SEQUENCES
Find the next three terms of the sequence:

$$3 \quad 3\sqrt{5} \quad 15 \quad 15\sqrt{5} \quad 75$$

STANDARD FORM

$$p^2 = \frac{x - y}{xy}$$

If $x = 8.5 \times 10^9$ and $y = 4 \times 10^8$
Find the value of p. Give your answer in standard form to 2sf.

PROOF/ SHOW THAT/ CONGRUENCE
Prove that $(3n + 1)^2 - (3n - 1)^2$ is a multiple of 4, for all positive integer values of n.

COORDINATE GEOMETRY
The equation of a circle is:
$$(x - 3)^2 + (y - 2)^2 = 25$$
State the coordinates of its centre, the radius and hence sketch the graph.

ESTIMATION AND BOUNDS
For $a = \frac{b}{c}$
b = 154 correct to 3 significant figures.
c = 43.2 correct to 3 significant figures.
Work out the error interval for a to a suitable degree of accuracy.

PROBABILITY/ COMBINATIONS
Sam travels to school by train every day. The probability that her bus will be late on any day is 0.3. Find the probability that Sam will be late every day in a week.

QUADRATICS/ INEQUALITIES
Solve:
$$x^2 + 6x - 14 = 0$$
Give your answer to 2 significant figures.

SIMULTANEOUS EQUATIONS
If twice the son's age in years is added to the father's age, the sum is 70. But if the father's age is added to the son's age, the sum is 95. Find the ages of the father and son.

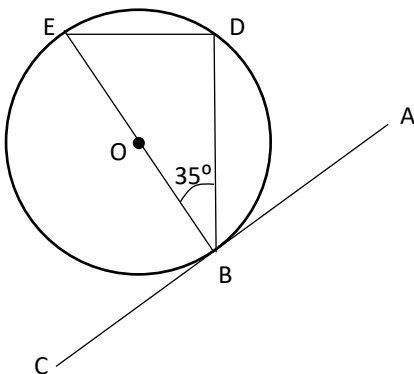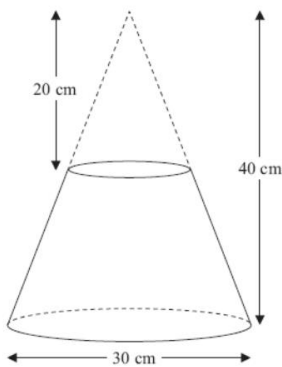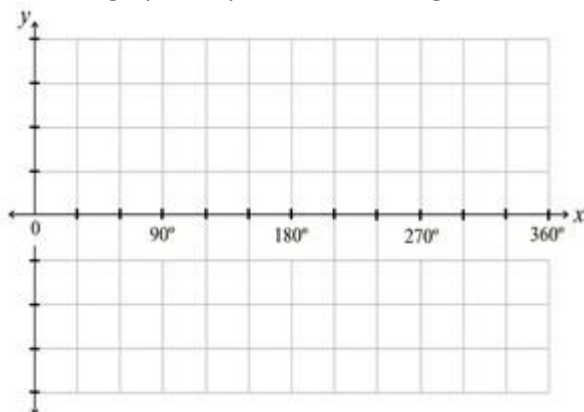| **RATIO AND PROPORTION**	**SIMPLIFY/ RE-ARRANGE/ SOLVE**
M is directly proportional to L^3. When L = 2, M = 160. Find the value of M when L = 3.	Express as a single fraction and simplify your answer. $$\frac{m+1}{n+1} - \frac{m}{n}$$
ANGLES & CIRCLE THEOREMS Find the size of angles ABD and DEB. Give reasons for your answers. 	**SURDS** Rationalise the denominator. $$\frac{\sqrt{5}+6}{\sqrt{5}-3}$$
AREA/ PERIMETER/ VOLUME Find the volume of the frustum 	**FRACTIONS/ DECIMALS/ RECURRING DECIMALS** Without a calculator, work out: 64.32 ÷ 0.12
TRIGONOMETRY/ GRAPHS Sketch the graph of y = tan x on the grid below. 	**PERCENTAGES** In an election, Stella gained 28 416 votes out of a total of 38 400 votes. Write 28 416 as a percentage of 38 400.

