

SOLVING EQUATIONS

Key Concept

Inverse Operations

Operation	Inverse
+	-
-	+
x	÷
÷	x
x^2	\sqrt{x}

Key Words

Unknown: A letter which represents a number we do not know the value of.

Terms: The numbers and letters in the expression or equation.

Inverse: The operation which will do the opposite.

Examples

$x + 9 = 16$ $-9 \quad -9$ $x = 7$	$x - 12 = 20$ $+12 \quad +12$ $x = 32$	$\frac{x}{3} = 5$ $\times 3 \quad \times 3$ $x = 15$	$2x + 5 = 14$ $-5 \quad -5$ $2x = 9$ $\div 2 \quad \div 2$ $x = 4.5$
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$\frac{x}{4} - 2 = 4$ $+2 \quad +2$ $\frac{x}{4} = 6$ $\times 4 \quad \times 4$ $x = 24$	$2(3x + 5) = -14$ expand $6x + 10 = -14$ $-10 \quad -10$ $6x = -24$ $\div 6 \quad \div 6$ $x = -4$	$2x + 7 = 5x + 1$ $-2x$ (smallest x term) $+7 = 3x + 1$ $-1 \quad -1$ $6 = 3x$ $\div 3 \quad \div 3$ $2 = x$
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sparx

M707, M509,
M554

Tip

Answers can be:

- Integers
- Decimals
- Fractions
- negatives

Questions

1) $x + 8 = 19$

2) $y - 25 = 15$

3) $2y = 82$

4) $\frac{t}{4} = 7$

5) $\frac{p}{2} - 6 = 2$

6) $3(2x - 3) = 15$



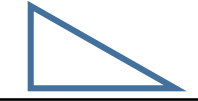


7) $4x - 8 = 2x + 1$

ANSWERS: 1) $x = 11$, 2) $y = 40$, 3) $y = 41$, 4) $t = 28$, 5) $p = 16$, 6) $x = 4$, 7) $x = 4.5$

PERIMETER

Key Concept

2D Shapes

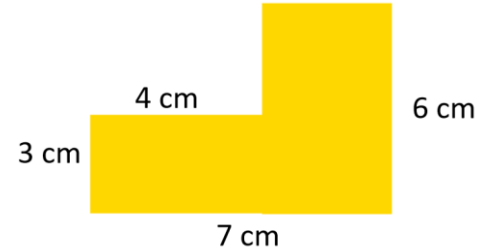
	Parallelogram
	Trapezium
	Right-angled triangle
	Isosceles triangle
	Equilateral triangle

Key Words

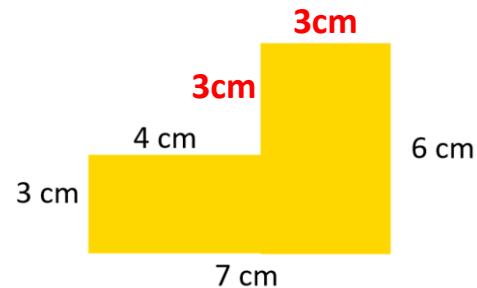
Perimeter: The distance around the outside of the shape.
Unit of measure: This could be any unit of length cm, inch, m, foot, etc.
Dimensions: The lengths which give the size of the shape.
Circumference: The perimeter of a full circle.

Examples

Find the perimeter



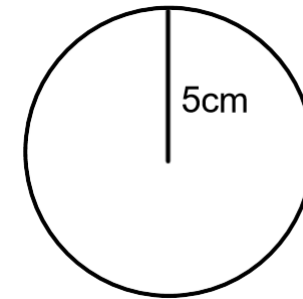
Step 1 – Find the missing lengths.



Step 2 – Add the lengths

$$3 + 4 + 3 + 3 + 6 + 7 = \underline{26 \text{ cm}}$$

Find the circumference to 1dp



Radius = 5, Diameter = 10

$$\text{Circumference} = \pi \times d$$

$$\text{Circumference} = \pi \times 10$$

$$\text{Circumference} = 31.4 \text{ cm}$$

sparx

M169, M231,
M487, M276

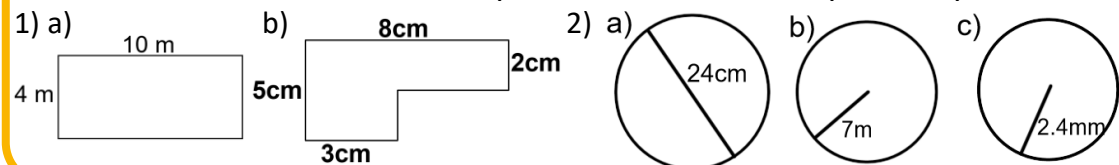
Tip

- Always include units with your answer.
- If you don't have a calculator use pi as 3.14.

