

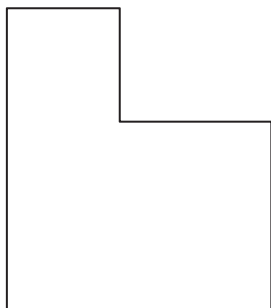
29. [Perimeter]

Skill 29.1 Measuring the perimeter of a shape.

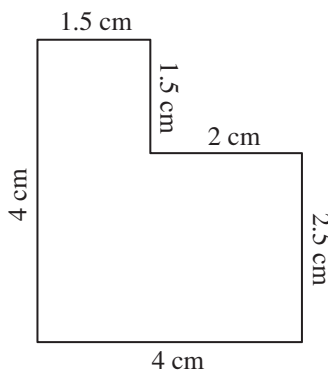
MM7 11 22 33 44
MM8 11 22 33 44

The perimeter of a shape is found by adding together the side lengths of the shape.

Q. Using a ruler, find in centimetres the perimeter of the shape shown.

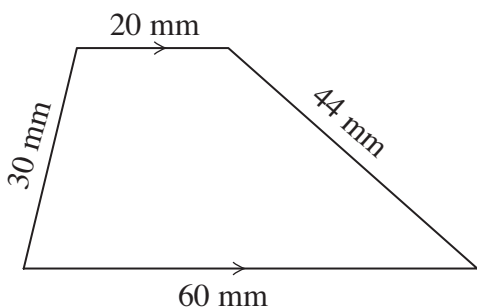


A. $P = 1.5 + 1.5 + 2 + 2.5 + 4 + 4$
 $= 15.5 \text{ cm}$



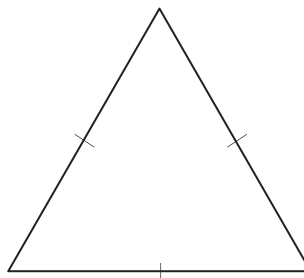
Measure the side lengths of the shape. Write down your results next to each side as shown. Add all side lengths together.

a) Using a ruler, find in millimetres the perimeter of the trapezium below.



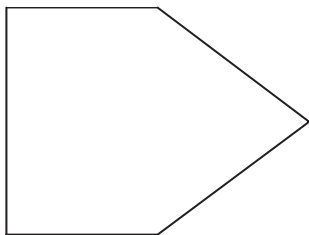
$P = \underline{60} + \underline{44} + \underline{20} + \underline{30}$
 $= \underline{154} \text{ mm}$

b) Using a ruler, find in centimetres the perimeter of the equilateral triangle below.



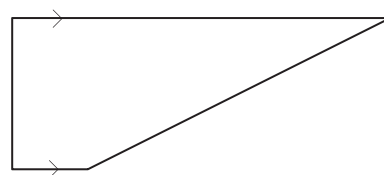
$P = \dots + \dots + \dots$
 $= \dots \text{ cm}$

c) Using a ruler, find in centimetres the perimeter of the shape below.



$P = \dots + \dots + \dots + \dots + \dots$
 $= \dots \text{ cm}$

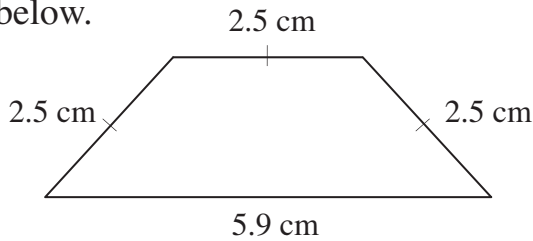
d) Using a ruler, find in centimetres the perimeter of the trapezium below.



$P = \dots + \dots + \dots + \dots$
 $= \dots \text{ cm}$

The perimeter of a shape is found by adding together the side lengths of the shape.

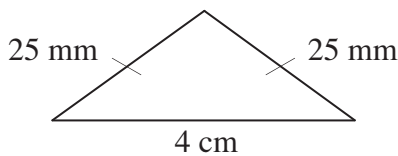
Q. Find the perimeter of the trapezium below.



A. $P = 5.9 + 2.5 + 2.5 + 2.5$
 $= 13.4 \text{ cm}$

Add all side lengths together.

