

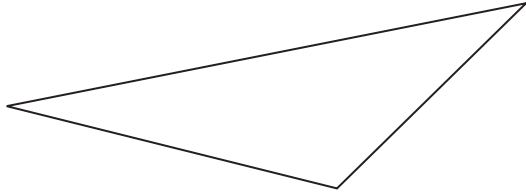
25. [Perimeter]

Skill 25.1 Finding the perimeter of polygons by measuring their side lengths.

MM4.2 11 2 2 3 3 4 4
MM5.1 1 2 2 3 3 4 4

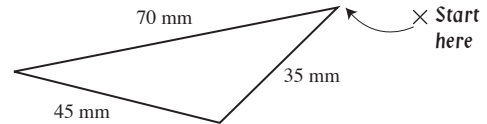
- Measure each side length of the shape.
- Add together the side lengths.

Q. Use a ruler to find the perimeter of the scalene triangle in millimetres.

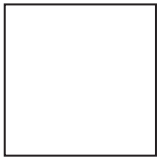


A. $35\text{ mm} + 45\text{ mm} + 70\text{ mm}$
= **150 mm**

Measure the side lengths.
Write down the lengths next to each side.



a) Use a ruler to find the perimeter of the square in centimetres.



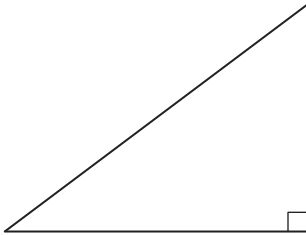
4×2 =

b) Use a ruler to find the perimeter of the rectangle in millimetres



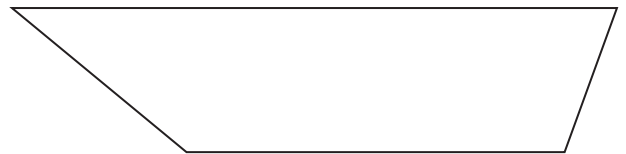
..... =

c) Use a ruler to find the perimeter of the right-angled triangle in centimetres.



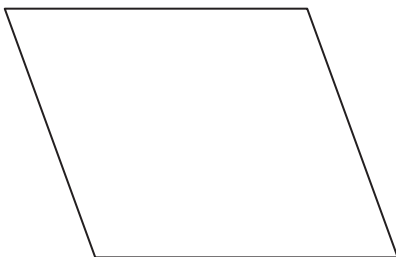
..... =

d) Use a ruler to find the perimeter of the trapezium in centimetres.



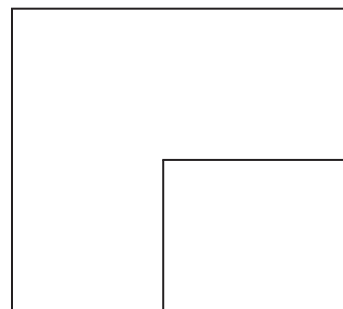
..... =

e) Use a ruler to find the perimeter of the parallelogram in millimetres.



..... =

f) Use a ruler to find the perimeter of the polygon in millimetres.



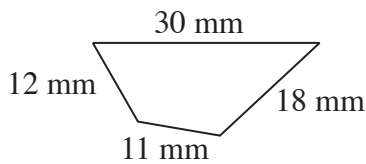
..... =

Skill 25.2 Calculating the perimeter of polygons when all side lengths are given (1).

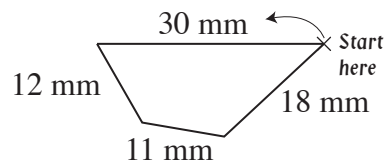
MM4.2 1 1 2 2 3 4 4
MM5.1 1 1 2 3 3 4 4

- Add together the side lengths.

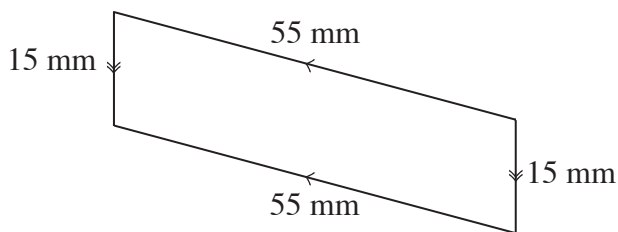
Q. Calculate the perimeter of the quadrilateral.



