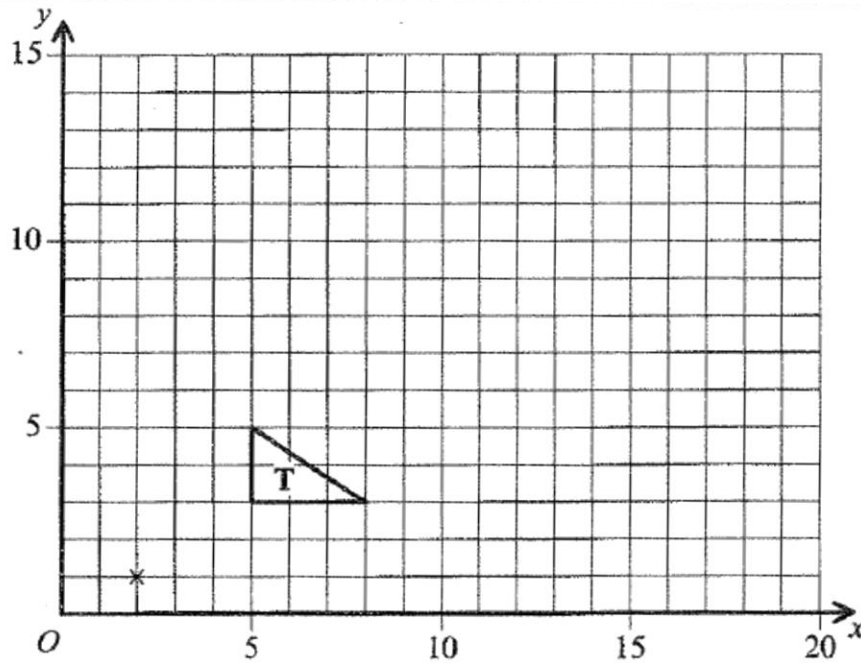


Mixed Exercise 6

1.



On the grid, enlarge triangle **T** with a scale factor of 3 and centre (2, 1).

(Total 3 marks)

2.

(a) Factorise $9p + 15$

.....
(1)

(b) Factorise $q^2 - 4q$

.....
(1)

(c) Factorise $x^2 - 3x - 10$

.....
(2)

3.

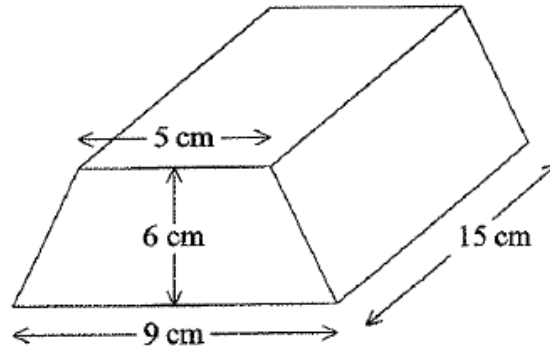


Diagram NOT
accurately drawn

The diagram shows a prism.

The cross section of the prism is a trapezium.

The lengths of the parallel sides of the trapezium are 9 cm and 5 cm.

The distance between the parallel sides of the trapezium is 6 cm.

The length of the prism is 15 cm.

(a) Work out the area of the trapezium.

..... cm²
(2)

(b) Work out the volume of the prism.

..... cm³
(2)

4.

In a sale at *Bargain Buys*, all the normal prices are reduced by 15%.

The normal price of a printer is £240

(a) Work out the sale price of the printer.

£.....
(3)

In the same sale, the sale price of a laptop computer is £663

(b) Work out the normal price of the laptop computer.

£.....
(3)

5.

(a) Solve the inequality $2x - 3 < 5$

.....
(2)

(b) n is a positive integer.

Write down all the values of n which satisfy the inequality $2n - 3 < 5$

.....
(2)

6.

The table gives information about the ages, in years, of the 80 members of a sports club.

Age (t years)	Frequency
$10 < t \leq 20$	8
$20 < t \leq 30$	38
$30 < t \leq 40$	28
$40 < t \leq 50$	4
$50 < t \leq 60$	2

Work out an estimate for the mean age of the 80 members.

