

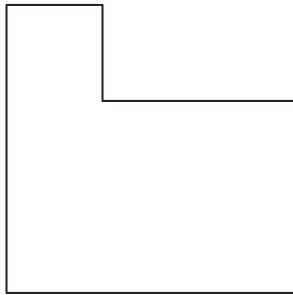
# 29. [Perimeter]

## Skill 29.1 Measuring the perimeter of a shape.

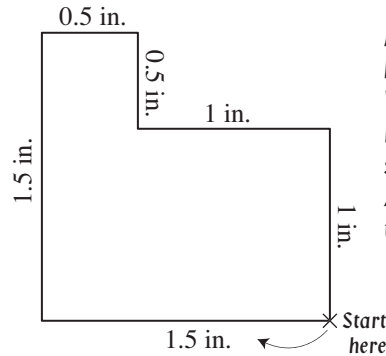
MMBlue 1 1 2 2 3 3 4 4  
MMGreen 1 1 2 2 3 3 4 4

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

**Q.** Use a ruler to find the perimeter of the shape in inches.

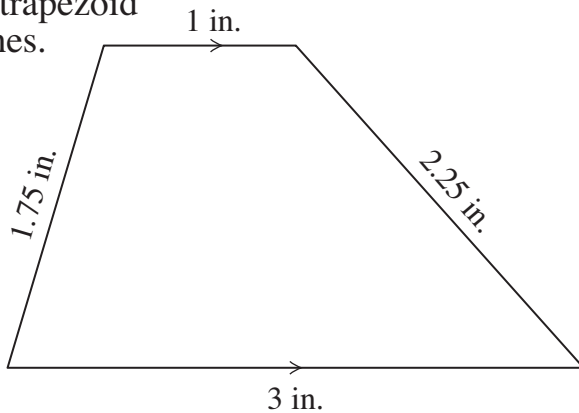


**A.**  $P = 1.5 + 1.5 + 0.5 + 0.5 + 1 + 1$   
 $= 6 \text{ in.}$



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

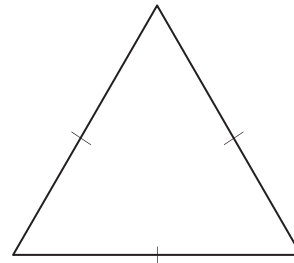
**a)** Use a ruler to find the perimeter of the trapezoid in inches.



$$P = \underline{3} + \underline{1.75} + \underline{1} + \underline{2.25}$$

$$= \underline{8} \text{ in.}$$

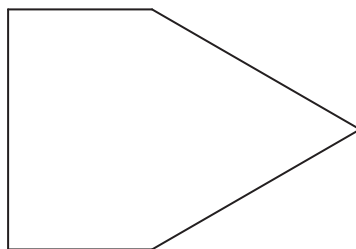
**b)** Use a ruler to find the perimeter of the equilateral triangle in inches.



$$P = \dots + \dots + \dots$$

$$= \dots \text{ in.}$$

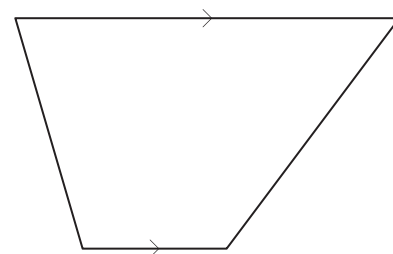
**c)** Use a ruler to find the perimeter of the shape in inches.



$$P = \dots + \dots + \dots + \dots + \dots$$

$$= \dots \text{ in.}$$

**d)** Use a ruler to find the perimeter of the trapezoid in inches.

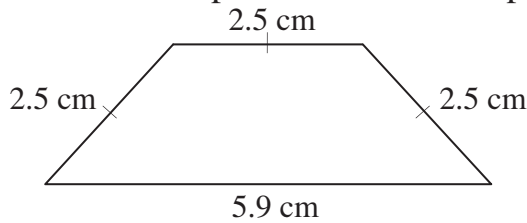


$$P = \dots + \dots + \dots + \dots$$

$$= \dots \text{ in.}$$

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

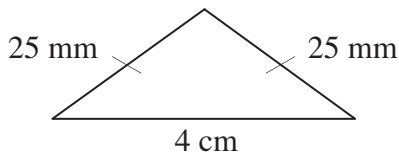
**Q.** Calculate the perimeter of this trapezoid.