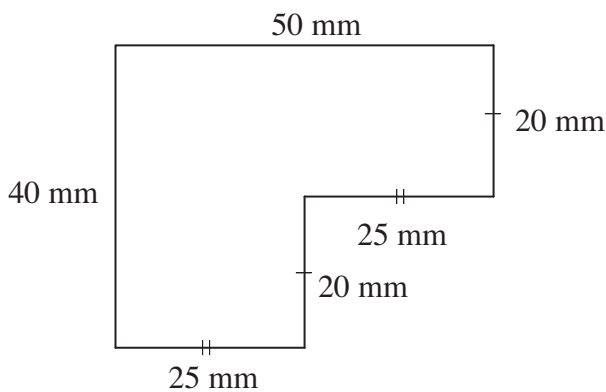
Q. Express all measurements in centimetres, then find the perimeter of the triangle below.



A. $P = 4 + 2.5 + 2.5$
 $= 9 \text{ cm}$

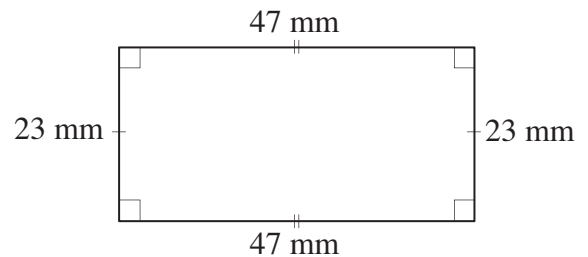
Check that the units are the same. If not, first convert to the appropriate unit, in this case cm, before adding. Since $10 \text{ mm} = 1 \text{ cm}$, convert mm to cm by dividing by 10.
 $25 \text{ mm} = 25 \div 10 = 2.5 \text{ cm}$

a) Find the perimeter of the shape below.



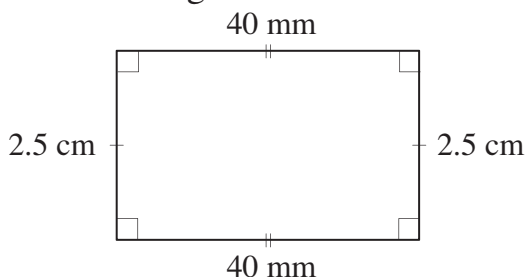
$P = 50 + 20 + 25 + 20 + \dots + \dots$
 $= \dots \text{ mm}$

b) Calculate the perimeter of the rectangle below.



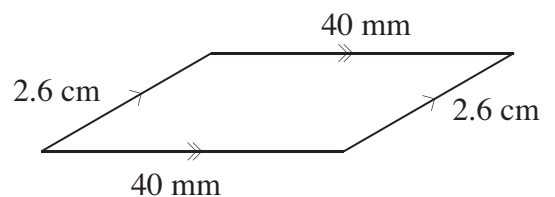
$P = \dots + \dots + \dots + \dots$
 $= \dots \text{ mm}$

c) Express all measurements in millimetres, then find the perimeter of the rectangle below.



$2.5 \text{ cm} = \dots \text{ mm}$
 $P = \dots + \dots + \dots + \dots$
 $= \dots \text{ mm}$

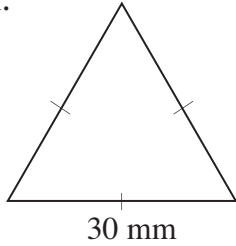
d) Express all measurements in centimetres, then find the perimeter of the parallelogram below.



$40 \text{ mm} = \dots \text{ cm}$
 $P = \dots + \dots + \dots + \dots$
 $= \dots \text{ cm}$

Skill 29.3 Finding the perimeter of a polygon given the relationship between side lengths.

Q. Calculate the perimeter of the equilateral triangle shown.

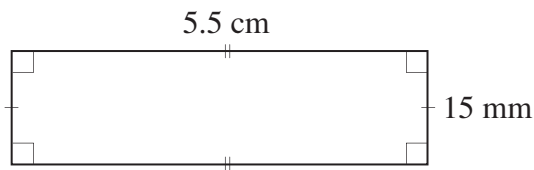


A. $P = 30 + 30 + 30$
 $= 90 \text{ mm}$

A dash on a side of a geometric shape indicates that it is of equal length to all other sides with one dash.

To find the perimeter:
Label all side lengths and add all side lengths together.

Q. Express all measurements in centimetres and then find the perimeter of the rectangle shown.

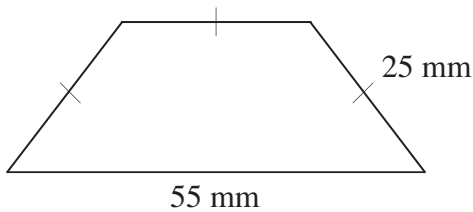


A. $P = 5.5 + 5.5 + 1.5 + 1.5$ $10 \text{ mm} = 1 \text{ cm}$
 $= 14 \text{ cm}$ $15 \text{ mm} = 1.5 \text{ cm}$

Two dashes indicate that all sides with two dashes are of equal length.