Formula

$$\text{Circumference} = \pi d$$

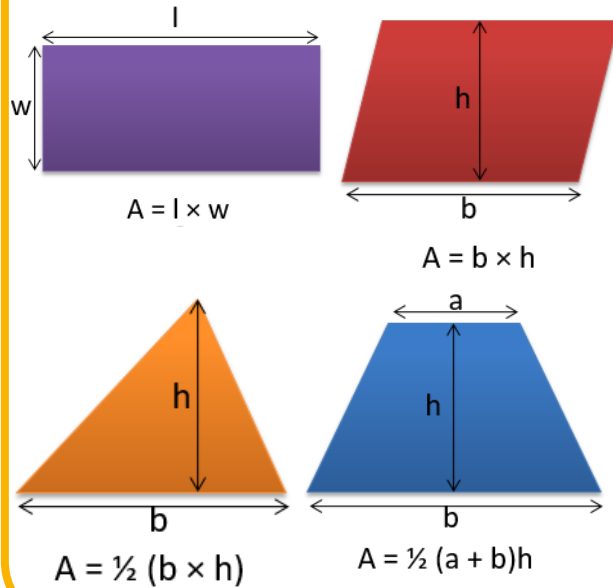
Questions – Find the perimeter of each shape to 1dp



ANSWERS: 1) a) 28 m b) 26 cm 2) a) 75.4 cm b) 44.0 m c) 15.1 mm

AREA AND PERIMETER

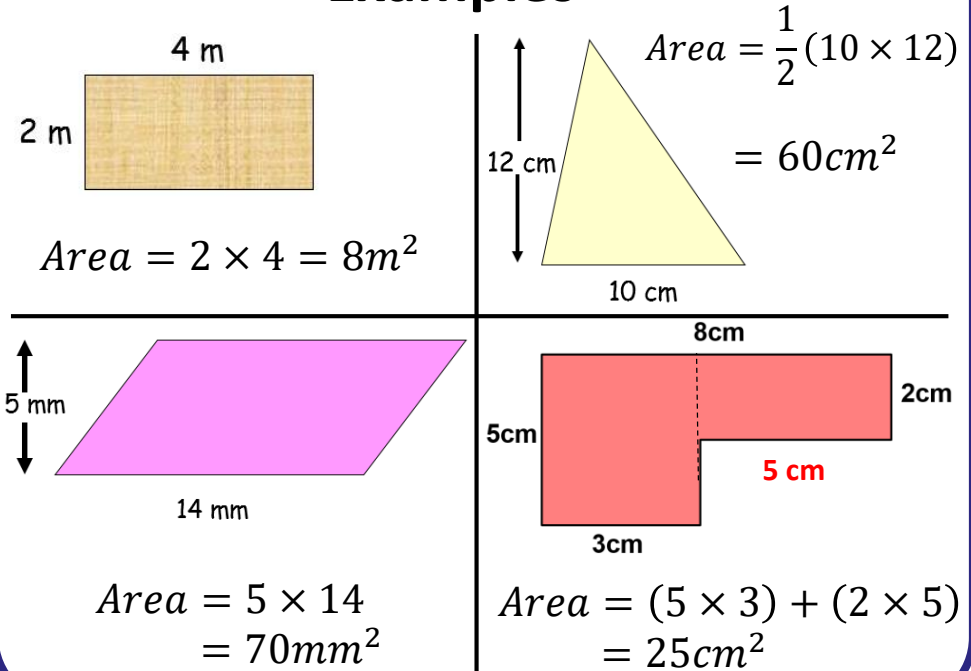
Key Concepts Area



Key Words

Area: The amount of square units that fit inside the shape.
Perimeter: The distance around the outside of the shape.
Dimensions: The lengths which give the size of the shape.
Shapes: Rectangle, Triangle, Parallelogram, Trapezium, Kite.

