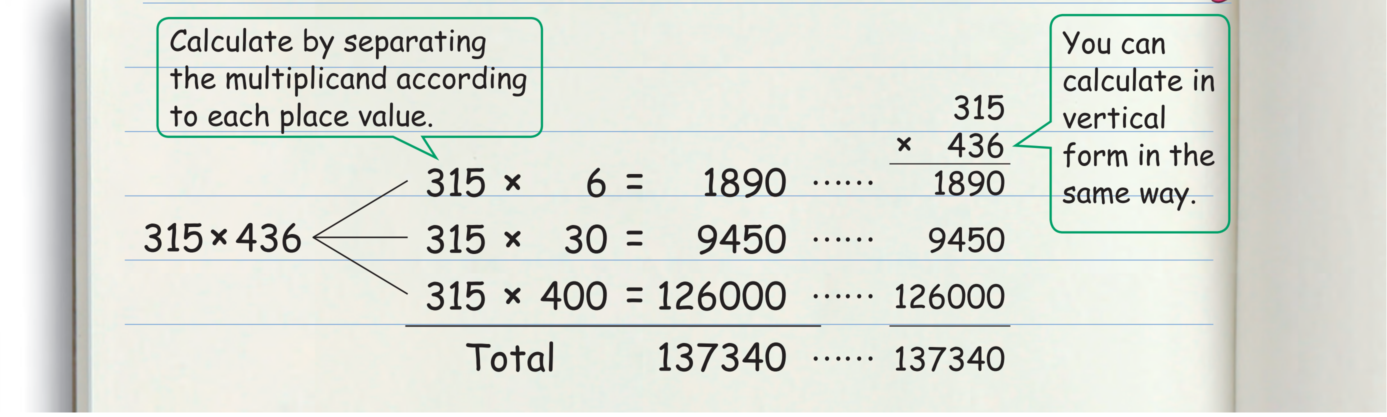
Expression : ☐

2 Boat fares were given to all 315 children during the school excursion. One return boat fare costs 436 kina for each member.

① How much is the total cost?

Expression 1 :

Expression 2 :



Calculate by separating the multiplicand according to each place value.

$$315 \times 436 \begin{cases} 315 \times 6 = 1890 \\ 315 \times 30 = 9450 \\ 315 \times 400 = 126000 \end{cases}$$

Total 137340

$$\begin{array}{r} 315 \\ \times\ 436 \\ \hline 1890 \\ 9450 \\ 126000 \\ \hline 137340 \end{array}$$

You can calculate in vertical form in the same way.

② Let's find the product for 436 × 315.

3 A principal wants to buy as many library books as possible with 5000 kina. One science book is sold at 68 kina at a discount store. How many science books can the principal buy?   Expression :

6	8	)5	0	0	0

4 Let's make mathematical stories using the sentences below and exchange stories and answers with each other.

Athletic festival at Lae city.

The awards were given to the participants of the competition. The budget for the participation awards was 120000 kina and 500 participation awards were prepared. 480 lunch boxes for the participants and officials at 25 kina each were also prepared. 1758 men and 1564 women came to the festival that day, including the spectators. Various events were held in the morning and the 100-metre sprint attracted the most number of participants, 18 groups of 7 took part. Stalls were also opened. 147 Aigir packs at 15 kina and 184 fish and chips at 20 kina each were sold. When the festival ended they were still short of 43 participation awards. It seems that they should prepare more participation awards for next year.

How much did all lunch boxes cost?

Expression : $480 \times 25 = 12000$ Answer 12000 kina

Activity

Exercise

Let's calculate.

① $3064 + 1987$
② $5006 - 3997$
③ $6102 - 2938$
④ $4000 - 3016$
⑤ 383×247
⑥ 738×952
⑦ $2652 \div 26$
⑧ $6432 \div 67$

Exercise

① Let's calculate.

Pages 121 ~ 129

① $500-(80+250)$ ② $650-(430-60)$

③ $(40+50)\times7$ ④ $6\times(18-3)$ ⑤ $120\div(12-4)$

⑥ $(37+18)\div5$ ⑦ $(11-4)\times(8+7)$ ⑧ $(14+22)\div(9-5)$

⑨ $18\times8\div4$ ⑩ $18\times(8\div4)$ ⑪ $28-3\times(13-8)$

⑫ $(32-18)+4\times5$ ⑬ $1549+79328$ ⑭ $45625-3088$

⑮ 351×205 ⑯ $9792\div34$

② Let's express the following questions as one expression and find the answers.

Pages 121 ~ 129

① There were 60 sheets of paper. I used 15 sheets of paper yesterday and 20 sheets of paper today. How many sheets of paper are left?

$60-(\boxed{}+\boxed{})$

② There were 5 dozens of pencils. The children used 40 pencils. How many pencils were left?

$\boxed{}\times5-\boxed{}$

③ There are 100 sheets of coloured papers. 18 students received 4 sheets of papers each. How many sheets of papers are left?

$\boxed{}-4\times\boxed{}$

④ Father paid 500 kina for 150 soft drinks that costed 3 kina each. How much is the change in kina?

$\boxed{}-\boxed{}\times\boxed{}$

⑤ Pain killer medicine that costs 20 kina each and a cough medicine that costs 50 kina each make one set. There are 15 sets. How much is the total cost?

$(\boxed{}+\boxed{})\times15$

Problems

1 Let's find the answers by expressing these problems as one expression.

● Representing a sentence as an expression.

① There were 1000 sheets of paper. Phyl used 250 sheets of paper yesterday and 320 sheets of paper today. How many sheets of paper are left?

② Mother is going to buy 150 orange juice that cost 2 kina each and 120 boxes of cookies that cost 2 kina each.
If she pays with 600 kina, how much is the change?

2 Let's calculate.

● Considering the order of calculations

① $8+12\times3$

② $40-12\div(6\div2)$

③ $40\times8-5\times24$

④ $36+6\times8\div12$

3 Fill in the $\boxed{}$ with a number.

● Considering how to simplify calculations.

① $25\times98=25\times(\boxed{}-2)$
$=25\times\boxed{}-25\times2$
$=\boxed{}$

② $25\times24=25\times\boxed{}\times6$
$=\boxed{}\times6$
$=\boxed{}$

③ $105\times6=(\boxed{}+5)\times6$
$=\boxed{}\times6+5\times\boxed{}$
$=\boxed{}$

④ $99\times9=\boxed{}-1)\times9$
$=\boxed{}\times9-1\times9$
$=\boxed{}$

4 Make mathematical stories for the following expressions.

● Making a mathematical story for an expression.

① $(1000+2000)\times4$

② $(3500-350)\div3$

12 Area

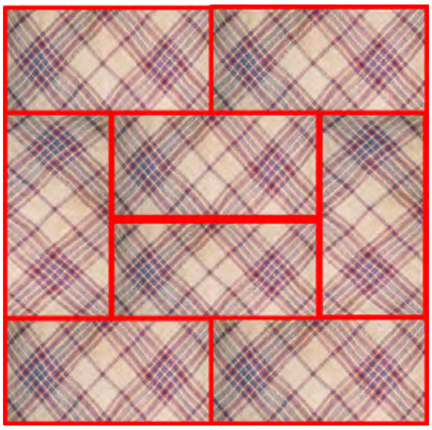
Which one is larger?

①

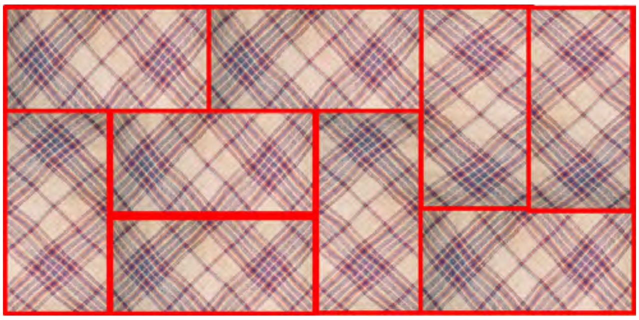
Scarfs

②

Ⓐ



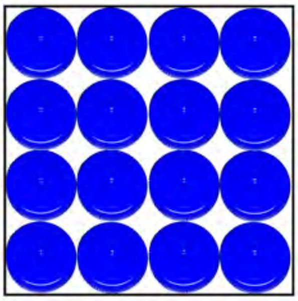
Ⓑ



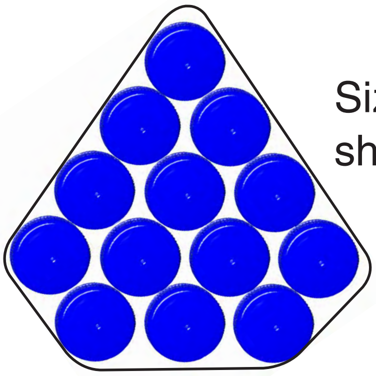
Kerema Mats

③

Ⓐ



Ⓑ



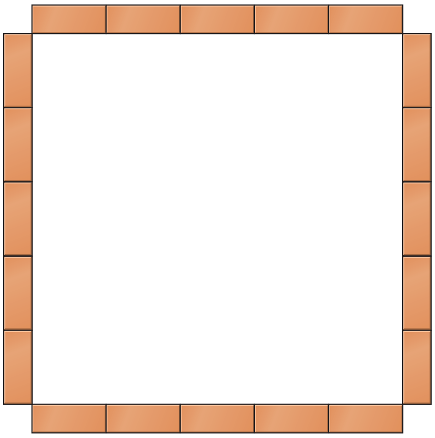
Sizes of two shapes

Activity

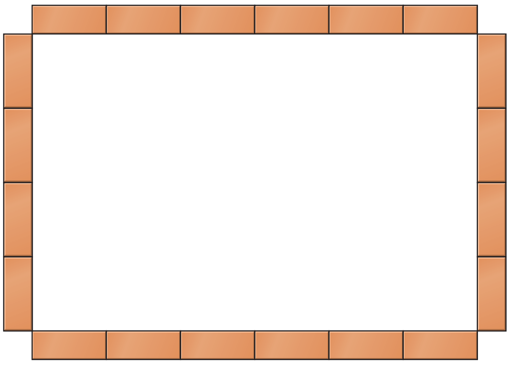
1 Area

1 We are going to make rectangular and square flower beds with 20 blocks around the edges.
Are the areas same or different?

(a)



(b)

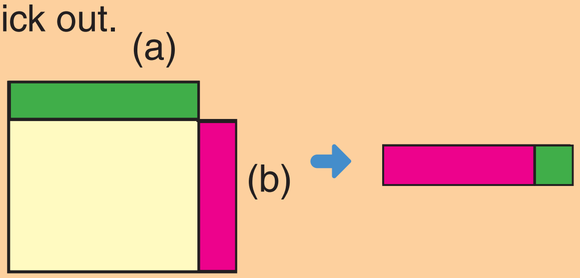


Let's think about how to compare the areas of rectangles and squares and how to represent the areas with numbers.

Compare the areas of (a) with (b).

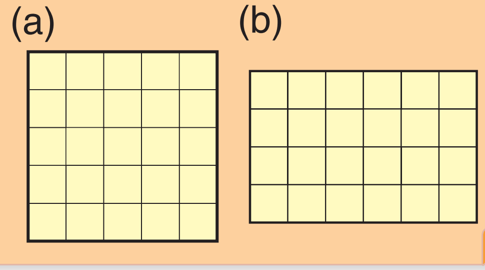
Naiko's idea

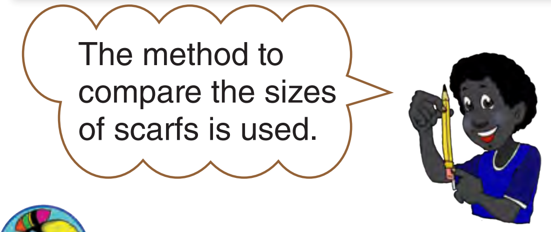
Place one on top of the other.
Then compare the two sections that stick out.

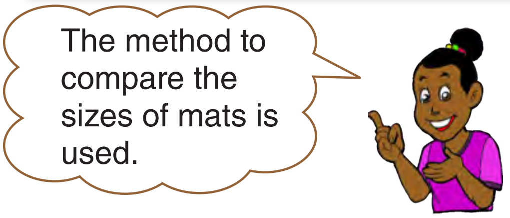


Kekeni's idea

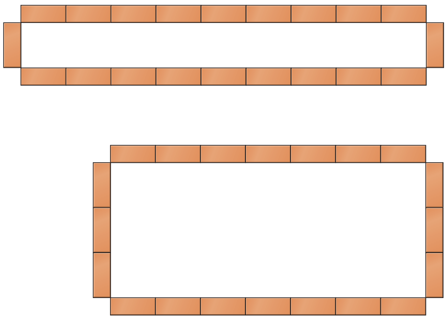
I drew squares of the same size on the blocks.

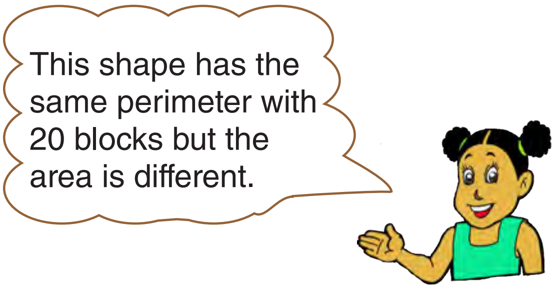






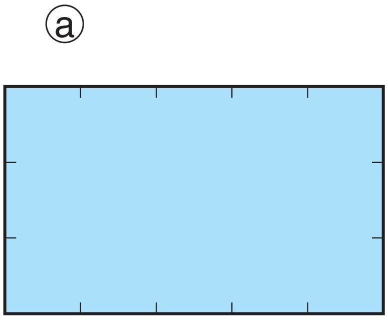
The size of area is the amount of space surrounded by lines.
This size represented by a number is called **area**.

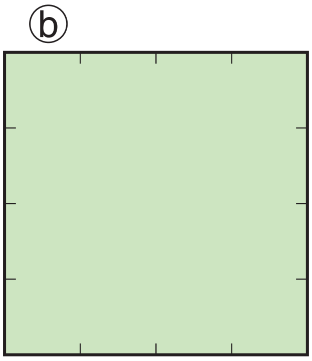




2 There are two sheets of coloured paper ⓐ and ⓑ.

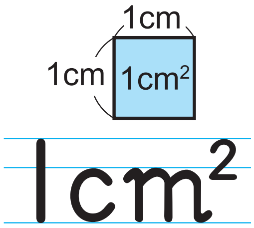
Which one is larger and by how many squares?



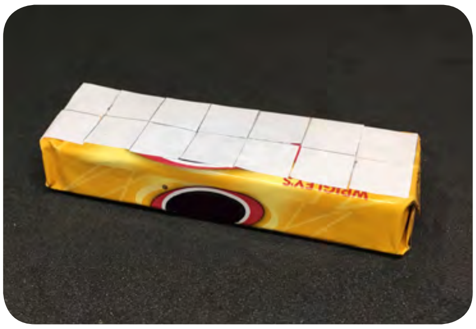


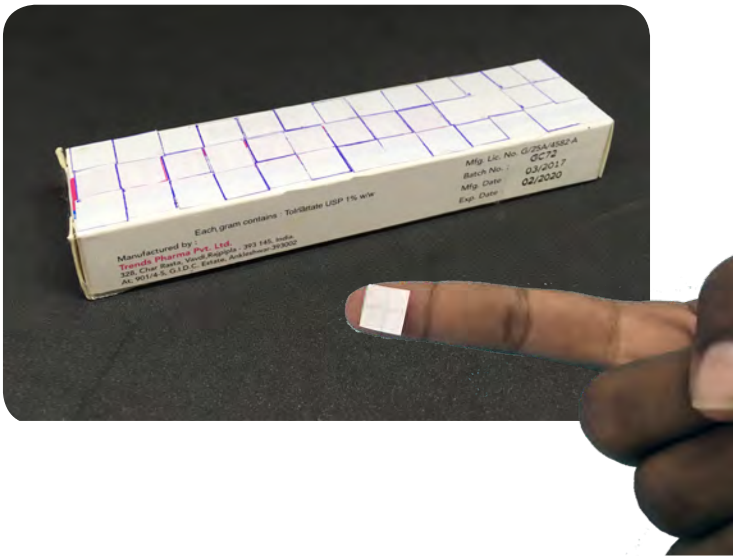
Area can be represented by the number of unit squares.

The area of a square with 1 cm sides is called **one square centimetre** and is written as 1 cm².
The unit cm² is a unit of area.



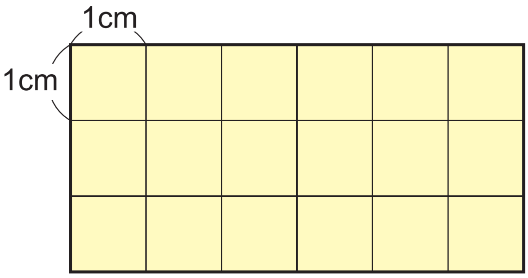
3 Let's measure the areas of various things by using some 1 cm² papers as shown below.



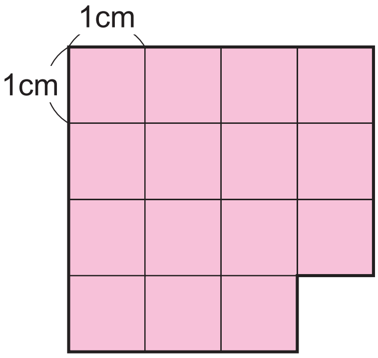


4 What is the area in cm² of these shapes?

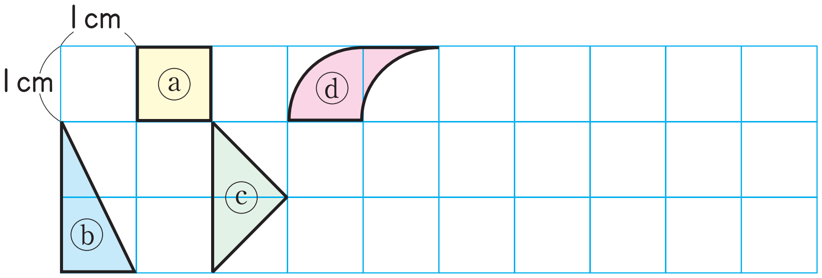
①



②

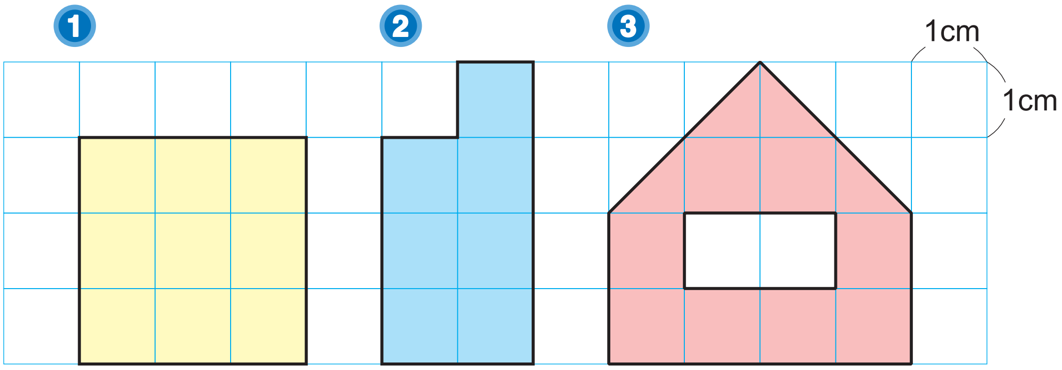


5 What is the area in cm² of the coloured figures below?

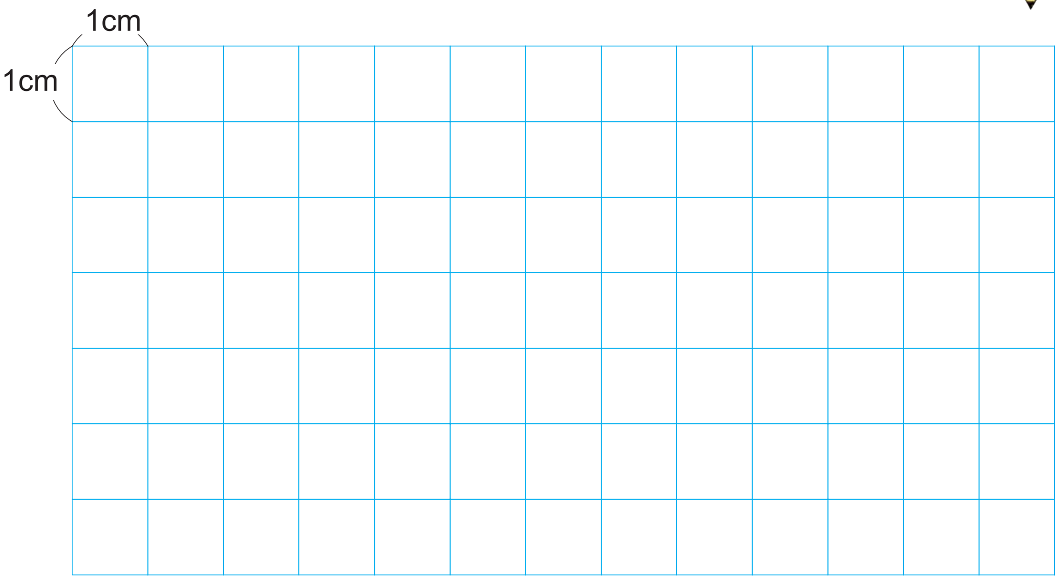


Draw other figures with an area of 1 cm².

6 What is the area in cm² of the coloured figures below?



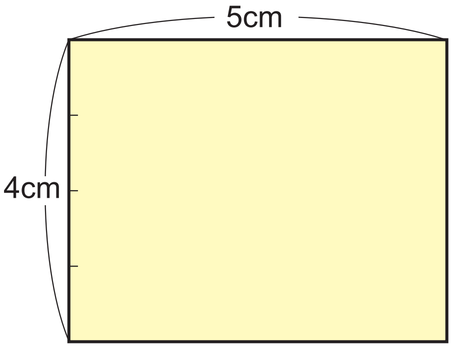
7 Let's draw different figures with an area of 12 cm².



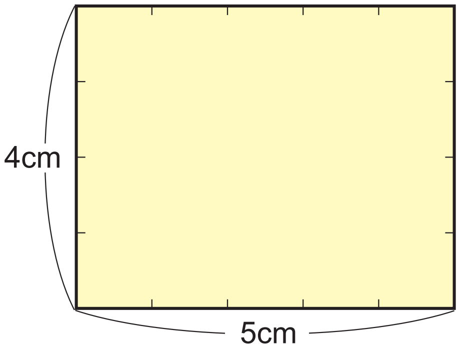
2 Area of Rectangles and Squares

1 What is the area in cm² of the rectangles on the right?

① The length is 4 cm.
How many 1 cm² are lined up vertically?

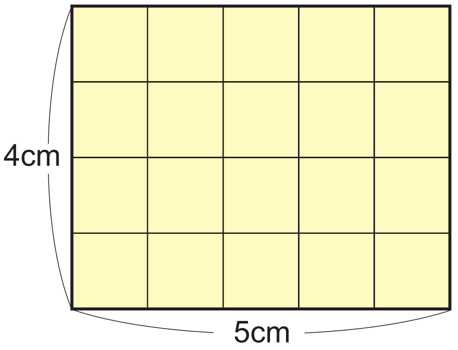


② The width is 5 cm.
How many 1 cm² are lined up horizontally?



③ How many 1 cm² are there in this rectangle?
What is the area in cm² of the rectangle?

④ Find the area of the rectangle using multiplication.



In the mathematical sentence on the right, 4 represents the width and 5 represents the length.

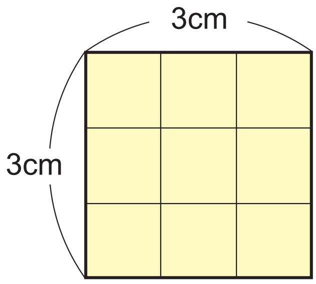
Number of 1 cm^2 squares...	5	×	4	=	☐
	Number of length		Number of width		Total number
	5	×	4	=	☐
	Length (cm)		Width (cm)		Area (cm^2)

The area of a rectangle is found using length and width.

Area of a rectangle = length × width

The area of any rectangle is expressed as
“Area of a rectangle = length × width”.
A mathematical sentence like this is called a **formula**.
The area of a rectangle is also expressed as **“width × length”.**

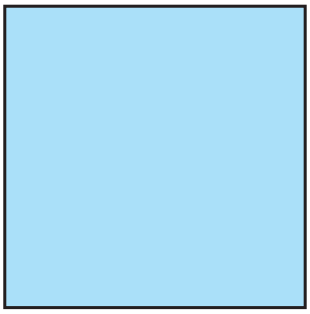
2 How many square centimetres are there in the area of a square with 3 cm sides? Let’s think about this in the same way as with a rectangle.

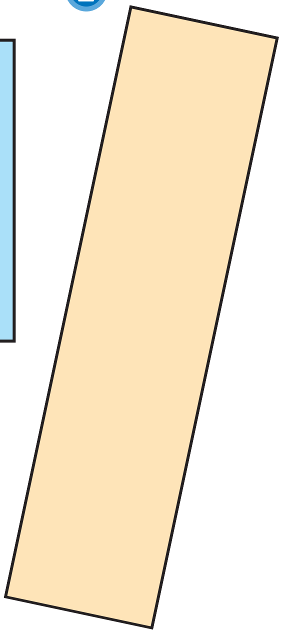


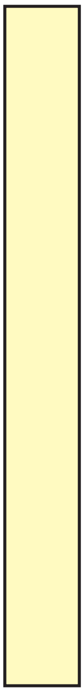
The area of a square is expressed in the following formula.

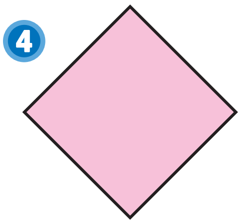
Area of a square = Side × Side

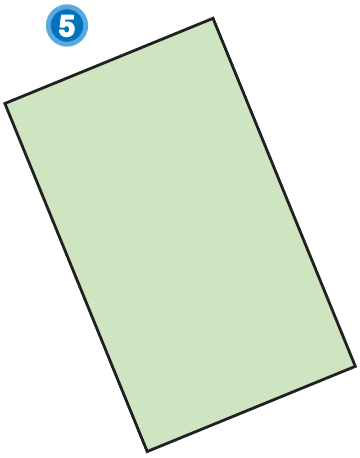
3 Let’s find the area of the following squares and rectangles by measuring the lengths of their sides.

①


②


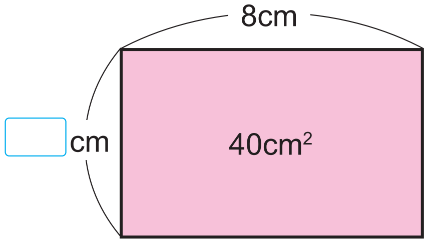
③


④


⑤


4 Make a rectangle with 40 cm² area and 8 cm width.

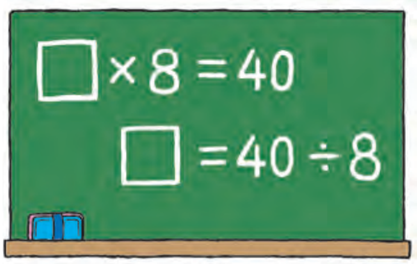
What is its length in cm?



Let's think about how to find the answer using the formula for the area of a rectangle.

$8 \times \square = 40$

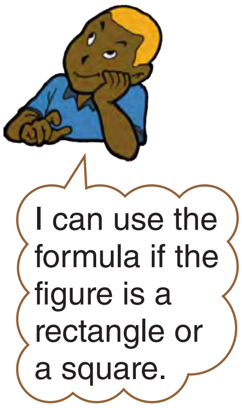
Length · Width · Area



Exercise

Make a rectangle with an area of 50 cm².

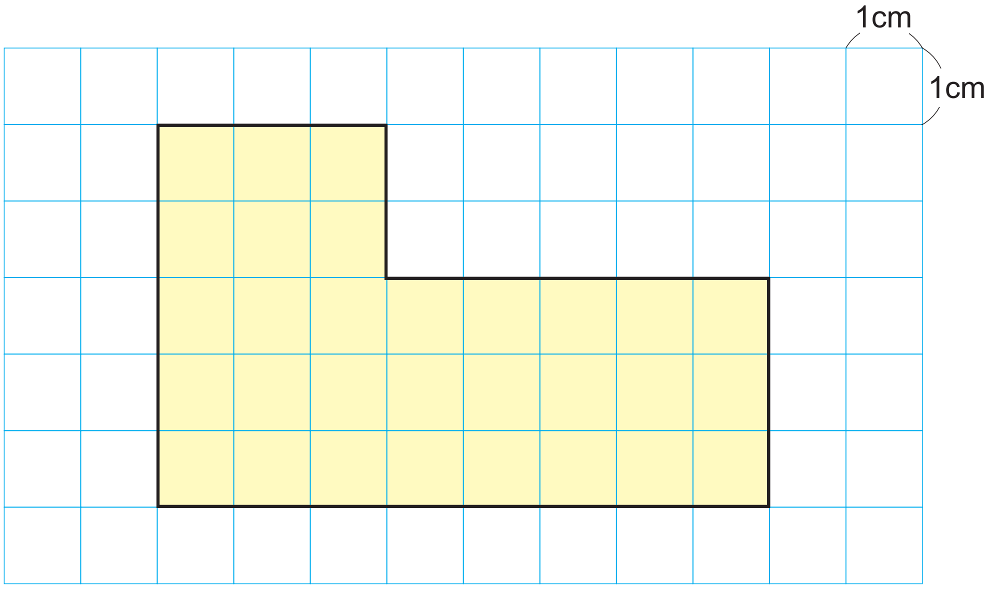
If its width is 10 cm, what is its length in cm?



Area of a Figure Composed by Rectangles and Squares

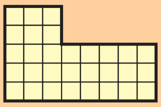
5 What is the area in cm² of the following figure?

① Let's think about how to find the area.



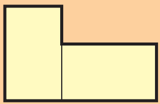
Yamo's idea

I count the number of 1 cm² squares.



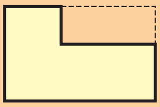
Sare's idea

I calculate the area by dividing the figure into 2 rectangles.



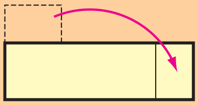
Gawi's idea

I imagine this as one large rectangle and then subtract the missing section.