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

Add all side lengths together.

**Q.** Find the perimeter of this triangle in centimeters.

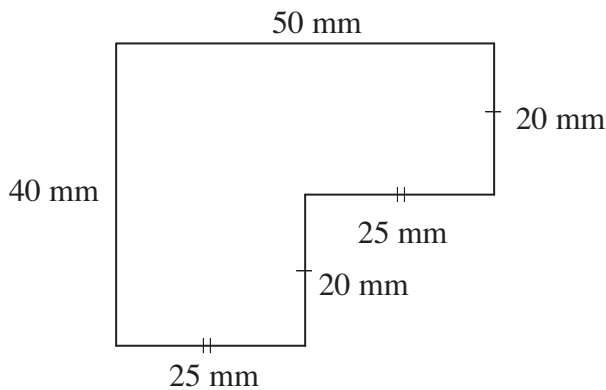


**A.**  $P = 4 + 2.5 + 2.5$   
 $= 9 \text{ cm}$

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.

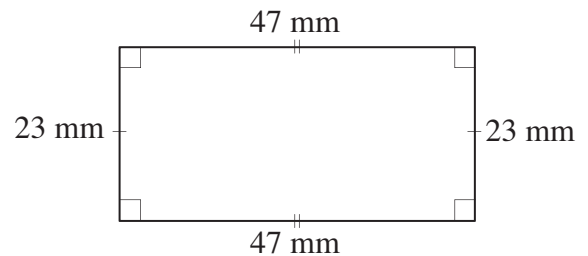
$25 \text{ mm} = 25 \div 10 = 2.5 \text{ cm}$

**a)** Calculate the perimeter of this shape.



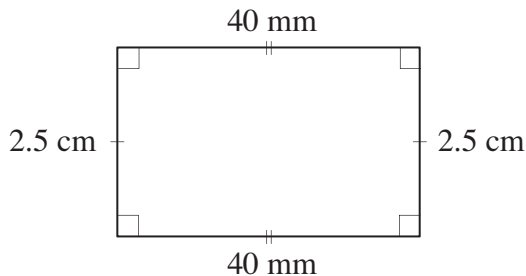
$P = 50 + 20 + 25 + 20 + \dots + \dots$   
 $= \dots \text{ mm}$

**b)** Calculate the perimeter of this rectangle.



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

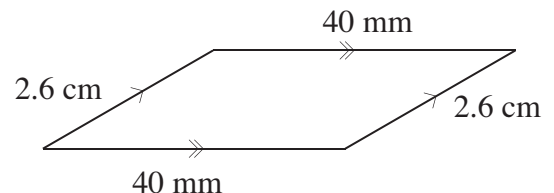
**c)** Find the perimeter of this rectangle in millimeters.



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

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

**d)** Find the perimeter of this parallelogram in centimeters.

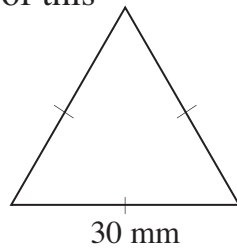


$40 \text{ mm} = \dots \text{ cm}$

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

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

**Q.** Calculate the perimeter of this equilateral triangle.

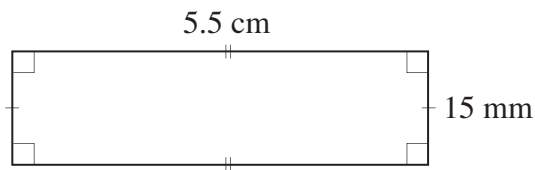


**A.**  $P = 30 + 30 + 30$   
 $= 90 \text{ mm}$

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.** Find the perimeter of this rectangle in centimeters.

