ORIGO STEPPING STORES STUDENT JOURNAL SAMPLE

Engaging student pages accompany each lesson within *ORIGO Stepping Stones*. In the Student Journal for this year level, there are two pages for each lesson.

YEAR 5

For more information on program content for *ORIGO Stepping Stones* Year 5 visit *origoeducation.com/stepping-stones*.

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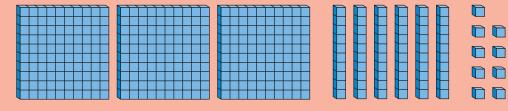
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8.1 Revising Division Strategies

Lora bought a mobile phone for \$369. She paid for it in three equal monthly payments.

How could you work out the amount she paid each month?

Rita used a sharing strategy. What do the blocks represent?



How could you share these blocks into three equal groups? Loop the blocks to show the amount in each share.

Mika used a different strategy. He followed these steps.





I'll call the amount that is paid each month **P**. $P = 369 \div 3$

	Step I		Step 2				Step 3			
	He drew a rectangle to ow the problem. The length of one side becomes the unknown value.		He split the re parts so that i to divide	t was eas	He thought: $3 \times 100 = 300$ $3 \times 20 = 60$ $3 \times 3 = 9$					
3	369	3	300	60	9	3	300	60 9		
	Р						100	+ 20 + 3		
Why	did he choose the numbers	\bigcap			\bigcirc					

Why did he add 100 + 20 + 3?

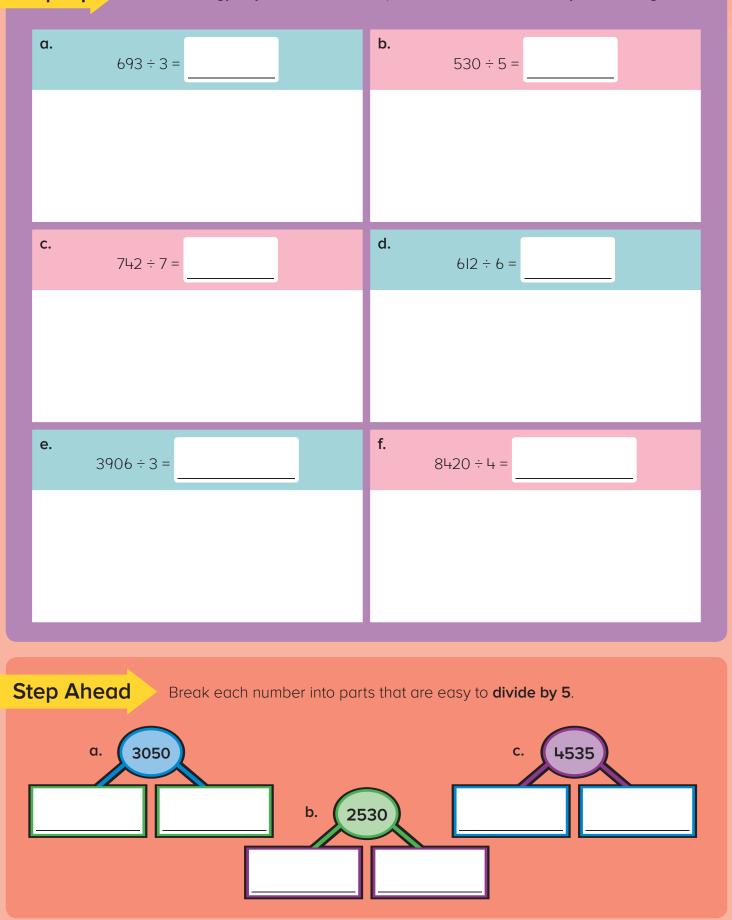
To find the amount, Rita thinks $369 \div 3 = P$ and Mika thinks $3 \times P = 369$.



How much did Lora pay each month?

How could you use these strategies to calculate 484 ÷ 4?

> Use a strategy of your choice to complete each of these. Show your thinking.



YEAR 5

8.2

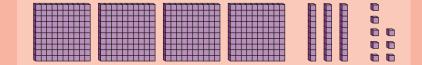
Partitioning and Regrouping Dividends

Imagine you are planning a holiday.

How can you work out the cost of one night at this hotel?

David showed the total cost using base-I0 blocks.





Then he followed these steps to calculate the cost of each night.