Vavi's idea

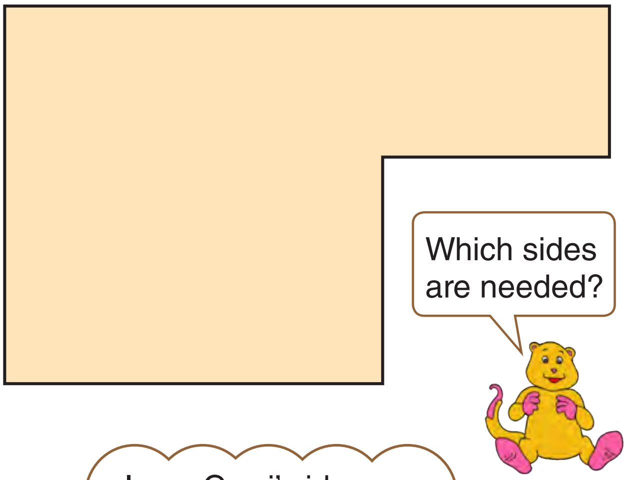
I cut away one section and moved it to make a rectangle.

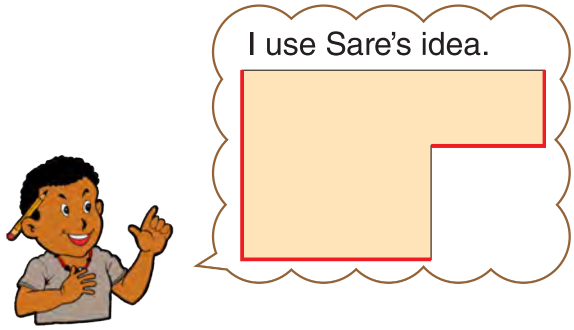


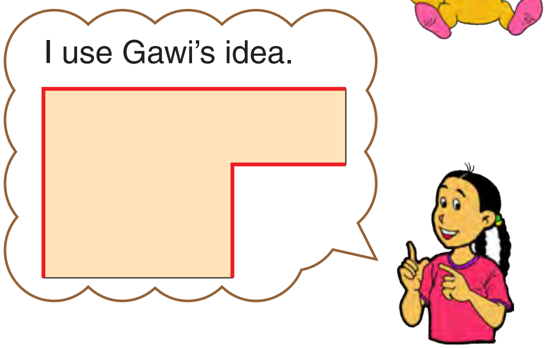
② Let's talk about which of the ideas in ① can be used for a shape like this.

6 Let's trace the sides of the figure on the right with any colour pencil that is needed to find its area.

Then find the area.





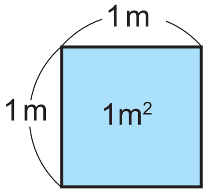


③ Units for Large Areas

1 Let's make a square with 1 m sides.

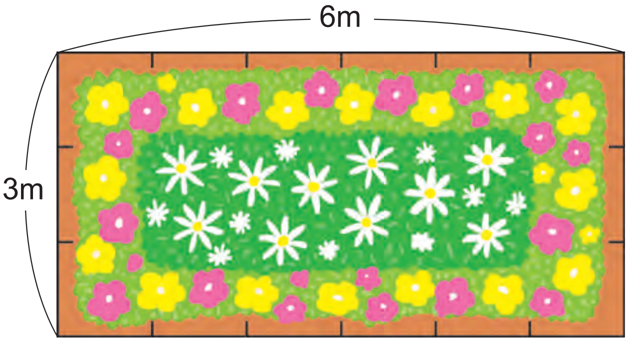
Let's see how many children can stand on this square.

The area of a square with a side of 1 m is called **one square metre** and is written as **1 m²**.
The unit m² is also a unit of area just like cm².



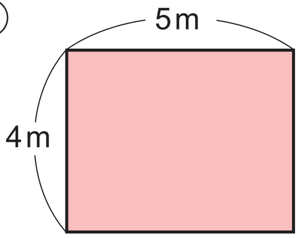
2

❶ What is the area in m² of a flower garden with a length of 3 m and a width of 6 m?

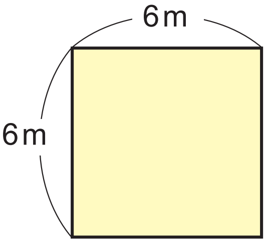


❷ Let's find the area of the figures below.

①



②

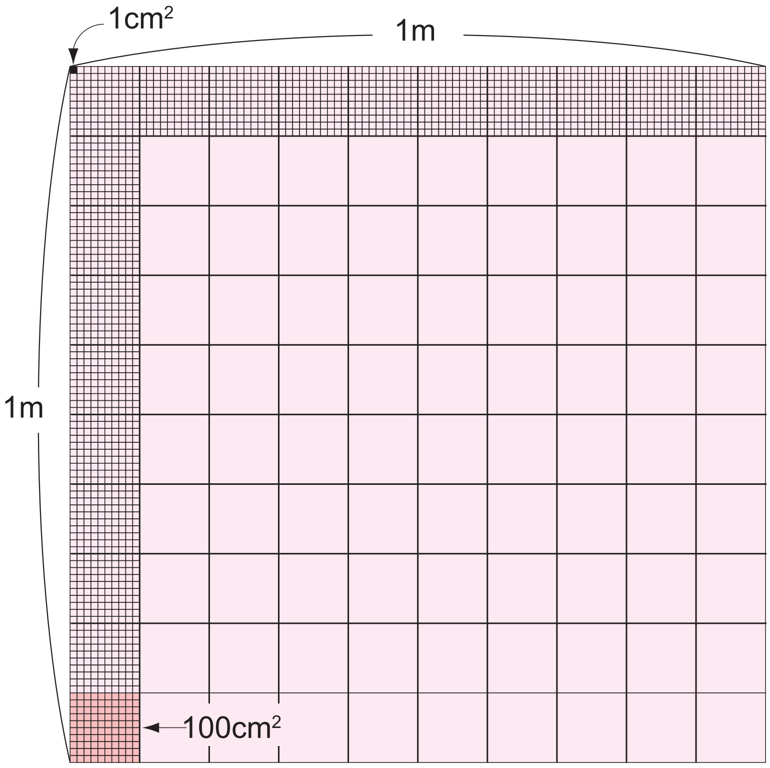


3 Let's see how many cm^2 are there in 1 m^2.

① How many 1 cm^2 can be lined up vertically?

How about along the width?

② What is 1 cm^2 in m^2 ?



1 m = 100 cm

100 × 100 = ☐

1 m^2 = 10 000 cm^2

4 Make a newspaper poster with a length of 2 m and a width of 80 m.

What is the area of the poster in cm^2?

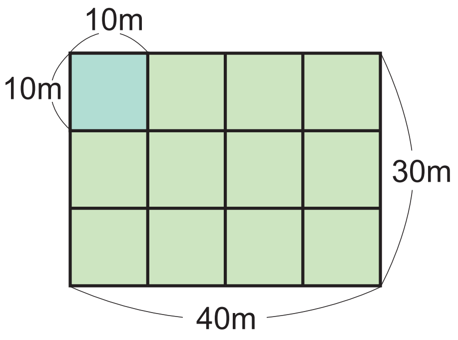
To find the area, we need to express all the lengths using the same unit.

200 × 80 = ☐

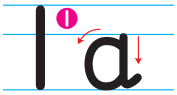
5 There is a rectangular field with a length of 30 m and a width of 40 m.

① How many m^2 is the field?

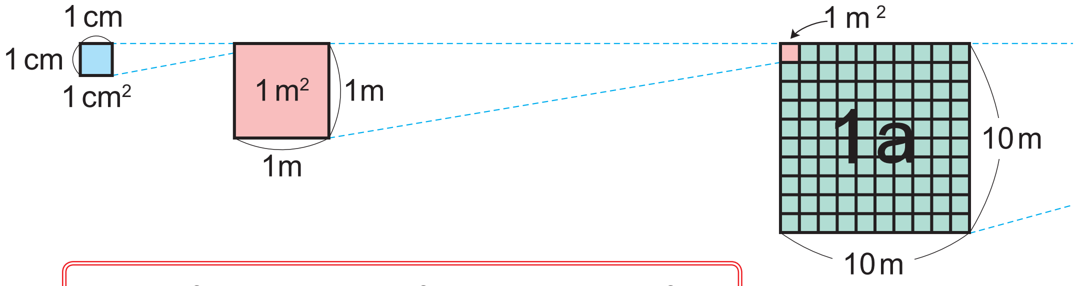
② How many 10 m squares can be placed in the field?



The area of square with a side of 10 m is called **are** and is written as 1 **a**.
The unit “**are**” is used to show the area of a vegetable garden and field.



③ What is the area in a of the field?



$$\boxed{1\ \mathrm{m}^2 = 10\ 000\ \mathrm{cm}^2,\ \ 1\ \mathrm{a} = 100\ \mathrm{m}^2}$$

6 What is the area in m^2 of the rectangular plaza with a length of 60 m and a width of 80 m? What is this in a?

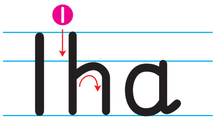
7 There is a square farm with 600 m sides.

① What is the area of the farm in m²?

② How many squares with 100 m sides can be placed in the farm?

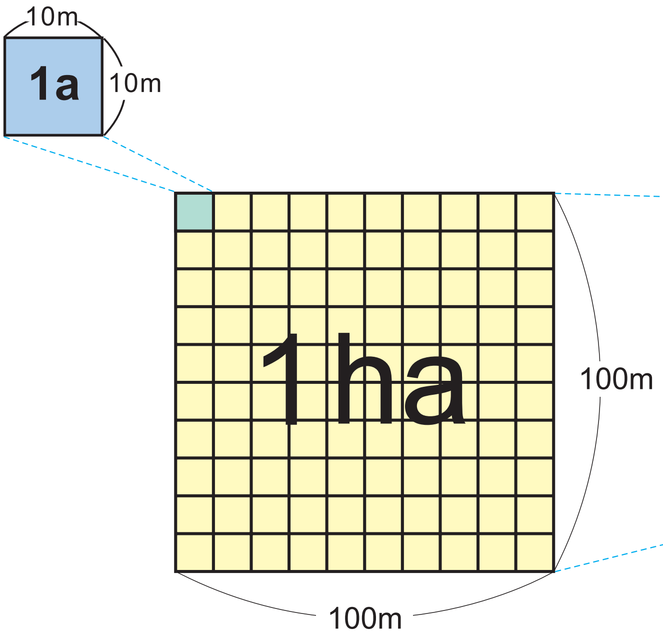
The area of a square with a side of 100 m is called **one hectare** and is written as **1 ha**.

The unit **ha** is used to show large areas of plantations, farms and forests.



③ What is the area in ha of the plantation?

Balsa Plantation, ENBP



$$\boxed{1\ \text{ha} = 10\,000\ \text{m}^2}$$

Pineapple Plantation, Sogeri
Central Province

8 What is 1 ha in a?

9 The photograph below shows PNG LNG site at Papa village in Central Province.

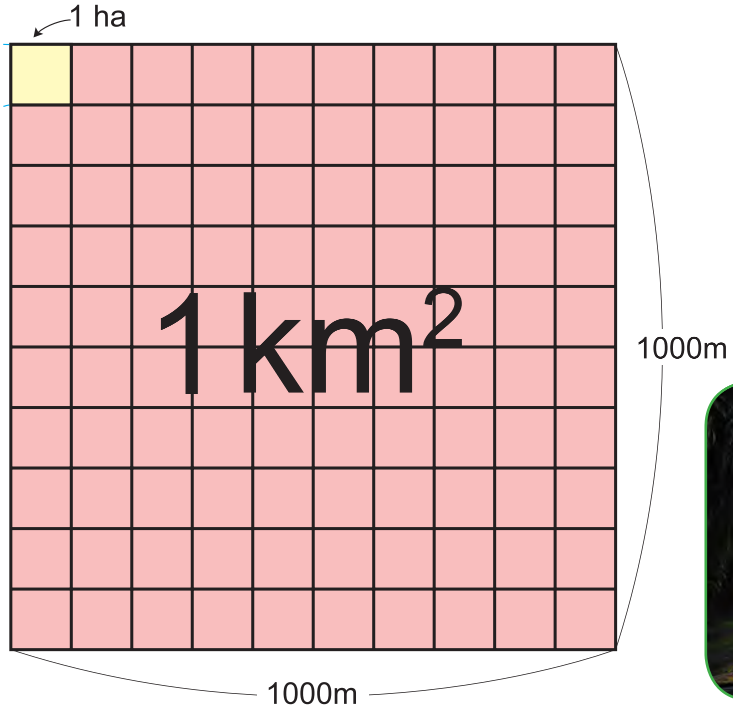
The white line area is a square with 3 km sides.

① How many squares with 1 km sides can be placed inside the figure?

LNG Plant, Papa, Central Province

The area of a square with a side of 1 km is called **one square kilometre** and is written as **1 km²**.
The unit km² is used to show large areas such as islands, provinces and countries.

② What is the area in km² of the photograph?



$$1\ \text{km}^2 = 1\ 000\ 000\ \text{m}^2$$

Palm oil Plantation, Kimbe, WNBP

10 Which room is the biggest in our school? Let's estimate and investigate.

11 Let's investigate the areas of various places where we live.

Exercise

Pages 135, 141, 143~135

1 Which of the units in ☐ should you use to represent the following areas? cm^2, m^2, a, ha, km^2

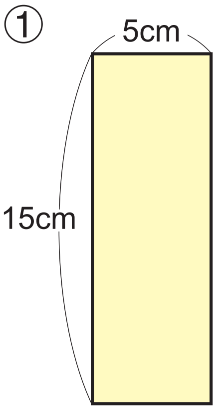
① The area of a school yard ② The area of an exercise book

③ The area of PNG ④ The area of a coffee plantation

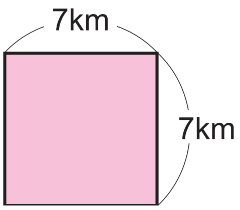
2 Let's find the areas of the following figures.

Pages 139~147

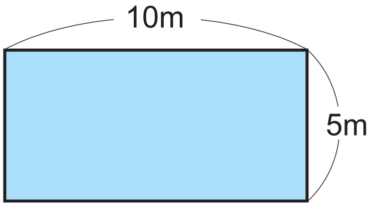
①



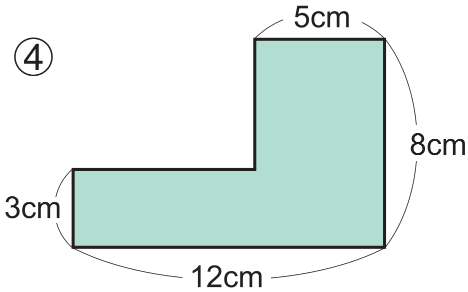
②



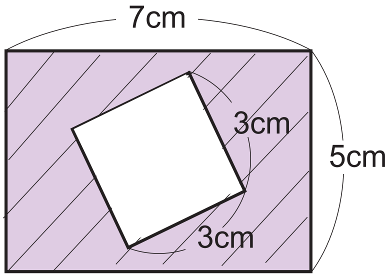
③



④



⑤



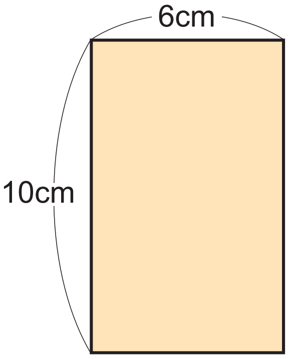
(Coloured part)

Problems

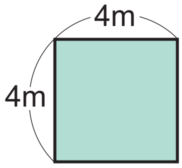
1 Let’s find the areas of the following figures.

● Getting areas using the formula

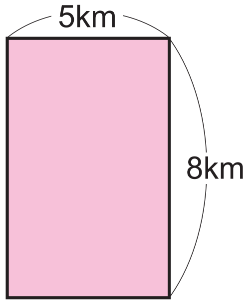
①



②



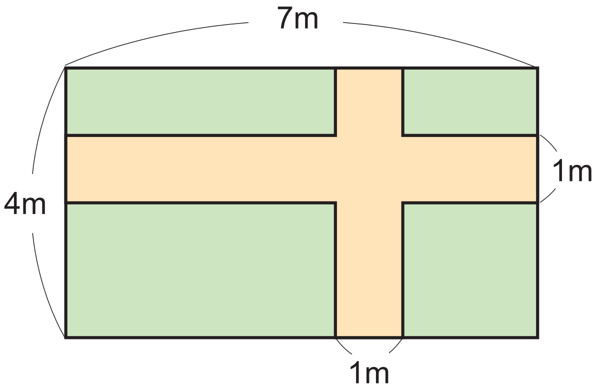
③



2 There are paths with 1 m width in this rectangle.

What is the area of the fields?

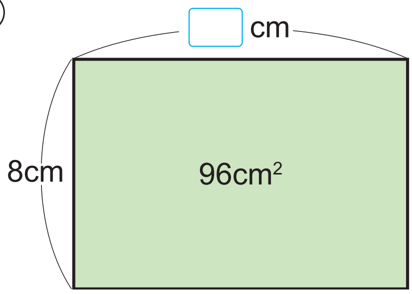
● Easier way to find the areas



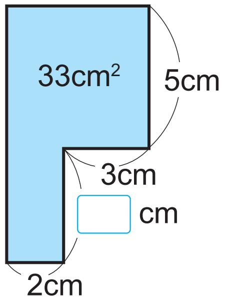
3 Fill in the □ with a number.

● Finding the length of a side by using the formula of area.

①



②



4 Let’s answer the following questions.

● Understanding the area formula.

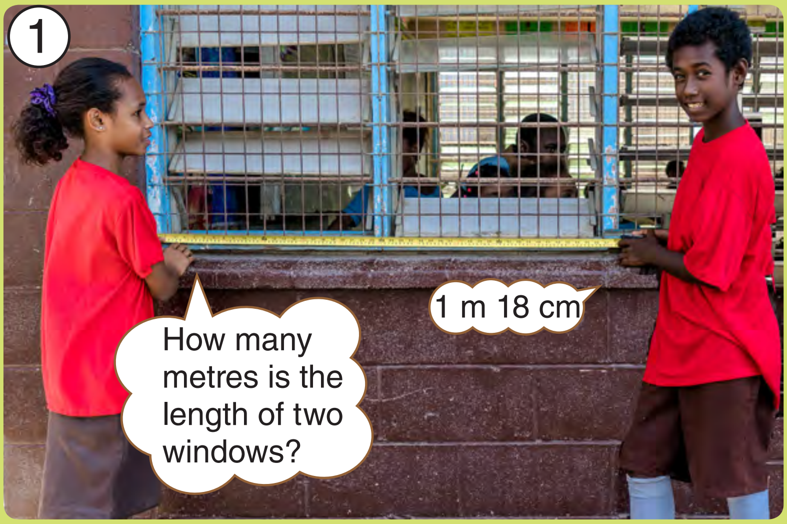
① 1 m^2 is equal to 10 000 cm^2. Let’s explain the reason.

② The area of a rectangle with a length of 3 cm and a width of 5 cm can be found by 3×5. Let’s explain the reason.

13

Decimal Numbers 2

▷▷ How can we express two units as one unit?

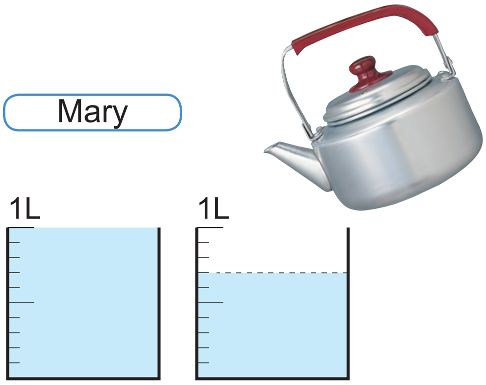


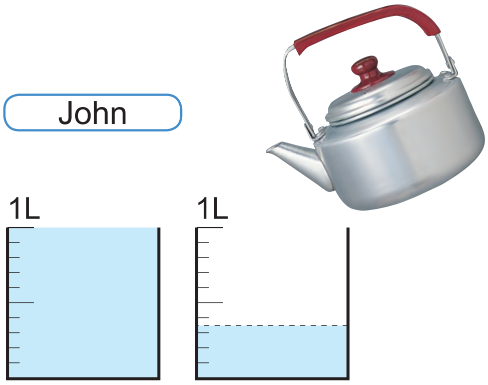
▷▷ Let's try to pour 1 L of water into a kettle without any measurement. Whose is closest to 1 L?

Let's keep records.

Mary and John each poured this much water.

How many litres is in each kettle?





▷▷ Can we change from a smaller unit to a larger unit?

③

The baby's weight is 3154 g.
What is the baby's weight in kg?

The amount of Mary's water is 1L and the remaining part.

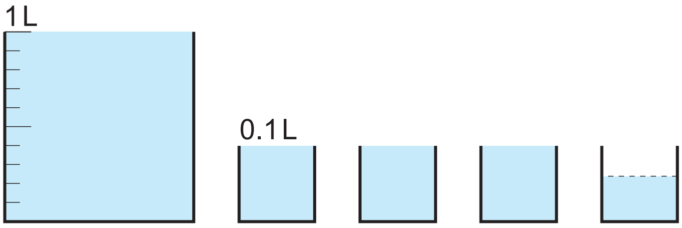
Since the part over 1L is 7 sets of 0.1L,…

The amount of Mary's water is $\boxed{\quad . \quad}$ L.

The amount of John's water is also 1 L and the remaining part.

① How to Represent Decimal Numbers

1 Let's write the amount of John's water using litre as the unit.

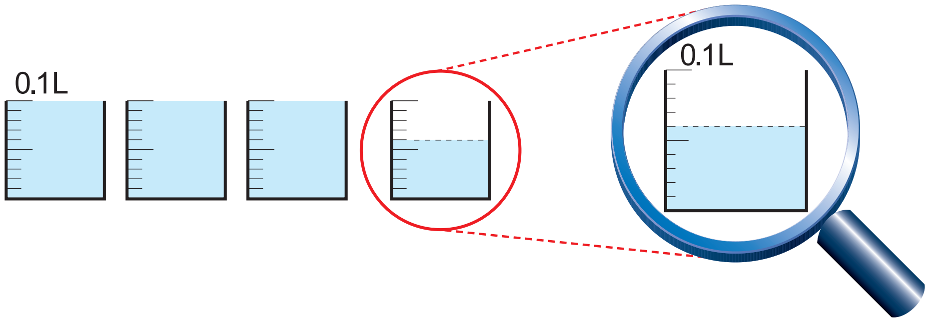


Measure the part over 1L by using a 0.1L measure.

There is an amount of water smaller than 0.1L. How can I represent it?

Let's investigate how to represent the remaining part that is smaller than 0.1 L.

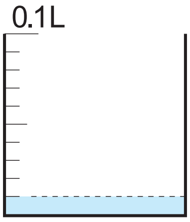
① Let's measure the amount of water that is less than 0.1 L through making the smaller unit scale by dividing 0.1 L into 10 equal parts.



② Let's represent the amount of John's water.

☐	. ☐	☐	L
Number of 1 L cup	Number of 0.1 L cup	Number of smaller unit	

③ How many litres is the amount of 1 small unit scale?



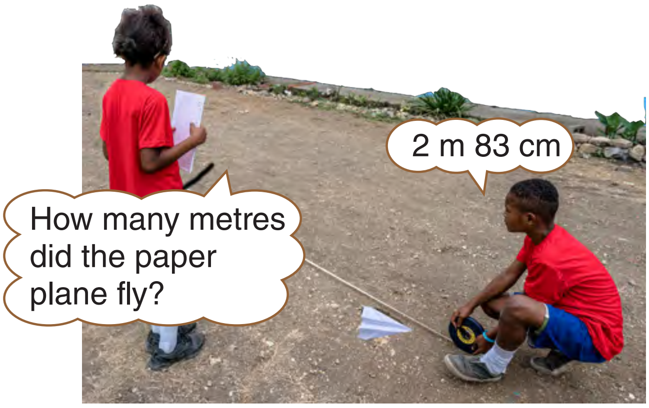
☐	. ☐	☐	L
Number of 1 L cup	Number of 0.1 L cup	Number of smaller unit	

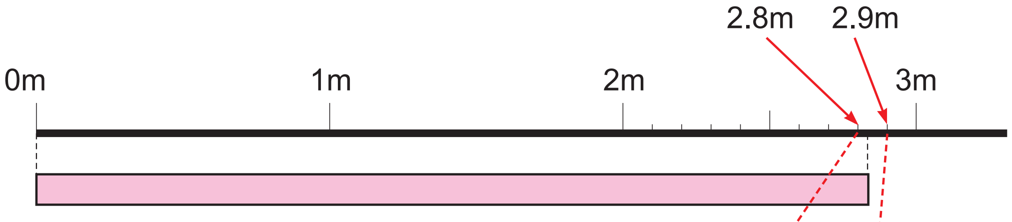
The amount that is obtained by dividing 0.1 L into 10 equal parts is written as 0.01 L and is read as **one hundredth litre or "zero point zero one litre"**.

The amount of John's water is 1.36 L and is read as "one point three six litres".

1 of 1 L	is 1 L
3 of 0.1 L	is 0.3 L
6 of 0.01 L	is 0.06 L
Total	1.36 L

2 Noko flies her paper plane. The length of flying the paper plane is 2 m 83 cm. Write this length by using only metre as the unit.



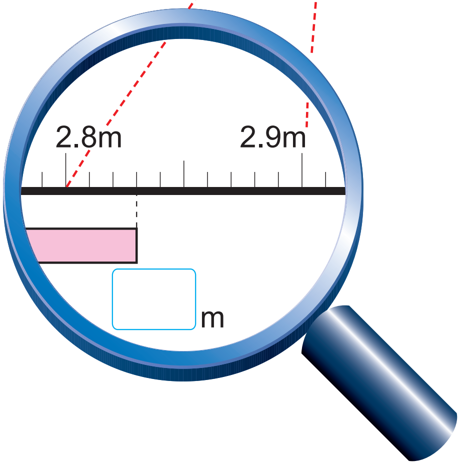


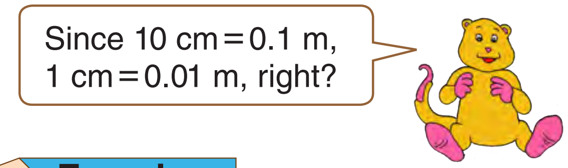
2 of 1 m is ☐ m

8 of 0.1 m is ☐ m

3 of 0.01 m is ☐ m

Total ☐ m

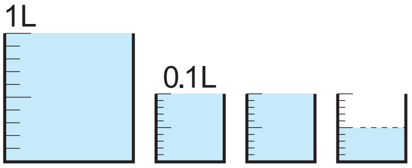




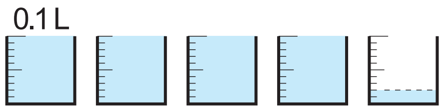
Exercise

1 How many litres are the following amounts of water?

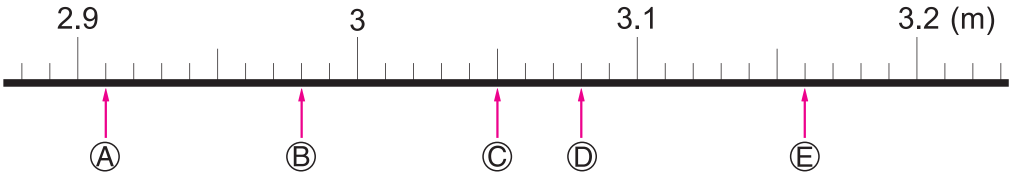
①



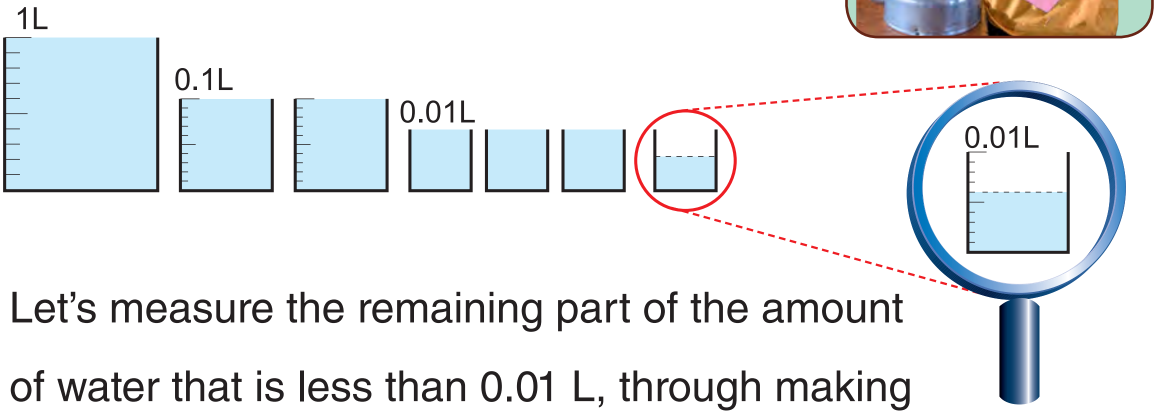
②



2 Let's read the following numbers marked by ↑.



3 Let's represent the amount of water that Tukana poured into a water container by using litre as the unit.



Let's measure the remaining part of the amount of water that is less than 0.01 L, through making the smaller unit scale by dividing 0.01 L into 10 equal parts.

☐ .	☐	☐	☐ L
Number of 1 L measuring cup	Number of 0.1 L measuring cup	Number of 0.01 L measuring cup	Number of smaller unit scale

The amount that is obtained by dividing 0.01 L into 10 equal parts is written as 0.001 L and is read as one thousandths litre or "zero point zero zero one litre".

Let's represent 1 kg 264 g by using kilogram as the unit.

100 g is $\frac{1}{10}$ of 1 kg → 0.1 kg

10 g is $\frac{1}{10}$ of 0.1 kg → 0.01 kg

1 g is $\frac{1}{10}$ of 0.01 kg → 0.001 kg

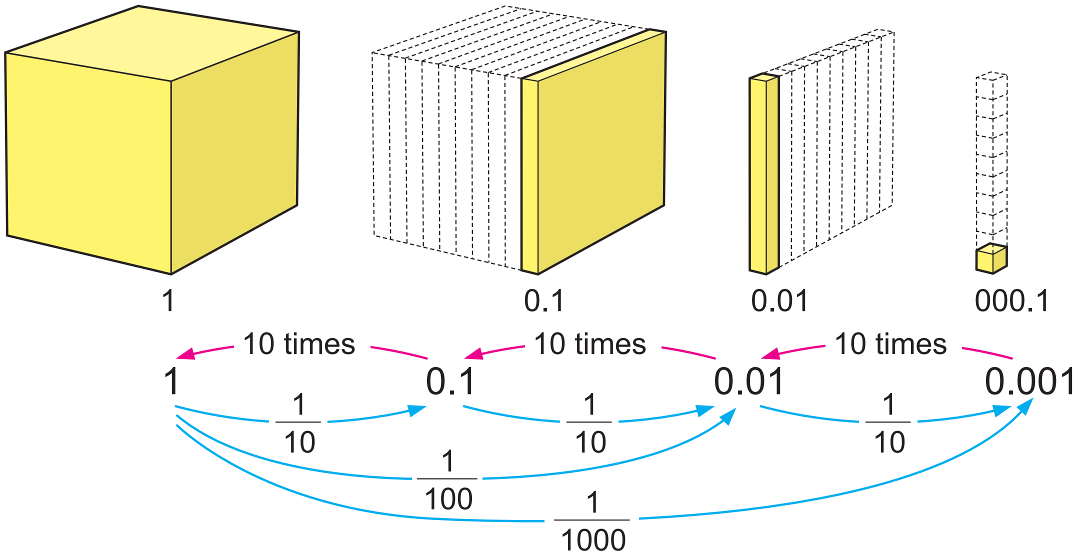
Exercise

Let's represent the following quantities by using the unit shown in ( ).