A. $30\text{ mm} + 12\text{ mm} + 11\text{ mm} + 18\text{ mm}$
 $= 71\text{ mm}$

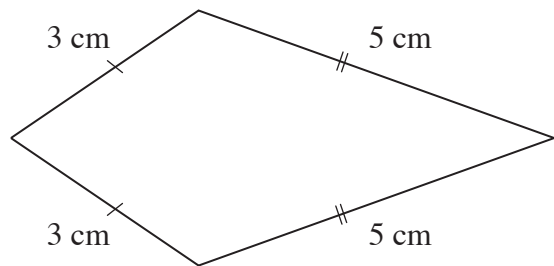


a) Calculate the perimeter of the parallelogram.



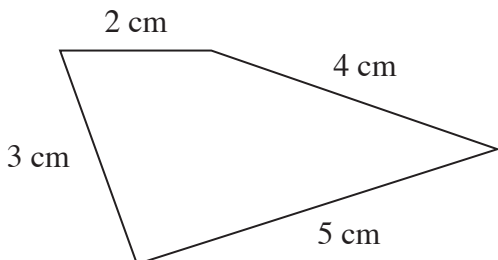
$15 + 15 + 55 + 55 = \boxed{140\text{ mm}}$

b) Calculate the perimeter of the kite.



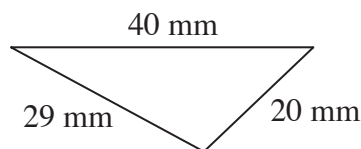
..... =

c) Calculate the perimeter of the quadrilateral.



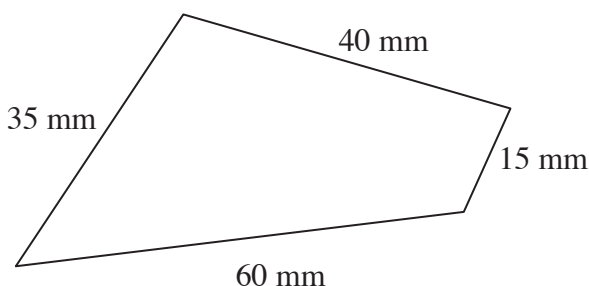
..... =

d) Calculate the perimeter of the scalene triangle.



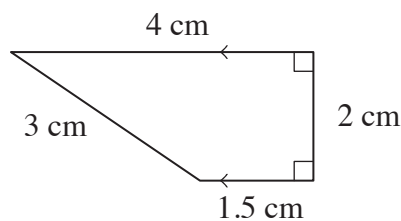
..... =

e) Calculate the perimeter of the quadrilateral.



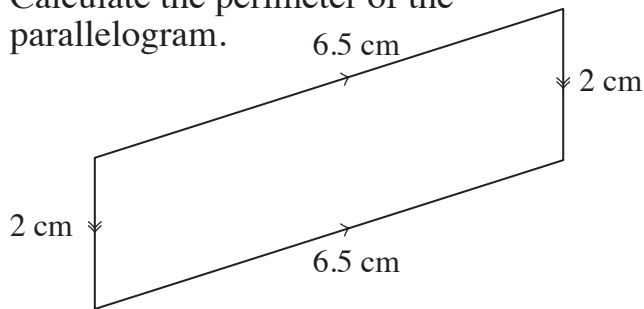
..... =

f) Calculate the perimeter of the trapezium.



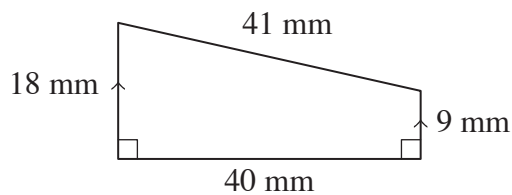
..... =

g) Calculate the perimeter of the parallelogram.



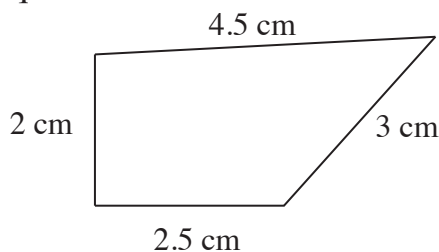
$6.5 + 2 + 6.5 + 2 = \boxed{\text{cm}}$

h) Calculate the perimeter of the trapezium.



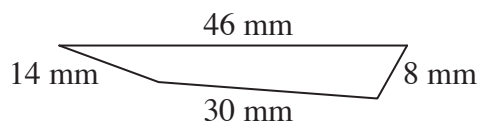
$\dots\dots\dots = \boxed{\text{mm}}$

i) Calculate the perimeter of the quadrilateral.



