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

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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.

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
</table>
| He drew a rectangle to show the problem. The length of one side becomes the unknown value. | He split the rectangle into parts so that it was easier to divide by 3. | He thought:
3 × 100 = 300
3 × 20 = 60
3 × 3 = 9 |
| 3 369 | 3 300 60 9 | 3 300 60 9 |
| P | 100 + 20 + 3 |

Why did he choose the numbers 300, 60, and 9?

Why did he add 100 + 20 + 3?

To find the amount, Rita thinks 369 ÷ 3 = P and Mika thinks 3 × P = 369.

How much did Lora pay each month?

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

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

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>693 ÷ 3 =</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>530 ÷ 5 =</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>742 ÷ 7 =</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>612 ÷ 6 =</td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>3906 ÷ 3 =</td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>8420 ÷ 4 =</td>
<td></td>
</tr>
</tbody>
</table>

Step Ahead

Break each number into parts that are easy to divide by 5.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 3050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. 2530</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. 4535</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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-10 blocks.

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

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share the hundreds.</td>
<td>Share the tens.</td>
<td>Share the ones.</td>
</tr>
<tr>
<td>3 Nights</td>
<td>3 Nights</td>
<td>3 Nights</td>
</tr>
</tbody>
</table>

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 1. Draw or write the amount in each share. Use blocks to help you.

| a. 456 ÷ 3 | b. 372 ÷ 3 |
| Shares | Shares |

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-10 blocks.

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

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share the hundreds.</td>
<td>Share the tens.</td>
<td>Share the ones.</td>
</tr>
<tr>
<td>3 Nights</td>
<td>3 Nights</td>
<td>3 Nights</td>
</tr>
</tbody>
</table>

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 1. Draw or write the amount in each share. Use blocks to help you.

| a. 456 ÷ 3 | b. 372 ÷ 3 |
| Shares | Shares |
2. Use a strategy of your choice to complete each of these. You can use blocks to help. Show your thinking.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>620 ÷ 5 =</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>375 ÷ 3 =</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>528 ÷ 4 =</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>429 ÷ 3 =</td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>4206 ÷ 3 =</td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>3250 ÷ 5 =</td>
<td></td>
</tr>
</tbody>
</table>

Step Ahead: Look at the example below. Write two other ways to split 960 into parts to make it easy to divide by 4.

960 ÷ 4 is the same as
(800 ÷ 4) + (160 ÷ 4)

a. 960 ÷ 4 is the same as

b. 960 ÷ 4 is the same as
### 8.3 Recording Division

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.

<table>
<thead>
<tr>
<th>Shares</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Share the hundreds.</td>
<td>Share the tens.</td>
<td>Share the ones.</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Blocks" /></td>
<td><img src="image" alt="Blocks" /></td>
<td><img src="image" alt="Blocks" /></td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Blocks" /></td>
<td><img src="image" alt="Blocks" /></td>
<td><img src="image" alt="Blocks" /></td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Blocks" /></td>
<td><img src="image" alt="Blocks" /></td>
<td><img src="image" alt="Blocks" /></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Shares</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Share the hundreds.</td>
<td>Share the tens.</td>
<td>Share the ones.</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>100 + 10</td>
<td>100 + 10 + 6</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>100 + 10</td>
<td>100 + 10 + 6</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>100 + 10</td>
<td>100 + 10 + 6</td>
</tr>
</tbody>
</table>

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

### Step Up

1. 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 \div 2

| Shares | |
|--------| |

#### b.

$348 \div 4

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

### a. $512 ÷ 4 = 128$
- **Step Up**
- **Step 1**: Shares 100 100 100 100
- **Step 2**: Shares 100 100 + 10
- **Step 3**: Shares 100 100 + 10 + 6

### b. $798 ÷ 6 = 133$

### c. $847 ÷ 7 = 121$

### d. $732 ÷ 6 = 122$

### e. $648 ÷ 4 = 162$

### f. $573 ÷ 3 = 191$

### g. $4230 ÷ 3 = 1410$
- **Step Up**
- **Step 1**: Shares 1000 1000 1000
- **Step 2**: Shares 1000 1000 + 100
- **Step 3**: Shares 1000 1000 + 100 + 10

### h. $5631 ÷ 3 = 1877$

**Step Ahead**

For each of these, write a digit to complete a three-digit number that you can divide without any amount left over. Then write the answers.

- $58___ ÷ 3 = ___
- $62___ ÷ 5 = ___
- $68___ ÷ 4 = ___
- $79___ ÷ 3 = ___
### 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?