① 1435 cm (m) ② 42195 m (km) ③ 875 g (kg)

2 Structure of Decimal Numbers

1 Let’s look at the relationship among 1, 0.1, 0.01 and 0.001.



2 Let’s investigate the structure of the number 2.386.

2.386

☐ sets of 1

☐ sets of 0.1

8 sets of 0.01

☐ sets of 0.001

The Place Value in Decimal Numbers from the first place to the right of the decimal point are as follows;

Tenths place ($\frac{1}{10}$ place),

Hundredths place ($\frac{1}{100}$ place),

Thousandths place ($\frac{1}{1000}$ place)

Decimal numbers are represented by setting their places by ten times or $\frac{1}{10}$ of the place values as in whole numbers.

2 . 3 8 6

2 …Ones place
. …Decimal point
3 …Tenths place
8 …Hundredths place
6 …Thousandths place

3 Let's investigate the number 3.254.

① 3.254 is the sum of ☐ sets of 1, ☐ sets of 0.1, ☐ sets of 0.01 and ☐ sets of 0.001.

② 3.254 is the sum of ☐ sets of 0.001.

4 Arrange the following numbers from the largest to the smallest.

0.5 5 0.005 0 0.05

5 What is the number which is 10 times of 0.039?

1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
0.	0	3	9
0.	3	9	

10×

6 What is the number which is $\frac{1}{10}$ of 0.58?

1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
0.	5	8	
.			

$\frac{1}{10}$

Every number multiplied by 10 moves to the next higher place and $\frac{1}{10}$ of every number moves to the next lower place.

Exercise

1 Let's write the number that the sum of 7 sets of 1, 3 sets of 0.1 and 5 sets of 0.001. How many sets of 0.001 make this number?

2 Multiply the following numbers by 10 and find $\frac{1}{10}$ of them.

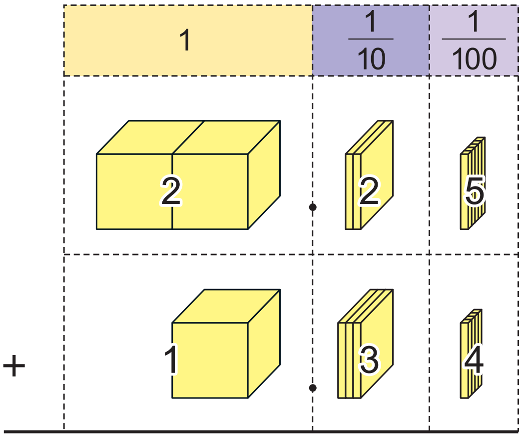
① 0.74 ② 1.58 ③ 26.95

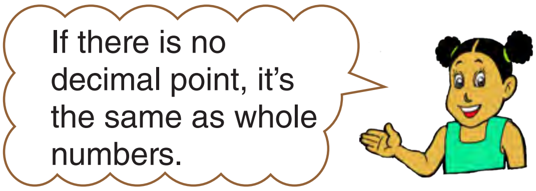
③ Addition and Subtraction of Decimal Numbers

1 There is 2.25 L of water in a tank. When 1.34 L of water is poured, how much water is there altogether?

① Write a mathematical expression.

② Let's think about how to add.





Addition Algorithm for 2.25 + 1.34 in Vertical Form

$$\begin{array}{r} 2.25 \\ 1.34 \\ \hline \end{array} \rightarrow \begin{array}{r} 2.25 \\ +\,1.34 \\ \hline 3\;5\;9 \end{array} \rightarrow \begin{array}{r} 2.25 \\ +\,1.34 \\ \hline 3.59 \end{array}$$

Align the numbers according to their place values.

Calculate each place value in the same way as whole numbers.

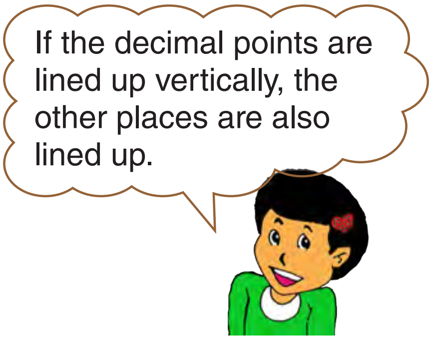
Put the decimal point of the sum in the same position as the decimal points above.

For adding decimal numbers in vertical form, we align the numbers according to their place values in the same way as whole numbers.

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

① 2.16 + 0.73

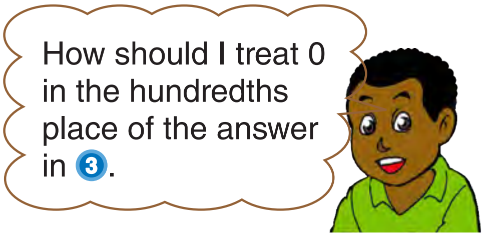
	2.	1	6
+	0.	7	3



② 5.74 + 2.63

	5.	7	4

③ 9.23 + 0.47



④ 4.05 + 3.1

Exercise

Let's calculate.

① 6.27 + 3.51 ② 8.46 + 0.32 ③ 1.54 + 2.38 ④ 4.72 + 3.49

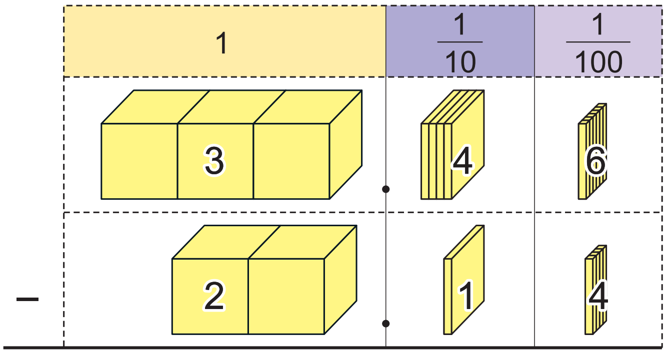
⑤ 9.62 + 0.18 ⑥ 4.25 + 2.75 ⑦ 3.21 + 2.5 ⑧ 2.8 + 0.54

3 Raka's older brother threw a paper plane at 3.46 m and Raka threw it at 2.14 m.

How many m more did Raka's brother throw than Raka?

① Write a mathematical expression. ☐

② Let's think about how to subtract.



For subtracting decimal numbers in vertical form, we arrange the numbers according to their place value in the same way as in whole numbers.

	3.	4	6
−	2.	1	4
	1.	3	2

4 Let’s think about how to subtract 1.25–0.67.

	1.	2	5
−	0.	6	7

Exercise

Let’s calculate.

① 5.78 − 3.44 ② 1.54 − 0.23 ③ 8.37 − 2.09 ④ 6.48 − 1.92

5 Let’s think about how to subtract the following.

❶ 2.32 − 1.82

	2.	3	2
−	1.	8	2

❷ 6.71 − 3.9

	6.	7	1

❸ 6 − 0.52

❹ 5.03 − 4.25

6 There is a 2.15 m tape. Cut off 85 cm of the tape. How much tape is left?

7 Let’s explain the rules of calculations in decimals and why the following method is appropriate, when ■ = 3.8, ▲ = 2.3 and ● = 2.7.

❶ ■ + ▲ = ▲ + ■

❷ ■ + ▲ + ● = ■ + (▲ + ●)

Exercise

Let’s calculate.

① 0.54 − 0.34 ② 1.96 − 0.56 ③ 7.28 − 2.4

④ 9.15 − 8.6 ⑤ 4 − 1.26 ⑥ 3.4 − 1.84

⑦ 7.08 − 0.29 ⑧ 4.07 − 1.98 ⑨ 2.03 − 1.65

Exercise

Pages 148 ~ 150

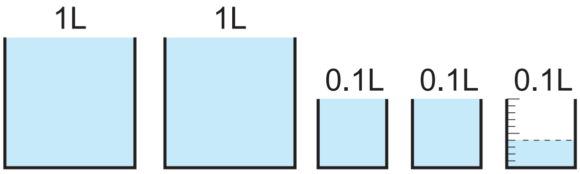
1 Let's read the following amounts of water, lengths and weights.

① 3.92 L ② 5.17 m ③ 0.05 L ④ 8.004 kg

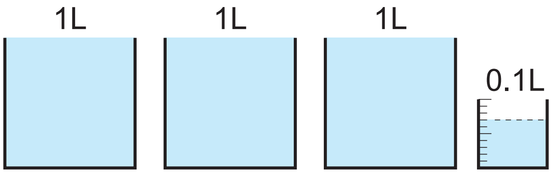
Page 148

2 How much is the amount of water?

①



②



Pages 153 ~ 154

3 Let's write the sum of 6 sets of 1, 4 sets of 0.1, 9 sets of 0.01 and 3 sets of 0.001.

Page 154

4 Find 10 times and $\frac{1}{10}$ of the following numbers.

① 0.46 ② 2.79 ③ 18.83

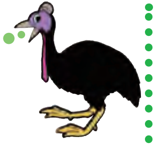
Pages 155 - 157

5 Let's calculate.

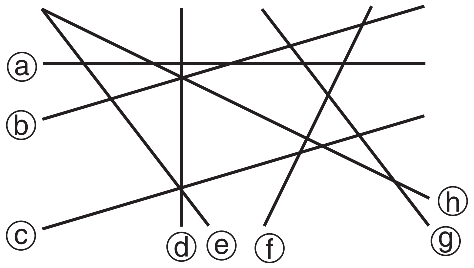
① 2.56 + 2.42 ② 5.76 + 4.28 ③ 10.8 + 3.45

④ 0.87 − 0.17 ⑤ 5.34 − 2.9 ⑥ 3.4 − 1.84

Grade 4 Do you remember?



Let's choose perpendicular lines and parallel lines.



Problems

1 Let's fill in the □ with numbers.

● Understanding the structure of decimals and whole numbers.

① 86.1 is 8 sets of □, 6 sets of □ and 1 set of □ combined.

② 19.003 is 1 set of □, 9 sets of □ and 3 sets of □ combined.

2 Let's represent the following quantities by using the unit shown in ( ).

● Converting units using decimal numbers.

① 8695 g (kg) ② 320 mL (L) ③ 3.67 km (m)

3 Let's fill in the □ with an inequality sign.

● Comparing decimal numbers.

① 0.21 □ 0.189 ② 2.395 □ 2.5

4 Let's calculate.

● Calculating addition and subtraction of decimal numbers.

① $4.18 + 0.32$ ② $3.64 + 2.4$ ③ $9.26 - 4.12$ ④ $7.05 - 4.6$

5 Kila's class holds a paper plane competition.

The group with the longest combined distance is the winner.

For group D to win, how long must Nick throw a paper plane in metres?

● Calculating decimal numbers.

Group A

Kila	2.57
Sane	2.69
Ben	2.7

Group B

Sam	3.26
Mata	2.85
Paul	3.17

Group C

Vagi	2.85
Ireen	2.96
Raka	2.8

Group D

Risa	2.68
Rex	3.2
Nick	

14

Thinking about How to Calculate

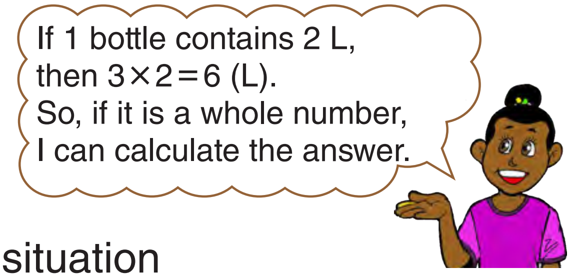
Decimal Numbers × Whole Numbers

1 There are 3 bottles of juice that contain 2 L each.

How many litres are there altogether?

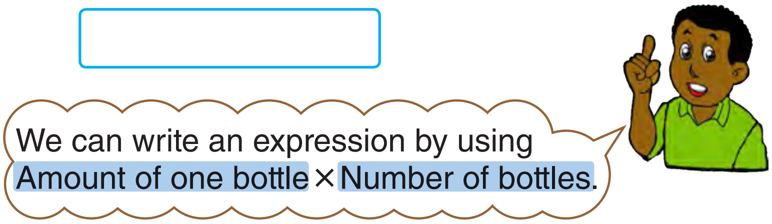
① Let's write a mathematical expression and find the answer.

☐ ☐ Litre



② Let's write an expression for the situation when 1.2 L is contained in each of the 3 bottles.

☐

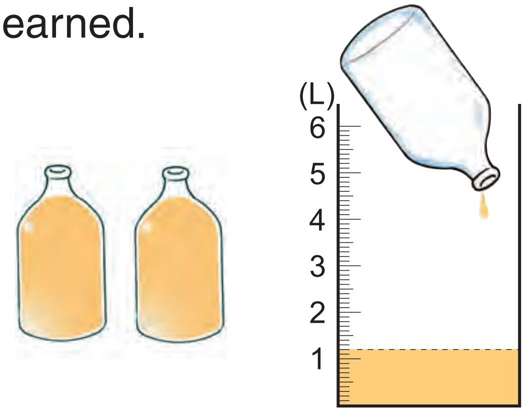


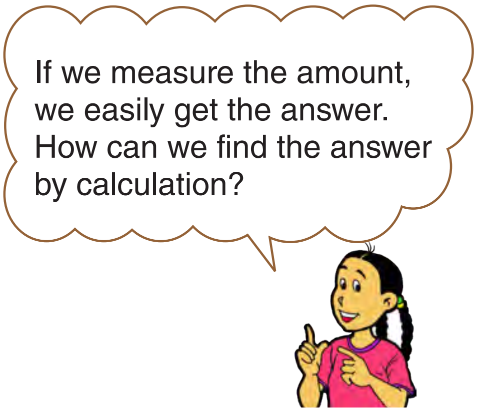
×3

L	1.2	?
Bottles	1	3

×3

③ Let's think about how to calculate by using what you have learned.



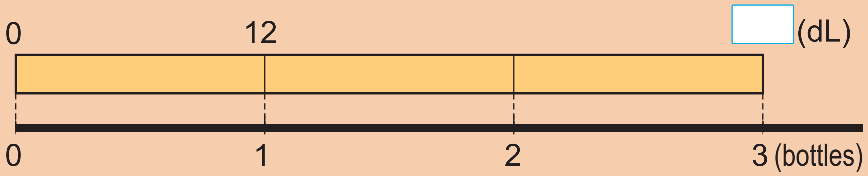


Sare's idea

If we change L to dL, we get 1.2 L = 12 dL.

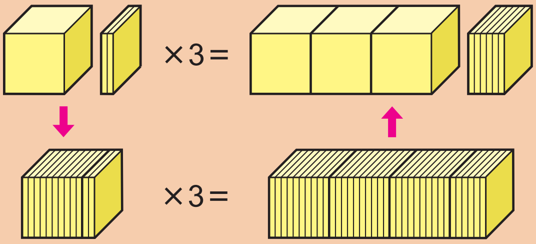
$12\times3=36$

$36\text{ dL}=\boxed{}\text{ L}$



Ambai's idea

If we use 0.1 as the unit,
1.2 is 12 sets of 0.1.
$12\times3=36$
36 sets of 0.1 is $\boxed{}$.



Gawi's idea

I use the structure of decimal numbers and the rules of calculation.

$$\begin{tikzcd} 1.2\times3 \arrow[d, "\times10"] & = \boxed{} \\ 12\times3 & = 36 \arrow[u, "\frac{1}{10}"'] \end{tikzcd}$$

If 1.2 is multiplied by 10, the product is divided by 10.

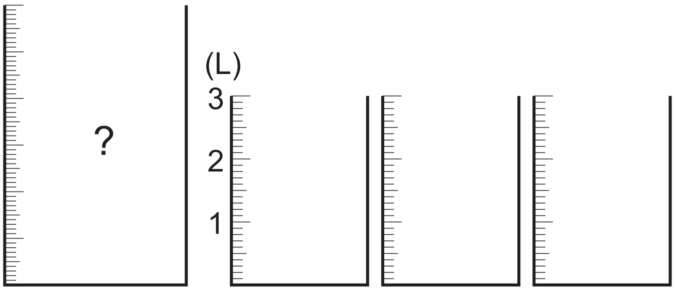
All these calculations of decimal numbers are done by changing into whole numbers.

2 Think about how to calculate 1.5 × 3 using the above ideas.

We can change the order of multiplication, so $1.5\times3=3\times1.5$

Decimal Numbers ÷ Whole Numbers

3 When we divide 5.4 L of juice into 3 bottles equally, how many litres will each bottle contain?



① Write a mathematical expression and find the answer.

When we share 9 L, the amount in each bottle is equal to 9 ÷ 3 = 3 (L). But if we share 5.4 L, how can we calculate the answer?

② Let's write a mathematical expression when we put 5.4 L in the blank.

÷3

Juice(L)	?	5.4
Bottles	1	3

÷3

I can calculate the amount of one bottle by Amount of juice ÷ Number of bottles.

③ Let's think about how to calculate by using what we have learned.

How can we calculate the answer if we convert L to dL?

Can I calculate the answer by using the division of whole numbers?

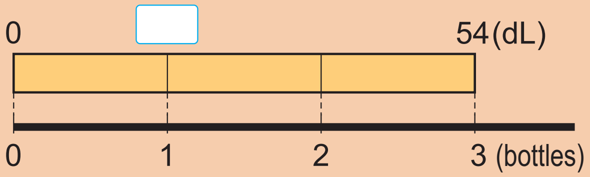
Activity

Mero's idea

5.4 L = 54 dL

54 ÷ 3 = 18

18 dL = □ L

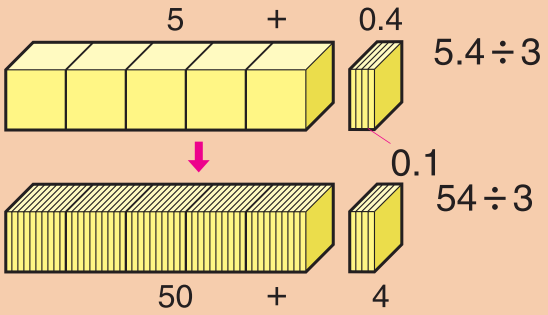


Vavi's idea

5.4 is 54 sets of 0.1.

54 ÷ 3 = 18

18 sets of 0.1 is □.



Naiko's idea

I use the structure of decimal numbers and the rules of division.

$$\begin{array}{ccccc} 5.4 & \div & 3 & = & \square \\ \downarrow \times 10 & & & & \uparrow \frac{1}{10} \\ 54 & \div & 3 & = & 18 \end{array}$$

In division if the dividend is multiplied by 10, the quotient is also multiplied by 10.

All these calculations of decimal numbers are done by changing into whole numbers.

Can you explain these ideas?

4 Think about how to calculate 5.1 ÷ 3 using the above ideas.

15

Arrangement of Data

Samuel was injured during sports day. He wants to make a poster to tell children to be more careful.

We investigated about injuries during three days at Samuel's school.

Record of Injuries

Grade	Locations	Type of injury
5	Basketball court	Bruise
4	Soccer field	Cut
5	Basketball court	Bruise
7	Volley ball court	Scratch
3	Classroom	Scratch
3	Soccer field	Fracture
6	Classroom	Scratch
5	Volley ball court	Cut
4	Soccer field	Scratch
5	Classroom	Scratch
3	Classroom	Bruise
7	Volley ball court	Scratch
8	Soccer field	Scratch
6	Classroom	Cut
6	Soccer field	Sprained finger
5	Volley ball court	Sprain
5	Classroom	Scratch
6	Basketball court	Bruise
4	Classroom	Cut
8	Soccer field	Bruise
6	Volley ball court	Scratch
4	Basketball court	Bruise

Let’s think about how to make a table to see the locations and the types of injuries.

1 Arrangement of Table

1 Let’s arrange the data in the above table and check the injuries at the school.

① Check where the injuries happened.

Ⓐ Where do injuries happen most frequently? Draw a table and check.

Ⓑ Tell everyone what you have discovered.

Number of Children and Locations

Locations of injury	Numbers of children	
Soccer field	𝍸 |	6
Basketball court		
Volley ball court		
Classroom		
Total		

② Check the types of injuries.

Ⓐ What types of injuries happen most frequently? Let's draw a table and check.

Ⓑ Tell everyone what you have noticed.

What kind of table can we draw to see the locations and types of injuries at a glance?

Number of Children and Injury

Type of injury	Numbers of children	
Cut		
Bruise		
Scratch		
Fracture		
Sprained finger		
Sprain	|	1
Total		

2 Let's check to see where the injuries happened and the types of injuries. Fill in the table with a number for the location and types of injuries.

Locations and Types of Injuries

Type	Cut		Bruise		Scratch		Fracture		Sprained finger		Sprain		Total
Soccer field													
Basketball court													
Volley ball court													
classroom	||	2											
Total													

① What is the most frequent injury by location and type?

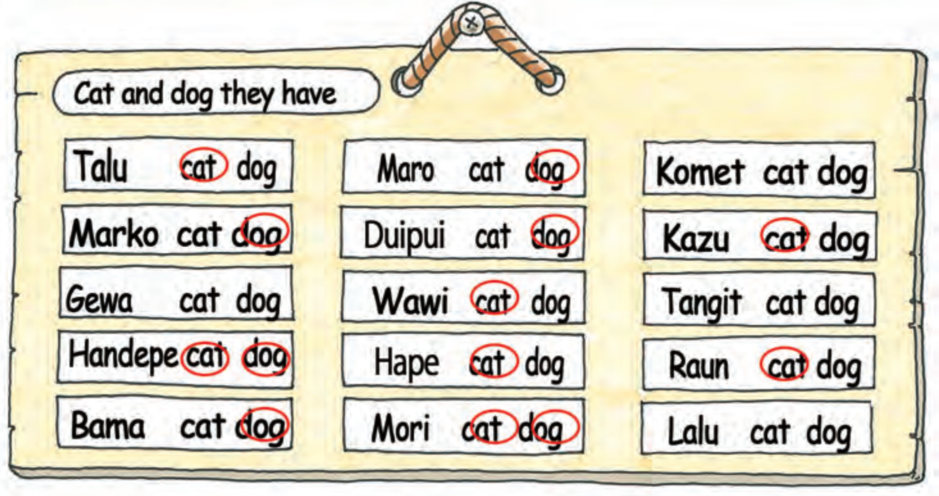
② Where did the largest number of injuries happen?

③ What can you conclude from the table above?

Let's make the same investigation at your school.

2 Arrangement of Data

1 Morea asked her classmates to draw a ○ (circle) to see if they have any cats or dogs at home.



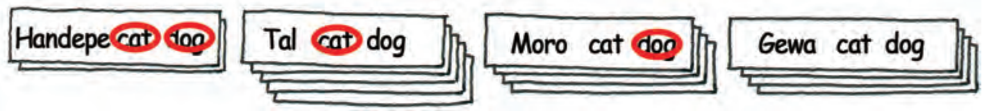
① What kind of groups can they make from the way they are marked?

Ⓐ How many children drew 2 ○ and what kind of group is this?

Ⓑ How many children drew 1 ○ and what kind of group is this?

Ⓒ Divide the children who drew 1 ○ into those who have cats and those who have dogs. How many children are there in each?

Ⓓ How many children drew nothing and what kind of group is this?



② Complete the tables below.

Ⓐ

	Cat & Dog	Cat only	Dog only	Nothing
Number of Children	2			

Ⓑ

		Cat		Total
		Yes	No	
Dog	Yes	2		
	No			
Total				

③ How many children have dogs only?

④ How many children have cats?

Exercise

① Gima investigated the traffic accidents in her town. From her data, make the table below and explain what you noticed to your friends.

Pages 164 ~ 166

Accidents with Primary School Children (Gima's City for One Year)

When	Cause	When	Cause
Playing	Running into the street	Playing	Crossing in front of cars
On the way to or from friends house	Outside the crosswalk	On the way to or from friends house	Running into the street
Playing	Running into the street	Shopping	Running into the street
Playing	Running into the street	Playing	Crossing on red light
On the way to or from school	Outside the crosswalk	Playing	Running into the street
Playing	Crossing on red light	On the way to or from school	Crossing in front of cars
Shopping	Crossing in front of cars	On the way to or from school	Running into the street
Playing	Running into the street	Playing	Outside the crosswalk
On the way to or from school	Running into the street	Playing	Running into the street
Shopping	Outside the crosswalk	On the way to or from school	Running into the street
Playing	Crossing on red light	On the way to or from school	Outside the crosswalk

Accidents with Primary School Children

Cause When	Running into street	Outside crosswalk	Crossing on red light	Crossing in front of cars	Total
Playing					
On the way to or from friends house					
On the way to or from school					
Shopping					
Total					

Problems

① The table below is a record of injuries for the grade 4 children in Robert's school. Complete the table below.

● Understanding how to make a table to show two things at once.

Record of Children Who Had Injuries

Name	Place	Type of injury
Kara	Soccer field	Scratch
Ted	Classroom	Cut
Wena	Classroom	Scratch
Ziko	Volleyball court	Sprain
Sete	Basketball court	Bruise
Nina	Volleyball court	Sprained finger
Sasa	Soccer filed	Bruise
Yema	Soccer filed	Cut
Karo	Volleyball court	Scratch
Yaga	Volleyball court	Bruise
Dada	Classroom	Scratch
Manu	Volleyball court	Scratch

Locations and Types of Injuries

Type of Injury / Place	Scratch					Total
Volleyball court						
Total						

② Julie made a record about the brothers and sisters of her classmates. There are 36 children in the class.

● Making and reading a table.

Children who have older brothers…12

Children who have older sisters…6

Children who do not have any older brothers or older sisters…18

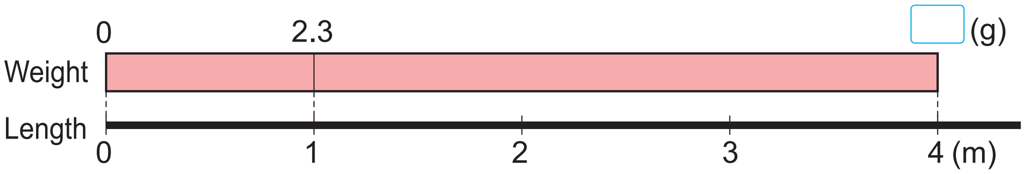
Complete the table on the right.

		Older brother		Total
		Yes	No	
Older sister	Yes			
	No			
Total				36

16 Multiplication and Division of Decimal Numbers

1 Calculations of (Decimal Number) × (Whole Number)

1 There is a 1 m wire that weighs 2.3 g. How many grams does 4 m of the same wire weigh?



① Let's write a mathematical expression.

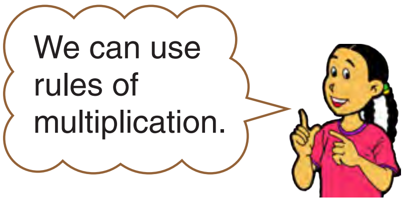
×4

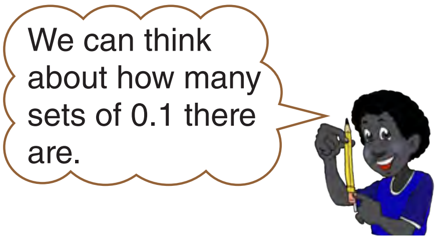
g	2.3	?
m	1	4

×4

② Approximately how many grams does it weigh?

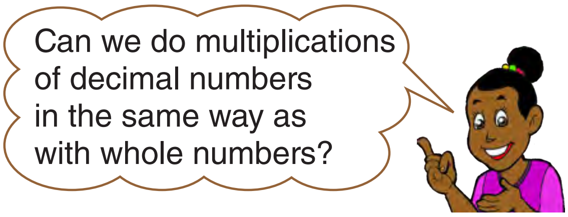
③ Let's think of ways on how to calculate.

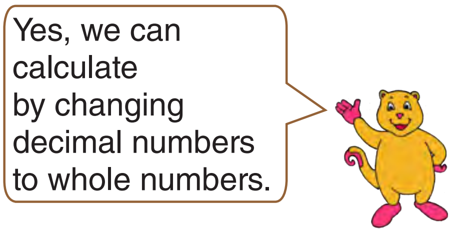




④ Let's think about how to multiply in vertical form.

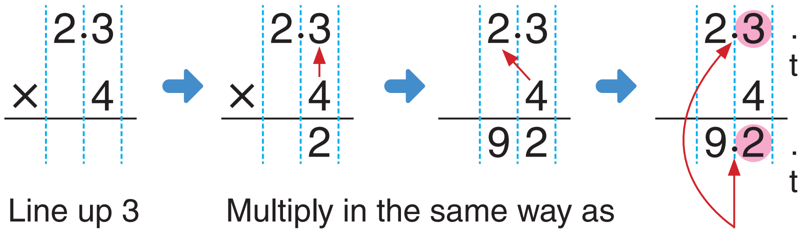
	2.	3
×		4





Let's think about how to multiply decimal numbers in vertical form.

Multiplication Algorithm for 2.3×4 in Vertical Form



…Number of digits after the decimal point is 1.

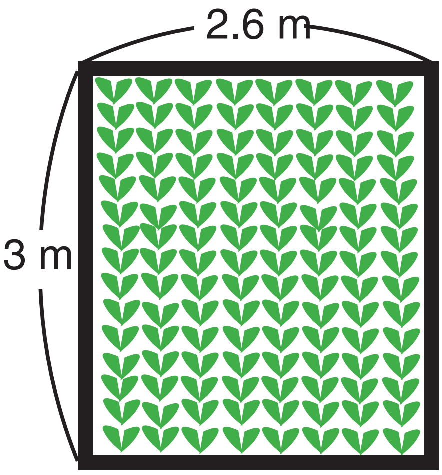
…Number of digits after the decimal point is 1.

Line up 3 and 4.

Multiply in the same way as with multiplication for whole numbers.

Put the decimal point of the product in the same place as the decimal point of the multiplicand.