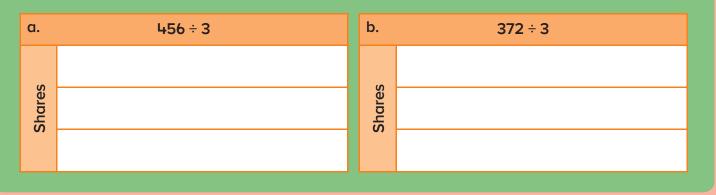
	Step I	Step 2	Step 3
	Share the hundreds.	Share the tens.	Share the ones.
3 Nights			

What did David do at each step?

What is the cost of each night?

What is another way you could work it out?

Step Up I. Draw or write the amount in each share. Use blocks to help you.



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2. Use a strategy of your choice to complete each of these. You can use blocks to help. Show your thinking.



year 5

Recording Division

8.3

Three people share the cost of renting this car.

How could you work out each person's share?

Anna showed the total cost with blocks then followed these steps to work out each share.



	Step I	Step 2	Step 3
	Share the hundreds.	Share the tens.	Share the ones.
Shares			

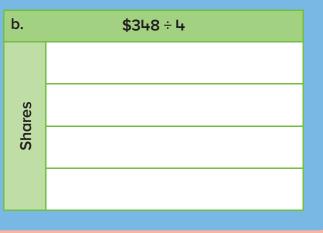
Carlos followed these steps to help him write the amount in each share.

	Step I	Step 2	Step 3
	Share the hundreds.	Share the tens.	Share the ones.
	100	100 + 10	100 + 10 + 6
Shares	100	100 + 10	100 + 10 + 6
	100	100 + 10	100 + 10 + 6

How much is each person's share of the car rental?

I. Work out how much two people, then four people would pay to share the same total cost of the car rental above. Use a strategy of your choice.

a.	\$348 ÷ 2
Ires	
Shares	

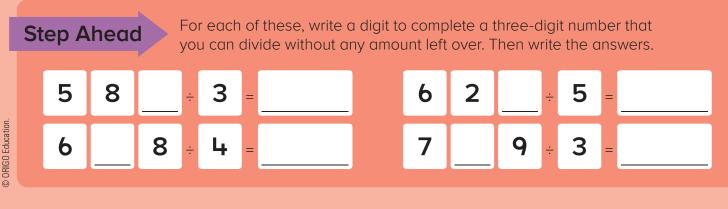


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Step Up

2. Work out the amount in each share. You can use blocks to help your thinking.





DRAFT

year 5

DRAFT ORIGO Stepping Stones 5 • 8.4

Introducing the Format of the Standard Division Algorithm

Four people shared the cost of a restaurant bill for \$84.

Gavin calculated each share and recorded his thinking like this. How much did each person pay?

Another way to record the calculation is to use a division bracket.

What numbers are written around the division bracket? What does each number tell you?

What is happening in each of these steps? How are they similar to Gavin's method?

Step I

н

3

9

3)

Т

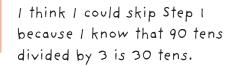
0

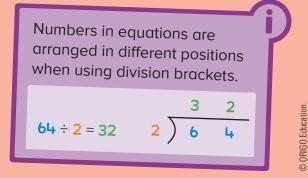
Look at these steps to work out 906 shared by 3.

0

6

What is happening in each step? Why is 0 written above the bracket in Step 2?





906 shared	by 3.			
	Step 2		Step 3	
н	т	0	нто	
3	0		3 0 2	
3) 9	0	6	3 9 0 6	

Step I

0

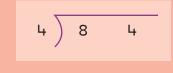
4

Т

2

8

4)



Step 2

0

L

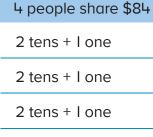
4

Т

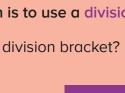
2

8

4



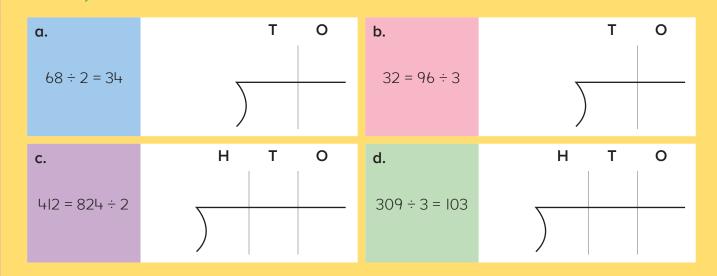
2 tens + I one





8.4

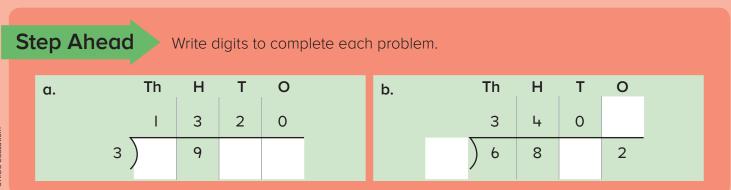
I. Rewrite each equation using the division bracket.