..... years
(4)

7.

Make W the subject of the formula $h = \sqrt{\frac{W}{I}}$

$W =$
(Total 2 marks)

8.

The size of each exterior angle of a regular polygon is 18° .

(a) Work out how many sides the polygon has.

.....
(2)

(b) Work out the **sum** of the interior angles of the polygon.

.....
(2)

9.

The height of a hall is 12 m.

A scale model is made of the hall.

The height of the scale model of the hall is 30 cm.

(a) Express the scale of the model in the form 1 : n

.....
(3)

The length of the scale model of the hall is 95 cm.

(b) Work out the real length of the hall.

Give your answer in metres.

..... m
(3)

10.

Solve $\frac{x-1}{2} + \frac{2x+3}{4} = 1$

$x =$

(Total 4 marks)

11.

(a) Express $\frac{10}{\sqrt{5}}$ in the form $k\sqrt{5}$ where k is an integer.

.....
(2)

(b) Express $(5 + \sqrt{3})^2$ in the form $a + b\sqrt{3}$ where a and b are integers.

.....
(2)

12.

Simplify fully $\frac{2}{x-1} + \frac{x-11}{x^2+3x-4}$

.....
(Total 6 marks)

13.

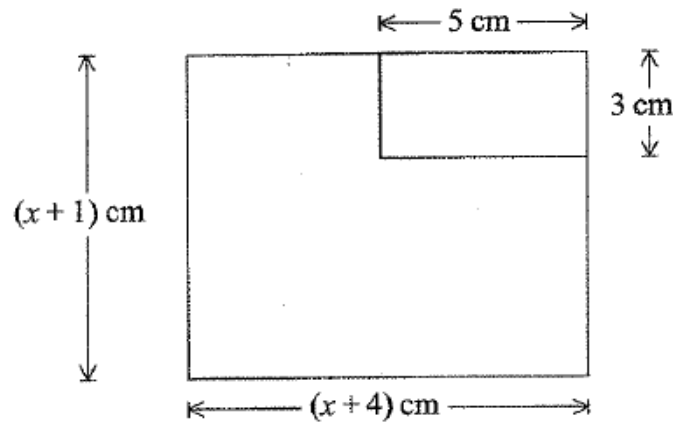


Diagram NOT
accurately drawn

A rectangular piece of card has length $(x + 4)$ cm and width $(x + 1)$ cm.
A rectangle 5 cm by 3 cm is cut from the corner of the piece of card.
The remaining piece of card, shown shaded in the diagram, has an area of 35 cm^2 .

(a) Show that $x^2 + 5x - 46 = 0$

(3)

(b) Solve $x^2 + 5x - 46 = 0$ to find the value of x .
Give your answer correct to 3 significant figures.

$x = \dots\dots\dots$
(3)

14.

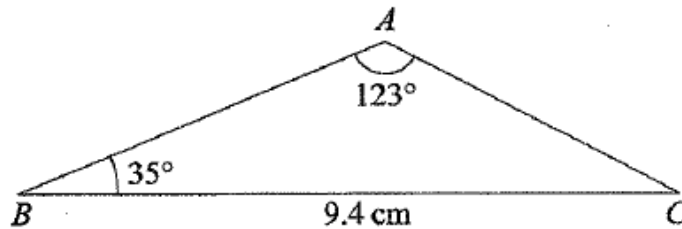


Diagram NOT accurately drawn

$BC = 9.4$ cm.
Angle $BAC = 123^\circ$.
Angle $ABC = 35^\circ$.

- (a) Calculate the length of AC .
Give your answer correct to 3 significant figures.