2 What is the area of a plant nursery that is 2.6 m wide and 3 m long in m^2?



❶ Write a mathematical expression.

❷ Let's think of ways on how to calculate.

❸ Let's multiply in vertical form.

3 Let's think about how to multiply in vertical form.

❶ 3.2×6=☐

$$\begin{array}{r} 3.2 \\ \times \quad 6 \\ \hline \end{array}$$

❷ 0.8×7=☐

$$\begin{array}{r} 0.8 \\ \times \quad 7 \\ \hline \end{array}$$

Exercise

Let's multiply in vertical form.

① 3.2×3　② 3.3×3　③ 1.8×2　④ 1.4×3

⑤ 2.4×4　⑥ 4.3×6　⑦ 0.7×6　⑧ 0.8×4

4 Let's think about how to multiply in vertical form.

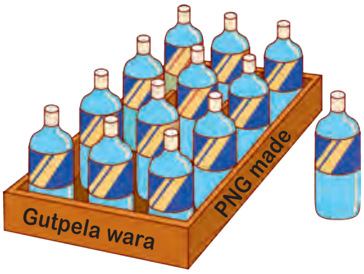
① 2.5 × 4 = ☐　　② 0.4 × 5 = ☐

	2.	5
×		4

	0.	4
×		5

5 There are 13 bottles with 1.2 L of water.

How many litres are there altogether?

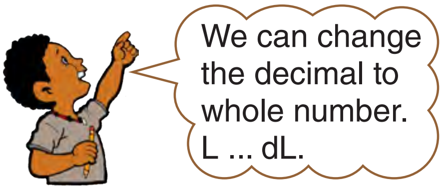


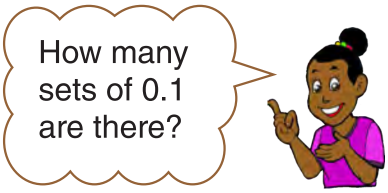
① Let's write a mathematical expression.

☐

② Let's estimate. ☐

③ Let's think of ways on how to calculate and think about how to multiply in vertical form.





	1.	2
×	1	3

6 Let's think about how to multiply in vertical form.

① 1.6 × 14 = ☐　　② 1.5 × 18 = ☐

	1.	6
×	1	4

	1.	5
×	1	8

Exercise

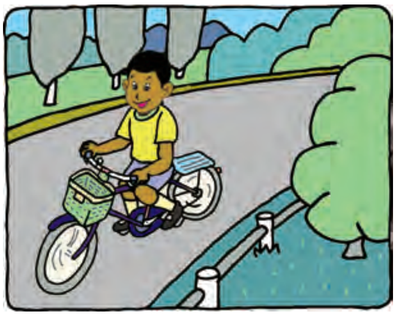
Let's multiply in vertical form.

① 1.5 × 6　② 3.6 × 5　③ 4.5 × 4　④ 2.5 × 8　⑤ 0.6 × 5

⑥ 0.8 × 5　⑦ 0.5 × 6　⑧ 0.2 × 15　⑨ 2.2 × 12　⑩ 1.2 × 31

⑪ 1.9 × 14　⑫ 1.7 × 15　⑬ 3.4 × 12　⑭ 4.8 × 21　⑮ 3.5 × 18

7 There is a 2.35 km long fence around the Golf course in Lae. Steven goes around the Golf course 3 times by bicycle. How many kilometres did he cycle altogether?



① Write a mathematical expression.

② Let's think of ways on how to calculate.

③ Let's think about how to multiply in vertical form.

	2.	3	5
×			3

8 Let's think about how to multiply.

① 0.24×4=

② 0.04×5=

Exercise

1 Let's multiply.

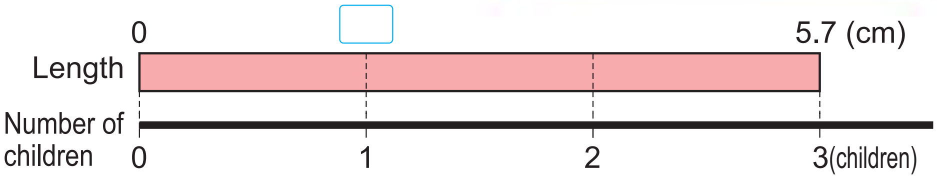
① 1.87×2 ② 2.63×5 ③ 2.23×4

④ 0.12×7 ⑤ 0.08×5 ⑥ 0.15×6

2 There is a 1 m iron bar that weighs 1.25 kg.
What is the weight of 4 m of this iron bar in kg?

2 Calculations of (Decimal Number)÷(Whole Number)

1 If we divide a 5.7 m rope equally among 3 children, how many metres will each one receive?



÷3

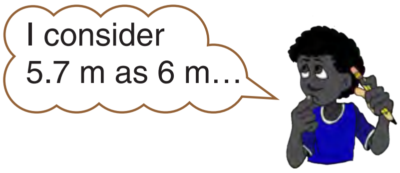
m	?	5.7
Children	1	3

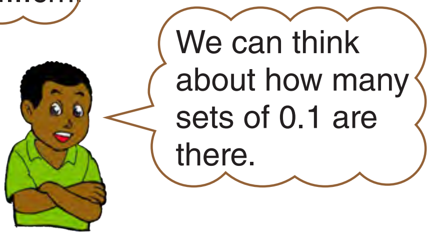
÷3

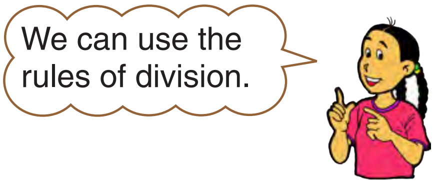
① Let's write a mathematical expression.

② Approximately how many metres is this?

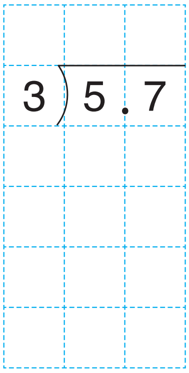
③ Let's think of ways on how to calculate.

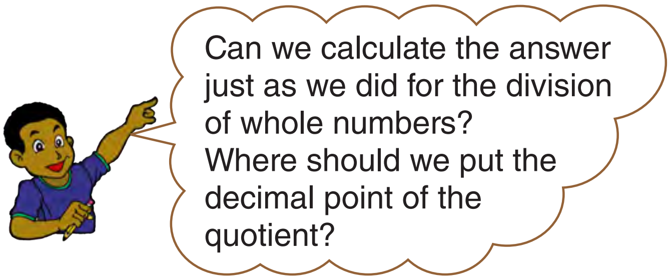






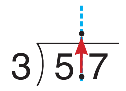
④ Let's think about how to divide in vertical form.



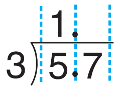


Let's think about how to divide decimal numbers in vertical form.

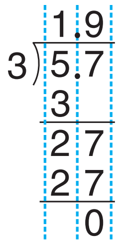
Division Algorithm for 5.7÷3 in Vertical Form



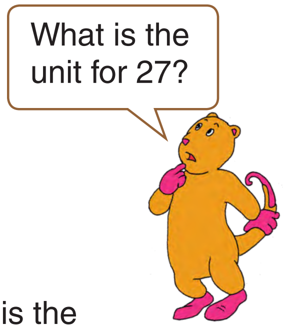
Put the decimal point of the quotient in the same place as the dividend.



When 5 is divided by 3, the quotient is written in the ones place.



Then calculate as if this is the division of whole numbers.

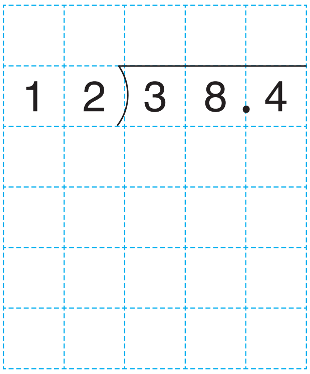


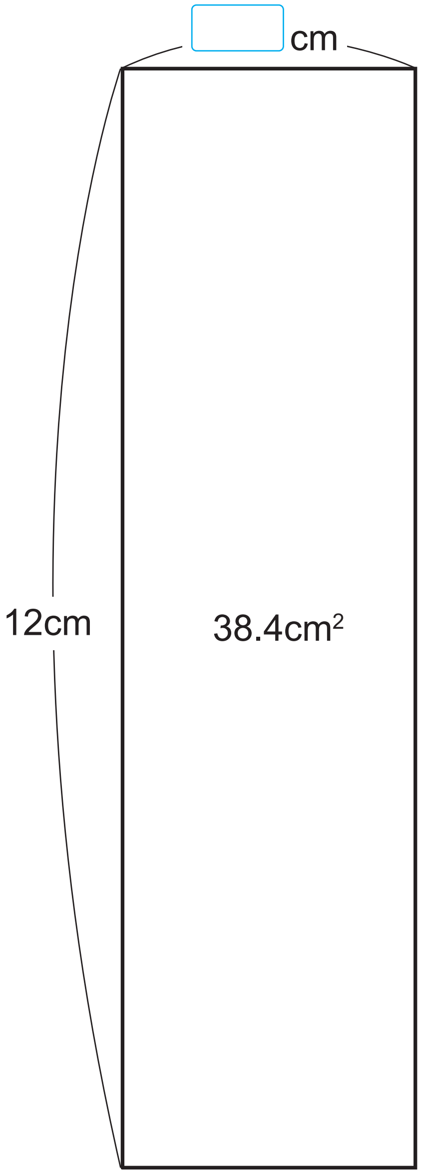
2 Let’s find the width of the rectangle with an area of 38.4 cm^2 and a length of 12 cm.

① Let’s write a mathematical expression.

② Let’s think of some ways of finding the answer.

③ Let’s think about how to divide in vertical form.



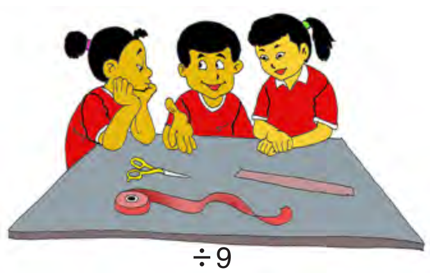


Exercise

Let’s divide in vertical form.

① 6.8÷2	② 6.4÷4	③ 7.5÷5
④ 52.9÷23	⑤ 61.2÷18	⑥ 58.8÷42

0 as the Quotient in the Ones Place



3 When we divide a 4.5 m tape equally among 9 children, how many metres will each child receive?

4.5÷9

÷9

m	?	4.5
Children	1	9

÷9

❶ Let's think of ways on how to calculate.

❷ Let's think about how to divide in vertical form.

① We put the decimal point of the quotient in the same place as the decimal point of the dividend and write 0 in the ones place of the quotient because 4 is smaller than 9.

② Since 4.5 is 45 sets of 0.1, we can calculate by using the same method that we used for whole numbers.

$$9\overline{)4.5}$$

↓

(1)

$$\begin{array}{r} 0. \\ 9\overline{)4.5} \end{array}$$

↓

(2)

$$\begin{array}{r} 0.5 \\ 9\overline{)4.5} \\ 4\,5 \\ \hline 0 \end{array}$$

4 Let's explain how to divide 1.61÷7 in ☐.

$$\begin{array}{r} 0. \\ 7\overline{)1\;61} \end{array}$$

$$\begin{array}{r} 0.2 \\ 7\overline{)1.61} \\ 1\;4 \\ \hline 21 \end{array}$$

$$\begin{array}{r} 0.23 \\ 7\overline{)1.61} \\ 1\;4 \\ \hline 21 \\ 21 \\ \hline 0 \end{array}$$

Exercise

Let's divide in vertical form.

① 3.5÷5 ② 4.8÷6 ③ 5.4÷9

④ 1.62÷3 ⑤ 2.45÷5 ⑥ 3.96÷4

Dividing Continuously

5 We divide a 7.3 m bilum wool equally among 5 children.

How many metres will each one receive?

$7.3 \div 5$

÷5

m	?	7.3
Children	1	5

÷5

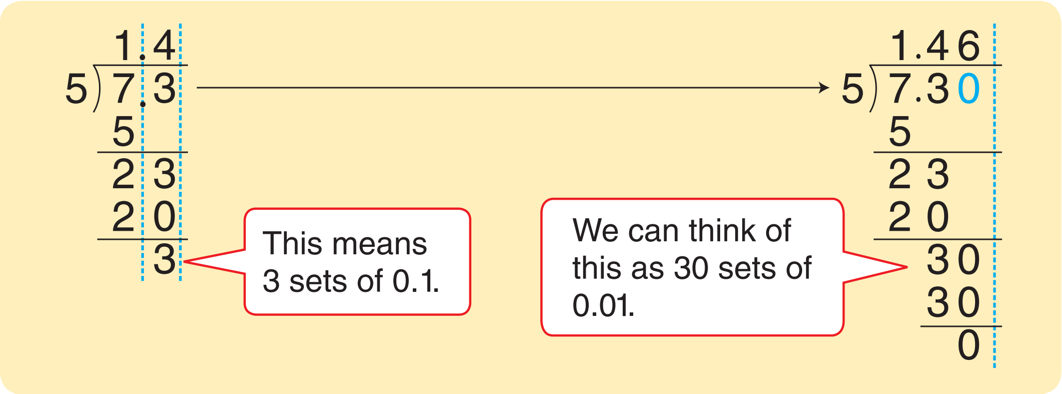
① Let's think of some ways of finding the answer.

Relationship betwen decimal and whole number....

How many sets of 0.1 are there?

Let's use rules of division.

② Let's think about how to divide in vertical form.



```
    1.4                    1.46
 5)7.3   ------------>  5)7.30
   5                      5
   2 3                    2 3
   2 0                    2 0
     3                      30
                            30
                             0
```

This means 3 sets of 0.1.

We can think of this as 30 sets of 0.01.

Division that is continued until the remainder is 0 is called "**dividing continuously**".

6 Let's calculate $6 \div 8$ in vertical form.

We can continue to divide.

```
    0.7
 8)6.0
   5 6
     4
```

Exercise

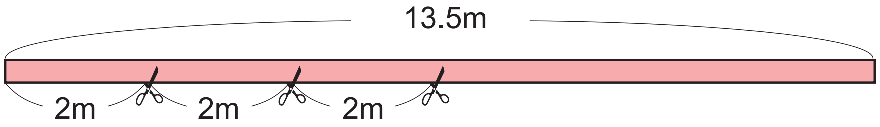
Let's divide continuously.

① 9.4÷4 ② 8.6÷5 ③ 7÷5 ④ 5÷8

③ Division Problems

Division with Remainders

1 There is a 13.5 m nylon. Shama makes grass skirts for singsing by using a 2 m nylon tape. How many grass skirts does she make and how many metres are left?



① Let's write a mathematical expression.

☐

m	2	13.5
Grass skirts	1	?

÷2 ÷2

② Let's think of ways on how to calculate.

③ The calculation is shown on the right.

What is the remainder in m?

$$\begin{array}{r} 6. \\ 2\overline{)13.5} \\ \underline{12} \\ 1\ 5 \end{array}$$

Ⓐ '15' is 15 sets of what?

Ⓑ Where should we put the decimal point of the remainder?

Dividend = divisor × quotient + remainder

13.5 = 2 × 6 + ☐

$$\begin{array}{r} 6 \\ 2\overline{)13.5} \\ \underline{12} \\ 1.5 \end{array}$$

Until which place value should we calculate?

In division of decimal numbers, the decimal point of the remainder is put at the same place as the original decimal point of the dividend.

Exercise

There is a 47.6 m of ribbon. If we cut it into 3 m each, how many 3 m ribbon are there and what is the remainder in m?

2 We divide a 2.3 L of juice equally among 6 children. How many litres does each one receive?

÷6

L	?	2.3
Children	1	6

÷6

① Let's write a mathematical expression.

☐

② Let's think of ways on how to calculate.

③ On the right, we can divide continuously. How can we say the answer?

④ Round the quotient to the hundredths place and give the answer to the nearest tenths.

$$\begin{array}{r}
0.3\,8\,3\\
6\,\overline{)\,2.3}\\
\underline{1\,\,8}\\
5\,0\\
\underline{4\,8}\\
2\,0\\
\underline{1\,8}\\
2
\end{array}$$

When the dividend is not divisible by the divisor or when the number of places become too long, the quotient is rounded.

Exercise

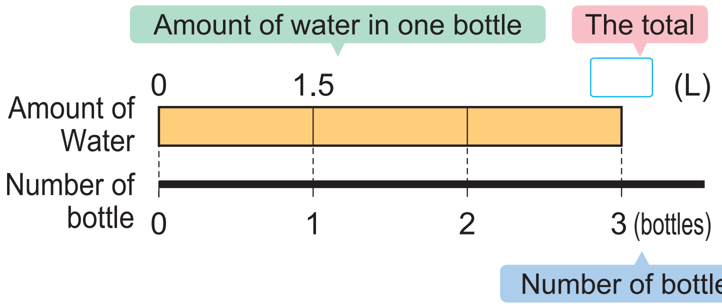
1 Let's calculate. Round the quotient to the hundredths place and give the answer to the nearest tenths.

① 5.5÷8 ② 9.9÷7 ③ 67.8÷79 ④ 42.9÷14

2 Divide a 16.3 m tape equally into 3 sections. How many metres is one section? Round the quotient to the hundredths place and give the answer to the tenths place.

4 What Kind of Expression?

1 There are 3 bottles of water, each bottle contains 1.5 L of water. How many litres are there altogether?



×3

L	1.5	?
Bottles	1	3

×3

① Let's write a mathematical expression. ☐

② Let's think of ways on how to calculate.

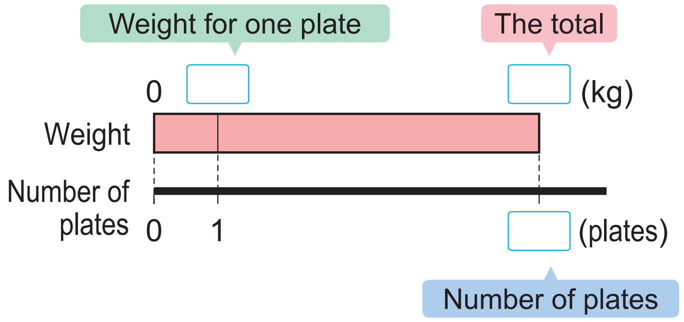
③ Let's think about how to divide in vertical form.

2 There are 6 plates with the same weight. The total weight is 5.1 kg. How many kg does each plate weigh?

① What is known?

② What do you want to know?

③ Write what is known in the diagram and find the answer.



×6

kg	?	5.1
Plates	1	6

×6

④ Let's write a mathematical expression. ☐

⑤ Let's think of ways on how to calculate.

⑥ Let's think about how to divide in vertical form.

3 Divide a 9 m rope equally into 5 sections. How many metres is each section?

Exercise

1 Let's calculate in vertical form.

Pages 170 ~ 173, 174 ~ 177

① 5.3×7　② 9.2×49　③ 70.5×73

④ 6.52×4　⑤ 0.26×8　⑥ 0.46×5

⑦ 6.5÷5　⑧ 12.6÷7　⑨ 8.1÷9

⑩ 49.4÷19　⑪ 65.61÷27　⑫ 15.36÷32

2 Let's calculate. Round the quotient to the hundredths place and give the answer to the tenths.

Page 179

① 2.63÷3　② 40.4÷6　③ 30.42÷14　④ 5.6÷39

3 There is a rectangular flowerbed with an area of 17.1 m^2. The length is 3 m. Let's find the width of this flowerbed.

Page 178

4 There is 9 L of rice that weighs 8 kg. How many kg does 1 L of this rice weigh? Round the quotient to the hundredths place and give the answer to the tenths.

Page 179

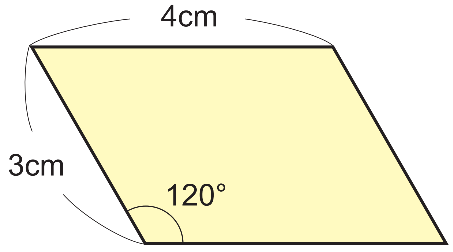
5 There are 25 books. Each book weighs 14 g. How many kg are there altogether?

Page 180

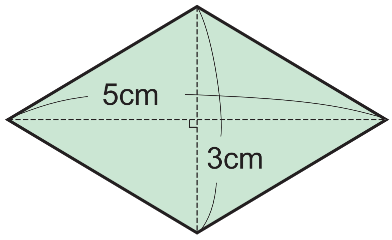
Grade 4 **Do you remember?**

Let's draw the following parallelogram and rhombus.

①



②



Problems

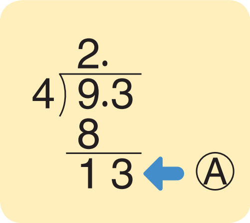
1 Let's summarise the multiplication and the division of decimal numbers.

● Understanding how to calculate multiplication and division of decimal numbers.

① Since 2.7×5 represents 27×5=135 as the unit of □, the answer 2.7×5 is □.

② Since 6.48÷9 represents 648÷9=72 as the unit of □, the answer 6.48÷9 is □.

③ Since 13 in Ⓐ means 13 sets of □ shown on the right, 9.3÷4=2 remainder □.



2 Let's calculate in vertical form.

● Calculating multiplication and division of decimal numbers in vertical form.

① 2.4×3 ② 2.8×12 ③ 0.12×5

④ 7.2÷4 ⑤ 41.6÷26 ⑥ 3.78÷6

3 There is a book with a length of 14.8 cm and width of 21 cm. What is the area of this book's cover in cm^2?

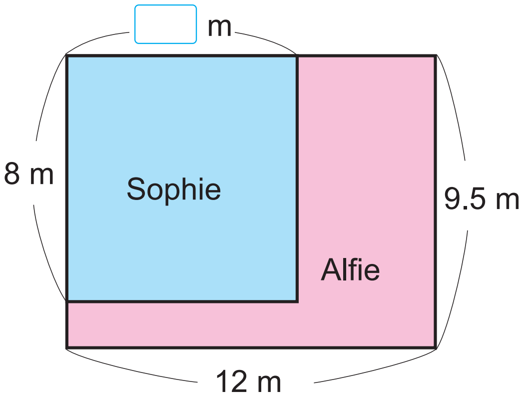
● Understanding the situation of division problem.

4 Divide 36.5 cm of wool equally into 5 sections. How long in metres is each section?

● Understanding the situation of division problem.

5 Sophie and Alfie divided the area into two areas shown on the right. When the two areas are the same, fill in the □ with a number.

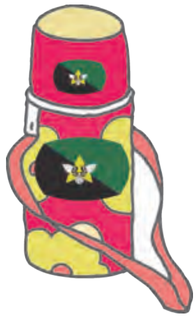
● Understanding the situation and answer.



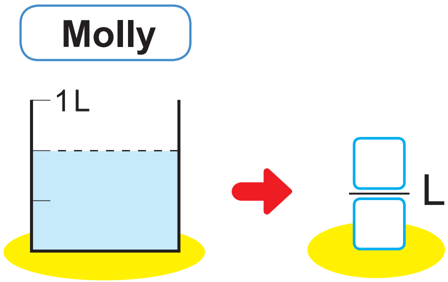
17

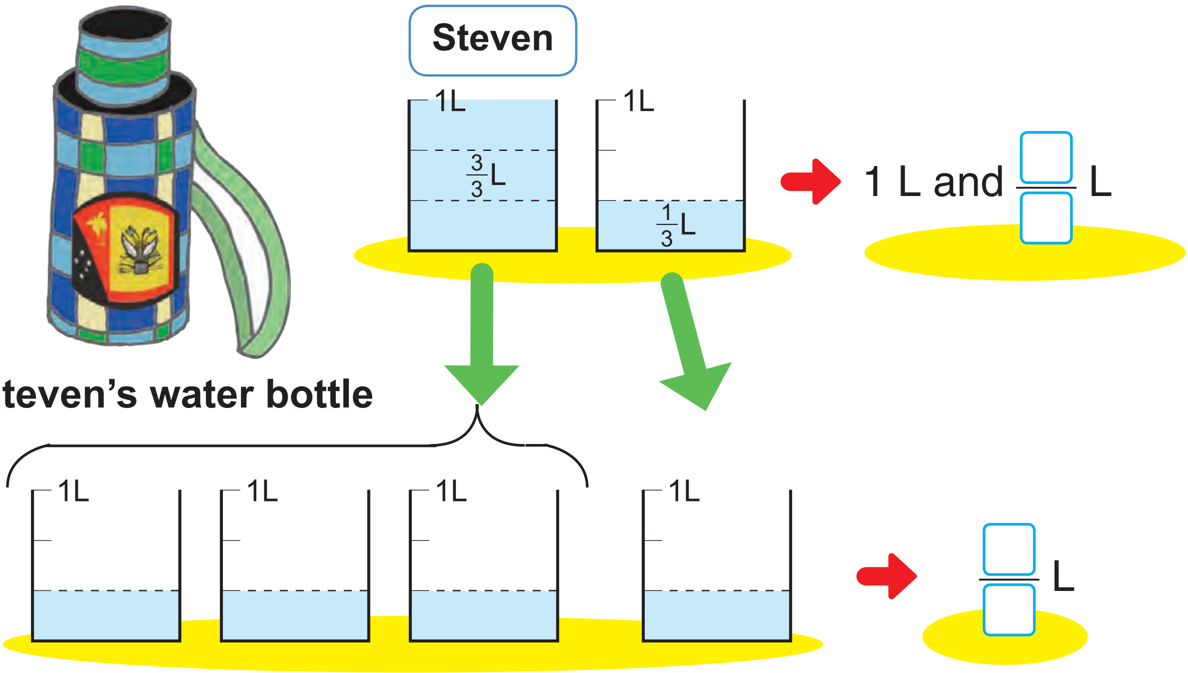
Fractions

What are the amounts of water in Molly's bottle and Steven's bottle in litres, respectively?

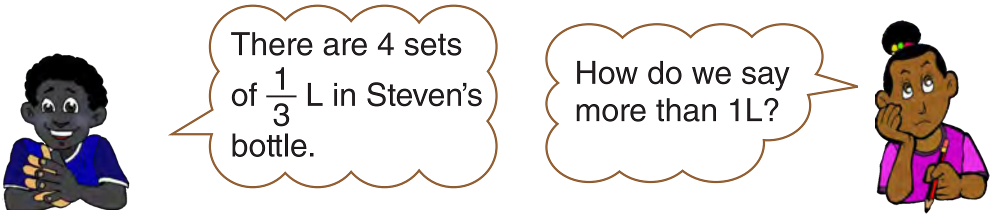


Molly's water bottle





Steven's water bottle



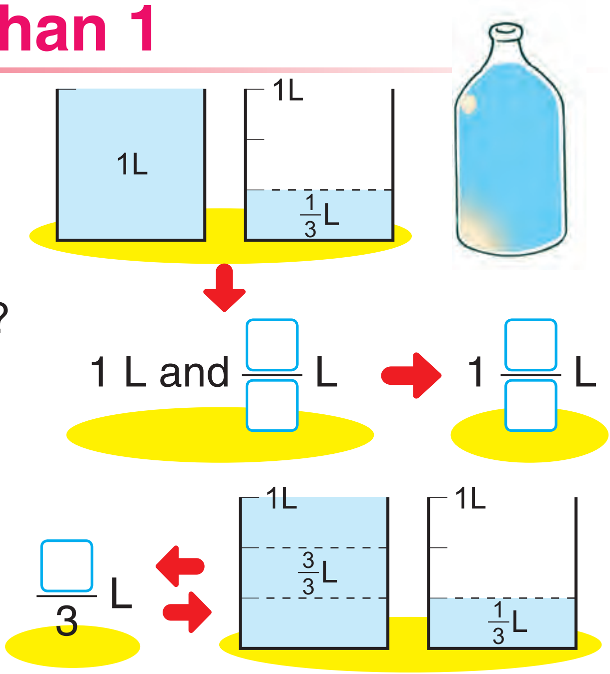
Let's think about how to represent fractions larger than 1 and how to calculate.

① Fractions Larger than 1

1 What is the amount of water in Steven's bottle in litres?

① 1 L and how many litres more?

② By looking at the figure on the right, how many $\frac{1}{3}$ L can we say?

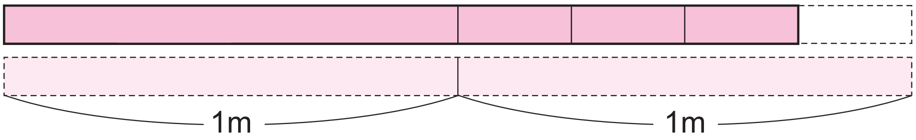


The sum of 1 L and $\frac{1}{3}$ L is written as $1\frac{1}{3}$ L and is read as **"one and one third litres"**.

It is also written as $\frac{4}{3}$ L and read as **"four third litres" or "four over three litres"**.

$$\boxed{1\frac{1}{3}=\frac{4}{3}}$$

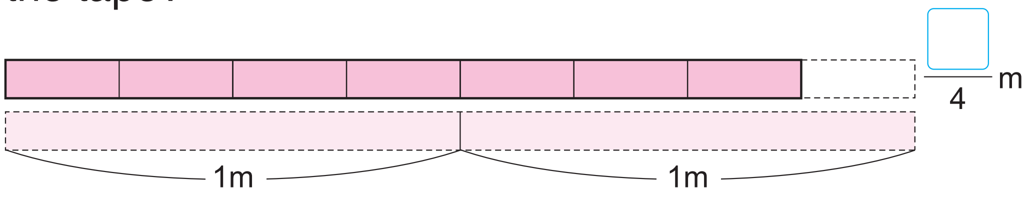
2 How many metres is the length of the tape below?



① 1 m and how many metres more?

1 m and $\frac{\square}{\square}$ m → $1\frac{\square}{\square}$ m

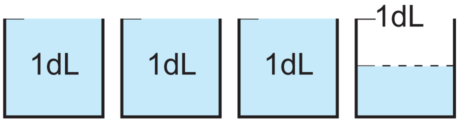
② By looking at the figure below, how many $\frac{1}{4}$ m are there in the tape?



1. Fractions in which the numerator is **smaller** than the denominator, like $\frac{1}{3}$ and $\frac{3}{4}$, are called **proper fractions**.
2. Fractions with the sum of a whole number and a proper fraction, like $1\frac{1}{3}$ and $1\frac{3}{4}$, are called **mixed fractions**.
3. Fractions in which the numerator is **equal to or larger than the denominator**, like $\frac{4}{4}$ and $\frac{7}{4}$, are called **improper fractions**.

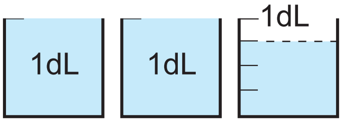
3 Let's write the following lengths and amounts of water as mixed fractions.