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

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

I think I could skip Step 1 because I know that 90 tens divided by 3 is 30 tens.
I. Rewrite each equation using the division bracket.

a. \(68 \div 2 = 34\)

b. \(32 = 96 \div 3\)

c. \(412 = 824 \div 2\)

d. \(309 \div 3 = 103\)

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

a. 
\[
\begin{array}{c|cc}
\text{T} & \text{O} \\
\hline
2 & 8 & 2
\end{array}
\]

b. 
\[
\begin{array}{c|cc}
\text{T} & \text{O} \\
\hline
3 & 6 & 3
\end{array}
\]

c. 
\[
\begin{array}{c|ccc}
\text{T} & \text{O} \\
\hline
5 & 5 & 5
\end{array}
\]

d. 
\[
\begin{array}{c|cc}
\text{T} & \text{O} \\
\hline
4 & 8 & 4
\end{array}
\]

e. 
\[
\begin{array}{c|ccc}
\text{H} & \text{T} & \text{O} \\
\hline
3 & 6 & 9 & 3
\end{array}
\]

f. 
\[
\begin{array}{c|ccc}
\text{Th} & \text{H} & \text{T} & \text{O} \\
\hline
2 & 8 & 6 & 2 & 6
\end{array}
\]

g. 
\[
\begin{array}{c|ccc}
\text{H} & \text{T} & \text{O} \\
\hline
4 & 8 & 0 & 4
\end{array}
\]

h. 
\[
\begin{array}{c|cc}
\text{H} & \text{T} & \text{O} \\
\hline
2 & 4 & 6 & 0
\end{array}
\]

i. 
\[
\begin{array}{c|ccc}
\text{Th} & \text{H} & \text{T} & \text{O} \\
\hline
4 & 4 & 0 & 4 & 8
\end{array}
\]

j. 
\[
\begin{array}{c|ccc}
\text{Th} & \text{H} & \text{T} & \text{O} \\
\hline
3 & 9 & 3 & 0 & 9
\end{array}
\]

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

\[
\begin{array}{c}
\text{ } \\
\text{ } \\
\text{ }
\end{array}
\]

Step Ahead

Write digits to complete each problem.

a. 
\[
\begin{array}{c|cc}
\text{Th} & \text{H} & \text{T} & \text{O} \\
\hline
1 & 3 & 2 & 0
\end{array}
\]

\[
\begin{array}{c|c}
\text{H} & \text{T} \\
\hline
3 & 9
\end{array}
\]

b. 
\[
\begin{array}{c|ccc}
\text{Th} & \text{H} & \text{T} & \text{O} \\
\hline
3 & 4 & 0 & \square
\end{array}
\]

\[
\begin{array}{c|cc}
\text{H} & \text{T} \\
\hline
6 & 8 & 2
\end{array}
\]

© ORIGO Education.
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?

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

Emily showed her the standard division algorithm to help.

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 $68 \div 4$. 

\[
\begin{array}{c|c|c}
78 & \div & 3 \\
7 \text{ tens} & \div & 3 = 2 \text{ tens} \\
\text{and 1 ten left over} \\
18 \text{ ones} & \div & 3 = 6 \text{ ones} \\
\end{array}
\]
Step Up
Use the standard division algorithm to calculate each quotient. Remember to estimate before or after your calculation to check your accuracy.

a. \[ 4 \overline{) 56} \]

b. \[ 3 \overline{) 81} \]

c. \[ 5 \overline{) 85} \]

d. \[ 2 \overline{) 76} \]

e. \[ 6 \overline{) 84} \]

f. \[ 3 \overline{) 78} \]

g. \[ 7 \overline{) 91} \]

h. \[ 3 \overline{) 54} \]

i. \[ 8 \overline{) 96} \]

j. \[ 4 \overline{) 92} \]

k. \[ 5 \overline{) 75} \]

l. \[ 3 \overline{) 48} \]

Step Ahead
Show two different ways to work out \( 87 \div 3 \).
8.6 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? Complete Megan’s calculation.

A factory produced 3492 boxes of bottled water in one day. These were packed equally into 4 trucks. 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? What has he done in this part of his calculation? Why did he write 28 on the fourth line under the division bracket?

3 thousands blocks can’t be divided into 4 parts so he regrouped the 3 thousands as hundreds from the start. 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.
Complete these calculations using the standard division algorithm.