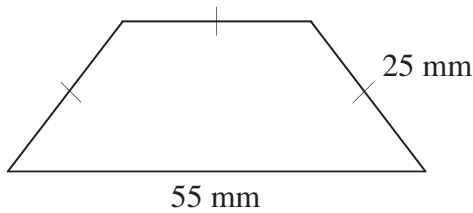


**A.**  $P = 5.5 + 5.5 + 1.5 + 1.5$        $10 \text{ mm} = 1 \text{ cm}$   
 $= 14 \text{ cm}$                                        $15 \text{ mm} = 1.5 \text{ cm}$

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

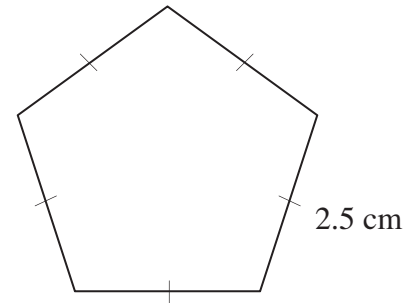
To find the perimeter:  
Label all side lengths, convert to the same units and add all side lengths together.

**a)** Calculate the perimeter of this trapezoid.



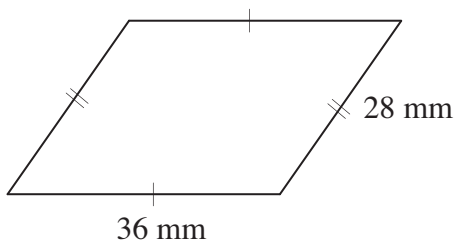
$P = 55 + 25 + 25 + 25$   
 $= 130 \text{ mm}$

**b)** Calculate the perimeter of this regular pentagon.



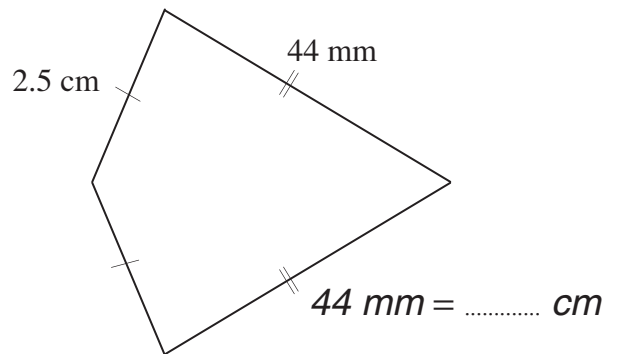
$P = \dots + \dots + \dots + \dots + \dots$   
 $= \dots \text{ cm}$

**c)** Calculate the perimeter of this parallelogram.



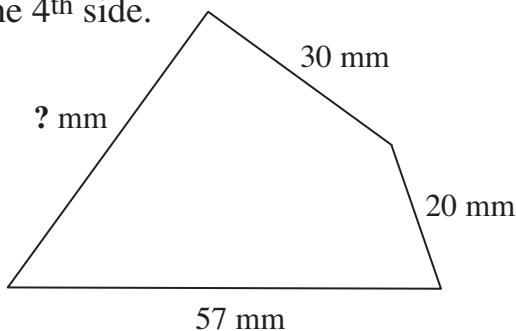
$P = \dots + \dots + \dots + \dots$   
 $= \dots \text{ mm}$

**d)** Find the perimeter of this kite in centimeters.



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

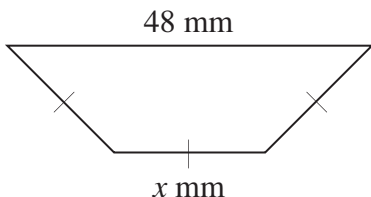
**Q.** The perimeter of the quadrilateral below is 152 mm. Find the length of the 4<sup>th</sup> side.



**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 length of the 4<sup>th</sup> side.  
 OR  
 Use algebra as shown above.