①



$\square\frac{\square}{\square}$ dL

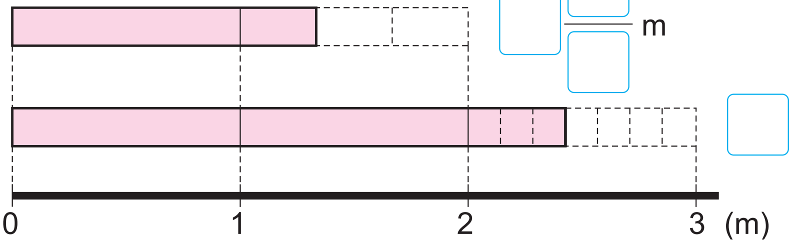
②



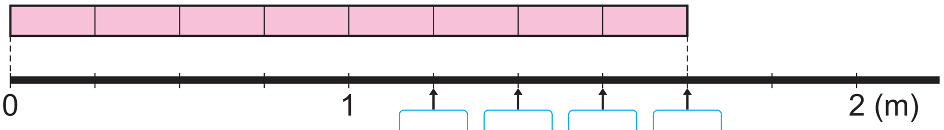
$\square\frac{\square}{\square}$ dL

③ $\square\frac{\square}{\square}$ m

④ $\square\frac{\square}{\square}$ m



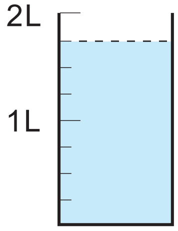
4 Let's write 5 sets of, 6 sets of, 7 sets of and 8 sets of $\frac{1}{5}$ m as improper fractions, respectively.



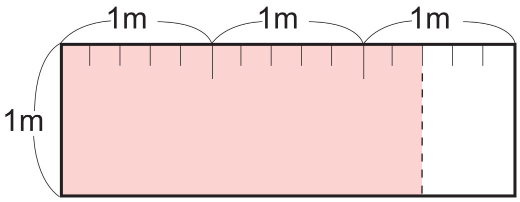
$\square$ $\square$ $\square$ $\square$

Proper fractions are smaller than 1, mixed fractions are larger than 1 and improper fractions are equal to 1 or larger than 1.

5 Let’s write these fractions as mixed fractions and improper fractions.

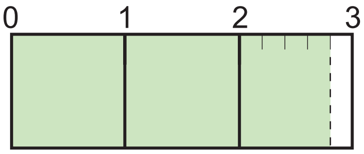
① 

$\square\frac{\square}{\square}$ L, $\frac{\square}{\square}$ L

② 

$\square\frac{\square}{\square}$ m², $\frac{\square}{\square}$ m²

6 Let’s change $2\frac{4}{5}$ to an improper fraction by the marking on the figure on the right.



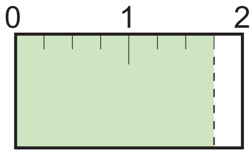
By looking at the fractions whose denominator is 5,

$2\frac{4}{5}$ is $\frac{5}{5}$, $\frac{5}{5}$ and $\frac{4}{5}$.

If a unit is $\frac{1}{5}$, we get $\square$ sets of $\frac{1}{5}$ by $5\times2+4$.

$2\frac{4}{5}=\frac{\square}{5}$

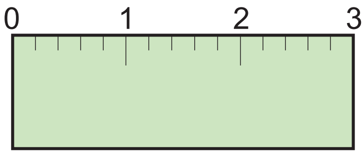
7 Let’s change $\frac{7}{4}$ to a mixed fraction.



$\frac{7}{4}$ is divided into $\frac{4}{4}$ and $\frac{3}{4}$.

Because $\frac{4}{4}$ is equal to 1, we get $\frac{7}{4}=\square\frac{\square}{4}$.

8 Let’s change $\frac{15}{5}$ to a whole number.



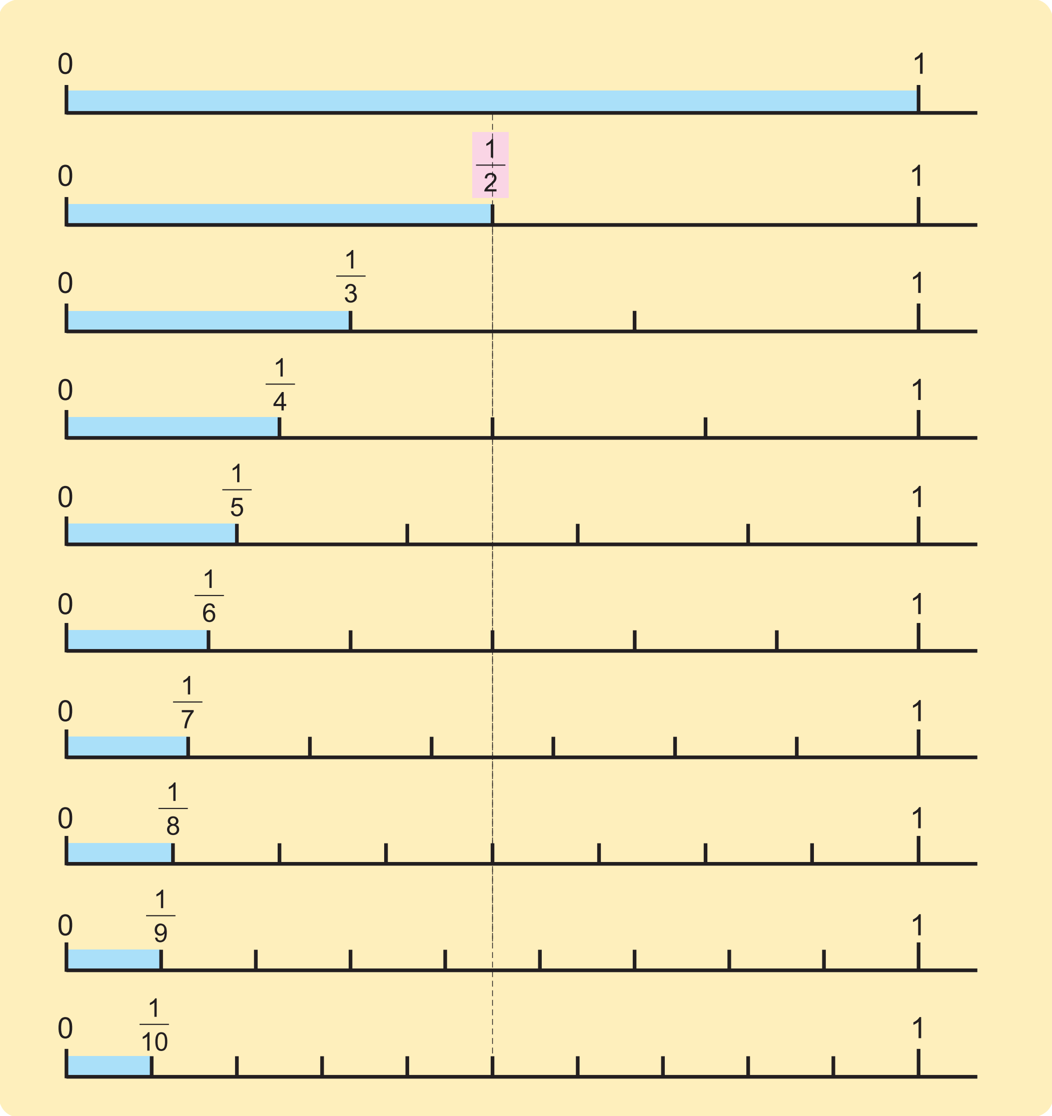
Exercise

Let’s change mixed fractions to improper fractions and improper fractions to mixed fractions or whole numbers.

① $4\frac{2}{3}$ ② $2\frac{1}{6}$ ③ $\frac{13}{4}$ ④ $\frac{9}{5}$ ⑤ $\frac{8}{2}$

2 Equivalent Fractions

1 Let's investigate the following by using this fraction wall.



① Let's read out the following fractions $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}, \frac{1}{8},$ $\frac{1}{9}$ and $\frac{1}{10}$ from smallest to largest.

② Let's replace the numerators in ① with 2 and read them again from the smallest to the largest.

When the numerator is the same and the denominators become larger, the fraction becomes smaller.

③ Let's look at the number line on the previous page, write the fractions that are equal to the following fractions.

Ⓐ $\frac{1}{2} = \square = \square = \square = \square$

Ⓑ $\frac{1}{3} = \square = \square$

Ⓒ $\frac{3}{4} = \square = \square$

④ Let's look at the number line and find other fractions that are equal to the fractions in ③.

⑤ Let's talk about what you have learned and summarise the results.

In fractions;

① When the denominators are the same, they become larger as the numerator increases. $\frac{1}{4} < \frac{2}{4} < \frac{3}{4}$

② When the numerators are the same, they become smaller as the denominator increases. $\frac{4}{2} > \frac{4}{4} > \frac{4}{8}$

③ Some fractions have the same size even if both their denominators and numerators are different.

Exercise

Which is larger? Let's fill in the □ with equal or inequality signs.

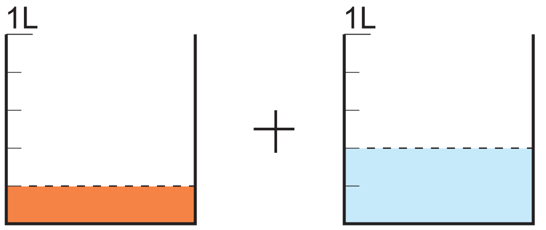
① $\frac{3}{5} \square \frac{3}{8}$ ② $\frac{3}{7} \square \frac{5}{7}$ ③ $\frac{1}{2} \square \frac{4}{8}$

3 Addition and Subtraction of Fractions

Addition of Fractions

1 Greg and Lucy made orange juice by mixing orange cordial and water. How many litres did each one make?

① Greg

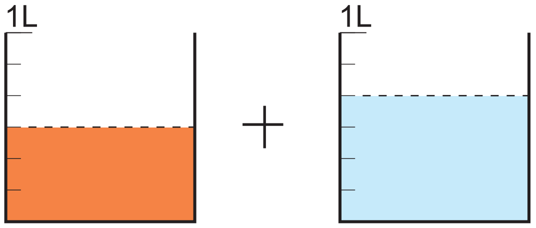


Cordial $\frac{1}{5}$ L　　Water $\frac{2}{5}$ L

Let's think about how many sets of $\frac{1}{5}$ this is.

$$\frac{1}{5}+\frac{2}{5}=\square$$

② Lucy



Cordial $\frac{3}{6}$ L　　Water $\frac{4}{6}$ L

$$\frac{3}{6}+\frac{4}{6}=\square$$

$$=\square\frac{\square}{\square}$$

I can find the amount of orange juice by changing this to a mixed fraction.

When adding fractions with the same denominators, add the numerators and keep the denominators unchanged.

Exercise

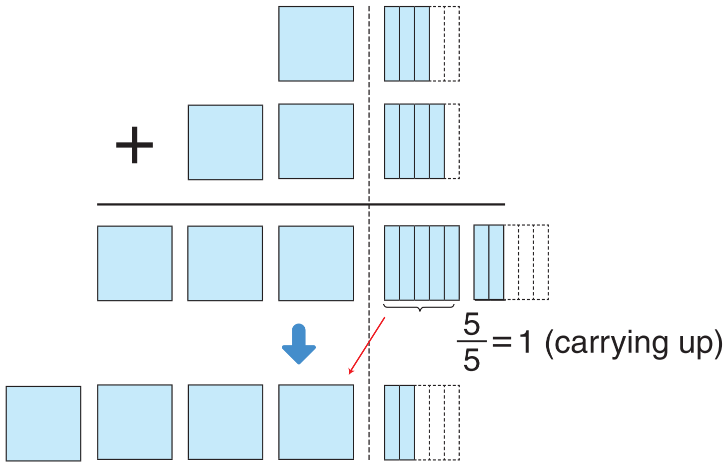
① $\frac{2}{4}+\frac{1}{4}$　② $\frac{4}{7}+\frac{1}{7}$　③ $\frac{2}{8}+\frac{3}{8}$

④ $\frac{2}{3}+\frac{3}{6}$　⑤ $\frac{2}{5}+\frac{4}{5}$　⑥ $\frac{3}{9}+\frac{6}{9}$

2 Let's explain how to calculate $1\frac{3}{6}+2\frac{3}{6}$ by using the diagram.

$$1\frac{3}{5}+2\frac{4}{5}=3\frac{7}{5}$$

$$=\boxed{}$$



3 Let's think about how to calculate $3\frac{4}{7}+\frac{3}{7}$.

When adding mixed fractions, add the sum of the whole number parts and the sum of the fraction parts.
When the sum of the fraction parts becomes improper fractions, carry up a part of the whole number.

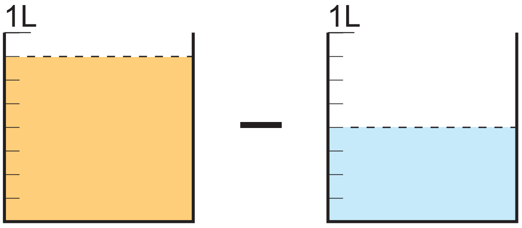
Exercise

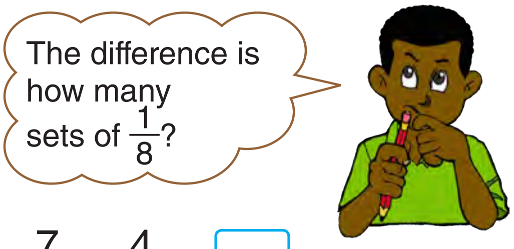
① $1\frac{1}{3}+2\frac{1}{3}$
② $3\frac{2}{7}+1\frac{3}{7}$
③ $4\frac{3}{8}+2\frac{4}{8}$
④ $2\frac{2}{6}+4\frac{3}{6}$
⑤ $3\frac{1}{5}+5\frac{3}{5}$
⑥ $3+3\frac{5}{6}$
⑦ $1\frac{2}{3}+2\frac{2}{3}$
⑧ $1\frac{5}{7}+1\frac{3}{7}$
⑨ $2\frac{1}{5}+3\frac{4}{5}$
⑩ $2\frac{7}{9}+\frac{4}{9}$
⑪ $\frac{2}{7}+4\frac{6}{7}$
⑫ $\frac{1}{4}+2\frac{3}{4}$

Subtraction of Fractions

4 How many more litres is $\frac{7}{8}$ L of juice than $\frac{4}{8}$ L of milk?

Let's think about how to calculate the answer.



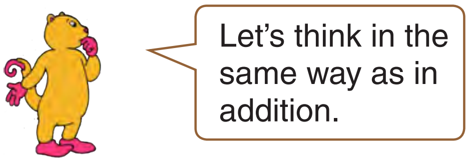


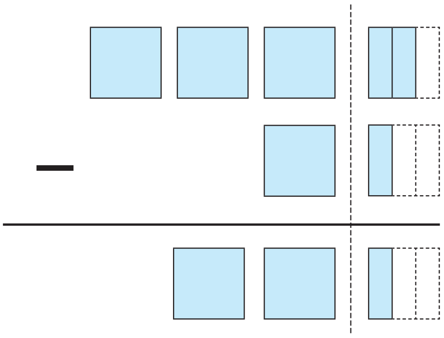
$$\frac{7}{8} - \frac{4}{8} = \square$$

When subtracting fractions with the same denominators, keep the denominator and subtract the numerators.

5 Let's think about how to calculate $3\frac{2}{3} - 1\frac{1}{3}$.

$$3\frac{2}{3} - 1\frac{1}{3} = \square\frac{\square}{3}$$





When we subtract mixed fractions, subtract the whole number parts, subtract the fraction parts, then combine the results.

Exercise

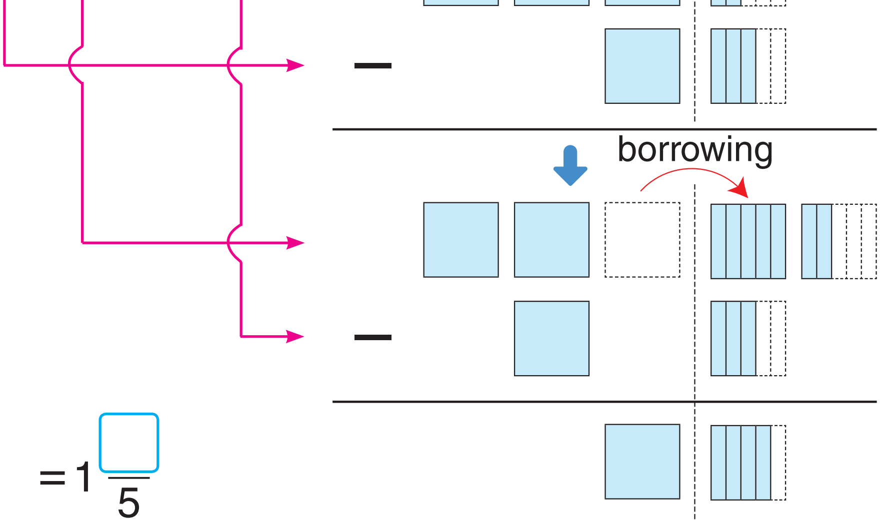
① $\frac{3}{4} - \frac{2}{4}$ ② $\frac{6}{7} - \frac{2}{7}$ ③ $\frac{10}{9} - \frac{4}{8}$

④ $6\frac{5}{7} - 4\frac{3}{7}$ ⑤ $8\frac{2}{5} - 5\frac{1}{5}$ ⑥ $7\frac{5}{9} - \frac{4}{9}$

6 Let's explain how to calculate $3\frac{2}{5}-1\frac{3}{5}$ by using the diagram.

$3\frac{2}{5}-1\frac{3}{5}=2\frac{\square}{5}-1\frac{3}{5}$

$=1\frac{\square}{5}$



When the numerators of the fractional parts cannot be subtracted, calculate by regrouping from the whole number parts of the minuend.

7 Let's think about how to calculate $3-1\frac{1}{4}$.

$3-1\frac{1}{4}=2\frac{\square}{4}-1\frac{1}{4}$

$=1\frac{\square}{4}$

① $1\frac{2}{4}-\frac{3}{4}$

② $1\frac{4}{9}-\frac{8}{9}$

③ $1\frac{1}{4}-\frac{1}{4}$

④ $6\frac{2}{7}-4\frac{5}{7}$

⑤ $9\frac{1}{4}-3\frac{1}{4}$

⑥ $7\frac{1}{4}-4\frac{1}{4}$

⑦ $1-\frac{1}{6}$

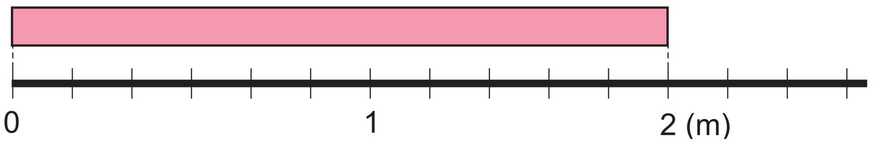
⑧ $8-1\frac{2}{7}$

⑨ $4-2\frac{1}{5}$

Exercise

1 Let's represent the following length as mixed fractions and improper fractions.

Pages 183 ~ 186



2 Let's answer using the following fractions.

Pages 183 ~ 186

$1 \quad \frac{2}{5} \quad \frac{1}{6} \quad \frac{10}{7} \quad \frac{3}{3} \quad 2\frac{1}{8} \quad \frac{1}{2} \quad \frac{9}{8}$

① Divide these fractions into proper fractions, improper fractions and mixed fractions.

② Let's change mixed fractions to improper fractions and change improper fractions to mixed fractions or whole numbers.

3 Let's arrange the fractions in (　　) from the largest to the smallest.

Pages 187 ~ 188

① $\left(\frac{2}{7}, \frac{5}{7}, \frac{6}{7}, \frac{4}{7}\right)$　② $\left(\frac{1}{6}, \frac{1}{8}, \frac{1}{5}, \frac{1}{10}\right)$

③ $\left(2\frac{1}{8}, 2\frac{5}{8}, 2\frac{7}{8}, 2\frac{3}{8}\right)$　④ $\left(3\frac{2}{9}, 1\frac{5}{9}, 2\frac{7}{9}, 4\frac{1}{9}\right)$

4 Let's calculate.

Pages 193 ~ 196

① $\frac{3}{5}+\frac{2}{5}$　② $2\frac{5}{9}+\frac{8}{9}$　③ $1\frac{2}{7}+2\frac{2}{7}$　④ $4\frac{2}{3}+2\frac{2}{3}$

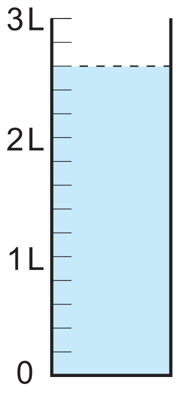
⑤ $3\frac{4}{8}-1\frac{3}{8}$　⑥ $1\frac{5}{9}-\frac{7}{9}$　⑦ $1-\frac{1}{10}$　⑧ $4\frac{1}{5}-2\frac{3}{5}$

5 Ani ran $1\frac{2}{5}$ km on Sunday morning and $1\frac{4}{5}$ km in the evening. How many kilometres did she run altogether? What is the difference in km?

Problems

1 Let's summarise fractions larger than 1.

● Understanding the meaning of fractions and calculating addition of fractions



① Represent the amount of water shown on the right as mixed fractions and improper fractions.

② About $2\frac{3}{7}$, 2 means 2 sets of □ and 3 means 3 sets of □.

③ $\frac{17}{7}$ means 17 sets of □.

④ Let's explain how to calculate $2\frac{3}{7}+1\frac{5}{7}$.

2 Let's change improper fractions to mixed fractions and change mixed fractions to improper fractions.

● Understanding the relationship between improper fractions and mixed fractions

$\frac{4}{7}$ $\frac{11}{5}$ $\frac{7}{2}$ $2\frac{3}{4}$ $3\frac{5}{6}$ $4\frac{4}{9}$

3 Let's calculate.

● Calculating addition and subtraction of fractions

① $\frac{3}{4}+\frac{2}{4}$ ② $2\frac{1}{3}+1\frac{1}{3}$ ③ $2\frac{2}{7}+3\frac{5}{7}$ ④ $1\frac{5}{8}+1\frac{6}{8}$

⑤ $\frac{11}{9}-\frac{4}{9}$ ⑥ $3\frac{5}{6}-1\frac{4}{6}$ ⑦ $5\frac{7}{15}-3\frac{7}{15}$ ⑧ $4\frac{2}{7}-1\frac{3}{7}$

4 Moses' family drank $1\frac{3}{5}$ L of milk yesterday morning and $\frac{4}{5}$ L in the evening.

● Understanding the situation and finding the answer.

① How many litres did they drink altogether?

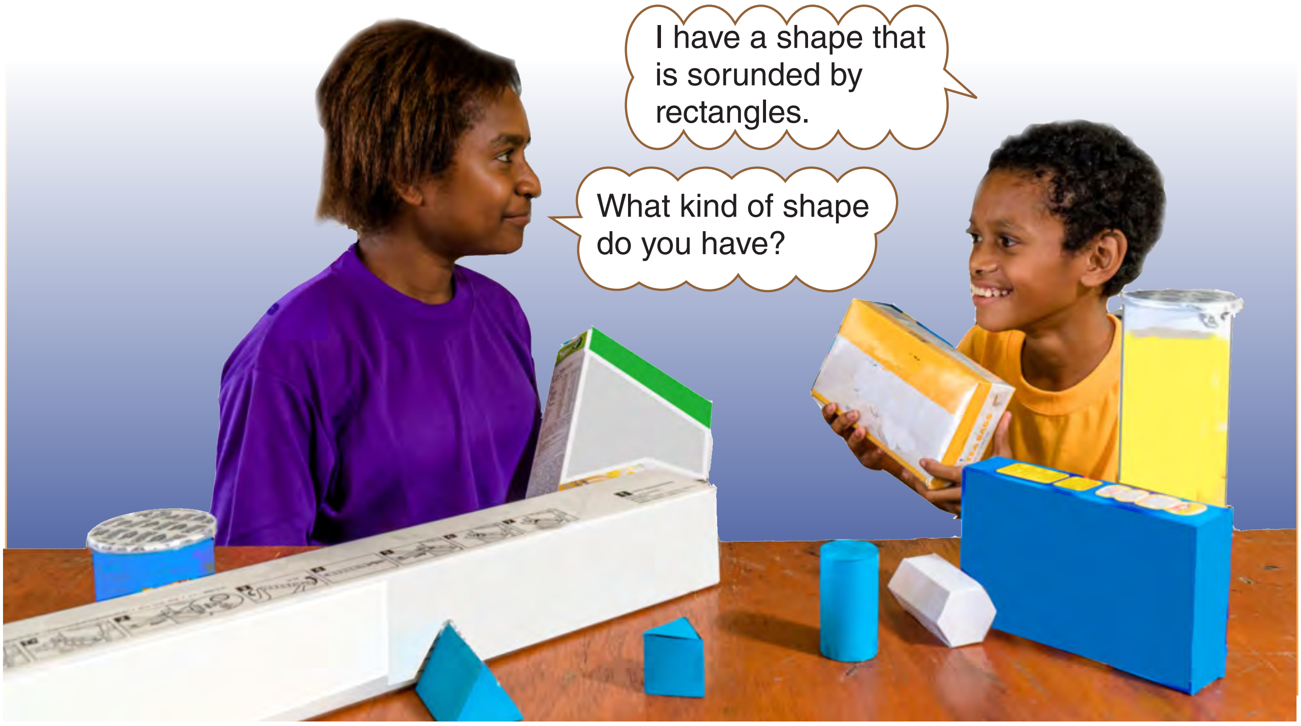
② They drank $1\frac{2}{5}$ L today. Which is the biggest amount of milk drank and by how many litres more?

18

Rectangular Prisms and Cubes

▶▶ Let's look for various types of solid shapes in our daily lives.

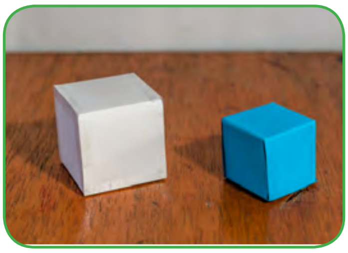
Categorise them by investigating the faces of the solid shapes.



1 Rectangular Prisms and Cubes

1 Joyce categorised them as follows.

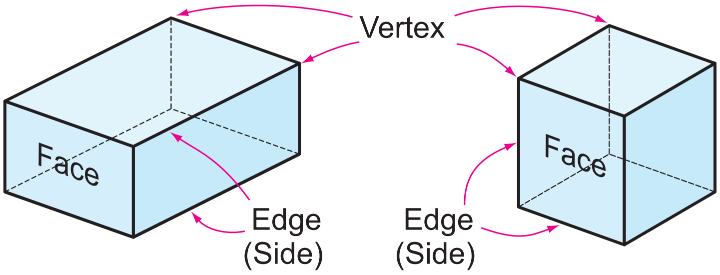
How did she categorise them?



Let's investigate the characteristics of the solid shapes and how to make them.

A shape covered only by rectangles or by squares and rectangles is called a **rectangular prism**.

A shape covered only by squares is called a **cube**.



Rectangular Prism **Cube**

A flat face like the faces of a rectangular prism and cube is called **plane**.

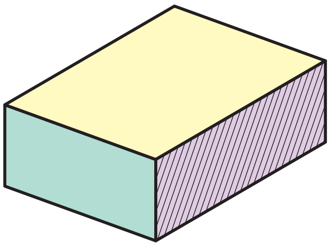
2 About Rectangular Prisms and Cubes. Fill in the blanks in the table below with numbers or words.

		Rectangular prism	Cube
Face	Shape	Rectangle or square	
	Number of faces		
Edge	Length		
	Number of edges		
Vertex	Number of vertices		

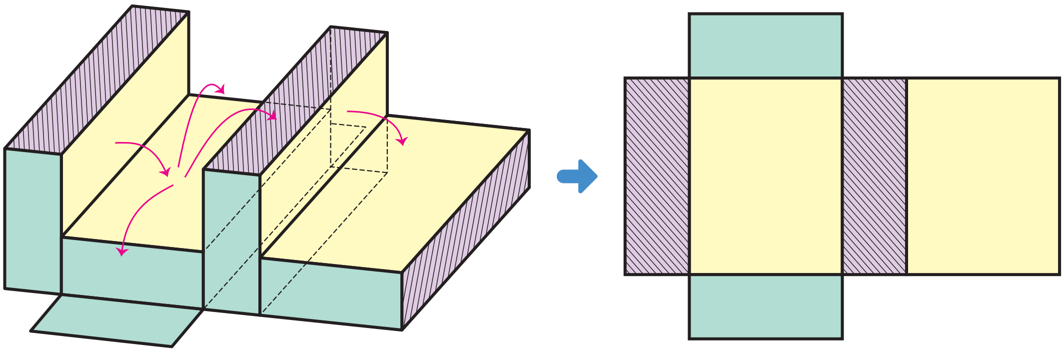
① Nets

Nets of Rectangular Prisms and Cubes

1 A rectangular prism is shown on the right.

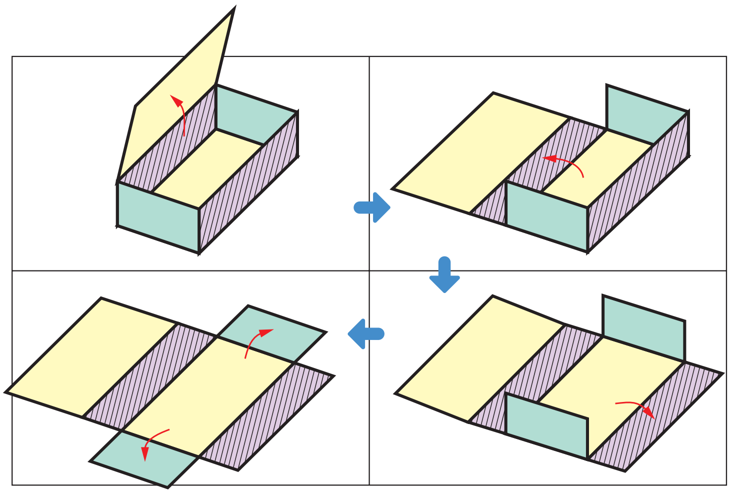


① Turn and trace it along its edges, respectively.

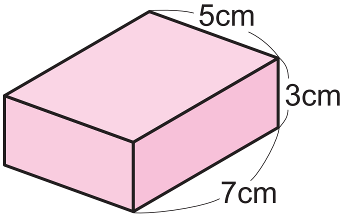


② Using the figure above on the right, let's make the rectangular prism.

A figure drawn on a sheet of paper by cutting the edges of a box and unfolding it flat is called **net (development)**.