Step Up

a. \[ \begin{array}{c|c|c|c|c} & H & T & O \\ \hline 4 & 9 & 3 & 6 \\ \end{array} \]

b. \[ \begin{array}{c|c|c|c|c} & H & T & O \\ \hline 3 & 4 & 8 & 6 \\ \end{array} \]

c. \[ \begin{array}{c|c|c|c|c} & H & T & O \\ \hline 5 & 4 & 1 & 5 \\ \end{array} \]

d. \[ \begin{array}{c|c|c|c|c} & Th & H & T & O \\ \hline 4 & 6 & 1 & 8 & 4 \\ \end{array} \]

e. \[ \begin{array}{c|c|c|c|c} & Th & H & T & O \\ \hline 6 & 1 & 8 & 7 & 2 \\ \end{array} \]

f. \[ \begin{array}{c|c|c|c|c} & Th & H & T & O \\ \hline 5 & 3 & 2 & 4 & 5 \\ \end{array} \]

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.

<table>
<thead>
<tr>
<th>8 hundreds divided by 4</th>
<th>3 tens divided by 4</th>
<th>32 ones divided by 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 hundreds</td>
<td>2 hundreds + 0 tens</td>
<td>2 hundreds + 0 tens + 8 ones</td>
</tr>
<tr>
<td>2 hundreds</td>
<td>2 hundreds + 0 tens</td>
<td>2 hundreds + 0 tens + 8 ones</td>
</tr>
<tr>
<td>2 hundreds</td>
<td>2 hundreds + 0 tens</td>
<td>2 hundreds + 0 tens + 8 ones</td>
</tr>
<tr>
<td>2 hundreds</td>
<td>2 hundreds + 0 tens</td>
<td>2 hundreds + 0 tens + 8 ones</td>
</tr>
</tbody>
</table>

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 brought down the 3 tens and 2 ones at the same time?

Did this affect the final answer?

How does each method relate to Kimie’s method?

Five friends ran a carwash. They earned $1045 and split the money evenly.

How much was in each share?

Complete this standard division algorithm to help you?

What is another strategy you could use?
Step Up
Use a method of your choice to solve each problem. Show your thinking.

a. \[ 609 \div 3 = \quad \]  
b. \[ 812 \div 4 = \quad \]  
c. \[ 708 \div 6 = \quad \]  
d. \[ 3105 \div 5 = \quad \]  
e. \[ 8010 \div 3 = \quad \]  
f. \[ 4260 \div 4 = \quad \]  

Step Ahead
Solve each problem. Write what you notice about the amount left over.

Four families share 10 pizzas. The pizzas totalled $90.

How much will each family pay?

\[ \$ \quad \]

How much pizza will each family receive?

\[ \quad \text{pizzas} \]
**8.8 Converting Between Centimetres and Metres**

Choose the number below that is likely to match an adult’s arm span.

- 0.85 m
- 1.65 m

Why did you choose that number?

How would you describe the arm span in centimetres?

What is another way you could describe and write that length?

You could write it as a fraction.

Complete this diagram to make a true statement.

![Diagram](image)

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

How would you write 1.7 metres in centimetres and as a fraction of a metre?

**Step Up**

1. Convert each length to centimetres. Then write it as a fraction of a metre.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>0.32 m =</td>
<td>cm =</td>
<td>m</td>
</tr>
<tr>
<td>b.</td>
<td>0.9 m =</td>
<td>cm =</td>
<td>m</td>
</tr>
<tr>
<td>c.</td>
<td>0.4 m =</td>
<td>cm =</td>
<td>m</td>
</tr>
<tr>
<td>d.</td>
<td>1.45 m =</td>
<td>cm =</td>
<td>m</td>
</tr>
<tr>
<td>e.</td>
<td>0.06 m =</td>
<td>cm =</td>
<td>m</td>
</tr>
<tr>
<td>f.</td>
<td>0.87 m =</td>
<td>cm =</td>
<td>m</td>
</tr>
</tbody>
</table>
2. Convert each length to metres. Then write it as a fraction of a metre.

<table>
<thead>
<tr>
<th></th>
<th>Length Conversion</th>
<th>Fraction of a Metre</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>m = 14 cm =</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>m = 79 cm =</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>m = 115 cm =</td>
<td></td>
</tr>
<tr>
<td>d</td>
<td>m = 235 cm =</td>
<td></td>
</tr>
<tr>
<td>e</td>
<td>m = 160 cm =</td>
<td></td>
</tr>
<tr>
<td>f</td>
<td>m = 80 cm =</td>
<td></td>
</tr>
</tbody>
</table>