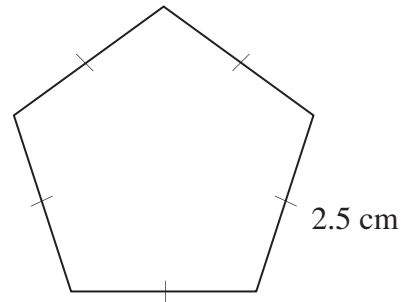
To find the perimeter:
Label all side lengths, convert to the same units and add all side lengths together.

a) Calculate the perimeter of the trapezium below.



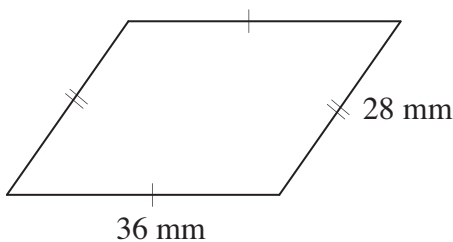
$P = 55 + 25 + 25 + 25$
 $= 130 \text{ mm}$

b) Calculate the perimeter of the regular pentagon below.



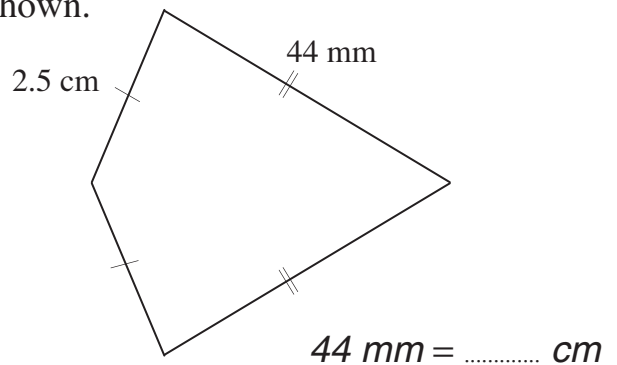
$P = \dots + \dots + \dots + \dots + \dots$
 $= \dots \text{ cm}$

c) Calculate the perimeter of the parallelogram below.



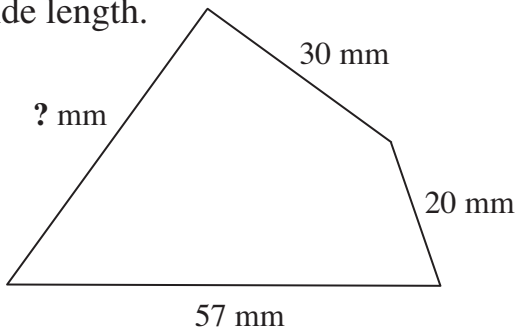
$P = \dots + \dots + \dots + \dots$
 $= \dots \text{ mm}$

d) Express all measurements in centimetres and then find the perimeter of the kite shown.



$P = \dots + \dots + \dots + \dots$
 $= \dots \text{ cm}$

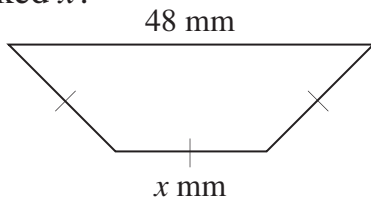
Q. The perimeter of the quadrilateral below is 152 mm. Find the missing side length.



A. $30 + 20 + 57 + ? = 152$
 $107 + ? = 152$
 $? + 107 - 107 = 152 - 107$
 $? = 45 \text{ mm}$

Add all given side lengths together.
 Subtract the total from the perimeter.
 The remainder is the missing side length.
 OR
 Use algebra as shown above.

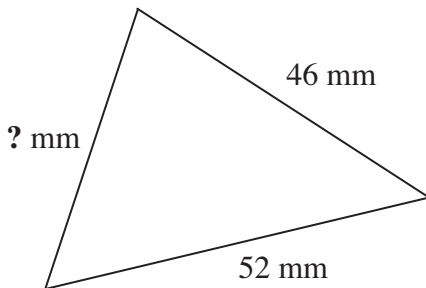
Q. The trapezium below has a perimeter of 108 mm. How long is the side marked x ?