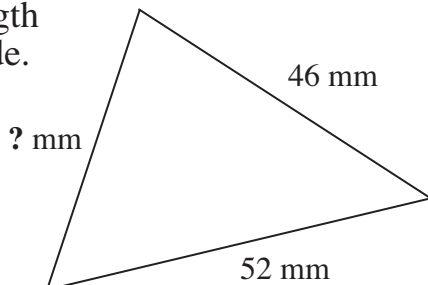
**Q.** This trapezoid has a perimeter of 108 mm. How long is the side marked  $x$ ?



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

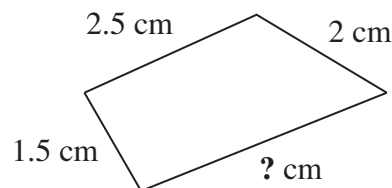
Note that the three side lengths marked with a dash are all the same length. Subtract 48 from the perimeter. If the three identical sides are 60 mm long in total, then the side marked  $x$  is 20 mm.  
 OR  
 Use algebra as shown above.

**a)** The perimeter of this triangle is 137 mm. Find the length of the 3<sup>rd</sup> side.



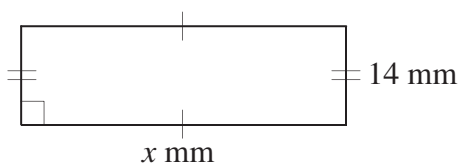
$52 + 46 + ? = 137$   
 $98 + ? - 98 = 137 - 98$   
 $? = 39 \text{ mm}$

**b)** The perimeter of this quadrilateral is 9.5 cm. Find the length of the 4<sup>th</sup> side.



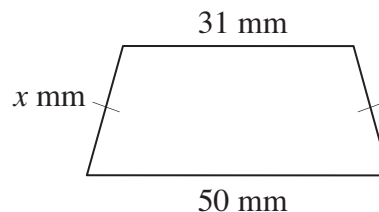
.....  
 .....  
 ..... cm

**c)** This rectangle has a perimeter of 112 mm. How long is the side marked  $x$ ?



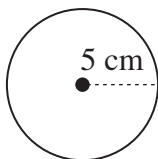
.....  
 .....  
 ..... mm

**d)** This trapezoid has a perimeter of 101 mm. How long is the side marked  $x$ ?



.....  
 .....  
 ..... mm

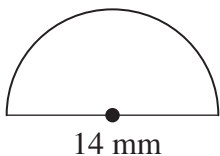
Q. Use  $C = 2\pi r$  and  $\pi \approx 3.14$  to find the perimeter of this shape.



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 this shape. [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:

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

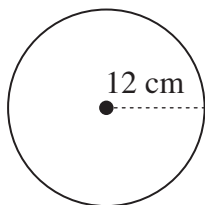
Calculate the perimeter of a complete circle first. [Hint: You need the radius, not the diameter!]

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  $C = 2\pi r$ .]

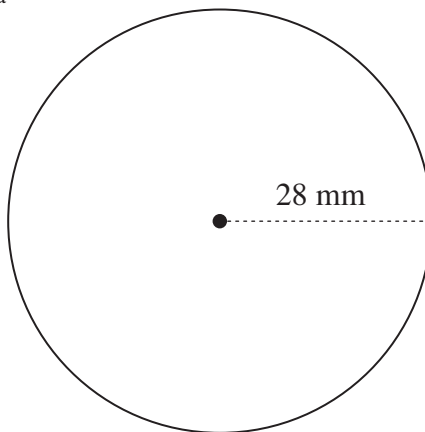


$C = 2 \times \pi \times r$

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

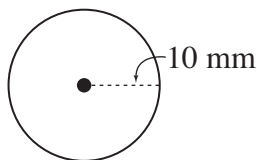
$C \approx 74.88 \text{ cm}$

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



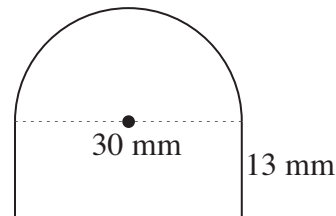
.....  
 .....  
 ..... mm

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



.....  
 .....  
 ..... mm

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



.....  
 .....  
 ..... mm