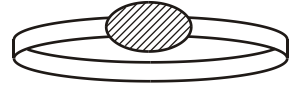# MATHEMATICS PRACTICE PAPER

1. Wayne bought an engagement ring for Tracy. The total cost of the ring was £420 **plus** VAT at $17\frac{1}{2}$%.

(a) Work out the cost of the ring.

Wayne invited 96 people to an engagement party. Only 60 of the people invited came to the party.

(b) Express 60 as a percentage of 96.

2. A company bought a van that had a value of £12 000. Each year the value of the van depreciates by 25%.

(a) Work out the value of the van at the end of three years.

The company bought a new truck. Each year the value of the truck depreciates by 20%.

(b) The value of the new truck can be multiplied by a single number to find its value at the end of four years. Find this single number as a decimal.

3. In a sale, normal prices are reduced by 20%. Andrew bought a saddle for his horse in the sale.

The sale price of the saddle was £220.

Calculate the normal price of the saddle.

4.

(a) Write the number 40 000 000 in standard form.

(b) Write 1.4×10^{-5} as an ordinary number.

(c) Work out $(5 \times 10^4) \times (6 \times 10^9)$ Give your answer in standard form.

(d) Work out $(4 \times 10^3) \div (8 \times 10^5)$ Give your answer in standard form.

5.
Simplify

(a) $c + c + c + c$

(b) $p \times p \times p \times p$

(c) $3g + 5g$

(d) $2r \times 5p$

(e) $p^2 \times p^7$

(f) x^8 / x^3

6.
Expand and simplify

(a) $5(2y - 3)$

(b) $2(3x + 4) - 3(4x - 5)$

(c) $(t + 4)(t - 2)$

7.
Solve

(a) $7x + 18 = 74$

(b) $4(2y - 5) = 32$
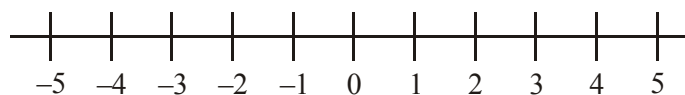
(c) $7p + 2 = 5p + 8$

(d) $5p + 7 = 3(4 - p)$

(e) $(y - 8)(y + 15) = 0$

8. Solve the inequality $5x - 7 < 2x - 1$

On the number line, represent the solution

$$\begin{array}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline
\end{array}$$

| | | | | | | | | | | |
|-5|-4|-3|-2|-1|0|1|2|3|4|5|

9. Evaluate

(a) 4^0
(b) 4^1
(c) 3^{-2}
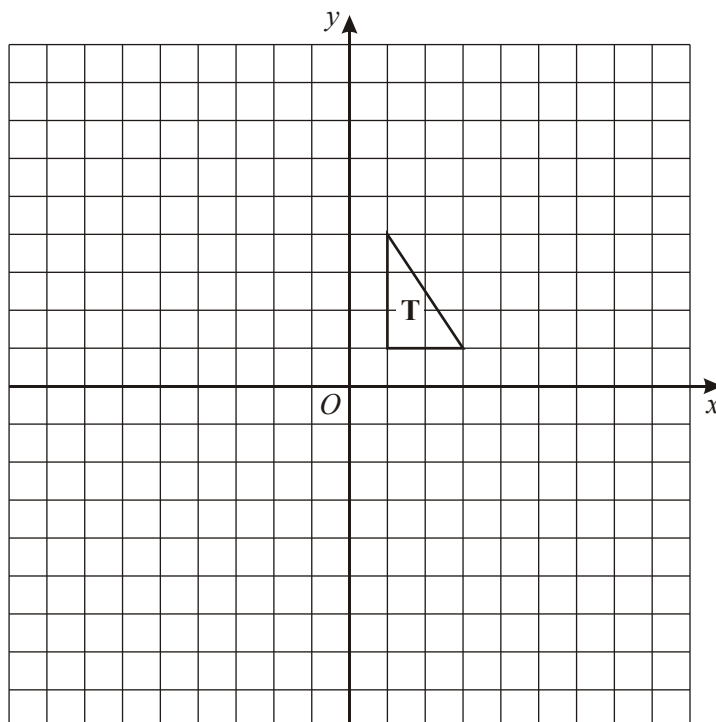(d) $36^{\frac{1}{2}}$
(e) $16^{\frac{3}{2}}$
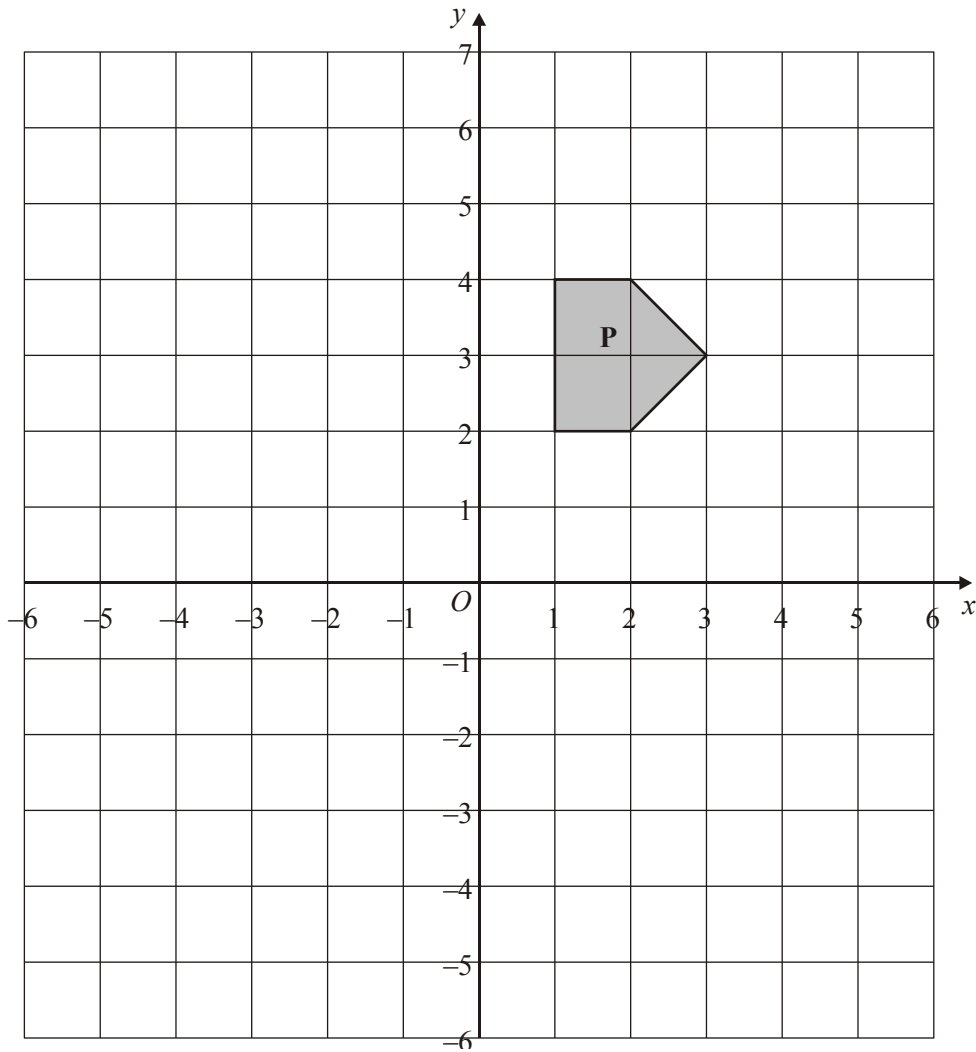
10.
Factorise
(a) $t^2 - 5t$
(b) $x^2 + 8x + 12$