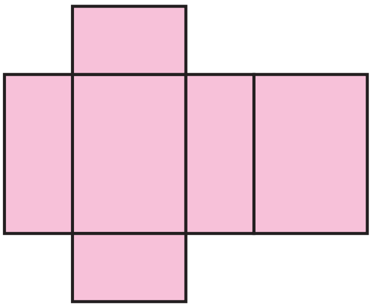


2 Let's make a rectangular prism box for storing cards.



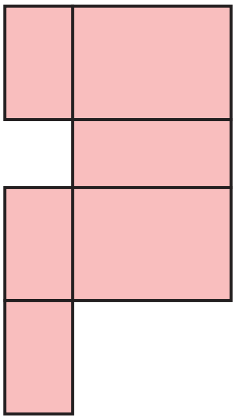
① Draw six faces and arrange them for folding.

② Let's fold the shape.

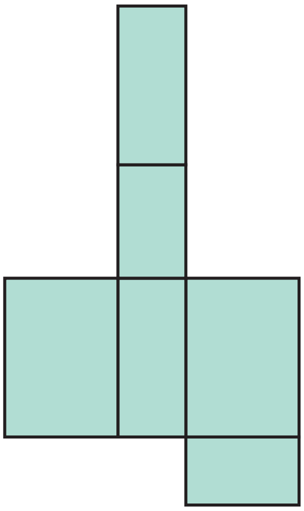


③ Which is the appropriate net?

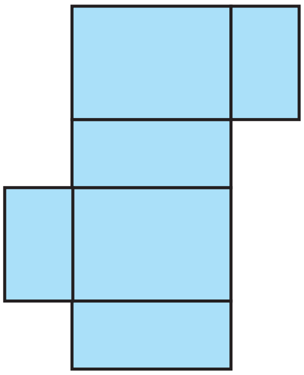
Ⓐ



Ⓑ



Ⓒ

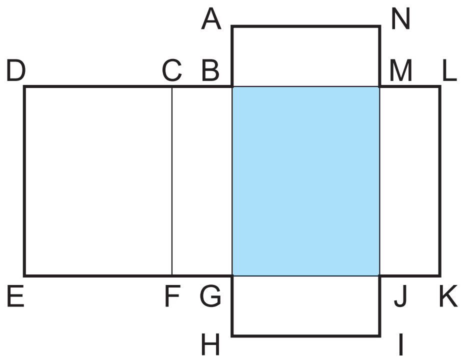


3 Let's fold the net as shown on the right.

① Colour the face opposite to the blue face BGJM.

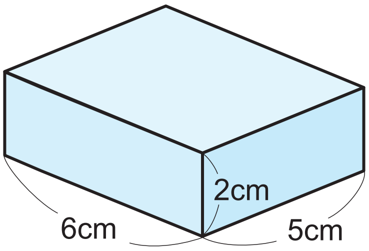
② Circle the points that overlap point L.

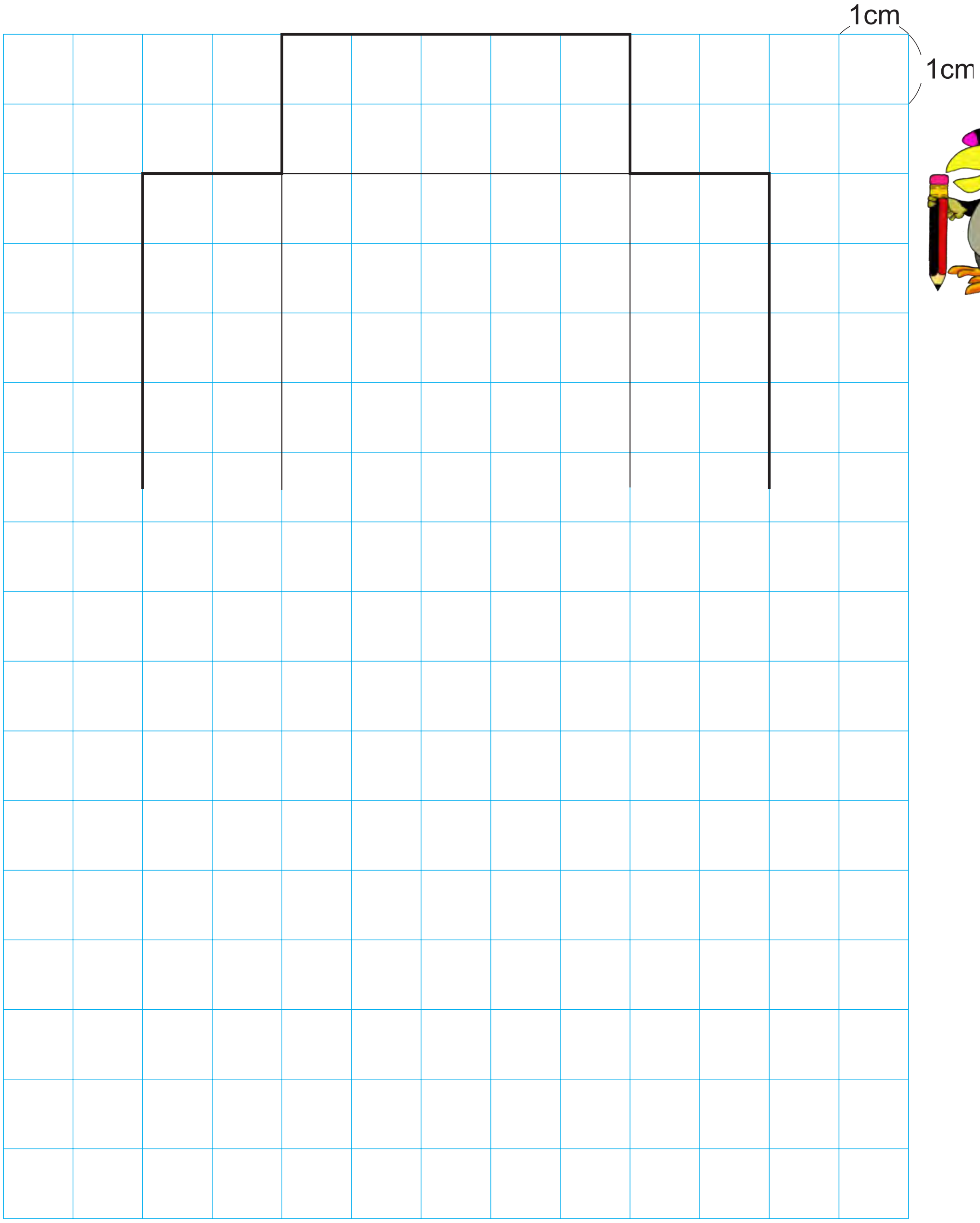
③ Colour the side that overlaps with the edge EF.



4 Let’s make a rectangular prism box as shown on the right.

① Draw the rest of the net as shown below.



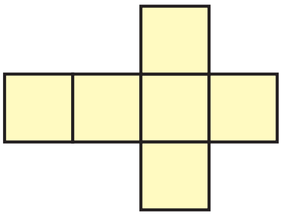


② Copy the net on a sheet of paper and fold it.

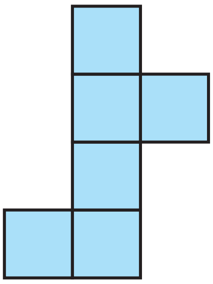
5 Let’s draw a net that can be folded to make a cube with 5 cm edges.

① Which nets can be folded to make a cube?

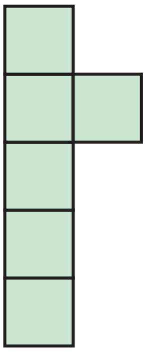
Ⓐ

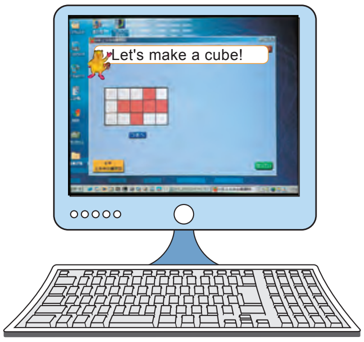


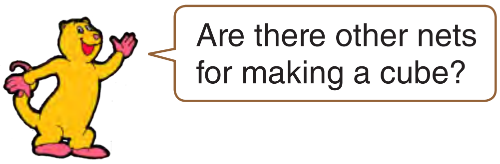
Ⓑ



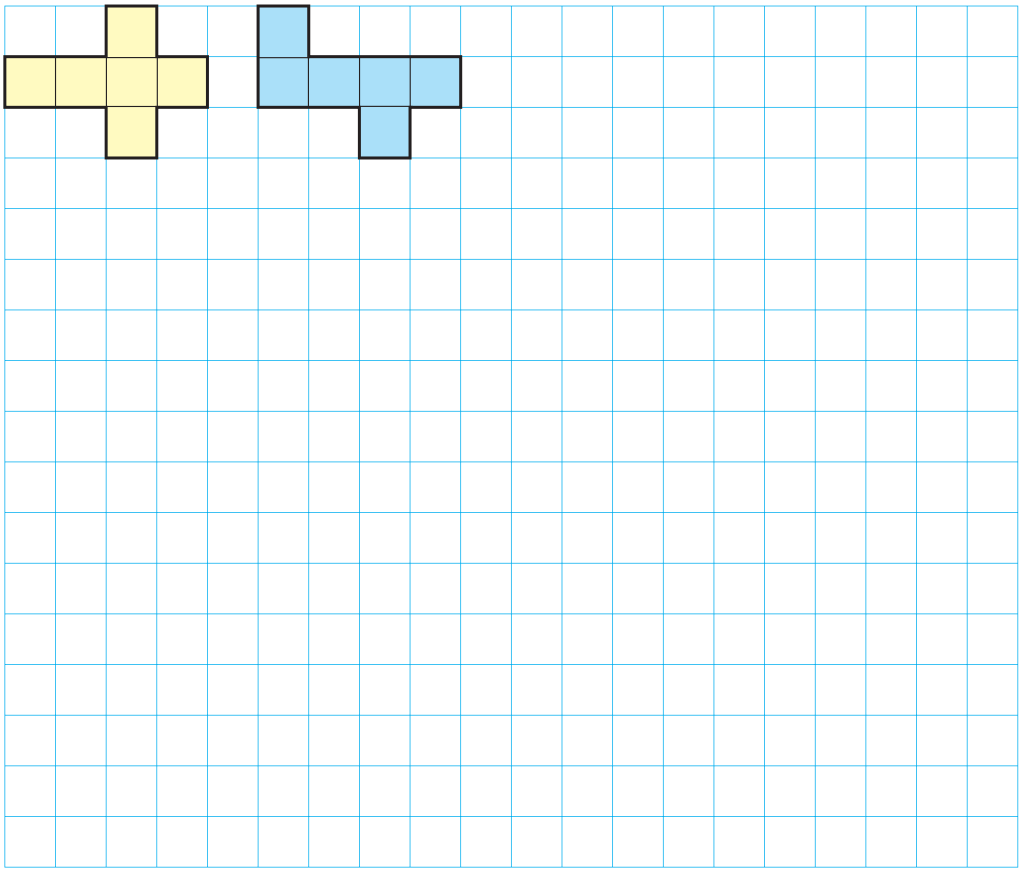
Ⓒ







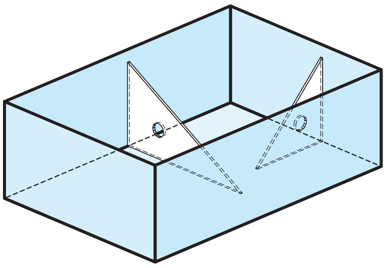
② Let’s draw different nets that make cubes.



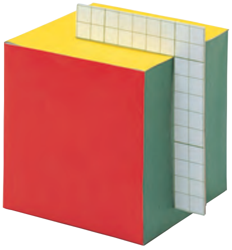
③ Perpendicular and Parallel Faces and Edges

Relationships between Faces and Faces, Edges and Edges

1 Take off the top of a rectangular prism and put the right angle of a set-square against the inner faces.



2 Place a tool to measure the right angles on the outer faces of a cube as shown on the right.

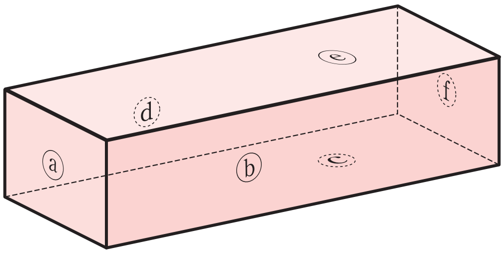


Any adjacent two faces of a rectangular prism and cube are **perpendicular** to each other.

3 Look at the rectangular prism on the right.

① Which faces are perpendicular to one another?

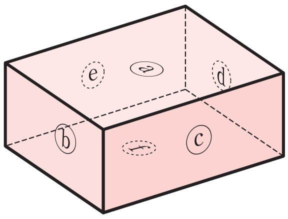
② Which faces are not perpendicular to one another?



Two faces are parallel when they never intersect each other such as ⓑ and ⓓ, and ⓒ and ⓔ.

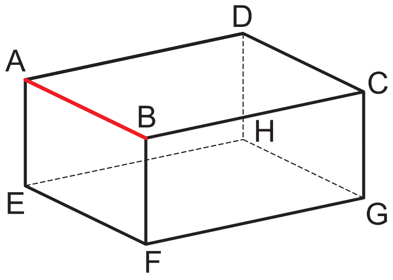
4 The figure on the right shows a rectangular prism box.

Let's find the pairs of parallel faces.

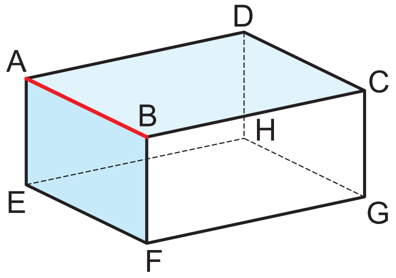


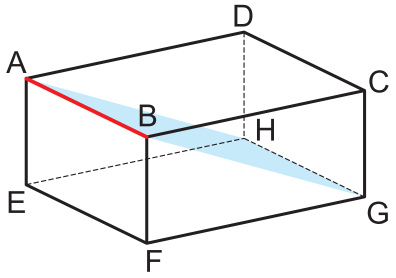
5 The figure on the right shows a rectangular prism box.

① Which edges are perpendicular to edge AB?.



② Which edges are parallel to edge AB?





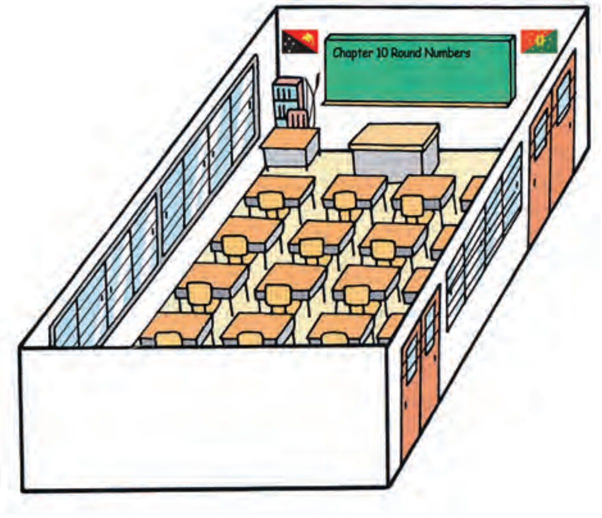
6 Let's check the cubes in the same way as you did in **3**, **4** and **5**.

Exercise

Look for the following in the classroom.

① Faces that are parallel to the floor.

② Faces that are perpendicular to the floor.

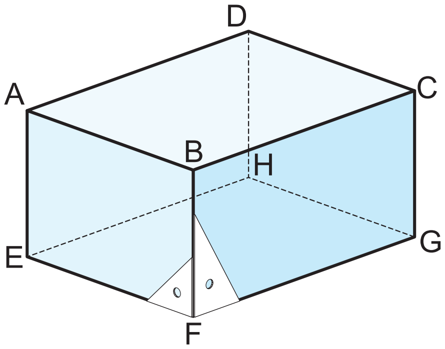


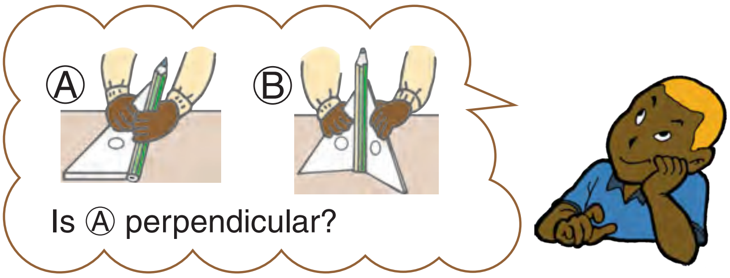
Relationship between Faces and Edges

7 The figure on the right shows a rectangular prism.

① Is edge BF perpendicular to face EFGH? Explain the reason.

② What other edges are perpendicular to face EFGH?

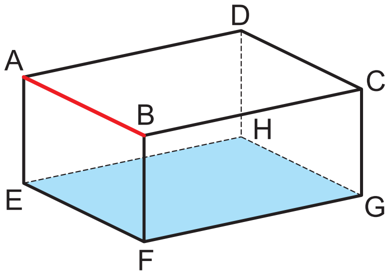


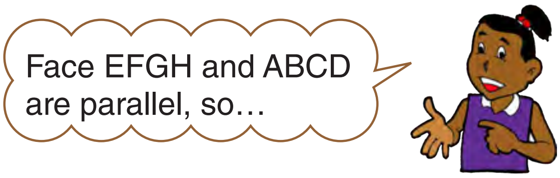


8 The figure on the right shows a rectangular prism.

① Is edge AB parallel to face EFGH? Explain the reason.

② What other edges are parallel to face EFGH?





Exercise

Look for edges that are perpendicular to the floor in your classroom.

Look for edges that are parallel to the floor.

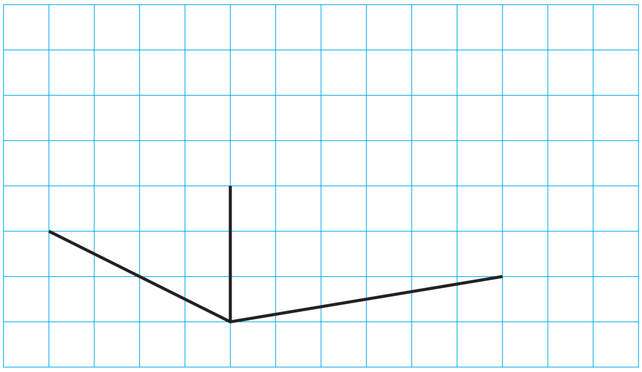
Sketch

From which angle can you see the most faces?

9 Draw a picture so that you can see the whole rectangular prism at once.

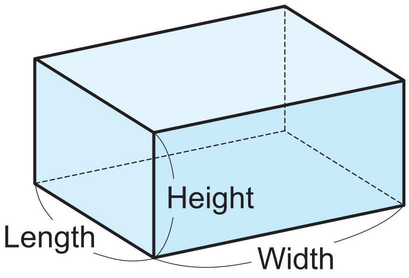
How do the faces look?

Draw the edges that you cannot see as dotted lines.

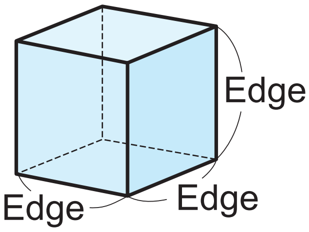


A picture that is drawn to give a quick view of the whole shape is called **sketch**.

Parallel edges are drawn parallel in the sketch.

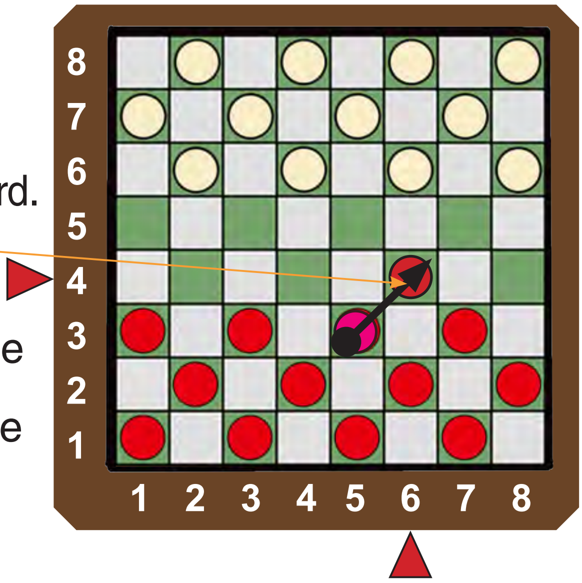


The size of a rectangular prism is represented by **the width, the length and the height** of 3 edges that meet at the same vertex. The size of a cube is represented by the length of an edge.



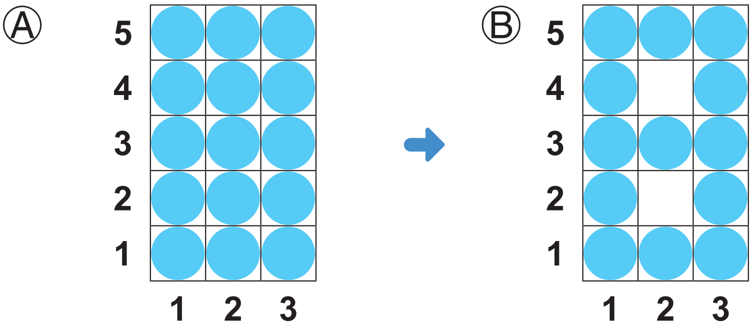
④ How to Represent Positions

The figure on the right shows the position of a game called checkers when a piece is moved on the board. This movement is called “6 , 4”. “6 , 4” tells the position of a piece that is moved. The position of the piece can be represented by writing two numbers.



1 There are blue circles in Ⓐ.

① Remove 2 blue circles and design a symbol of 8.

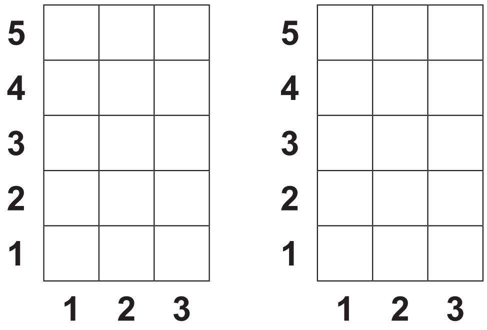


The positions of the blue circles that have been removed are represented as (2 , 2) , (2 , 4).

② Remove a blue circle at (1 , 2) on Ⓑ. What symbol do the blue circles show?

③ Which blue circle on Ⓑ can you remove to design the symbol 0?

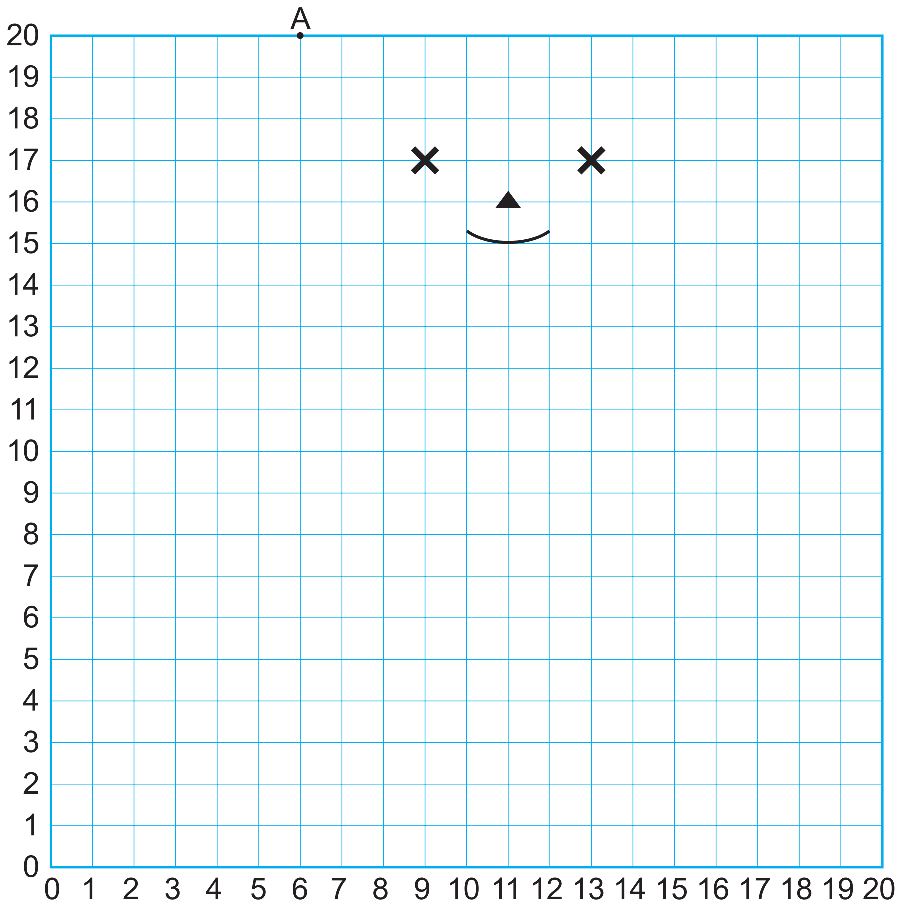
④ Let’s design different symbols to show different numbers.



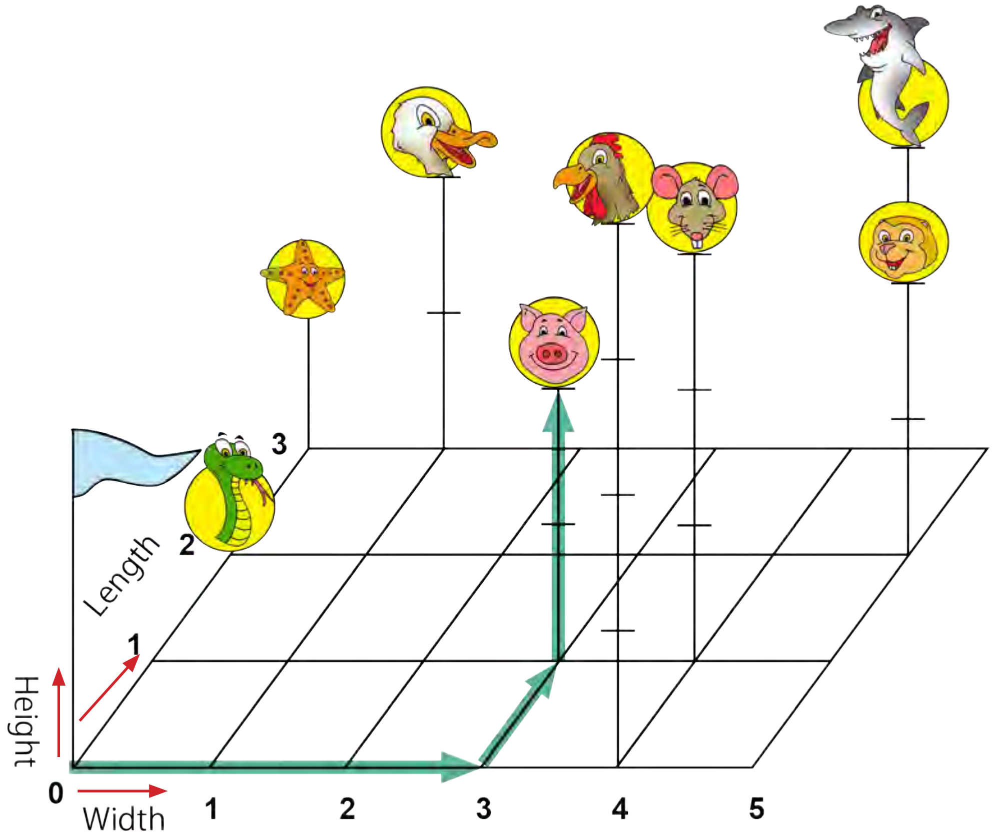
2 On the grid paper, the vertical and horizontal axis are numbered as follows.

Point A is represented as (6 , 20). Let's plot the points below in order and connect them with lines.

(6 , 20) → (14 , 20) → (14 , 15) → (16 , 12) →
(18 , 12) → (18 , 10) → (16 , 0) → (14 , 12) →
(13 , 12) → (13 , 0) → (11 , 0) → (11 , 7) →
(9 , 7) → (9 , 3) → (7 , 3) → (3 , 5) →
(5 , 6) → (7 , 5) → (7 , 12) → (6 , 12) →
(6 , 7) → (4 , 7) → (4 , 15) → (6 , 15) →
(6 , 20)



3 Based on the standing position of the flag, let's represent the position of animals using numbers.



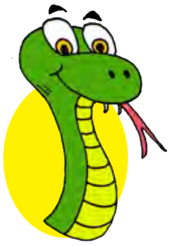
Every position in the space is represented by a list of three numbers.

The position of the pig is Width 3, Length 1 and Height 2.

We represent it by (3 , 1 , 2).

① Let's express the position of the animals below.

(, ,)



(, ,)

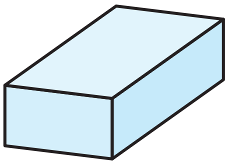
(, ,)

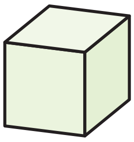
② What animal is at position (4 , 1 , 3)?

Exercise

1 Let's summarise rectangular prisms and cubes.

Pages 195 ~ 196





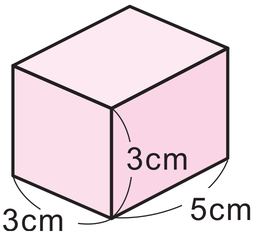
① Rectangular prisms and cubes are categorised by the shape of □.

② Rectangular prisms are covered only by □ or by both rectangles and squares.
Cubes are covered only by □.

③ The number of edges for both rectangular prism and cubes is □. The number of vertices for both rectangular prism and cubes is □.

2 Let's draw the net of a rectangular prism on the right.

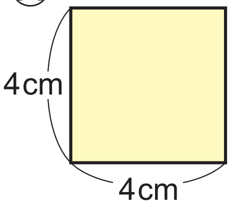
Pages 196 ~ 200



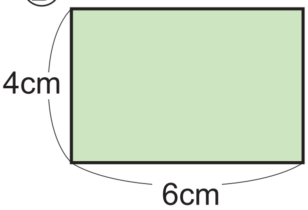
3 There are a number of sheets of papers of different sizes shown below. Make rectangular prisms and cubes by using them. How many sheets of papers of each size are there in each shape?

Pages 196 ~ 200

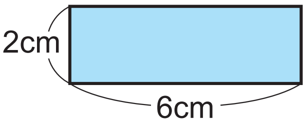
Ⓐ



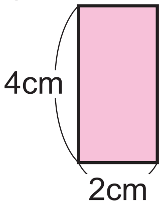
Ⓑ



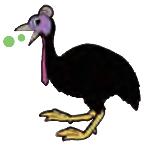
Ⓒ



Ⓓ



Grade 3 **Do you remember?**



Roku bought 6 pigs and paid 1440 kina. What is the cost of one pig?