2. Use the steps on page 182 to calculate each quotient.

a.	т	0		b.	Т	0		c.	T (0	d.	Т	0	
2) 8	2		з)	6	3		5)	5 !	5	ц	8	4	-
e.	Н	Т	0		f.	Th	Н	т 	0	g.	н	Т	0	
3) 6	9	3	-	2) 8	6	2	6	4)	8	0	4	
h.	н	Т	0		i.	Th	Н	Т 	0	j.	Th	Н	т	0
2) 4	6	0	-	4) 4	0	4	8	з)	9	3	0	9

3. Choose three problems from Question 2. Rewrite each as an equation.



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8.5 Introducing the Standard Division Algorithm

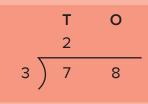
Three friends equally share \$78.

Jacob used blocks and wrote this to work out each share. How much is each share?

What regrouping did Jacob have to do? How do you know?

78 ÷ 3
7 tens ÷ 3 = 2 tens
and I ten left over
18 ones ÷ 3 = 6 ones

Tia tried using the division bracket but did not know how to show the regrouping.



Emily showed her the standard division algorithm to help.

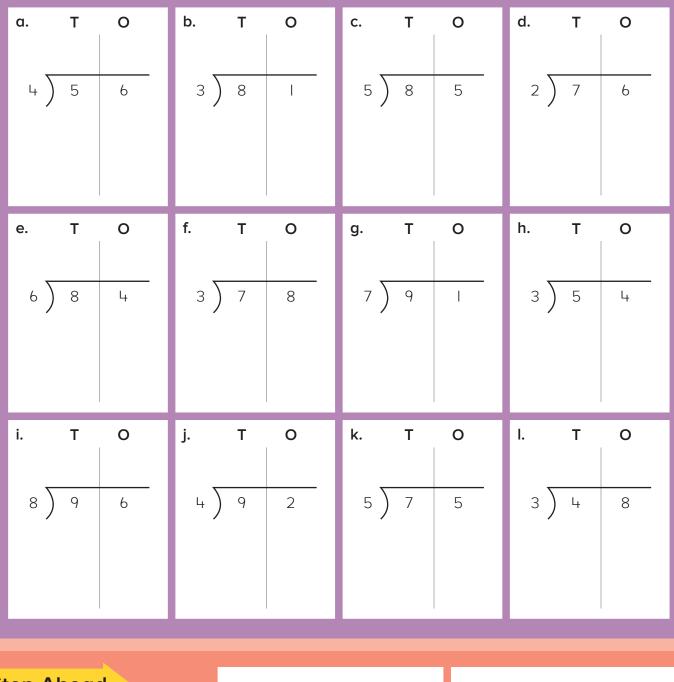
Step I	т	0	Step 2	т	0
Divide There are 7 tens to share. There are 3 shares. There are 2 tens in each share because 3 × 2 is 6.	2 3) 7	8	Multiply then subtract. There are 7 tens to share. There are 6 tens shared. There is 1 ten left over because 7 – 6 is 1.	$\begin{array}{c} 2 \\ 3 \\ \hline \\ - \\ \hline \\ 6 \\ \hline \\ 1 \end{array}$	8
Step 3 Bring down the next digit. There is I ten left to share. There are 8 ones to share. That makes I8 ones to share.	T 2 3)7 - 6 1	O 8 ↓ 8	Emily completed the standard algorithm by repeating the first two steps with 18 ones.	T 2 3)7 - 6 1 - 1	O 6 ↓ 8 8 8 0

How is Emily's method similar to Jacob's method?

What is another method you could use?

Try using the standard division algorithm to calculate $68 \div 4$.

Use the standard division algorithm to calculate each quotient. Remember to estimate before or after your calculation to check your accuracy.



Step Ahead

Show two different ways to work out $87 \div 3$.

year 5

Using the Standard Division Algorithm (No Zeros)

A rope measured 645 centimetres. It was cut into three equal parts.