Examples



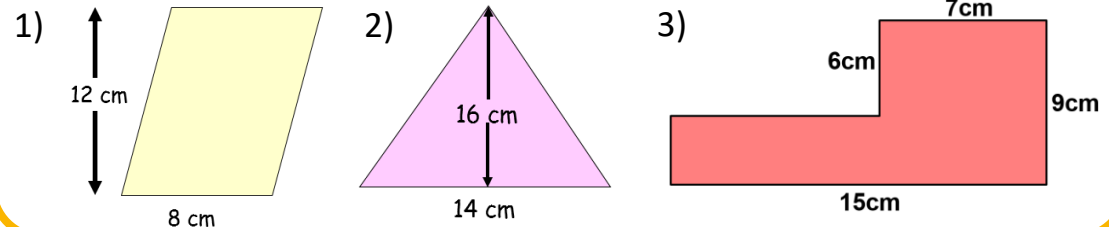
sparx

M390, M635, M269,
M291, M610, M996,
M705

Tip

Always remember units. These units are squared for area. mm^2 , cm^2 , m^2 , etc

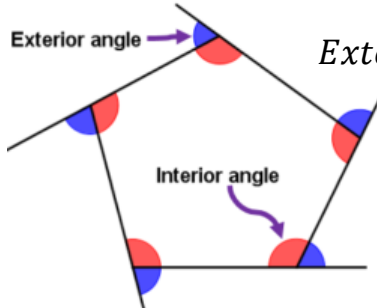
Questions – Find the area.



ANSWERS: 1) 96 cm^2 2) 112 cm^2 3) 87 cm^2

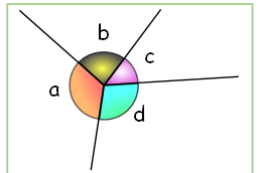
ANGLE PROPERTIES

Key Concepts

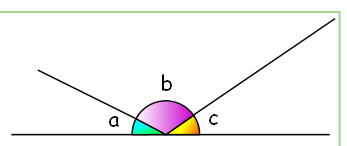


Exterior angle

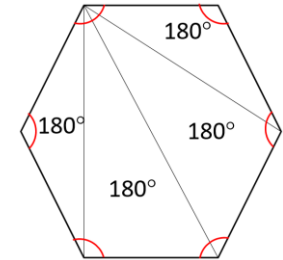
Interior angle

$$\text{Exterior} = \frac{360}{\text{no. of sides}}$$


Angles at a point add to 360°



Angles on a line add to 180°



Sum of interior
 $= 180^\circ \times 4 = 720^\circ$

Key Words

Angle: This is formed by two lines joined by a common endpoint.

Quadrilateral: 4 sided shape.

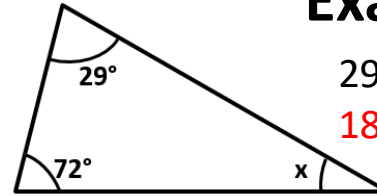
Polygon: Many sided shape.

Regular polygon: All sides and angles are equal.

Interior angle: The angle inside a polygon.

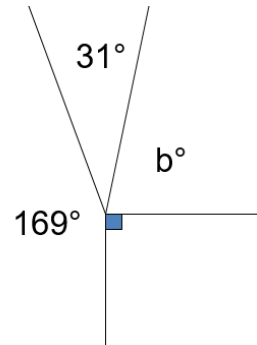
Exterior angle: The angle formed when a side length of a polygon is continued.

Examples



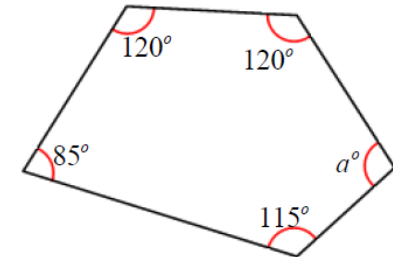
$$29^\circ + 72^\circ = 101^\circ$$

$$180^\circ - 101^\circ = 79^\circ$$



$$169^\circ + 31^\circ + 90^\circ = 290^\circ$$

$$360^\circ - 290^\circ = 70^\circ$$



$$120^\circ + 120^\circ + 85^\circ + 115^\circ = 440^\circ$$

$$540^\circ - 440^\circ = 100^\circ$$

sparx

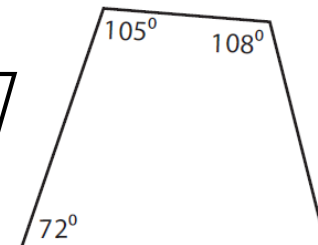
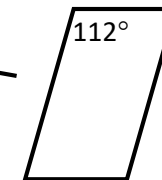
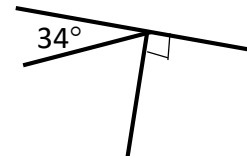
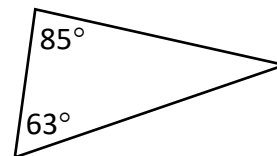
M818, M679,
M653, M351,

Tip

Remember isosceles triangles have two equal angles and equilateral triangles have three equal angles.

Questions

1) Find the missing angles:



ANSWERS: 1) 32° 2) 56° 3) $68^\circ, 112^\circ, 68^\circ$ 4) 75°