① Let's write a mathematical sentence with words.

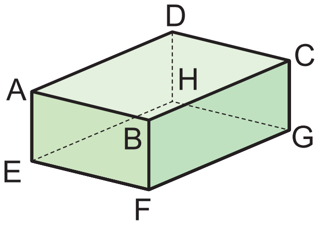
□ × □ = □

② Represent a mathematical sentence by putting an unknown number to □ , and find the answer by filling in the □ .

Problems

1 The picture on the right is a rectangular prism box.

Understanding relationships between both faces, both edges and face and edge.



① Which edges are perpendicular to edge AE?

② Which edges are parallel to edge AE?

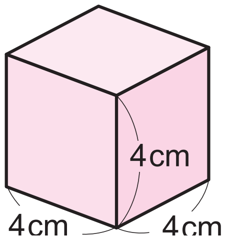
③ Which face is parallel to face ABCD?

④ Which edges are perpendicular to face AEFB?

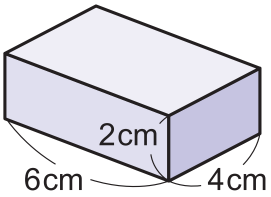
2 Let's draw the nets of the rectangular prism and cube shown below.

Drawing the nets of rectangular prisms and cubes.

① A cube with 4 cm edge.



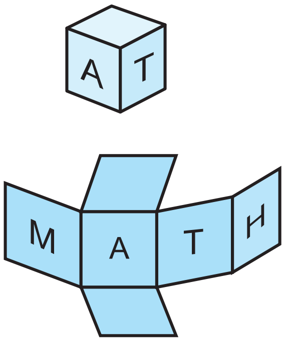
② A rectangular prism with 6 cm length, 4 cm width and 2 cm height.



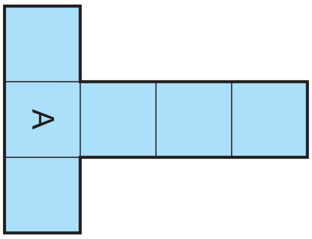
3 We designed a net to make a cube with side faces that spell out the word "MATH."

Let's write the characters in the nets below.

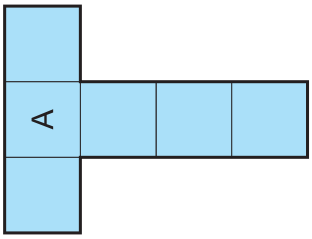
Understanding the relationship between face and face.



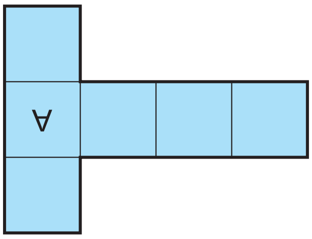
①



②



③



19

Quantities Change Together

Ⓐ

April 21 30 cm

April 26 130 cm

April 28 190 cm

Ⓑ

▷▷ Let's look for quantities that change together in the photographs Ⓐ, Ⓑ, Ⓒ and Ⓓ. Let's discuss how they are changing at the same time.

Quantities are the numbers such as length, time, amount of water, weight, angles and area that you have learned.

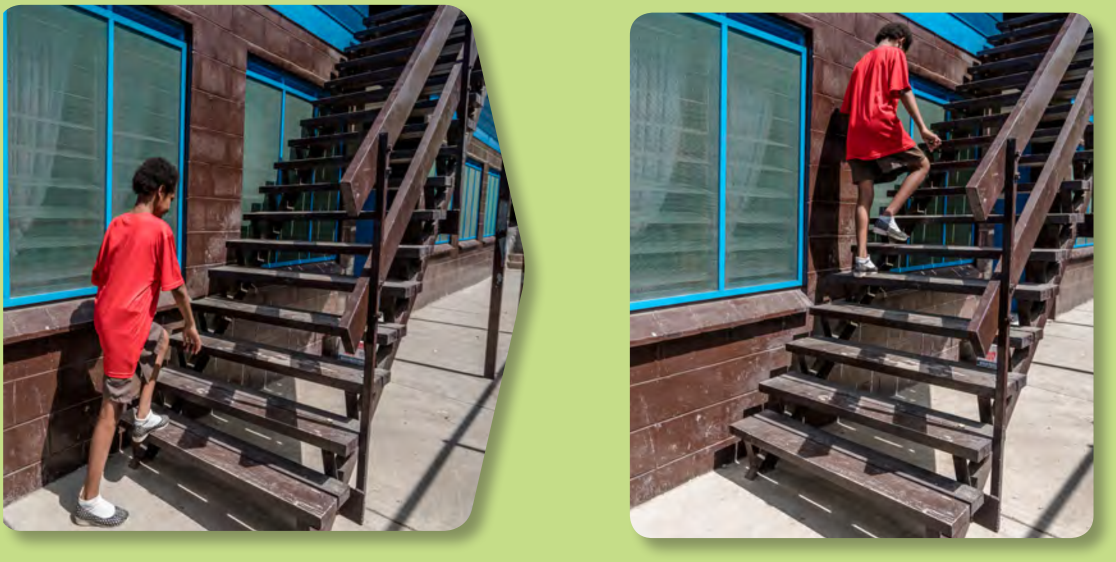
Let's investigate the relationships of 2 quantities which change together.

1 Quantities Which Change Together

1 Let's look for quantities that change together in Ⓐ, Ⓑ, Ⓒ and Ⓓ. How are they changing together?

Ⓒ

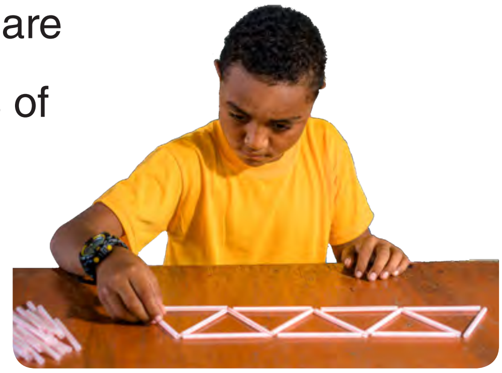
Ⓓ



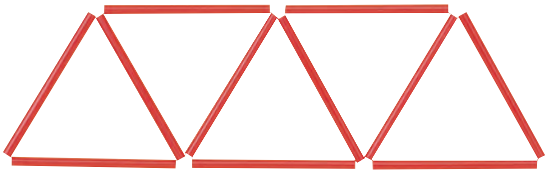
	Things which change together	How they changed
Ⓐ	and	
Ⓑ	and	
Ⓒ	and	
Ⓓ	and	

In our surroundings, there are some quantities that change as another quantity changes.

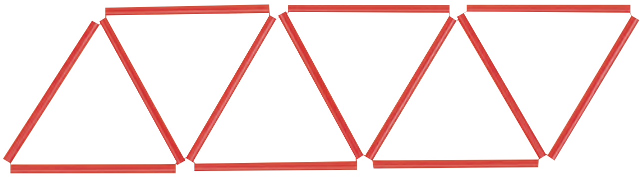
2 Let’s make equilateral triangles that are lined up horizontally by using straws of the same length.



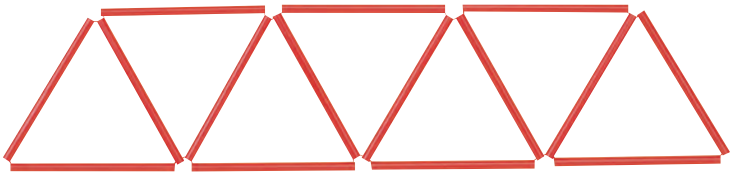
Ⓐ



Ⓑ



Ⓒ



① Let’s look for two quantities which change together from the above.

② Let’s investigate how to change the number of equilateral triangles and straws.

Number of Equilateral Triangles and Straws

Number of equilateral triangles									
Number of straws									

When we look for the rule on how 2 quantities change together, we draw the table to find the rule easily.

③ When the number of equilateral triangles increases by 1, by how many does the number of straws increase?

④ When we make 10 equilateral triangles, how many straws do we need?

Changing Quantities and Graphs

3 The table below shows how the amount of water and the time change as a small water tank is filled.

Time and amount of water when filling a small water tank

Time (minutes)	0	2	4	6	8	10	12	14	
Amount of water (L)	0	3	6	9	12	15	18	21	

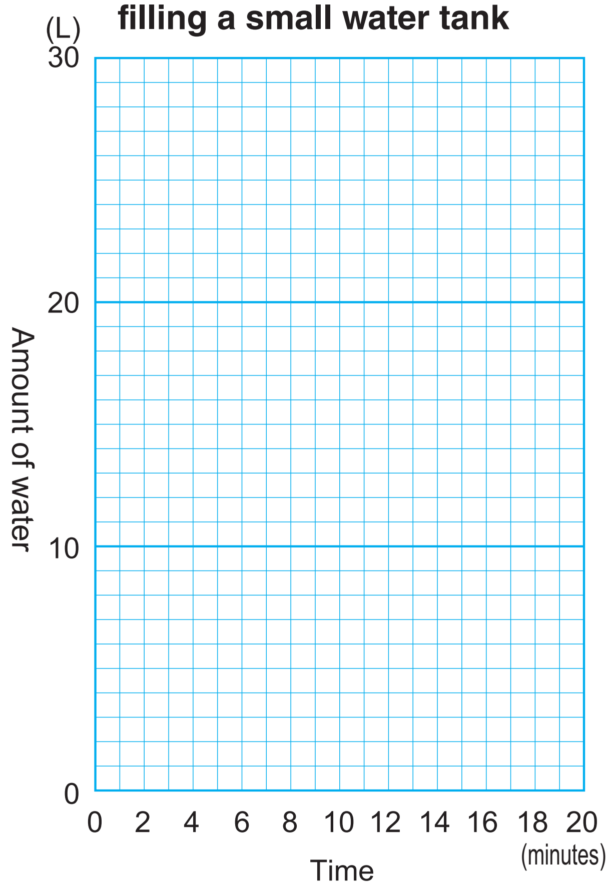
① Let's plot the points on the graph by using the numbers on the table.

② Let's connect the points with a line.

③ What is the amount of water in 7 minutes after filling the water tank?

④ How many litres of water will there be after 20 minutes?

Time and amount of water when filling a small water tank



⑤ Another water tank was filled with water as shown in the table on the right. Let's draw a graph by using the information from the table above. Compare the 2 graphs and tell everyone what you observed.

Time and amount of water when filling a water tank

Time (minutes)	0	4	8	12	16	
Amount of water (L)	0	3	6	9	12	

② Mathematical Sentence Using □ and ○

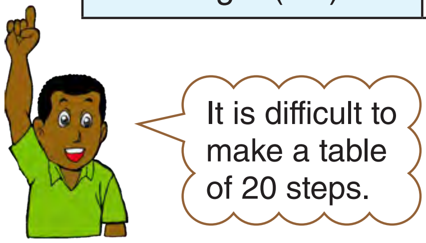
1 Shama's school has stairs to go to the playground. The children decided to use the stairs to measure the height at ground level to the top of the stairs.

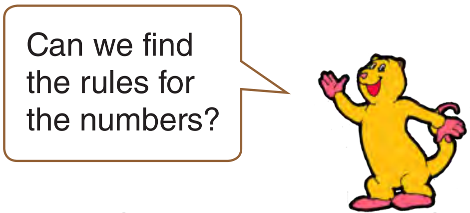
① As the number of steps increases, how does the height from the playground change?

② There are 20 steps from the playground to the classroom. Let's write the number of steps and the height of the classroom in the table.

Number of Steps and Height

Number of steps (steps)	1	2	3	4	5	6	7	8	
Height (cm)	15	30							





③ Let's look at the table and find a rule for the number of steps and height.

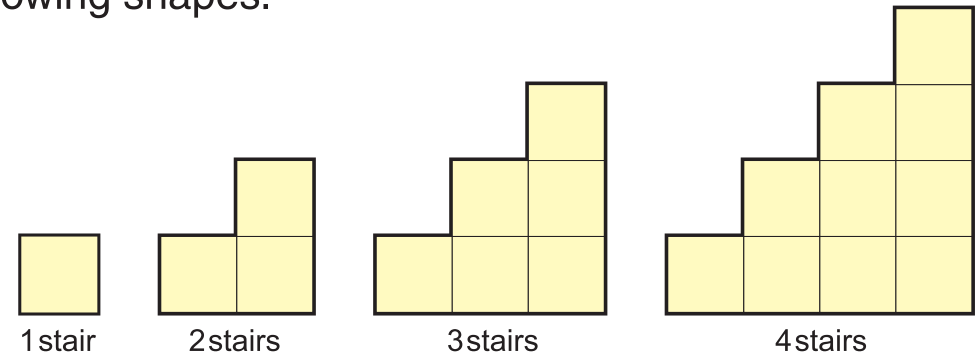
When the number of steps is □ and its height is ○, let's write a mathematical sentence by using □ and ○.

Height of each step × Number of steps = Height from floor

15 × □ = ○

④ Let's find the height when there are 20 steps.

2 Arrange a square paper with 1 cm side and make the following shapes.



① How many cm are the length around 1 stair and 2 stairs?

② Let's study how the number of stairs and the length around the stairs change.

Number of Stairs and the Length Around the Stairs

Number of stairs	1	2	3	4	5	6	7	
Length around the stairs (cm)	4	8						

③ When the number of stairs increases by 1, how long does the length around the stairs increase?

④ When the number of stairs is □ and the length around the stairs is ○, let's show the relationship by a mathematical sentence.

⑤ When the number of stairs is 8, how many cm is the length around the stairs? When the length around the stairs is 40 cm, what is the number of stairs?

Exercise

Belinda bought a ream of drawing paper for 20 kina. When the number of reams is □ and the cost is ○. Let's express the relationship between □ and ○ in a mathematical sentence.

Exercise

① Let's look at the relationships between the 2 quantities written below. In which one is "both increasing" and in which one is "one increasing and one decreasing?"

Pages 210 ~ 211

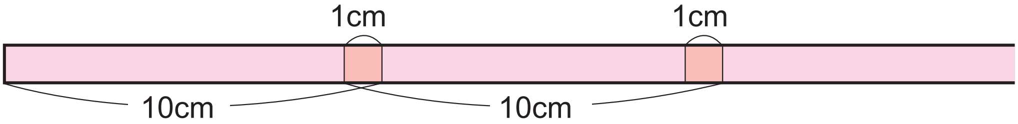
① The distance that a car travels and the quantity of fuel used.

② The time that you are riding on the bus that started at one bus stop and the distance from the bus to the next bus stop.

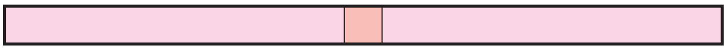
③ The quantity of orange juice consumed and the remaining amount.

Page 212

② The children are going to connect 10 cm tapes as shown in the figure below. The length of each overlapping section is 1 cm.



① If we connect 2 pieces of tape in this way, what is the total length in cm?



② Write the numbers in the table below.

Number of Pieces of Tape and Total Length

Number of piece of tape	1	2	3	4	5	6	7	8	9
Total length(cm)	10								

③ If we connect 10 pieces of tape, what is the total length in cm?

Let's calculate.

Grade 4 **Do you remember?**

① 8.6×68 ② 24.8×65 ③ 0.79×5

④ 5.1÷3 ⑤ 32.2÷7 ⑥ 45.6÷48

⑦ $\frac{5}{9}+\frac{8}{9}$ ⑧ $1\frac{3}{4}+\frac{3}{4}$ ⑨ $6\frac{1}{5}+3\frac{4}{5}$

⑩ $\frac{5}{6}-\frac{1}{6}$ ⑪ $3\frac{5}{8}-1\frac{7}{8}$ ⑫ $2-1\frac{2}{3}$

Problems

1 Let's look at the relationships between the 2 quantities shown below. In which, are "both increasing" and in which is "one increasing and one decreasing?"

● Understanding the relationship between 2 quantities.

① Day time and night time in a day.

② The number of times phone calls are made and the fees.

2 Summarise the 2 quantities that change together.

● Understanding the relationship between 2 quantities from a table.

A string is cut at several points. Check the relationship between the number of cuts and the pieces of string.

① When the number of cuts increase, what else increases?

② Make a table and find the relationship.

Number of Cuts and Pieces of String

Number of cuts									
Pieces of string									

③ How many times should we cut the string to make 10 pieces?

3 Let's investigate the relationship between the length of one side and the perimeter of a square.

● Understanding the relationship between 2 quantities from a table.

① Let's fill in the table.

Length of One Side and Perimeter of a Square

Length of one side (cm)	1	1.5	2	3	4	5
Perimeter (cm)	4					

② Let's represent the relationship by the mathematical sentence when one side is □ cm and the perimeter is ○ cm.

③ What is the length of the side of the square when the perimetre is 36 cm?

20 Summary of Grade 4

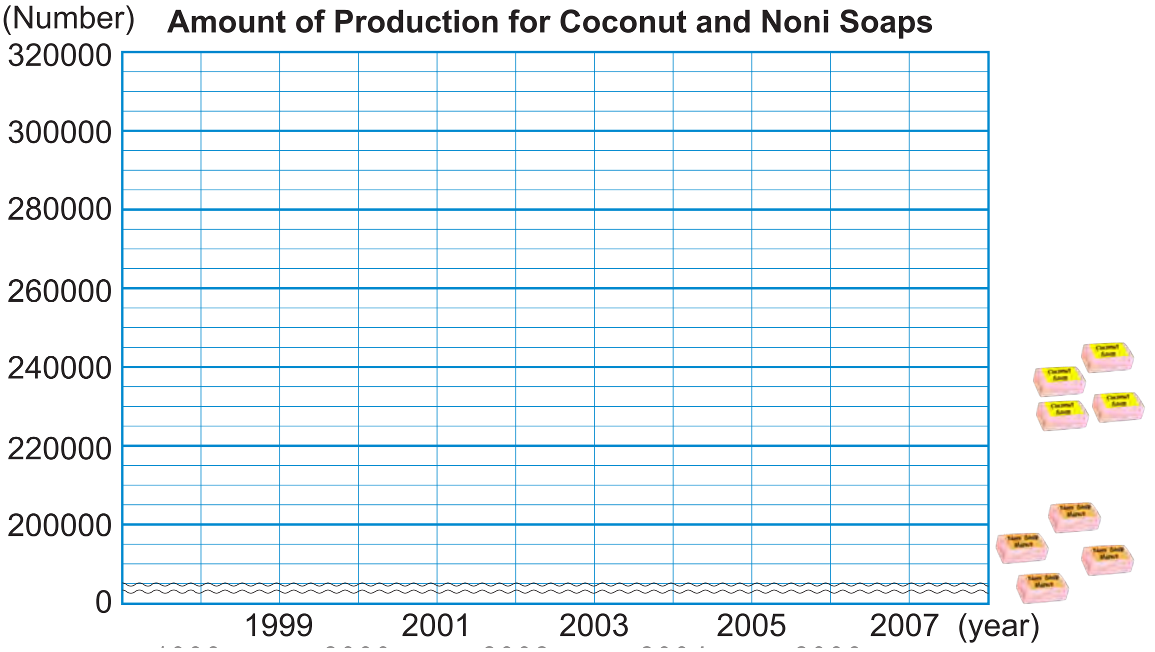
Line graphs

1 The table below shows the production of Coconut soap and Noni soap in a local factory. Let's use the data to draw line graphs. What does the graph tell you?

⑧ ⑨

Amount of Production for Coconut and Noni Soaps

Year	Coconut production	Noni production
2008	271034 	201730 
2009	275751	216549
2010	265541	214107
2011	283402	234522
2012	292392	242908
2013	297047	243071
2014	303169	260965
2015	301558	276427
2016	298641	271387
2017	301451	279406



Numbers and Calculations

①

1 Let’s read the following numbers. Round them to the place as shown in ( ).

① 3 824 901 (ten thousand)

② 64 098 172 (million)

③ 2 715 205 860 432 (ten billion)

① ⑬ ⑰

2 Let’s write the following numbers in numerals.

① 300 sets of 100 million and 68 sets of 10 thousand.

② 100 times 80 billion.

③ 250 million divided by 10.

④ 5 sets of 1 and 3 sets of 0.1.

⑤ 12 sets of 0.1.

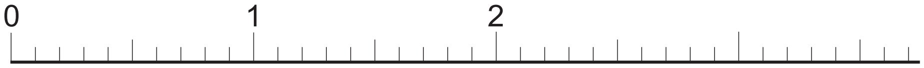
⑥ 4 sets of $\frac{1}{5}$.

⑦ Mixed fractions and improper fractions for 11 sets of $\frac{1}{7}$.

⑬ ⑰

3 Let’s write the following numbers on the number line.

① 0.2 ② $\frac{6}{10}$ ③ 1.6 ④ 2.1 ⑤ 3 ⑥ $1\frac{1}{10}$



⑬

4 Let’s arrange these numbers from the largest to the smallest.

0.08 8 0.8 0.808 0

⑤ ⑦ ⑪ ⑫ ⑯ ⑰

5 Let's calculate.

① $7.84+4.32$ ② $16.89+5.3$ ③ $8.4-2.01$

④ $\frac{3}{8}+\frac{7}{8}$ ⑤ $2\frac{2}{7}+\frac{6}{7}$ ⑥ $1\frac{7}{9}+4\frac{7}{9}$

⑦ $1\frac{1}{3}-\frac{2}{3}$ ⑧ $8\frac{1}{5}-2\frac{3}{5}$ ⑨ $3-\frac{5}{6}$

⑩ 106×247 ⑪ 0.61×8 ⑫ 0.24×75

⑬ $96\div12$ ⑭ $864\div36$ ⑮ $080\div72$

⑯ $75.2\div8$ ⑰ $3.68\div16$ ⑱ $45\div36$

⑤

6 There are 144 packages that must be put on 3 trucks, with each truck carrying the same number of packages. How many packages are placed on each truck?

⑪

7 Look at the following calculations. Find the errors and correct them.

① $10-3\times2=7\times2$

$\qquad\qquad=14$

② $21+80\times(13-7)=101\times6$

$\qquad\qquad\qquad\qquad=606$

⑦

8 127 grade 4 children are going to Loloata Island by boat. Only 25 children can go at a time.

① How many trips will it take to carry all children to the Island?

② We want to carry the same number of children in 6 trips. How should the number of children be divided?

9 Let's calculate. ⑪ ⑬ ⑰

① $8.96+5.43$ ② $14.78+6.3$ ③ $7.5-3.02$

④ $\frac{7}{4}+\frac{7}{5}$ ⑤ $3\frac{2}{5}+\frac{2}{5}$ ⑥ $1\frac{7}{9}+4\frac{7}{9}$

⑦ $1\frac{1}{3}-\frac{2}{3}$ ⑧ $8\frac{1}{5}-2\frac{2}{5}$ ⑨ $3-\frac{7}{9}$

⑤

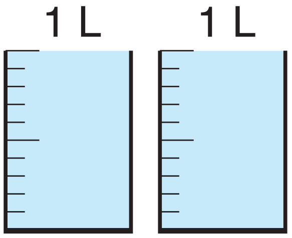
10 There is an 18 m rope. Janice wants to make 3 skipping ropes out of it.

How long will each skipping rope be in m?

11 Jaydan bought a 2 L juice in the morning and drank $\frac{1}{5}$ of it. Later in the evening, Fiona drank $\frac{3}{5}$ of the 2 L.

① How many litres did both Jaydan and Fiona drink altogether?

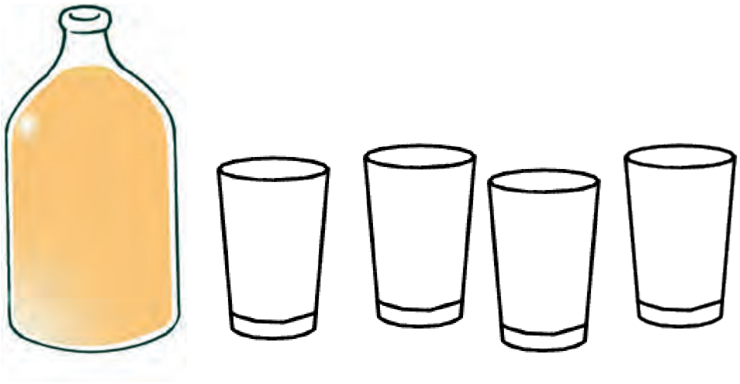
② What was the amount left in L by both of them? ⑰



12 We divide 3.4 L of juice equally among 4 children. ⑯

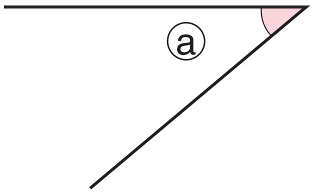
① Let's write a mathematical expression.

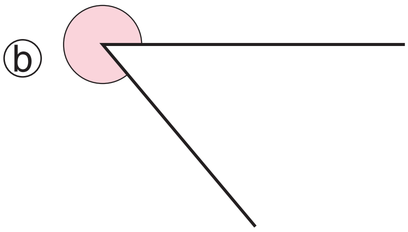
② How many litres will each child receive?



Measurement and Shapes

1 How many degrees are the angles ⓐ and ⓑ? ④

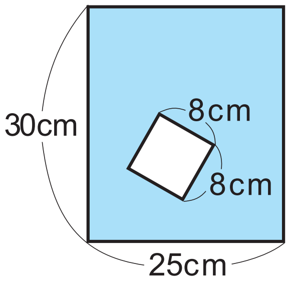


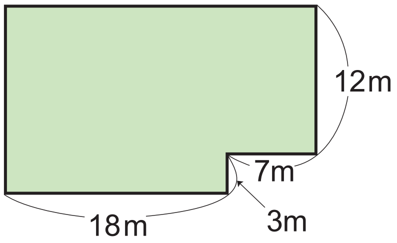


2 Let’s draw angles of 70° and 123°. ④

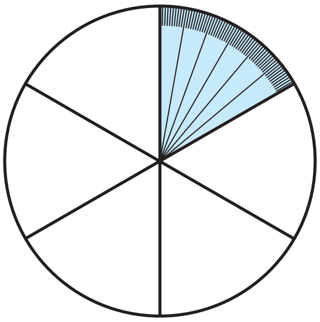
⑫

3 Let’s find the areas of the shaded parts.





Why Are the Degrees of a Circle Equal to 360 Degrees?

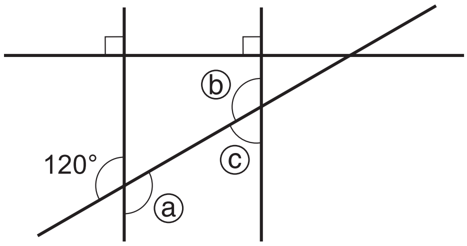


About 6000 years ago in ancient Babylonia, people divided a circle into 6 equal sections and then divided each part into 60 equal parts that they called “one degree.”
The degrees of a circle equal 360°.
At that time in Babylonia, people used a method of counting that was based on 60. They defined a circle as 360 degrees because 1 year is approximately 360 days.

Quadrilaterals and Net

6

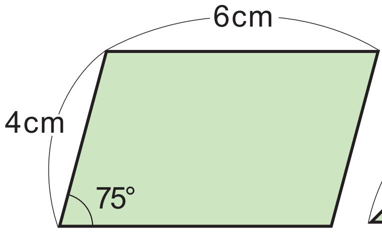
1 How many degrees are the angles ⓐ, ⓑ and ⓒ on the right?



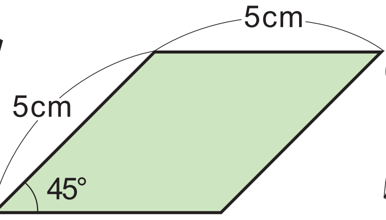
2 Let’s draw the following quadrilaterals.

6

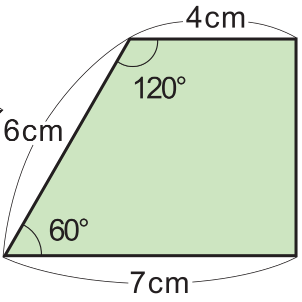
① Parallelogram



② Rhombus

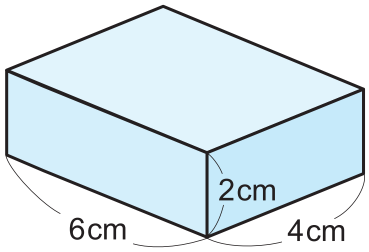


③ Trapezoid

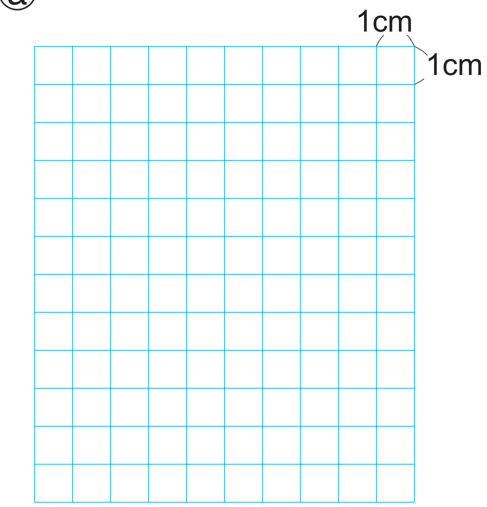


3 We made a rectangular prism box shown on the right. Let’s draw its nets on the graph below.

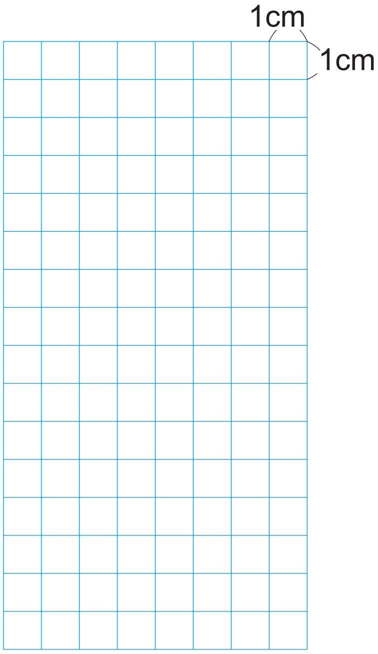
18



ⓐ

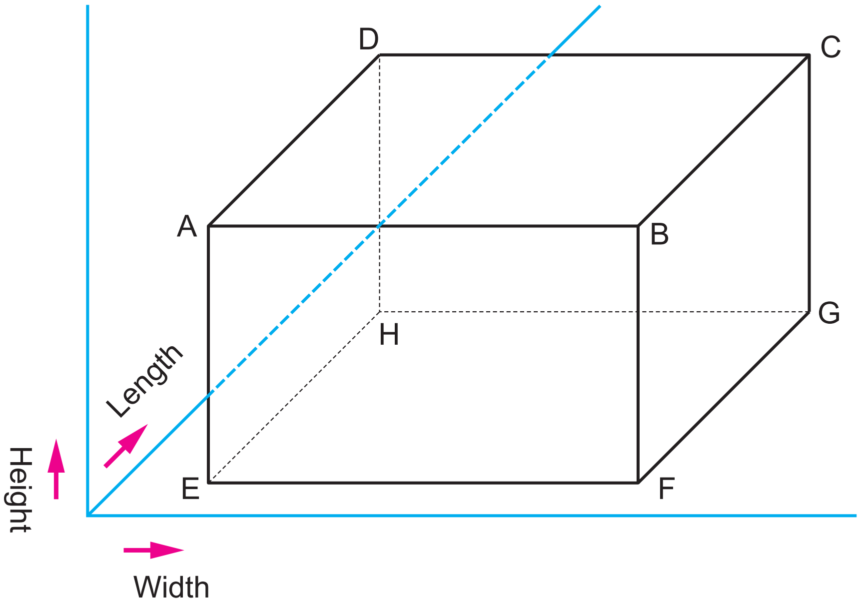


ⓑ



4 A rectangular prism box is set as follows.

Let’s answer the questions.