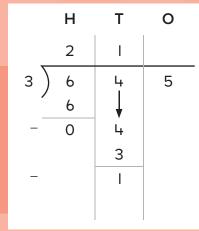
How would you work out the length of each part?

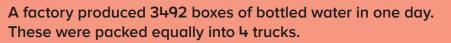
Megan decided to use the standard division algorithm to calculate each length.

What steps has she completed? What does she need to do next?

8.6

Complete Megan's calculation.





How many boxes were in each truck?

Tyler used the standard division algorithm. He started like this. What has he done in this part of his calculation? Why do you think he did that?



3 thousands blocks can't be divided into 4 parts so he regrouped the 3 thousands as hundreds from the start.

What has he done in this part of his calculation? Why did he write 28 on the fourth line under the division bracket?

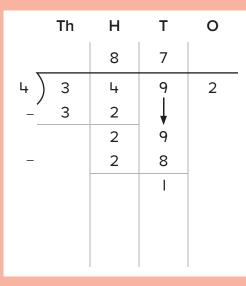


He needed to divide 29 tens by 4. What did he multiply 4 by to make a product close to 29?

Complete Tyler's calculation.



	Th	н	т	0
		8		
4)	3 3	4	9	2
	3	2		
		2		



Complete these calculations using the standard division algorithm.

a. H	Т	C)	b.	н	Т	C)	c.	Н	Т	(D
4) 9	3	6	, ,	3) 4	8	E	 >	5) 4	I		5
d. Th	Н	т	0	e.	Th	н	т	0	f.	Th	н	Т	0
4)6	I	8	Ļ	6)	1	8	7	2	5) 3	2	4	5

Step Ahead

Choose two problems above that you can solve easily **without** using the standard division algorithm. Show your methods.

Using the Standard Division Algorithm (With Zeros)

Four wheels cost \$832. What is the cost of each wheel?

Kimie followed these steps to work it out.

8 hundreds divided by 4	3 tens divided by 4	32 ones divided by 4				
2 hundreds	2 hundreds + 0 tens	2 hundreds + 0 tens + 8 ones				
2 hundreds	2 hundreds + 0 tens	2 hundreds + 0 tens + 8 ones				
2 hundreds	2 hundreds + 0 tens	2 hundreds + 0 tens + 8 ones				
2 hundreds	2 hundreds + 0 tens	2 hundreds + 0 tens + 8 ones				

Corey

Т

0

3

0

8

2

2

2

0

н

2

8

8

Corey and Sofia each used the standard algorithm.

Compare their calculations.

What do you notice about the steps Sofia used?

Why do you think she brou down the 3 tens and 2 one at the same time?

Did this affect the final ans

How does each method re to Kimie's method?

Five friends ran a carwash.

How much was in each share?

you could use?

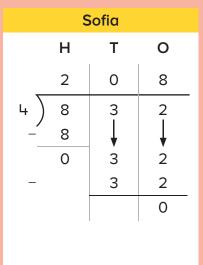
They earned \$1045 and split the money evenly.

What is another strategy

Complete this standard division algorithm to help you?

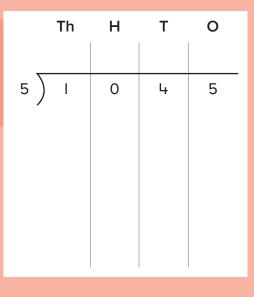
ught		-		
es		0	3	
	-		0	
swer?			3	
	-		3	
elate				