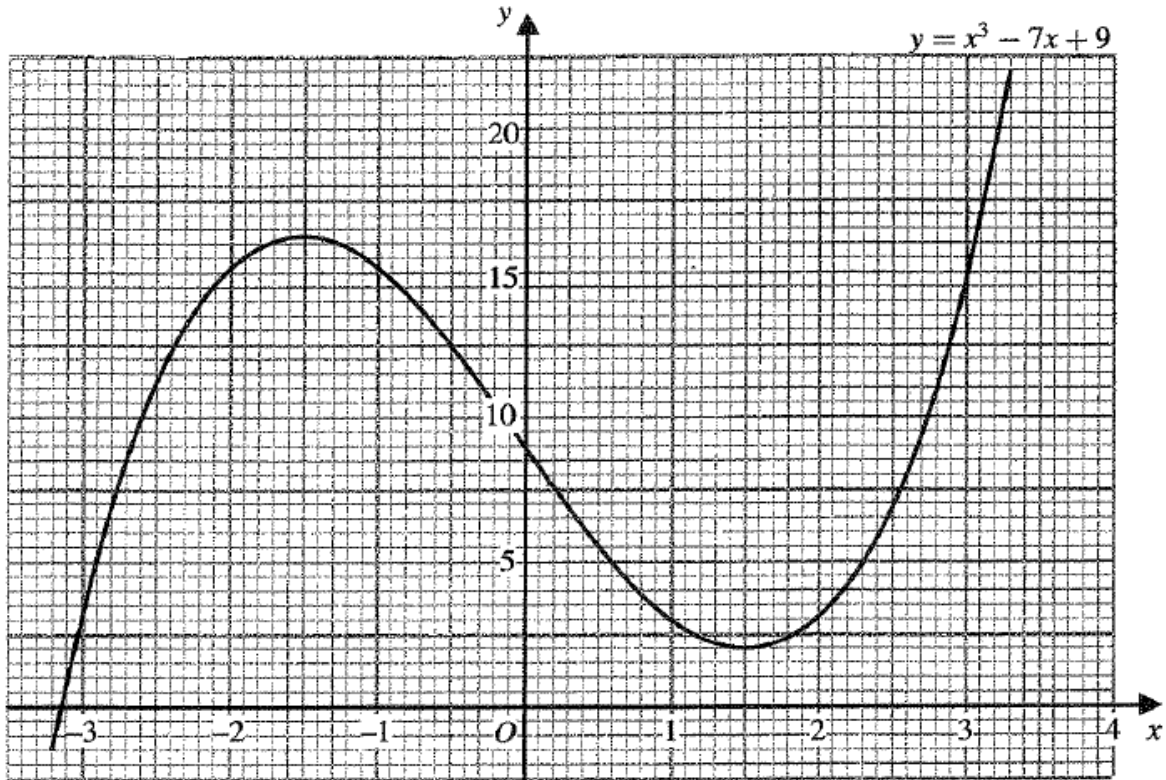
..... cm
(3)

- (b) Calculate the area of triangle ABC .
Give your answer correct to 3 significant figures.

..... cm^2
(3)

15.

Part of the graph of $y = x^3 - 7x + 9$ is shown on the grid.



The graph of $y = x^3 - 7x + 9$ and the line with equation $y = k$, where k is an integer, have 3 points of intersection.

(a) Find the greatest possible value of the integer k .

$k = \dots\dots\dots$
(1)

(b) By drawing a suitable straight line on the grid, find estimates of the solutions of the equation $x^3 - 6x - 2 = 0$.
Give your answers correct to 1 decimal place.

$\dots\dots\dots$
(3)

16.

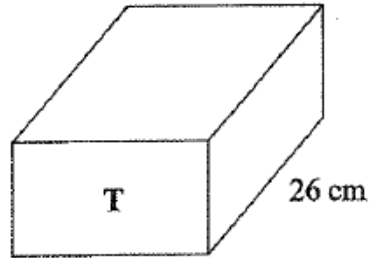
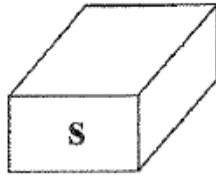


Diagram **NOT**
accurately drawn

Two cuboids, **S** and **T**, are mathematically similar.
The total surface area of cuboid **S** is 157 cm^2 and the total surface area of cuboid **T** is 2512 cm^2 .

- (a) The length of cuboid **T** is 26 cm.
Calculate the length of cuboid **S**.

..... cm
(3)

- (b) The volume of cuboid **S** is 130 cm^3 .
Calculate the volume of cuboid **T**.

..... cm^3
(2)