① Vertices A, E, F, G and H are represented as follows;

A (1, 1, 3)　　E (1, 1, 0)

F (6, 1, 0)　　G (6, 5, 0)

H (1, 5, 0)

Let’s write the positions of vertices B, C and D. Explain why.

② When the unit scale is 1 cm for the length, the width and the height. Find the area of figure below.

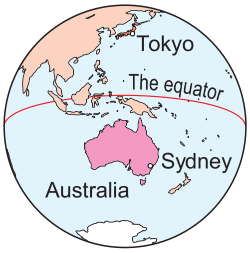
Ⓐ Rectangle EFGH

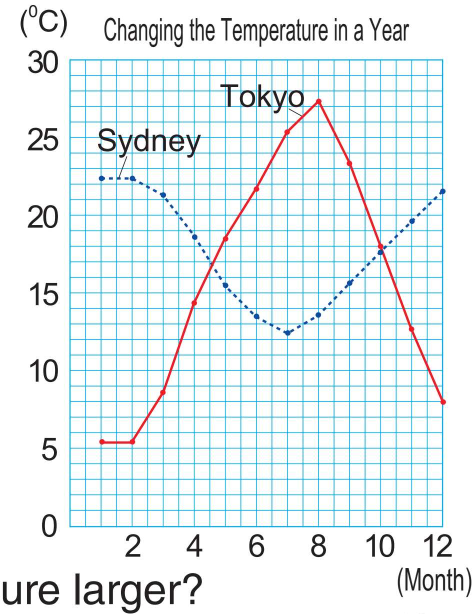
Ⓑ Rectangle AEFB

Ⓒ Rectangle BFGC

Using Graphs to Show Changes

1 The line graph on the right shows changes in the temperatures in Tokyo and Sydney in a year.

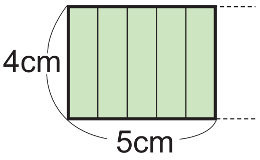




① In which month(s) is the temperature in Tokyo higher than that in Sydney?

② In which city is the change in temperature larger?

2 Shown below is a rectangle with a length of 4 cm. See how the area changes as the width of the rectangle increases.



Length of width (cm)	1	2	3	4	5	
Area of rectangle (cm^2)	4	8				

① Each time the width of the rectangle increases by 1 cm, by how many cm^2 does the area increase?

② When the area of the rectangle is 36 cm^2, how many cm is the width?

The Secret of the Calendar

On the calendar, choose a group of any 9 numbers as shown on the right and calculate the sum of those numbers. Now try another location. Do you find the secret? Do other locations on the calendar have the same secret?

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		26	27
28	29	30	31			

Answers

Chapter 1 Excercise: Page 10

① ① 1 million, 7 million , 12 million.

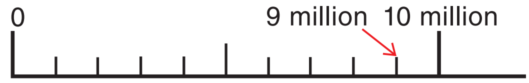
② 50 million , 70 million.

③ 100 million, 500 million,

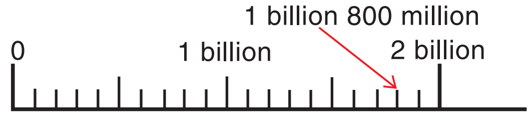
700 million, 1 billion and 200 milion

② ①

②



③



③ ① < ② >

④ ① Ⓐ Ten million Ⓑ Fifty million

Ⓒ Hundred ten million

② Ⓓ Two hundred million

Ⓔ Five hundred million

Ⓕ Nine hundred million

Chapter 1 Excercise: Page 13

① ① 1 million ② 1000 ③ 10

② ① 2 000 237 000 ②1 000 450 000

③ 1 800 000

③ ① 9 billion ② 339 million

③ 2 billion 630 million ④ 3 billion

④ ① 9 876 543 210 ② 1 000 002 345

Do you remember?: Page 13

① 670 ② 4344 ③ 846

④ 349 ⑤ 234 ⑥ 577

Chapter 1 Problems: Page 14

① ① billions ② 465 ③ 100

② ① 'One hundred fourty nine million and six hundred thousand'.

② 'Fourteen million two hundred and nine thousand'.

③ ① 34 000 000 000 ② 7 800 000 000

Chapter 2 Problems: Page 21

① ① 3 ② 10, 2 ③ 4, 20 ④ 2 ⑤ 4 ⑥ 6

② ① 10 ② 20 ③ 10 ④ 100 ⑤ 200 ⑥ 300

③ 4 bundles

Chapter 2 Problems: Page 22

① ① 2 ② 8, 2 ③ 6, 30 ④ 2 ⑤ 14 ⑥ 4

② ① 10 ② 20 ③ 10 ④ 100 ⑤ 400 ⑥ 200

③ ① 600 ÷ 3 ② 150 sheets

Chapter 4 Excercise: Page 34

① ① 55° ② 110° ③ 320°

② ⓐ 120° ⓑ 135° ⓒ 75°

③ See teacher.

Do you remember?: Page 34

Isosceles triangles: ②, ④

Equilateral triangles: ⑤, ⑦

Chapter 4 Problems: Page 35

① ① degree, 360°

② ⓐ 70° ⓑ 220° ⓒ 130°

③ ⓐ 105° ⓑ 15° ⓒ 25° ⓓ 95°

Do you remember?: Page 36

① ① 8 ② 6 ③ 7 ④ 8 ⑤ 4 ⑥ 4 ⑦ 4 ⑧ 8

⑨ 7 ⑩ 5 ⑪ 6 ⑫ 7 ⑬ 4 ⑭ 9 ⑮ 8 ⑯ 3

⑰ 1 ⑱ 0 ⑲ 4 ⑳ 1 ㉑ 4 ㉒ 7 ㉓ 4 ㉔ 6

㉕ 9 ㉖ 7 ㉗ 1 ㉘ 0 ㉙ 2 ㉚ 1

② ① 5 r 3 ② 5 r 2 ③ 4 r 1

④ 5 r 2 ⑤ 3 r 6 ⑥ 7 r 5

③ ① 5 ② 9 ③ 3 ④ 7 ⑤ 6 ⑥ 9 ⑦ 6 ⑧ 8

Chapter 5 Excercise: Page 48

① ① 26 ② 12 ③ 19 ④ 11

⑤ 12 ⑥ 12 r 5 ⑦ 18 r 2 ⑧ 12 r 6

⑨ 41 r 1 ⑩ 21 r 2 ⑪ 10 r 8 ⑫ 20 r 1

② ① 137 ② 37 ③ 208 ④ 40 r 7

⑤ 76 r 1 ⑥ 108 r 3 ⑦ 120 r 3 ⑧ 121 r 2

③ 60 paper flowers.

④ 145 r 1, 14 more pencils are needed

⑤ 16 cm

Chapter 5 Problems: Page 49

① ① tens ② 10 ③ 23

② ① 8 r 2 ② 8 r 2 ③ 14 r 2 ④ 43
⑤ 14 r 3 ⑥ 14 ⑦ 16 r 1 ⑧ 22 r 1
⑨ 29 ⑩ 189 r 3 ⑪ 84 r 1 ⑫ 59
⑬ 276 ⑭ 48 ⑮ 130 r 4 ⑯ 105 r 3

③ ① 20 groups ② 5 children

④ 48, 49, 50, 51, 52, 53

Chapter 5 Problems: Page 50

① ① Ⓒ, Ⓔ, Ⓖ ② Ⓐ, Ⓗ

② See teacher.

Chapter 6 Excercise: Page 60

① ⓐ and ⓔ, ⓒ and ⓓ, ⓓ and ⓕ

② See teacher.

③ ⓐ and ⓒ, ⓑ and ⓓ, ⓔ and ⓘ, ⓖ and ⓗ

④ See teacher.

Chapter 6 Excercise: Page 71

① ① parallel, trapeziod ② parallel, parallelogram
③ equal, rhombus

② See teacher.

③ See teacher.

Chapter 6 Problems: Page 72

① Perpendicular: ⓒ and ⓕ, ⓒ and ⓔ, ⓐ and ⓖ
Parallel: ⓔ and ⓕ, ⓑ and ⓓ

② See teacher.

③ 5cm, 115°, 6cm, 65°

④ ① ⓑ, ⓒ, ⓔ, ⓕ ② ⓒ, ⓕ
③ ⓒ, ⓕ ④ ⓑ, ⓒ, ⓔ, ⓕ
⑤ ⓑ, ⓒ, ⓔ, ⓕ ⑥ ⓐ

Chapter 7 Excercise: Page 82

① ① 2 ② 4 ③ 3 r 10 ④ 3
⑤ 3 r 16 ⑥ 30 r 18 ⑦ 8 ⑧ 6 r 49
⑨ 9 r 6 ⑩ 24 ⑪ 26 r 11 ⑫ 4 r 9

② 9 eggs and 5 eggs remainder

③ 152 tapes and 0 cm remainder.

Do you remember?: Page 82

See teacher.

Chapter 7 Problems: Page 83

① ① tens ② 76 ÷ 32 ③ 128

② ① 3 r 1 ② 4 r 14 ③ 9 r 10
④ 17 r 1 ⑤ 20 r 7 ⑥ 20 r 16

③ 12 pieces

④ Ⓐ 9 Ⓑ 1 Ⓒ 4 Ⓓ 3

Chapter 8 Excercise: Page 94

① See teacher.

Chapter 8 Problems: Page 95

① Ⓑ and Ⓒ

② ① Ⓐ 30 Ⓑ 29 Ⓒ 28 Ⓓ 27
② See teacher.
③ Between 5 month and 6 month.
Between 8 month and 9 month.

Chapter 9 Excercise: Page 106

① ① 0.4 ② 23 ③ 1.7 ④ 2.7 ⑤ 0.5 ⑥ 4.3

② ① 0.1 ② 0.6 ③ 1.5 ④ 2.8 ⑤ 3.1

③ ① < ② < ③ >

④ ① 4.9 ② 1.1 ③ 8.3 ④ 5
⑤ 2.5 ⑥ 1.9 ⑦ 0.4 ⑧ 0.9

Do you remember?: Page 106

See teacher.

Chapter 9 Problems: Page 107

① ① 10 ② 0.7 ③ 1.7, 17

② ① 14 ② 10 ③ 0.3

③ ① 5.8 ② 5.3 ③ 5 ④ 3.1 ⑤ 0.4 ⑥ 6.3

④ Sum = 1.9 L , Difference = 0.3 L

Chapter 10 Excercise: Page 119

① ① Ⓐ 50 000 Ⓑ 620 000 Ⓒ 280 000
② Ⓐ 39 000 Ⓑ 513 000 Ⓒ 50 000
③ Ⓐ 67 000 Ⓑ 750 000 Ⓒ 200 000

② ① 38478, 37501, 37573, 38490
② 37400, 37501, 37573, 37499
③ 38478, 38573, 38500, 38490

Chapter 10 Problems: Page 120

① ① Incorrect ② Correct.

② ① 36 000, 40 000 ② 44 000, 40 000
③ 24 000, 24 000

③ ① 5 000, 4 600 ② 60 000, 62 000
③ 800 000, 830 000

④ 780 kina

⑤ 0, 1, 2, 3, 4,

Chapter 11 Excercise: Page 130

① ① 170 ② 280 ③ 630 ④ 90 ⑤ 15 ⑥ 11
⑦ 105 ⑧ 9 ⑨ 36 ⑩ 36 ⑪ 13 ⑫ 34
⑬ 80877 ⑭ 42537 ⑮ 71955 ⑯ 288

② ① 15, 20, 25 sheets ② 12, 40, 20 pencils
③ 100, 18, 28 sheets
④ 500 ,150 , 3, 50 kina ⑤ 20, 50, 1050 kina

Chapter 11 Problems: Page 131

① ① 430 sheets ② 60 kina

② ① 44 ② 36 ③ 200 ④ 40

③ ① 100, 100, 2450 ② 4, 100, 600
③ 100, 100, 6, 630 ④ 100, 100, 891

④ See teacher.

Chapter 12 Excercise: Page 146

① ① m^2 ② cm^2 ③ km^2 ④ a

② ① 75 cm^2 ② 49 km^2 ③ 50 m^2
④ 61 cm^2 ⑤ 26 cm^2

Chapter 12 Problems: Page 147

① ① 60 cm^2 ② 16 m^2 ③ 40 km^2

② 18 m^2

③ ① 12 ② 4

④ See teacher.

Chapter 13 Excercise: Page 158

① ① Three point nine two litre
② Five point one seven metre
③ Zero point zero five litre
④ Eight point zero zero four kilogram

② ① 2.24 L ② 3.07 L

③ 6.493

④ ① 4.6 , 0.046 ② 27.9 , 0.279 ③ 188.3 , 1.883

⑤ ① 4.98 ② 10.04 ③ 14.25
④ 0.7 ⑤ 2.44 ⑥ 1.56

Do you remember?: Page 158

Perpendicular lines: ⓐ and ⓓ, ⓕ and ⓗ

Parallel lines: ⓑ and ⓒ, ⓔ and ⓖ

Chapter 13 Problems: Page 159

① ① 10, 1, 0.1 ② 10, 1, 0.001

② ① 8.695 kg ② 0.32 L ③ 3670 m

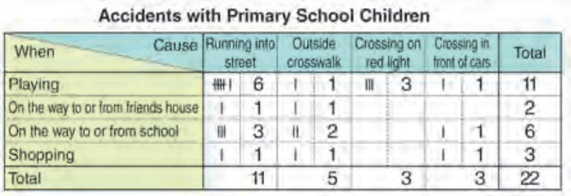
③ ① > ② <

④ ① 4.5 ② 6.04 ③ 5.14 ④ 2.45

⑤ 3.4

Chapter 15 Excercise: Page 168

①

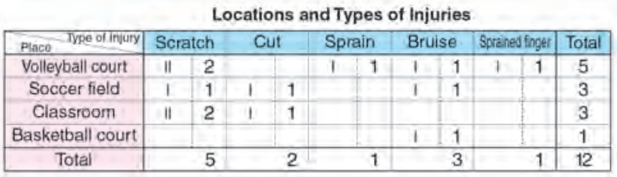


Accidents with Primary School Children

Cause / When	Running into street		Outside crosswalk		Crossing on red light		Crossing in front of cars		Total
Playing	𝍸 |	6	|	1	|||	3	|	1	11
On the way to or from friends house	|	1	|	1					2
On the way to or from school	|||	3	||	2			|	1	6
Shopping	|	1	|	1			|	1	3
Total		11		5		3		3	22

Chapter 15 Problems: Page 169

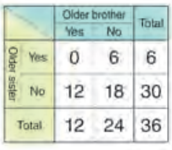
①



Locations and Types of Injuries

Type of injury / Place	Scratch		Cut		Sprain		Bruise		Sprained finger		Total
Volleyball court	||	2			|	1	|	1	|	1	5
Soccer field	|	1	|	1			|	1			3
Classroom	||	2	|	1							3
Basketball court							|	1			1
Total		5		2		1		3		1	12

②



		Older brother		Total
		Yes	No	
Older sister	Yes	0	6	6
	No	12	18	30
Total		12	24	36

Chapter 16 Excercise: Page 181

① ① 37.1 ② 450.8 ③ 5156.5 ④ 26.08
⑤ 2.08 ⑥ 2.3 ⑦ 1.3 ⑧ 1.8
⑨ 0.9 ⑩ 2.6 ⑪ 2.43 ⑫ 0.48

② ① 0.9 ② 6.7 ③ 2.2 ④ 0.1

③ 5.7m

④ 0.9kg

⑤ 0.35kg

Do you remember?: Page 181

①, ② See teacher.

Chapter 16 Problems: Page 182

① ① 0.1, 13.5 ② 0.01, 0.72 ③ 0.1, 1.3

② ① 7.2 ② 33.6 ③ 0.6
④ 1.8 ⑤ 1.6 ⑥ 0.63

③ 310.8 cm^2

④ 7.3 cm

⑤ 7

Chapter 17 Excercise: Page 193

① $1\frac{5}{6}$ m, $\frac{11}{6}$ m

② ① Proper: $\frac{2}{5}$, $\frac{1}{6}$, $\frac{1}{2}$, Improper: 1, $\frac{10}{7}$, $\frac{9}{8}$, $\frac{3}{3}$

Mixed: $2\frac{1}{8}$

② $1\frac{3}{7}$, $1\frac{1}{8}$, 1, $\frac{17}{8}$

③ ① $\frac{6}{7}$, $\frac{5}{7}$, $\frac{4}{7}$, $\frac{2}{7}$, ② $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{8}$, $\frac{1}{10}$

③ $2\frac{7}{8}$, $2\frac{5}{8}$, $2\frac{3}{8}$, $2\frac{1}{8}$, ④ $4\frac{1}{9}$, $3\frac{2}{9}$, $2\frac{7}{9}$, $1\frac{5}{9}$,

④ ① 1 ② $3\frac{4}{9}$ ③ $3\frac{4}{7}$ ④ $7\frac{1}{3}$

⑤ $2\frac{1}{8}$ ⑥ $\frac{7}{9}$ ⑦ $\frac{9}{10}$ ⑧ $1\frac{3}{5}$

⑤ $3\frac{1}{5}$ km, $\frac{2}{5}$ km

Chapter 17 Problems: Page 194

① ① $2\frac{3}{5}$ L, $\frac{13}{5}$ L

② 1 , $\frac{1}{7}$

③ $\frac{1}{7}$

④ $(2+1)+\left(\frac{3}{7}+\frac{5}{7}\right)=3+\frac{8}{7}=3+1\frac{1}{7}=4\frac{1}{7}$

② $1\frac{3}{4}$, $2\frac{1}{5}$, $3\frac{1}{2}$, $\frac{11}{4}$, $\frac{23}{6}$, $\frac{40}{9}$

③ ① $1\frac{1}{4}$ ② $3\frac{2}{3}$ ③ 6 ④ $3\frac{3}{8}$

⑤ $\frac{7}{9}$ ⑥ $2\frac{1}{6}$ ⑦ 2 ⑧ $2\frac{6}{7}$

④ ① $2\frac{2}{5}$ L ② He drank 1 litre more yesterday.

Chapter 18 Excercise: Page 208

① ① faces ② rectangles , squares ③ 12, 8

② See teacher.

③ Ⓑ 2 Ⓒ 2 Ⓓ 2

Do you remember?: Page 208

① 6 pigs × Cost of 1 pig = Total cost

② 6 × ☐ = 1440, 240 kina

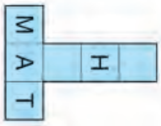
Chapter 18 Problems: Page 209

① ① AB, AD, EH, EF ② BF, CG, DH

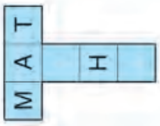
③ EFGH ④ AD, BC, EH, FG

② ①, ② See teacher.

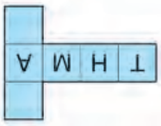
③ ①



②



③



Chapter 19 Excercise: Page 216

① ① Both distance and using fuel increasing

② Time increasing, distance decreasesing

③ Quantity consumed increasing, amount left decreasing

② ① 19 cm

②

Number of Pieces of Tape and Total Length

Number of piece of tape	1	2	3	4	5	6	7	8	9
Total length(cm)	10	19	28	37	46	55	64	73	82

③ 91 cm

Do you remember?: Page 216

① 584.8 ② 1612 ③ 3.95 ④ 1.7

⑤ 4.6 ⑥ 0.95 ⑦ $1\frac{4}{9}$ ⑧ $2\frac{2}{4}$

⑨ 10 ⑩ $\frac{4}{6}$ ⑪ $1\frac{6}{8}$ ⑫ $\frac{1}{3}$

Chapter 19 Problems: Page 217

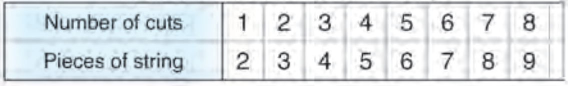
① ① One increase other decrease

② Both increase

② ① Pieces of string

②

Number of Cuts and Pieces of String

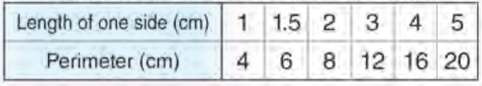


Number of cuts	1	2	3	4	5	6	7	8
Pieces of string	2	3	4	5	6	7	8	9

③ 9 times

③ ①

Length of One Side and Perimeter of a Square



Length of one side (cm)	1	1.5	2	3	4	5
Perimeter (cm)	4	6	8	12	16	20

② 4 × ☐ = ○ ③ 9 cm

Glossary

Approximate is almost but not exact. · · · · · · · · · · · · · · 109

Angle is simply the size of an angle. · · · · · · · · · · · · · · · 29

Angle of one revolution are 4 right angles (4 right angles = 360°) · · · · · · 29

Angle of a half revolution are 2 right angles (1 right angle = 90°) · · · · · · 29

Are is a unit. ***1 are*** (***1a***) is the area of square with a side of 10 m. · · · · · · 143

Area is the amount of space surrounded by lines and it is represented by a number. · · · · · · · · · · · · · · · 134

Area of rectangle is expressed as width × length (W × L). · · · · · · · · · · · · 138

Area of a square is expressed as Side × Side (S × S). · · · · · · · · · · · · · · · 138

Cube is a shape covered only by squares. · · · · · · · · · · · · · · · 196

Decimal numbers are numbers like 2.6, 0.6 and 0.1 · · · · · · · · · · · · · · · · 98

Decimal point is referred to as "." · · · · · · · · · · · · · · · · 98

Degree is a unit to express the size of angles. · · · · · · · · · · · · · · · · 29

Diagonal is formed when connecting lines from the opposite vertices/corners. · · · · · · · · · · · · · · · · 68

Difference is the result of subtracting one number from another. · · · · · · · · 11

Dividing continuously is division that is continued until the remainder is 0. · · · · · · · · · · · · · · · 177

Dividend = divisor × quotient + remainder. · · · · · · · · · · · · · · · 178

Formula is a mathematical sentence or rule expressed in symbols. · · · · 138

Hundred million is a number with 100 sets of one million. · · · · · · · · · · · · · · 5

Hundredths place ($\frac{1}{100}$ place) is 2 places to the right of the decimal place. · · · · · · · · · · · · · · · 153

Improper fractions are fractions in which the numerator is equal to or larger than the denominator. · · · · · · · · · · · · · · · 185

Intersecting lines are 2 lines that cross over each other. · · · · · · · · · · · · · · 31

Line graph is a graph that uses lines to show changes like in monthly temperatures. · · · · · · · · · · · · · · · · 88

Mixed fractions are fractions that are the sum of a whole number and a proper fraction · · · · · · · · · · · · · · · 184

Net (or development) is a figure drawn on a sheet of paper by cutting the edges of a box and unfolding it flat on a smooth surface. · · · · · · · 197

One billion is a number with 1 million sets of one thousand.	7
One hectare (1 ha) is the area of a square with a side of 100 m.	144
One hundredth litre or ***zero point one litre*** is 0.01 L	150
One million is a number with 1 000 sets of one thousands.	3
One square centimetre is the area of a square with 1 cm sides (1 cm^2).	135
One square metre is the area of a square with a side of 1 m (1 m^2).	141
One square kilometre is the area of a square with a side of 1 km (1 km^2).	145
Two lines are ***parallel*** when a third line crosses at right angle.	57
Parallelogram is a quadrilateral with two pairs of parallel sides.	62
Perpendicular lines are two lines which intersect (meet) at a right angle.	53
Product is the result of multiplying numbers.	12
Proper fractions are fractions in which the numerator is smaller than the denominator.	185
Protractor is used to measure the size of angles more accurately.	29
Quotient is a result of dividing numbers.	12
Quotient and a remainder is the answer for division with remainder.	38
Rectangular prism is a shape covered by rectangles or by squares and rectangles.	196
Rhombus is a quadrilateral with four equal sides.	65
Round number is also called approximate.	109
Size of an angle is determined by the amount of space between one side to another and not the lengths of the sides.	27 & 28
Sketch is a picture that is drawn to give a quick view of the whole shape.	204
Sum is the result of adding numbers.	11
Temporary quotient is the first estimation of the quotient.	76
Ten million is a number with 10 sets of one million.	4
Tenths place ($\frac{1}{10}$ place) is 1 place to the right of the decimal point.	98
Thousandths place ($\frac{1}{1000}$ place) is 3 places to the right of the decimal point.	153
Trapezoid is a quadrilateral that has one pair of parallel sides.	61

National Mathematics Grade 4 Textbook Development Committee

The National Mathematics Textbook was developed by Curriculum Development Division (CDD), Department of Education in partnership with Japan International Cooperation Agency (JICA) through the Project for Improving the Quality of Mathematics and Science Education (QUIS-ME Project). The following stakeholders have contributed to manage, write, validate and make quality assurance for developing quality Textbook and Teacher's Manual for students and teachers of Papua New Guinea.

Joint Coordinating Committee members for QUIS-ME Project

Dr. Uke Kombra, Secretary for Education - Chairperson, Mr. Walipe Wingi, Deputy Secretary - Deputy Chairperson, Mr. Baran Sori, Mr. Samson Wangihomie, Mr. Titus Romano Hatagen, Dr. Eliakim Apelis, Mr. Godfrey Yerua, Mrs. Annemarie Kona, Mr. Camilus Kanau, Mr. Joseph Moide, Mr. Peter Kants, Mr. Maxton Essy, Mr. Steven Tandale, Ms. Hatsie Mirou, Mr. Paul Ainui, Mr. Packiam Arulappan, Mr. Allen Jim, Mr. Nopa Raki, Mr. Gandhi Lavaki, Mr. John Kakas, Ms. Philippa Darius, Mr. Alex Magun, Ms. Mary Norrie, Mr. James Namari, Ms. Kila Tau, Mr. Moses Hatagen Koran, Ms. Colette Modagai, Ms. Dorothy Marang, Mr. Dan Lyanda, Representatives from Embassy of Japan and JICA PNG Office, Mr. Akinori Ito, MPS, Mr. Chiko Yamaoka and other Project Experts

Steering Committee members for QUIS-ME Project

Mrs. Annemarie Kona, First Assistant Secretary - Chairperson, Mr. Steven Tandale - Assistant Secretary, CDD - Deputy, Chairperson, Ms. Hatsie Mirou, Mr. Paul Ainui, Mr. Gandhi Lavaki, Mr. John Kakas, Ms. Philippa Darius, Mr. Alex Magun, Ms. Mary Norrie, Mr. James Namari, Ms. Kila Tau, Mr. Moses Hatagen Koran, Ms. Mary Phillips, Mr. Nopa Raki, Mr. Geoff Gibaru, Ms. Jean Taviri, Mr. Akinori Ito, MPS, Mr. Chiko Yamaoka, Mr. Satoshi Kusaka, Mr. Ryuihi Sugiyama, Mr. Kenichi Jibutsu, Ms. Masako Tsuzuki, Dr. Kotaro Kijima, Ms. Kyoko Yamada and Representatives from Textbook writers and JICA PNG Office

Curriculum Panel

Mr. Steven Tandale, Mr. Gandhi Lavaki, Ms. Philippa Darius, Mr. Alex Magun, Mr. John Kakas, Ms. Mirou Avosa, Ms. Mary Norrie, Mr. Gilbert Ikupu, Mr. John Wek, Ms. Betty Bannah, Mr. Vitus Witnes, Ms. Clemencia Dimain and Ms. Celine Vavetaovi

Editorial Supervisors

Prof / Dr. Masami Isoda, Mr. Satoshi Kusaka, Mr. Katsuaki Serizawa and Mr. Akinori Ito, MPS

Content Supervisors

Ms. Kyoko Yamada, Prof. Hiroki Ishizaka, Prof. Yoichi Maeda and Prof. Takeshi Sakai

Writers & Proofreaders (Curriculum Officers & Textbook writers - Math working Group)

Ms. Mary Norrie - Math Working Group Leader, Mr. James Namari, Ms. Kila Tau, Mr. Anda Apule, Ms. Pisah Thomas, Ms. Michelle Pala, Ms. Ileen Palan, Ms. Hilda Tapungu, Mr. Armstrong Rupa and Mr. Gibson Jack

Chief Proofreader, Illustrators, Photos & Desktop Publishing

Mr. Alex Magun (Chief Proofreader), Mr. Micheal John (Illustrator), Mr. David Gerega, Mr. Vitus Witnes (Graphic designers), Mr. Armstrong Rupa, Mr. Gibson Jack, Ms. Yoshiko Osawa, Ms. Michiyo Ueda (Desktop Publishing), Mr. Chiko Yamaoka (Photographer) and Gakko Tosho Co.,Ltd. (Photos and illustrations)

Validation Team (Math working group & Teachers from pilot schools)

Mrs. Anne Afaisa, Ms. Esther Yambukia, Mr. Freeman Kefoi, Ms. Heidi Supa, Ms. Ikai Koivi, Ms. Jill Koroi, Mr. Kila Vela Ymana, Ms. Lino Eaki, Ms. Louisa Kaekae, Ms. Lucy Paul, Ms. Margaret Itoro, Ms. Martha Dimsock, Mr. Tom Ovia and Mrs. Wilfreda Efi

Cooperation

Japan International Cooperation Agency (JICA), Department of National Planning & Monitoring (DNPM), Bank of Papua New Guinea, Centre for Research on International Cooperation in Education Development (CRICED) - University of Tsukuba, Naruto University of Education, Gakko Tosho Co.,Ltd. , Gaire Primary School, Iobuna Kouba Primary School, Koki Primary School, Koiari Park Primary School, St. John Primary School, St. Peter Primary School, St. Therese Primary School, Sogeri Primary School, Tubuseria Primary School and Wardstrip Primary School.

From
the People of Japan