4



REAL WHEEI

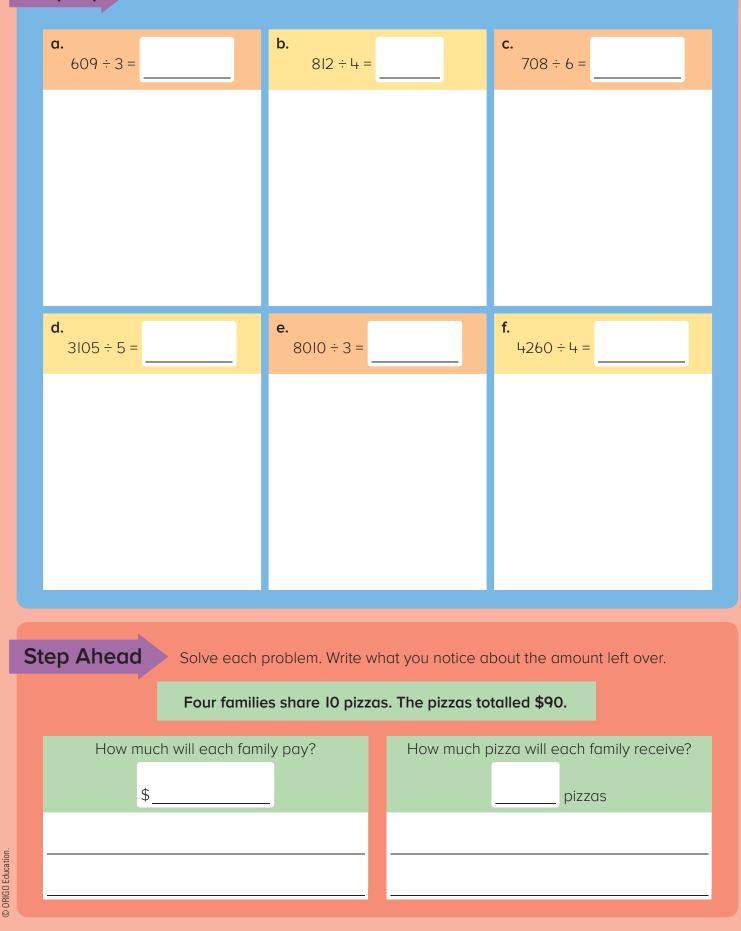
DEALS



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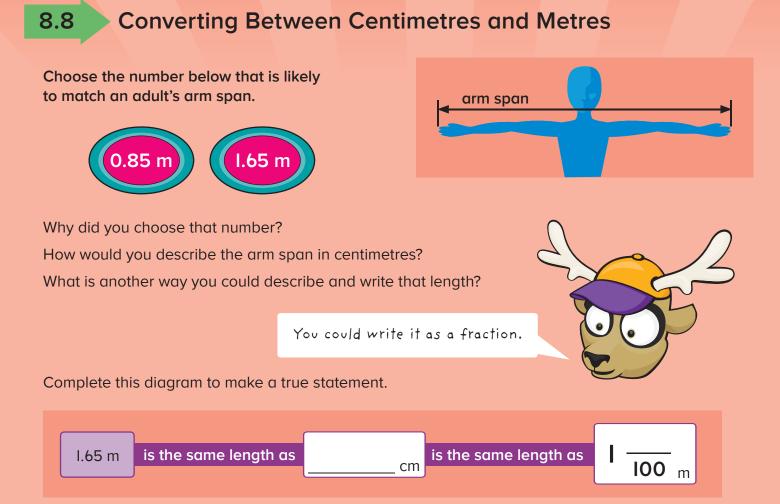
8.7

Use a method of your choice to solve each problem. Show your thinking.



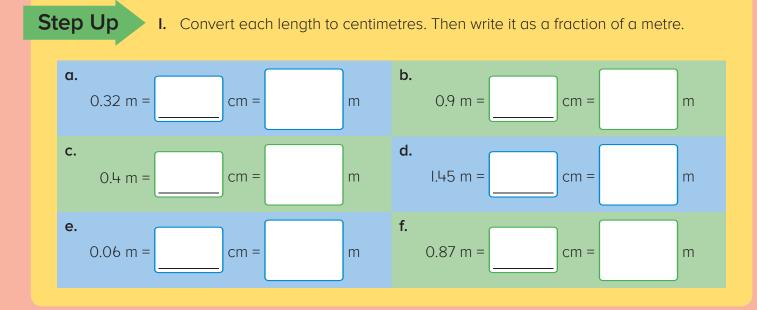
DRAFT

YEAR 5

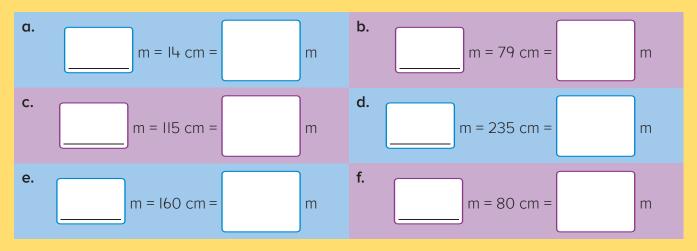


How could you use the diagram to help you to describe or write 25 centimetres in different ways?