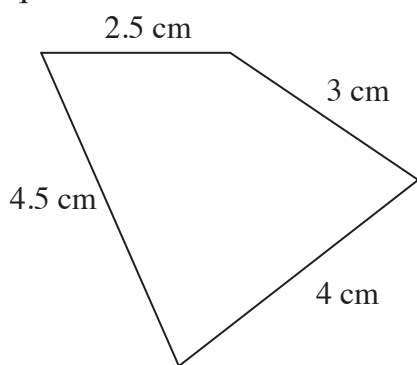
$\dots\dots\dots = \boxed{\text{cm}}$

j) Calculate the perimeter of the quadrilateral.



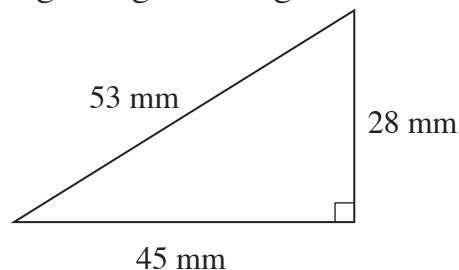
$\dots\dots\dots = \boxed{\text{mm}}$

k) Calculate the perimeter of the quadrilateral.



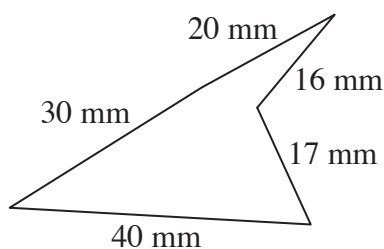
$\dots\dots\dots = \boxed{\text{cm}}$

l) Calculate the perimeter of the right-angled triangle.



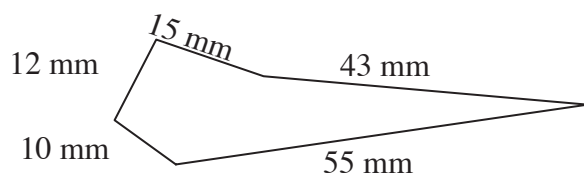
$\dots\dots\dots = \boxed{\text{mm}}$

m) Calculate the perimeter of the polygon.



$\dots\dots\dots = \boxed{\text{mm}}$

n) Calculate the perimeter of the polygon.



$\dots\dots\dots = \boxed{\text{mm}}$

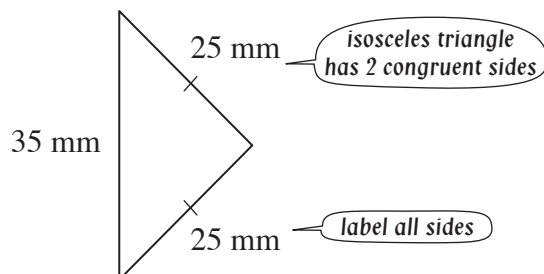
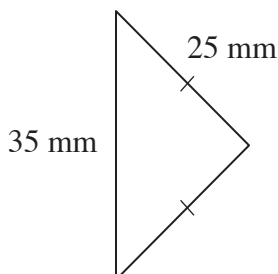
Skill 25.3 Calculating the perimeter of polygons by recognising congruent sides.

MM4.2 1 1 2 2 3 3 4 4
MM5.1 1 1 2 2 3 3 4 4

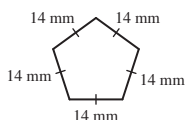
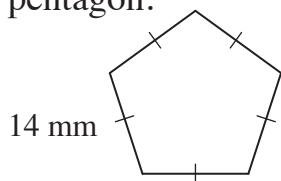
- Determine and label all side lengths.
Hint: Sides marked with a dash (|) are of equal length. Sides marked with two dashes (||) are of equal length etc.
- Add together the side lengths.

Q. Calculate the perimeter of the isosceles triangle.

A. $25\text{ mm} + 25\text{ mm} + 35\text{ mm}$
 $= 85\text{ mm}$

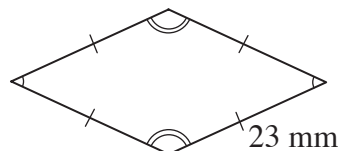


a) Calculate the perimeter of the regular pentagon.



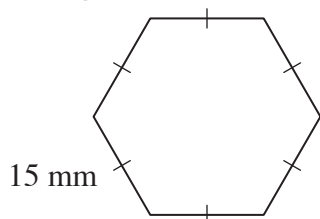
5×14 *pentagon - 5 sides* =

b) Calculate the perimeter of the rhombus.



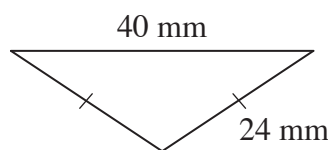
$\dots =$

c) Calculate the perimeter of the regular hexagon.



