SEQUENCES
a) Find the nth term of:

15   35   63   99   143

b) Hence, find the 11th term.

STANDARD FORM
Calculate giving your answer in standard form to 3 significant figures.

$$\frac{1.52 \times 10^5 - 4.6 \times 10^4}{4.56 \times 10^{-2}}$$

PROOF/ SHOW THAT/ CONGRUENCE
If $2n$ is always even for all positive integer values of n, prove algebraically that the sum of the squares of any two consecutive even numbers is always a multiple of 4.

COORDINATE GEOMETRY
Show that the lines 3y = 4x – 14 is perpendicular to line 4y = -3x + 48.

ESTIMATION AND BOUNDS
Estimate the value of:

$$\frac{21 \times 3.86}{0.207}$$

PROBABILITY/ COMBINATIONS
A restaurant menu has 8 starters, 12 mains and 6 desserts. A customer can choose from the following meals
• a starter and a main,
• a main and a dessert,
• a starter, a main and a dessert.
How many different combinations could the customer order?

QUADRATICS/ INEQUALITIES
a) Solve:

$$10 \leq 2x + 5 < 21$$

b) Represent your solution on a number line.

SIMULTANEOUS EQUATIONS
Find the coordinates of the point(s) of intersection of:

3x + 2y – 11 = 0
7x – 4y – 4 = 0

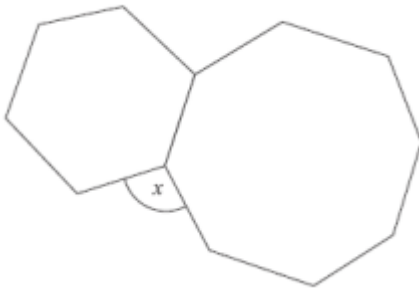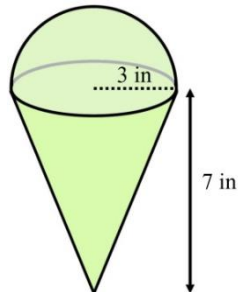|	
RATIO AND PROPORTION y is directly proportional to the square root of x, 	x	36	a
---	---	---
y	2	5 | Find the value of a.	**SIMPLIFY/ RE-ARRANGE/ SOLVE** Simplify: $$\frac{s^2 - 16}{s^2 + s - 20}$$
ANGLES & CIRCLE THEOREMS The diagram shows a regular hexagon and a regular octagon, find the size of angle x. 	**SURDS** Show that: $$\frac{\sqrt{125} - \sqrt{45}}{\sqrt{125} + \sqrt{45}} = \frac{1}{4}$$
AREA/ PERIMETER/ VOLUME A cone with a base of radius of 3 inch and height of 7 inch, is joined to a hemisphere of radius 3 inch, so that the two circular faces join. Find the volume and surface area of the new shape. 3 in 7 in	**FRACTIONS/ DECIMALS/ RECURRING DECIMALS** Write $\frac{5}{11}$ as a recurring decimal.
TRIGONOMETRY/ GRAPHS The minute hand of a clock is 18cm long and the hour hand is 12.5cm. Calculate the distance between the tips of the hands at 7 o'clock.	**PERCENTAGES** Work out the percentage increase from 60 to 84.

TRANSFORMATIONS

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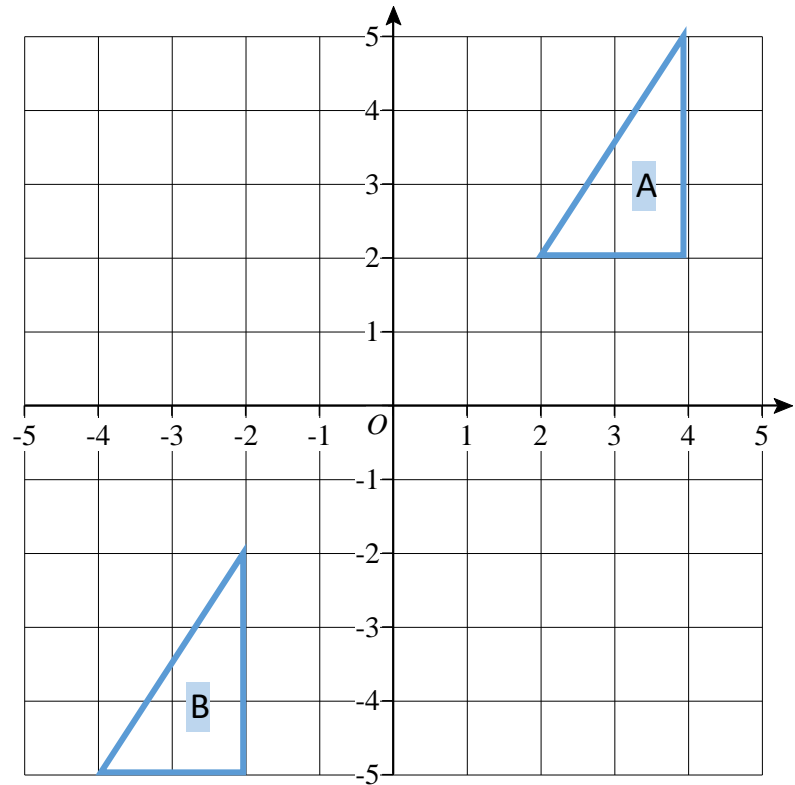
GRAPHS AND CHARTS (HISTOGRAM,CUMULATIVE FREQUENCY ETC)