3. Complete the missing parts to make these true.

<table>
<thead>
<tr>
<th></th>
<th>Missing Parts</th>
<th>Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>m =</td>
<td>cm = 2 3/10 m</td>
</tr>
<tr>
<td>b</td>
<td>0.6 m =</td>
<td>cm =</td>
</tr>
<tr>
<td>c</td>
<td>m =</td>
<td>cm =</td>
</tr>
<tr>
<td>d</td>
<td>m =</td>
<td>cm = 3/10</td>
</tr>
<tr>
<td>e</td>
<td>3.05 m =</td>
<td>cm =</td>
</tr>
<tr>
<td>f</td>
<td>m =</td>
<td>cm = 211</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Fraction</th>
<th>Another Fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>125 cm</td>
<td>m =</td>
<td>m =</td>
</tr>
<tr>
<td>b</td>
<td>275 cm</td>
<td>m =</td>
<td>m =</td>
</tr>
</tbody>
</table>

Step Ahead

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

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>0.4</td>
<td>1/4</td>
<td>0.04</td>
</tr>
<tr>
<td>b</td>
<td>1 5/10</td>
<td>1.5</td>
<td>150</td>
</tr>
</tbody>
</table>

The book is _______ m thick.

Cody can stand and leap _______ cm.
8.9 Converting Between Millimetres and Centimetres

Where would 15 mm and 5 mm be on this number line? How do you know?

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 to complete a true statement.

What are some different ways to write 250 mm?

Step Up
Use these boxes to answer Question 1 below and Question 2 on page 193.

I. Complete the tables to show the dimensions of the first two packages.

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
</tr>
<tr>
<td></td>
<td>cm</td>
<td>cm</td>
<td>cm</td>
</tr>
<tr>
<td>B</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
</tr>
<tr>
<td></td>
<td>cm</td>
<td>cm</td>
<td>cm</td>
</tr>
</tbody>
</table>
2. Use the dimensions of the boxes on page 192 to complete these.

<table>
<thead>
<tr>
<th>Length</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>mm</td>
<td>mm</td>
</tr>
<tr>
<td>cm</td>
<td>cm</td>
<td>cm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>mm</td>
<td>mm</td>
</tr>
<tr>
<td>cm</td>
<td>cm</td>
<td>cm</td>
</tr>
</tbody>
</table>

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

a. 25 mm = _____ cm = _____ cm

b. _____ mm = 6.5 cm = _____ cm

c. _____ mm = _____ cm = 3 1/2 cm

d. 45 mm = _____ cm = _____ cm

e. 5 mm = _____ cm = _____ cm

f. _____ mm = _____ cm = 1/10 cm

4. Convert these lengths.

a. _____ cm = 67 mm

b. 215 cm = _____ mm

c. _____ cm = 70 mm

d. 64 cm = _____ mm

Step Ahead

One metre of ribbon has been used to wrap this gift. Write some possible dimensions of the box. Allow 15 cm for the bow.

Height _____ cm  Width _____ mm
This number line represents one metre.

What number would you write at the other end if you marked the line in centimetres?
What would you write at the other end if you marked the line in millimetres?
Where would you draw an arrow to show the length that is 50 cm long?
Use your ruler to determine the halfway mark and label the point.

What are all the different ways you could describe and write that length?

You could describe the length in millimetres, and as a fraction of a metre, which could be written as a decimal fraction or common fraction.

Complete this equivalence statement to show the different ways.

<table>
<thead>
<tr>
<th>50 cm</th>
<th>is the same length as</th>
<th>m</th>
<th>is the same length as</th>
<th>m</th>
<th>is the same length as</th>
<th>mm</th>
</tr>
</thead>
</table>

What are some different ways you could read 0.5 m?

**Step Up**

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

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>100 mm = 0.____ m = ____ m</td>
<td>b.</td>
</tr>
<tr>
<td>c.</td>
<td>1 mm = 0.____ m = ____ m</td>
<td>d.</td>
</tr>
<tr>
<td>e.</td>
<td>32 mm = 0.____ m = ____ m</td>
<td>f.</td>
</tr>
</tbody>
</table>
2. Measure each strip. Write the length in millimetres and as a decimal fraction of a metre.

a. [Strip image]
   \[ \underline{\hspace{2cm}} \text{mm} \quad \underline{\hspace{1cm}} \text{m} \]

b. [Strip image]
   \[ \underline{\hspace{1cm}} \text{mm} \quad \underline{\hspace{1cm}} \text{m} \]

c. [Strip image]
   \[ \underline{\hspace{1cm}} \text{mm} \quad \underline{\hspace{1cm}} \text{m} \]

d. [Strip image]
   \[ \underline{\hspace{1cm}} \text{mm} \quad \underline{\hspace{1cm}} \text{m} \]

e. [Strip image]
   \[ \underline{\hspace{1cm}} \text{mm} \quad \underline{\hspace{1cm}} \text{m} \]

f. [Strip image]
   \[ \underline{\hspace{1cm}} \text{mm} \quad \underline{\hspace{1cm}} \text{m} \]

3. a. Add the length of each strip in Question 2. Then write the total in millimetres and metres.