11. Enlarge triangle **T**, scale factor –2, centre *O*.

12. On the grid, rotate the shaded shape **P** one quarter turn anticlockwise about *O.* Label the new shape **Q**.

On the grid, translate the shaded shape **P** by 2 units to the right and 3 units up. Label the new shape **R.**

13. The diagram shows a trapezium of height 3 m.

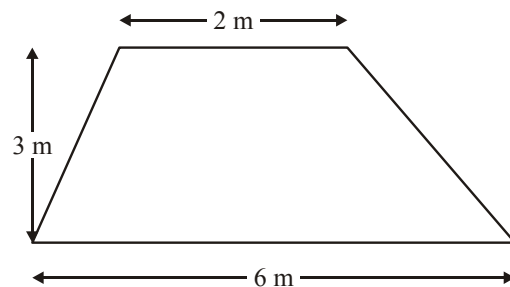Find the area of this trapezium. State the units with our answer.

Diagram **NOT** accurately drawn

14. The diameter of a circle is 12 centimetres.

Work out the circumference of the circle.
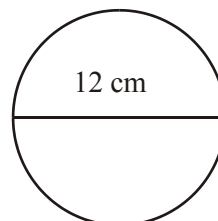Give your answer, in centimetres, correct to 1 decimal place.

12 cm

Diagram **NOT** drawn accurately

15.

(a) The diagram shows a semi-circle.
The diameter of the semi-circle is 15 cm.
Calculate the area of the semi-circle.
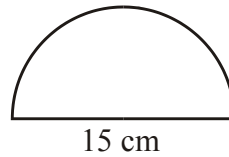Give your answer correct to 3 significant figures.

Diagram **NOT** accurately drawn

15 cm

(b) The length of each diagonal of a square is 20 cm.
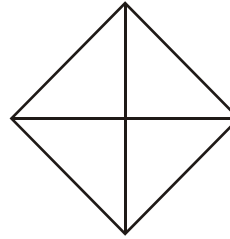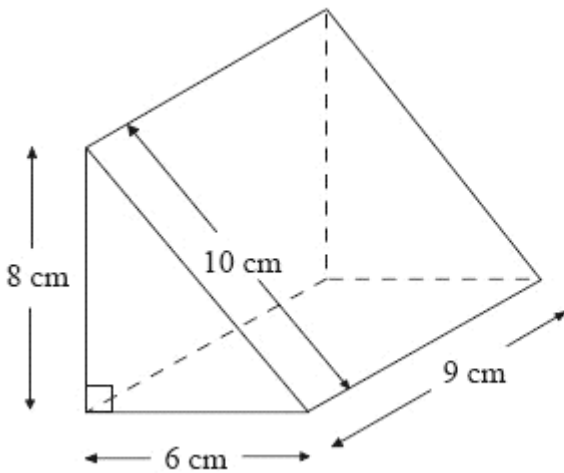Work out the area of the square.

Diagram **NOT** accurately drawn

16.
Work out the surface area of the triangular prism. State the units with your answer.

8 cm

10 cm

9 cm

6 cm

17. The equation $x^3 + 4x = 100$ has one solution which is a positive number.
Use the method of trial and improvement to find this solution.
Give your answer correct to 1 decimal place.
You must show **ALL** working.