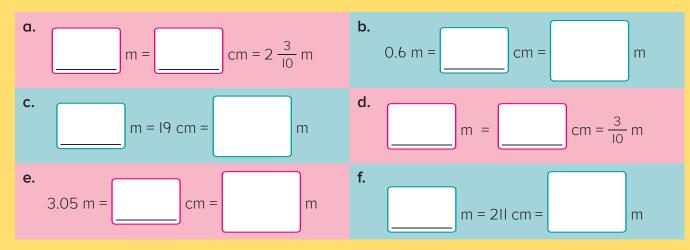
How would you write I.7 metres in centimetres and as a fraction of a metre?



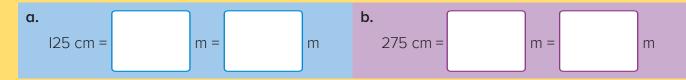
2. Convert each length to metres. Then write it as a fraction of a metre.



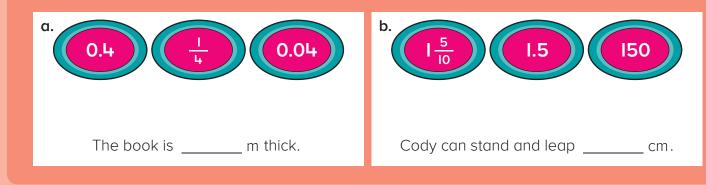
3. Complete the missing parts to make these true.



4. Write these lengths as a fraction of a metre. Then write the same fraction another way.



Step Ahead Choose the number that makes the most sense to complete the sentence.



8.9 Converting Between Millimetres and Centimetres

0 cm I cm 2 cm Label each length above the number line. How would you write these lengths as decimal fractions of a centimetre? Label each length as a decimal fraction of a centimetre below the number line. What is another way you can describe or write 15 mm? Write a decimal fraction and a mixed number I could write it as a fraction. to complete a true statement. is the same length as is the same length as 15 mm cm ст What are some different ways to write 250 mm? Use these boxes to answer Question I **Step Up** Height below and Question 2 on page 193. Width Length 95 cm В CU mm Α D C $\frac{1}{2}$ cm 6 mm 415 mm 150 mm 56 cm $4\frac{1}{2}$ cm I. Complete the tables to show the dimensions of the first two packages.

A	Length	Width	Height	B Length	Width	Height
	mm	mm	mm	mm	mm	mm
	CM	CM	cm	CM	CM	CM

Where would I5 mm and 5 mm be on this number line? How do you know?

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2. Use the dimensions of the boxes on page 192 to complete these.

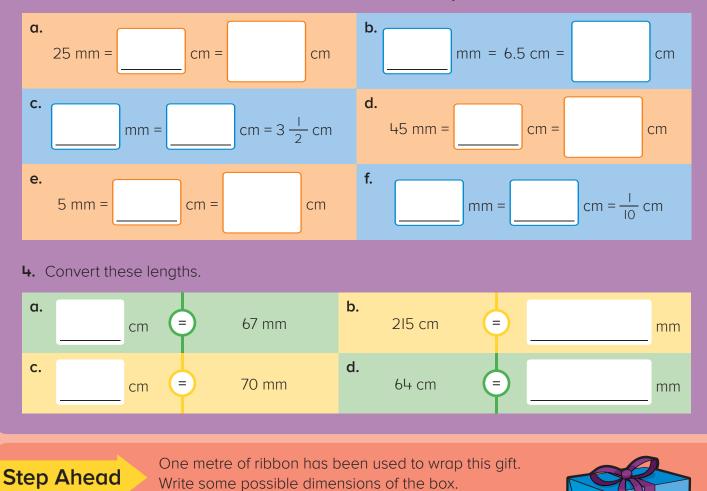
C	Length	Width	Height	D Length	Width	Height
	mm	mm	mm	mm	mm	mm
	cm	cm	cm	cm	cm	cm

3. Write numbers to show equivalent lengths. Use decimal fractions and mixed numbers where necessary.

Allow 15 cm for the bow.