   The total length is \[ \underline{\hspace{1cm}} \text{mm} \] which is the same as \[ \underline{\hspace{1cm}} \text{m} \].

b. Work out the difference between the longest and shortest strips in Question 2. Then write the difference in millimetres and metres.

   The difference is \[ \underline{\hspace{1cm}} \text{mm} \] which is the same as \[ \underline{\hspace{1cm}} \text{m} \].

Step Ahead

The word **metre** comes from the ancient Greek word **metron**, meaning measure. The prefix **milli** comes from the Latin word for **one-thousand**.

Write another unit of measurement that involves thousandths.
8.11 Converting Between Metres and Kilometres

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.

_________ km is the same length as _________ km

Step Up

I. Write the length of these airport runways in kilometres.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Perth (PER)</td>
<td>3444 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>km</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Sydney (SYD)</td>
<td>3920 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>km</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>Melbourne (MEL)</td>
<td>3657 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>km</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d</td>
<td>Brisbane (BNE)</td>
<td>3561 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>km</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Convert these runway lengths to metres.

<table>
<thead>
<tr>
<th>Airport</th>
<th>Length (km)</th>
<th>Metres</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Adelaide (ADL)</td>
<td>3.1 km</td>
<td>3 100 m</td>
</tr>
<tr>
<td>b. Cairns (CNS)</td>
<td>3.197 km</td>
<td>3 197 m</td>
</tr>
<tr>
<td>c. Hobart (HBA)</td>
<td>2.251 km</td>
<td>2 251 m</td>
</tr>
<tr>
<td>d. Darwin (DRW)</td>
<td>3.354 km</td>
<td>3 354 m</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Length</th>
<th>Decimal Fraction</th>
<th>Mixed Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 3650 m</td>
<td>$\frac{3650}{1000}$</td>
<td>3 650 km</td>
</tr>
<tr>
<td>b. 2780 m</td>
<td>$\frac{2780}{1000}$</td>
<td>2 780 km</td>
</tr>
<tr>
<td>c. 4190 m</td>
<td>$\frac{4190}{1000}$</td>
<td>4 190 km</td>
</tr>
<tr>
<td>d. 1325 m</td>
<td>$\frac{1325}{1000}$</td>
<td>1 325 km</td>
</tr>
</tbody>
</table>

Step Ahead

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

<table>
<thead>
<tr>
<th>Building</th>
<th>Height (m)</th>
<th>Height (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Burj Khalifa, Dubai</td>
<td>828 m</td>
<td>0.828 km</td>
</tr>
<tr>
<td>B Taipei 101 Tower, Taiwan</td>
<td>508 m</td>
<td>0.508 km</td>
</tr>
<tr>
<td>C Shanghai World Financial Centre, China</td>
<td>492 m</td>
<td>0.492 km</td>
</tr>
<tr>
<td>D Petronas Towers 1 and 2, Malaysia</td>
<td>451 m</td>
<td>0.451 km</td>
</tr>
<tr>
<td>E Willis Tower, North America</td>
<td>443 m</td>
<td>0.443 km</td>
</tr>
</tbody>
</table>
Step Ahead

Write a word problem to match this equation. Then calculate the product.

\[
250 \text{ m} \times 5 \times 52 = \ ? \text{ km}
\]

\[
198
\]

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ORIGO Stepping Stones 5 • 8.12

1. Work out the unknown value in each problem. Show your thinking.

a. The swimming pool is 50 m long. Julia swims 30 lengths each week. How many kilometres does she swim in 4 weeks?

\[
____ \text{ km}
\]

b. Manuel is running a 5-km fun run. He ran 1500 m to Checkpoint 1, then 1 \(\frac{3}{4}\) km to Checkpoint 2. How many more metres does he have left to run?

\[
______ \text{ m}
\]
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 1720 mm. His total was 5.82 m. How long was his jump?

_________________ mm

b. Claire had a 10-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?

_________________ cm

3. Solve each problem. Write your answer two ways. Show your thinking.

a. The perimeter 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?

___________ mm  ___________ cm

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

Step Ahead
Write a word problem to match this equation. Then calculate the product.

250 m × 5 × 52 = __________ km

Working Space