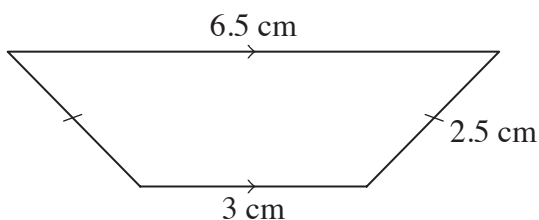
$\dots =$

d) Calculate the perimeter of the isosceles triangle.



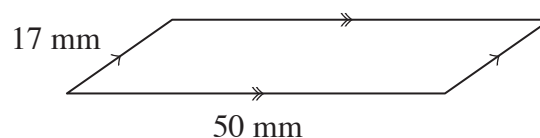
$\dots =$

e) Calculate the perimeter of the trapezium.



$\dots =$

f) Calculate the perimeter of the parallelogram.



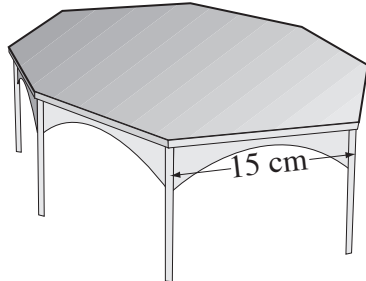
$\dots =$

Skill 25.4 Calculating the perimeter of polygons using real-life examples.

MM4.2 1 1 2 2 3 3 4 4
MM5.1 1 1 2 2 3 3 4 4

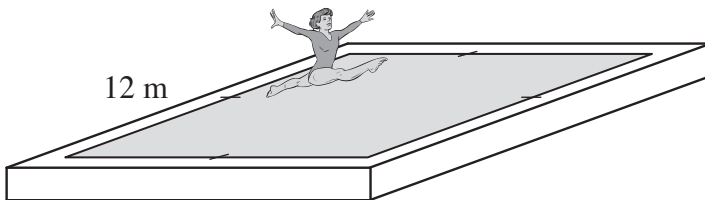
- Determine and label all side lengths.
Hint: Sides marked with a dash (|) are of equal length. Sides marked with two dashes (||) are of equal length etc.
- Add together the side lengths.

Q. Calculate the perimeter of the regular octagonal table top.



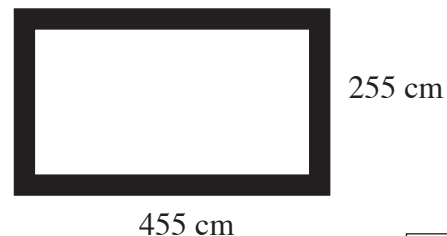
A. $15 + 15 + 15 + 15 + 15 + 15 + 15 + 15$
 $= 15 \times 8$
 $= 120 \text{ cm}$

a) What is the perimeter of the gymnastics floor?



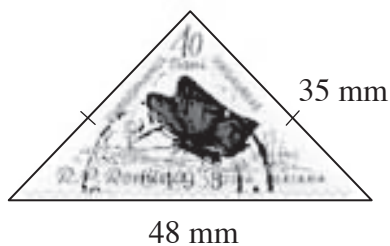
$4 \times 12 = \boxed{48 \text{ m}}$

b) What is the perimeter of the rectangular Luxio TV screen?



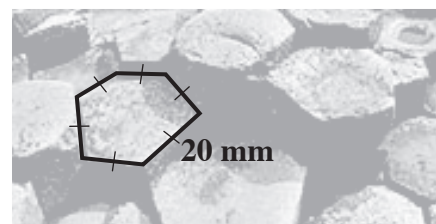
$255 + 455 + 255 + 455 = \boxed{\text{cm}}$

c) What is the perimeter of this Romanian stamp valued at 40 bani?



$48 + 35 + 35 = \boxed{\text{mm}}$

d) What is the perimeter of the upper surface of this regular hexagonal column of basalt seen at the Giant's Causeway in Ireland?



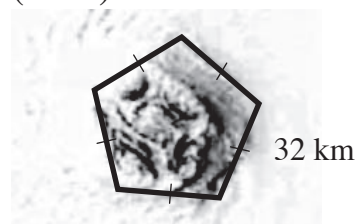
$6 \times 20 = \boxed{\text{mm}}$

e) What is the perimeter of the rectangular ceiling of the Sistine Chapel?



$13 + 41 + 13 + 41 = \boxed{\text{m}}$

f) What is the perimeter of the eye of the pentagonal vortex of hurricane Isabel (2003)?



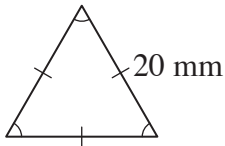
$5 \times 32 = \boxed{\text{km}}$

Skill 25.5 Calculating the perimeter of polygons using unit conversions.