A. $48 + x + x + x = 108$
 $3x + 48 = 108$
 $3x + 48 - 48 = 108 - 48$
 $3x = 60$
 $3x \div 3 = 60 \div 3$
 $x = 20 \text{ mm}$

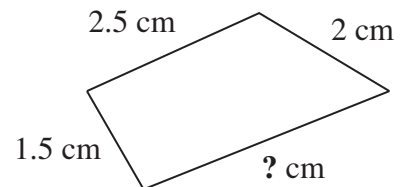
Note that the three side lengths marked with a dash are all the same length. Subtract 48 from the perimeter. If the three identical sides are 60 mm long in total, then the side marked x is 20 mm.
 OR
 Use algebra as shown above.

a) The perimeter of the triangle below is 137 mm. Find the missing side length.



$52 + 46 + ? = 137$
 $98 + ? - 98 = 137 - 98$
 $? = 39 \text{ mm}$

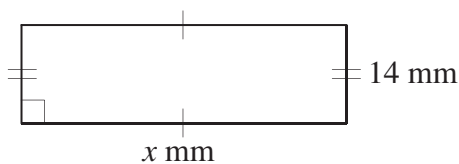
b) The perimeter of the quadrilateral below is 9.5 cm. Find the missing side length.



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 cm

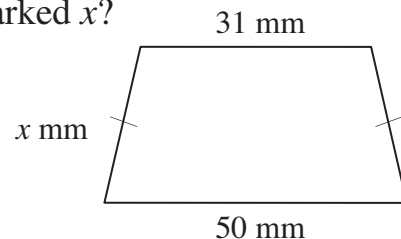
c) The rectangle below has a perimeter of 112 mm. How long is the side marked x ?



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 mm

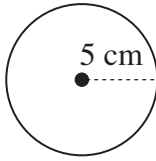
d) The trapezium below has a perimeter of 101 mm. How long is the side marked x ?



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 mm

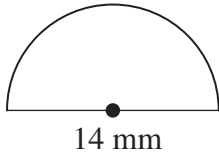
Q. Use $C = 2\pi r$ and $\pi \approx 3.14$ to find the perimeter of the shape shown.



A. $C = 2 \times \pi \times r$
 $\approx 2 \times 3.14 \times 5$
 $= 3.14 \text{ cm}$

Substitute the values into the equation.
Complete the multiplication.

Q. Use $\pi \approx \frac{22}{7}$ to find the perimeter of the shape shown. [Hint: The formula for finding the circumference of a circle is $C = 2\pi r$.]



A. Circle:
 $C = 2 \times \pi \times r$
 $\approx 2 \times \frac{22}{7} \times 7$
 $= 2 \times 22 \times 1$
 $= 44$

Semi-circle arc:

$P \approx 22 \text{ mm}$

Shape:

$P \approx 22 + 14 = 36 \text{ mm}$

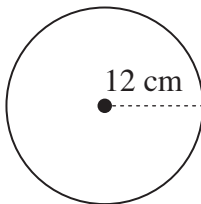
Calculate the perimeter of a complete circle first. [Hint: You need the radius, not the diameter!]

Then halve that answer to get the distance around the semi-circular arc.

Finally add the diameter to enclose the shape.

a) Use $\pi \approx 3.14$ to find the circumference of the circle shown.

[Hint: The formula for finding the circumference of a circle is $C = 2\pi r$.]

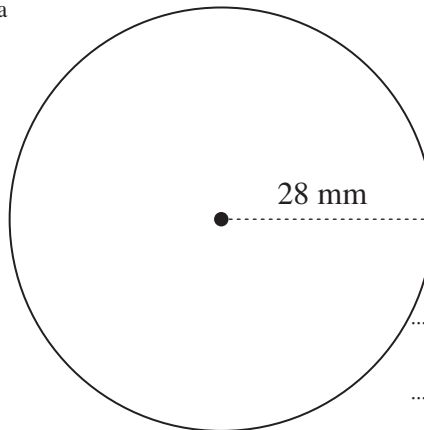


$C = 2 \times \pi \times r$

$C \approx 2 \times 3.14 \times 12$

$C \approx 74.88 \text{ cm}$

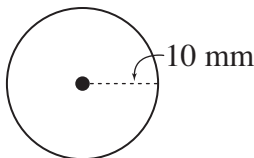
b) Use $C = 2\pi r$ and $\pi \approx \frac{22}{7}$ to find the circumference of the circle shown.



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 mm

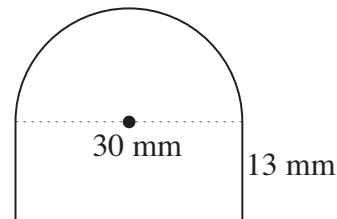
c) Use $C = 2\pi r$ and $\pi \approx 3.14$ to find the circumference of the circle shown.



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 mm

d) Use $C = 2\pi r$ and $\pi \approx 3.14$ to find the perimeter of the shape shown.



.....

 mm