Width

cm



mm

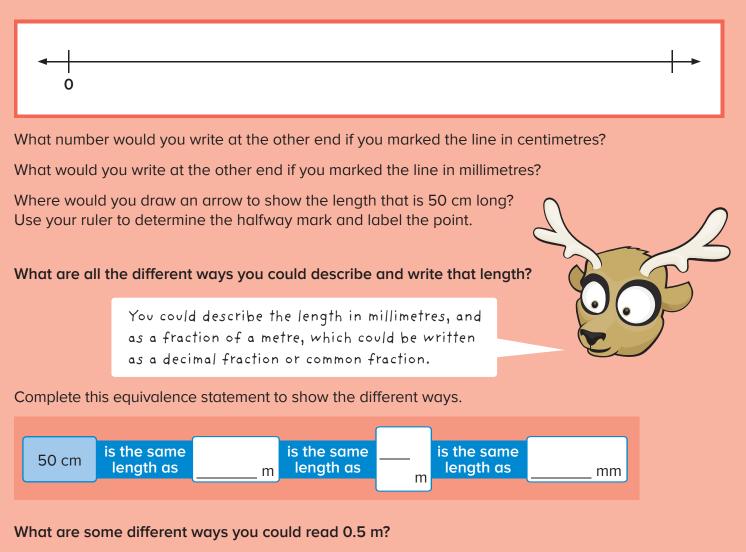
Working Space

Height

8.10

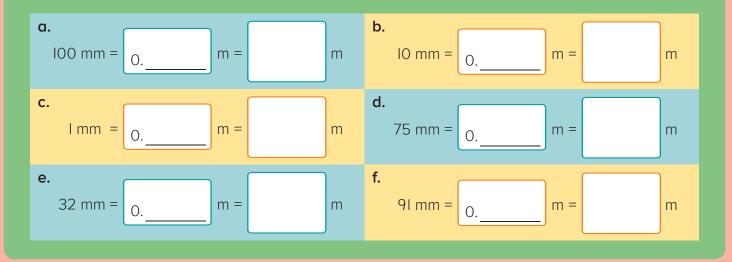
Converting Between Millimetres and Metres

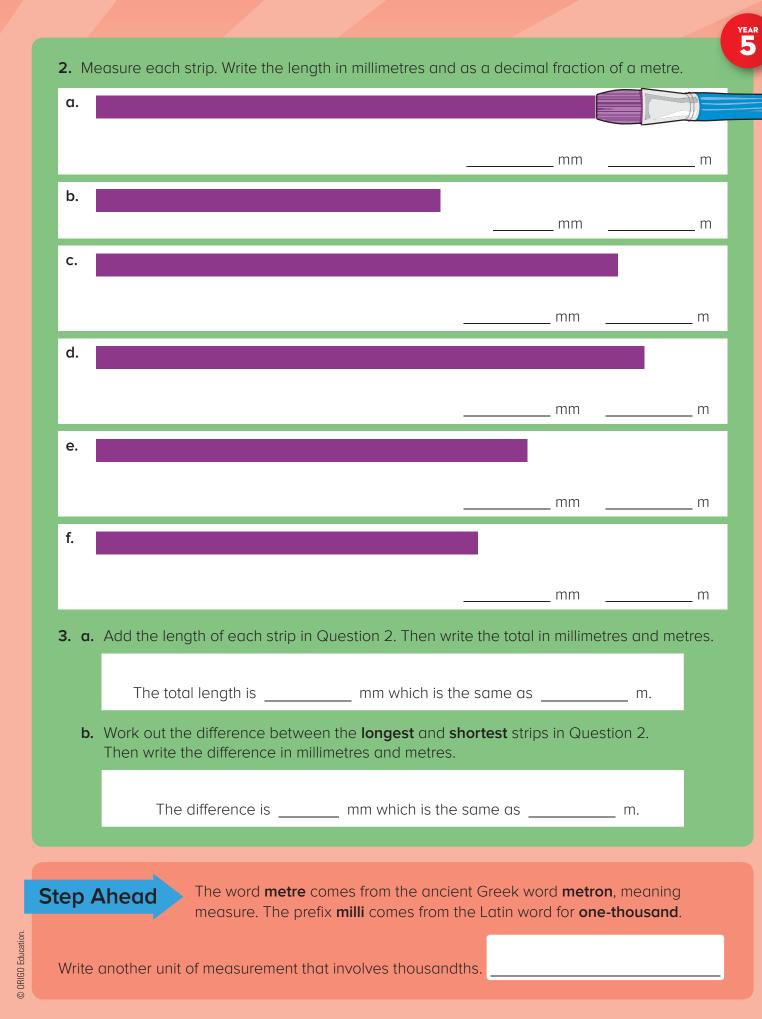
This number line represents one metre.



Step Up

I. Write each length as a fraction of a metre. Use decimal fractions and common fractions.







What are some things you know about one kilometre?



Do you know what the prefix "kilo" means?

How many metres are in one kilometre? How do you know?

What are some distances that you think are about one kilometre long? How could you check?



Complete this diagram to show the length of the 5-km Fun Run in metres.