MM4.2 11 22 33 44
MM5.1 11 22 33 44

- Convert all measurements to the same unit. (see skill 24.2, page 229)
- Determine and label all side lengths.
*Hint: Sides marked with a dash (|) are of equal length.
Sides marked with two dashes (||) are of equal length etc.*
- Add together the side lengths.

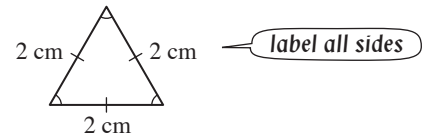
Q. Calculate the perimeter of the equilateral triangle in centimetres.



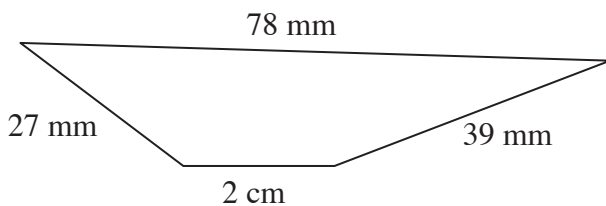
A. $20 \text{ mm} = 20 \div 10 \text{ cm} = 2 \text{ cm}$ mm to cm: $\div 10$

$$P = 3 \times 2$$

$$= 6 \text{ cm}$$



a) Calculate the perimeter of the trapezoid in millimetres.

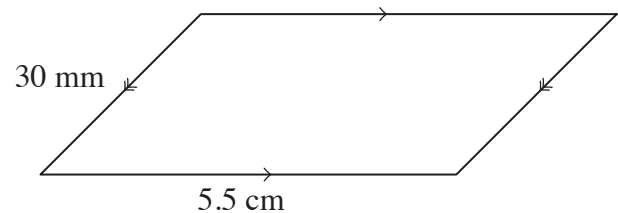


.....

$$P = \quad = \quad \boxed{\text{mm}}$$

.....

b) Express all measurements in centimetres and then find the perimeter of the parallelogram.

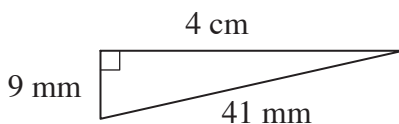


.....

$$P = \quad = \quad \boxed{\text{cm}}$$

.....

c) Express all measurements in millimetres and then find the perimeter of the right-angled triangle.

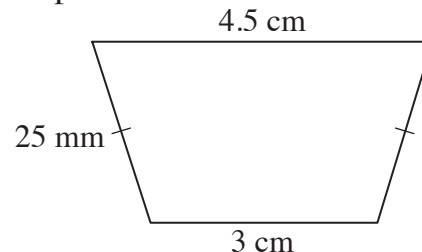


.....

$$P = \quad = \quad \boxed{\text{mm}}$$

.....

d) Calculate the perimeter of the trapezium in centimetres.

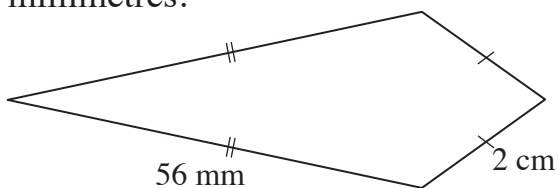


.....

$$P = \quad = \quad \boxed{\text{cm}}$$

.....

e) Calculate the perimeter of the kite in millimetres.

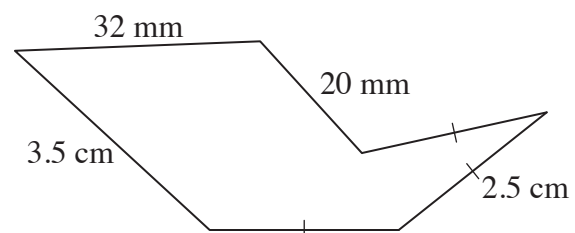


.....

$$P = \quad = \quad \boxed{\text{mm}}$$

.....

f) Calculate the perimeter of this polygon in centimetres.



.....

$$P = \quad = \quad \boxed{\text{cm}}$$

.....

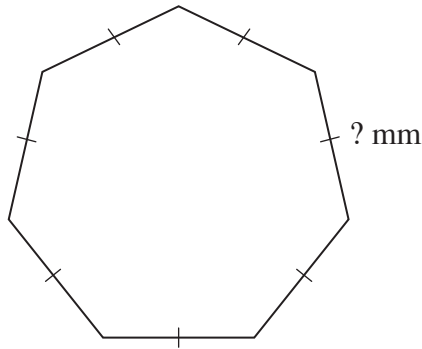
EITHER

- Add together all the given side lengths.
- Subtract the total from the perimeter to find the unknown side length.