The histogram shows information about the books sold in a book shop one Saturday.
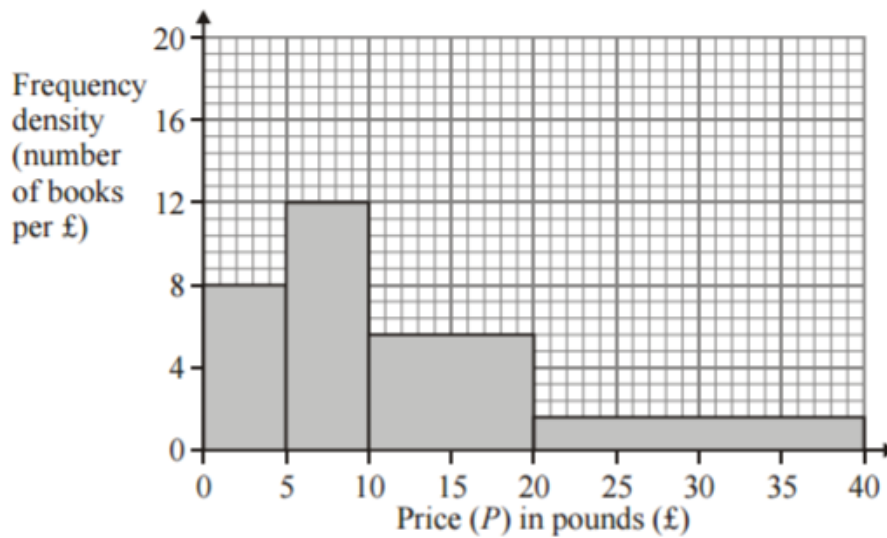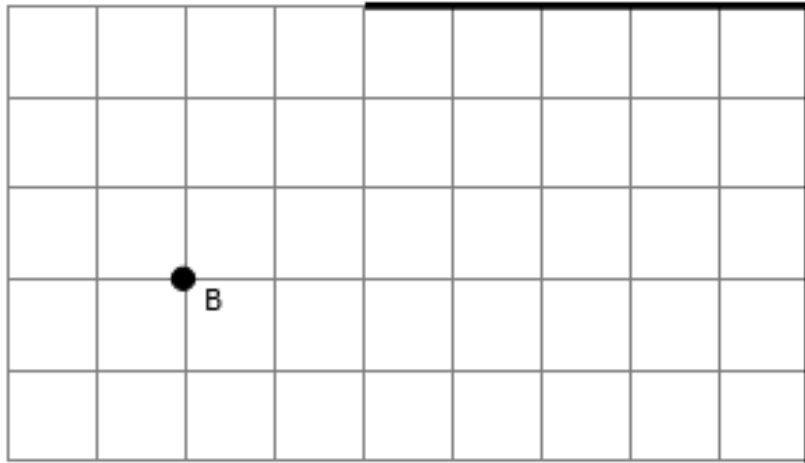

Use the histogram to complete the table.

Price (P) in pounds (£)	Frequency
$0 < P \leq 5$	
$5 < P \leq 10$	
$10 < P \leq 20$	
$20 < P \leq 40$	

LOCI/CONSTRUCTIONS
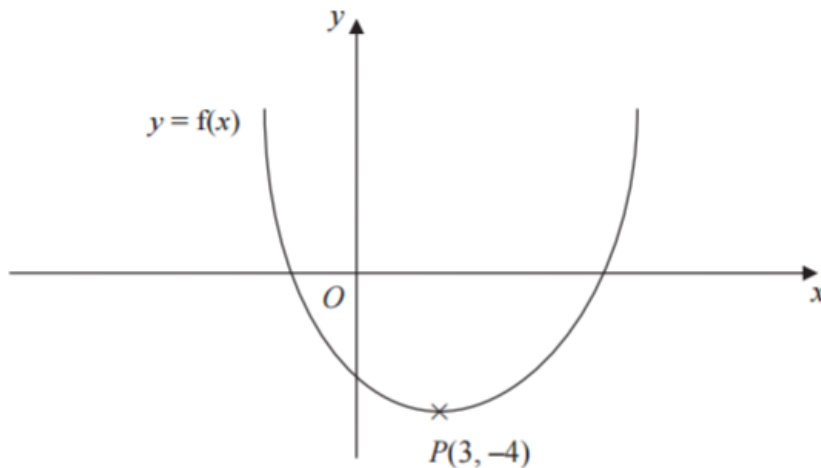
Using 1 square to represent 1cm.

For the diagram below find the point(s) that are

- equidistant from the two lines and
- 5cm from point B

ALGEBRAIC GRAPHS – INCLUDING REGIONS, SOLVING AND TRANSFORMING

Below is the graph of y=f(x)

$y = f(x)$

$P(3, -4)$

a) Write down the coordinates of the minimum point of the curve with equation
$y = f(x - 2)$.

b) Write down the coordinates of the minimum point of the curve with equation
$y = f(x + 5) + 6$