5 km is the same length as _____m

How many kilometres is 2500 metres?

How would you write this as a decimal fraction or mixed number?

Show how you would write 3725 metres as a decimal fraction and common fraction.



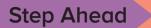


2. Convert these runway lengths to metres.

a. Adelaide	b. Cairns	c. Hobart	d. Darwin	
(ADL)	(CNS)	(HBA)	(DRW)	
3.I km	3.197 km	2.251 km	3.354 km	
m	m	m	m	

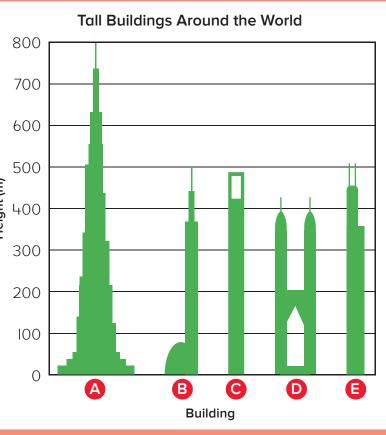
3. Write each length as a decimal fraction then as a mixed number.

a. 3650 m	b. 2780 m	c. 4 190 m	d. 1325 m
km	km	km	km
3 <u>650</u> 1000 km	km	km	km

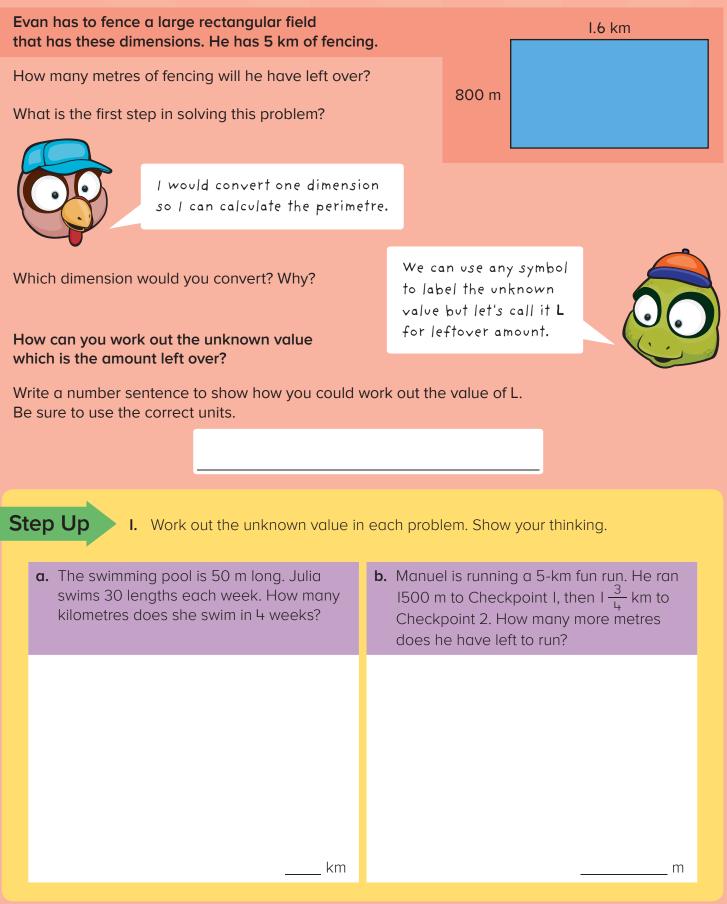


Estimate the height of each building in metres and as a decimal fraction of a kilometre.





Solving Multi-Step Word Problems Involving Conversions of Metric Lengths



8.12

- 2. Solve each problem. Show your thinking and use a symbol to represent the unknown value.
- a. Luis competed in a hop, skip, and jump event. His hop was 1.85 m. His skip was I720 mm. His total was 5.82 m. How long was his jump?
 b. Claire had a I0-metre ball of string. She cut 6 lengths at 40 cm each and 5 lengths at 600 mm each. How much string did she use?
- **3.** Solve each problem. Write your answer two ways. Show your thinking.

 a. The perimetre of a triangle is 750 mm. The base is 23 cm long. The longest side is 400 mm long. How long is the other side? 	b. Daniel drew a chart with 5 columns. Three columns were 35 mm wide and 2 were 5 cm wide. How wide was the finished chart?
mm cm	mm cm
mm cm	mm cm



Write a word problem to match this equation. Then calculate the	e product.	250 m × 5 × 52 =	
			ter and the second s

Working Space

km