OR

- Use algebra.

Q. The perimeter of this regular heptagon is 140 mm. What is the length of a side?



A. If ? represents the length of a side:

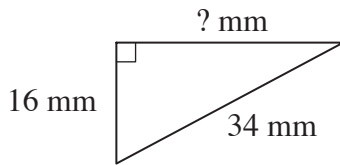
$$P = 140 \text{ mm}$$

$$P = 7 \times ?$$

$$140 = 7 \times ?$$

$$? = \mathbf{20 \text{ mm}}$$

a) The perimeter of this right-angled triangle is 80 mm. Find the missing side length.

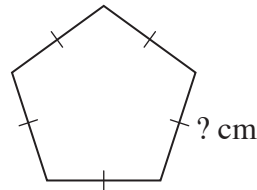


$$P = 16 + 34 + ?$$

Guess ? = 30

$$80 = 50 + ? \quad \text{so } ? = \boxed{\text{mm}}$$

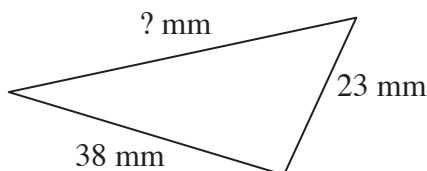
b) The perimeter of this regular pentagon is 7.5 cm. What is the length of a side?



$$P =$$

$$= \quad \text{so } ? = \boxed{\text{cm}}$$

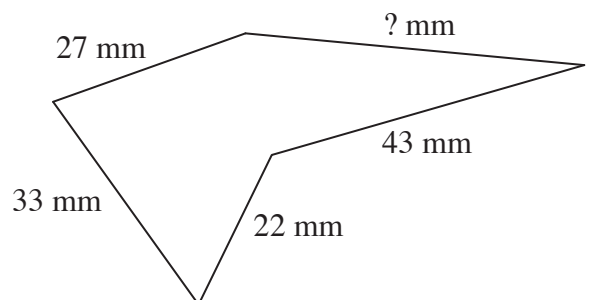
c) The perimeter of this scalene triangle is 108 mm. Find the missing side length.



$$P =$$

$$= \quad \text{so } ? = \boxed{\text{mm}}$$

d) The perimeter of this polygon is 170 mm. Find the missing side length.



$$P =$$

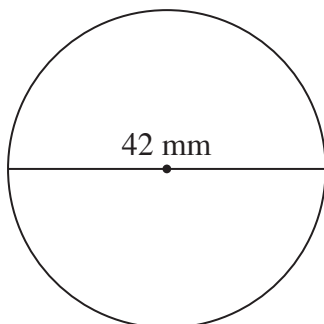
$$= \quad \text{so } ? = \boxed{\text{mm}}$$

Skill 25.7 Calculating the circumference of circles (1).

MM4.2 11 22 33 44
MM5.1 11 22 33 44

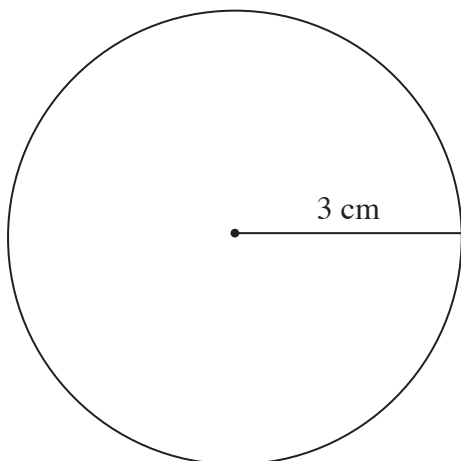
- Substitute the known values into the formula for the circumference of a circle.
Hint: You need the radius which is half the diameter.

Q. Using $C = 2\pi r$ where $\pi \approx \frac{22}{7}$, calculate the circumference of the circle.



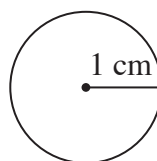
A. $C = 2\pi r$ where $d = 42$ and $r = 21$ $\left(r = \frac{d}{2}\right)$
 $= 2 \times \frac{22}{7} \times 21$ $\left(\text{Simplify: } \div 7\right)$
 $= 44 \times 3$
 $= 132 \text{ mm}$

a) Using $C = 2\pi r$ where $\pi \approx 3.14$, calculate the circumference of the circle.