TRANSFORMATIONS
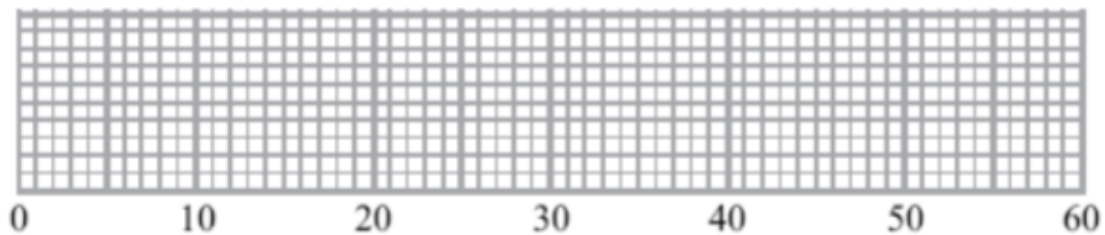
Describe fully the transformation from A to B.
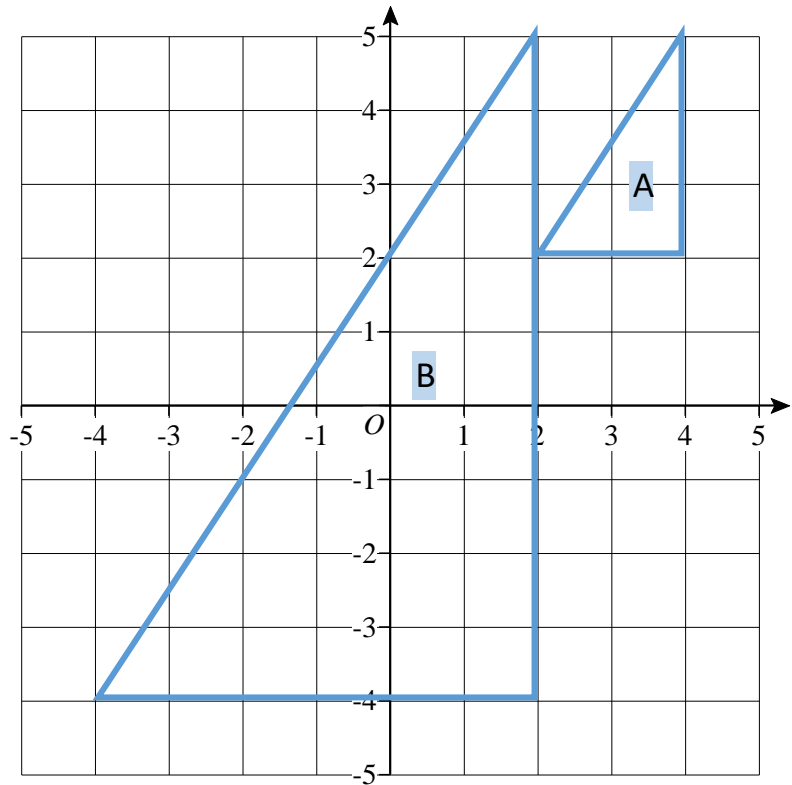
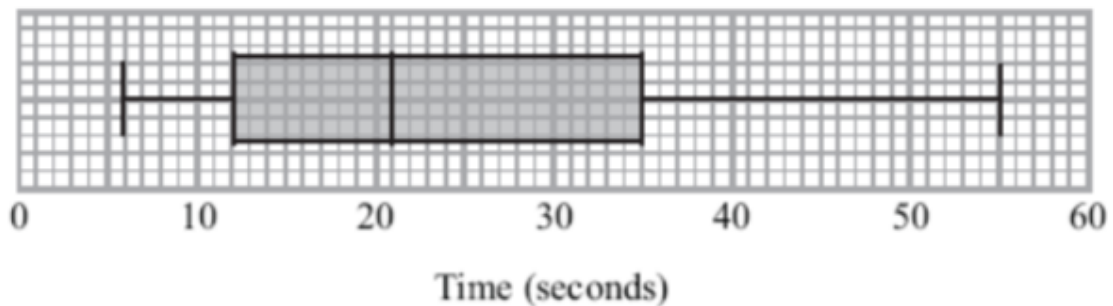## GRAPHS AND CHARTS (HISTOGRAM,CUMULATIVE FREQUENCY ETC)

Here are the times, in seconds, that 15 people waited to be served at Rose's garden centre.

5   9   11   14   15   20   22   25   27   27   28   30   32   35   44

a) On the grid, draw a box plot for this information.

Time (seconds)

b) The box plot below shows the distribution of waiting times at Greens garden centre. Compare the two box plots.

Time (seconds)

LOCI/CONSTRUCTIONS

Joe uses a ruler and compasses to find the centre of the circle drawn below. He starts by drawing a chord on the circle. Complete Joe's construction to find the centre of the circle.
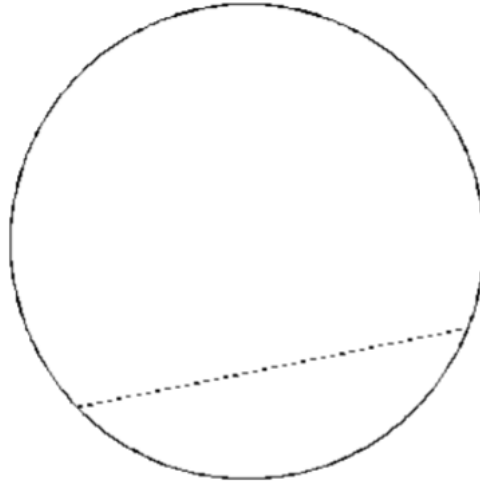
ALGEBRAIC GRAPHS – INCLUDING REGIONS, SOLVING AND TRANSFORMING

On the grid, mark with a cross, each of the six points which satisfies all these 3 inequalities, where x and y are integers.

$-2 < x \le 1$

$y > -2$

$y < x + 1$