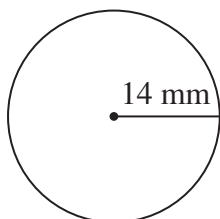
$C = 2\pi r = 2 \times 3.14 \times 3$
 $= 6 \times 3.14 = \boxed{\text{cm}}$

b) Using $C = 2\pi r$ where $\pi \approx 3.14$, calculate the circumference of the circle.



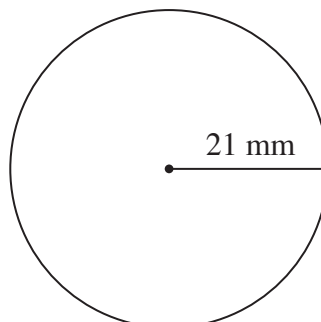
$C =$
 $=$ $=$ $\boxed{\text{cm}}$

c) Using $C = 2\pi r$ where $\pi \approx \frac{22}{7}$, calculate the circumference of the circle.



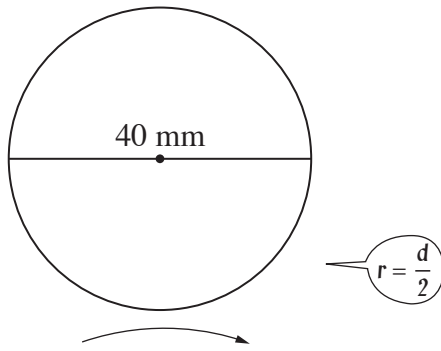
$C =$
 $=$ $=$ $\boxed{\text{mm}}$

d) Using $C = 2\pi r$ where $\pi \approx \frac{22}{7}$, calculate the circumference of the circle.



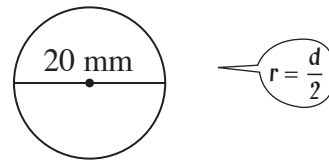
$C =$
 $=$ $=$ $\boxed{\text{mm}}$

- e) Using $C = 2\pi r$ where $\pi \approx 3.14$, calculate the circumference of the circle.



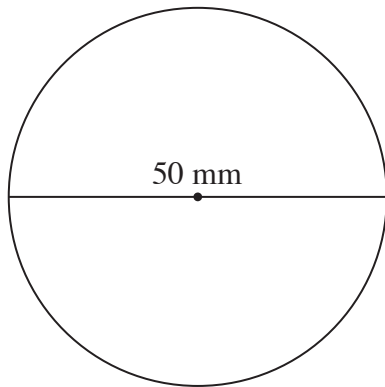
$C = 2 \times 3.14 \times 20$ where $d = 40$ and $r = 20$
 $= 40 \times 3.14 = \boxed{125.6 \text{ mm}}$

- f) Using $C = 2\pi r$ where $\pi \approx 3.14$, calculate the circumference of the circle.



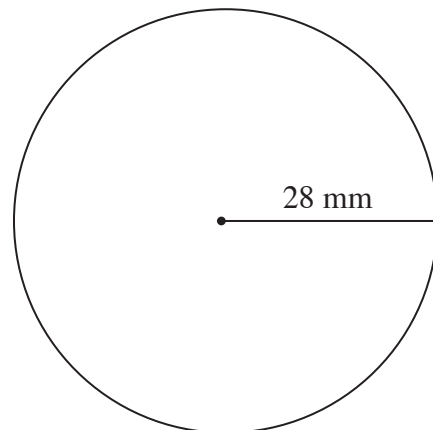
$C =$
 $=$ $=$ $\boxed{\text{mm}}$

- g) Using $C = 2\pi r$ where $\pi \approx 3.14$, calculate the circumference of the circle.



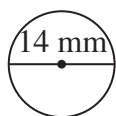
$C =$
 $=$ $=$ $\boxed{\text{mm}}$

- h) Using $C = 2\pi r$ where $\pi \approx \frac{22}{7}$, calculate the circumference of the circle.



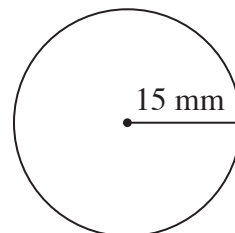
$C =$
 $=$ $=$ $\boxed{\text{mm}}$

- i) Using $C = 2\pi r$ where $\pi \approx \frac{22}{7}$, calculate the circumference of the circle.



$C =$
 $=$ $=$ $\boxed{\text{mm}}$

- j) Using $C = 2\pi r$ where $\pi \approx 3.14$, calculate the circumference of the circle.



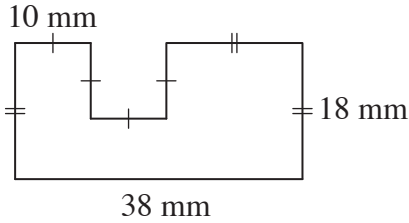
$C =$
 $=$ $=$ $\boxed{\text{mm}}$

Skill 25.8 Calculating the perimeter of composite shapes.

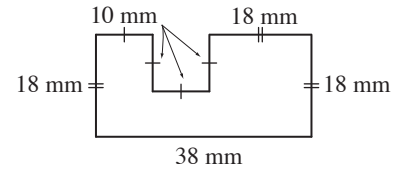
MM4.2 11 22 33 44
MM5.1 11 22 33 44

- Determine and label all side lengths.
*Hint: Sides marked with a dash (|) are of equal length.
Sides marked with two dashes (||) are of equal length etc.*
- Add together the side lengths.

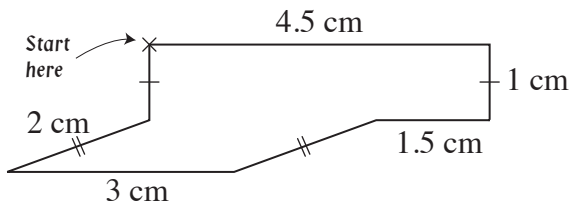
Q. Calculate the perimeter of the polygon.



A. $10 + 10 + 10 + 10 + 18 + 18 + 38 + 18$
 $= 40 + 36 + 56$
 $= \mathbf{132 \text{ mm}}$
 OR $(10 \times 4) + (18 \times 3) + 38$
 $= 40 + 54 + 38$
 $= \mathbf{132 \text{ mm}}$

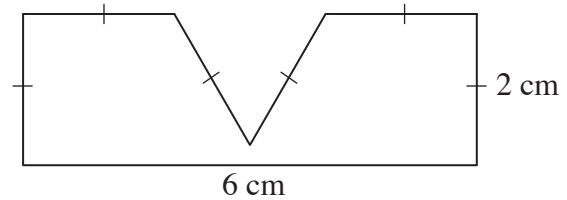


a) Calculate the perimeter of the polygon.



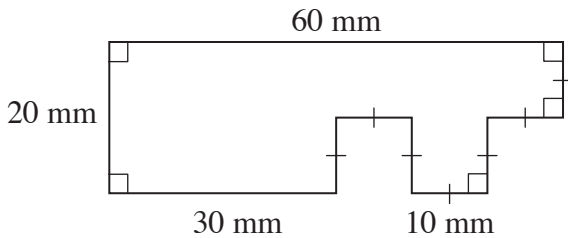
$4.5 + 1 + 1.5 + 2 + 3 + 2 + 1$
 $= 5.5 + 3.5 + 6 = \boxed{\text{cm}}$

b) Calculate the perimeter of the polygon.



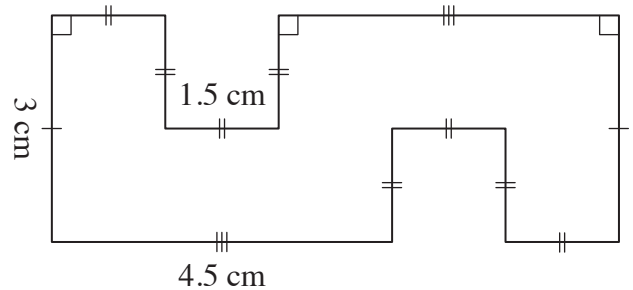
$= \boxed{\text{cm}}$

c) Calculate the perimeter of the polygon.



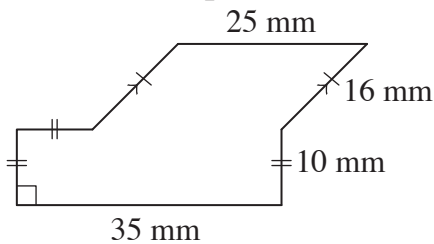
$= \boxed{\text{mm}}$

d) Calculate the perimeter of the polygon.



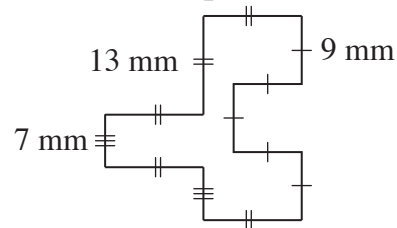
$= \boxed{\text{cm}}$

e) Calculate the perimeter of the polygon.



$= \boxed{\text{mm}}$

f) Calculate the perimeter of the polygon.



$= \boxed{\text{mm}}$