

Write your name here

Surname

Other Names

Mathematics

**November 2017 Paper 1 (Non Calculator)
Part 2 (Second half of the paper)
Edexcel Higher Tier**

Time: 45 minutes

Q	Topic	Max Mark	My Marks
13	Proportion, Bounds	4	
14	Rearranging Harder Formula, Algebraic Fractions	3	
15	Converting Recurring Decimals to Fractions	3	
16	Direct and Inverse Proportion	3	
17	Algebraic Proof	2	
18	Negative Enlargement	2	
19	Perpendicular Lines	4	
20	Trigonometric Graphs, Transformations	4	
21	Surds, Rationalise the Denominator	3	
22	Similar Shapes	5	
23	Solving Quadratic Inequalities	5	
	Total	38	

For worked solutions and video solutions visit mathsgenie.co.uk

- 13** A factory makes 450 pies every day.
The pies are chicken pies or steak pies.

Each day Milo takes a sample of 15 pies to check.

The proportion of the pies in his sample that are chicken is the same as the proportion of the pies made that day that are chicken.

On Monday Milo calculated that he needed exactly 4 chicken pies in his sample.

- (a) Work out the total number of chicken pies that were made on Monday.

.....
(2)

On Tuesday, the number of steak pies Milo needs in his sample is 6 correct to the nearest whole number.

Milo takes at random a pie from the 450 pies made on Tuesday.

- (b) Work out the lower bound of the probability that the pie is a steak pie.

.....
(2)

(Total for Question 13 is 4 marks)



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14 The ratio $(y + x):(y - x)$ is equivalent to $k:1$

Show that $y = \frac{x(k + 1)}{k - 1}$

(Total for Question 14 is 3 marks)

15 $x = 0.4\dot{3}\dot{6}$

Prove algebraically that x can be written as $\frac{24}{55}$

(Total for Question 15 is 3 marks)



16 y is directly proportional to $\sqrt[3]{x}$

$$y = 1\frac{1}{6} \text{ when } x = 8$$

Find the value of y when $x = 64$

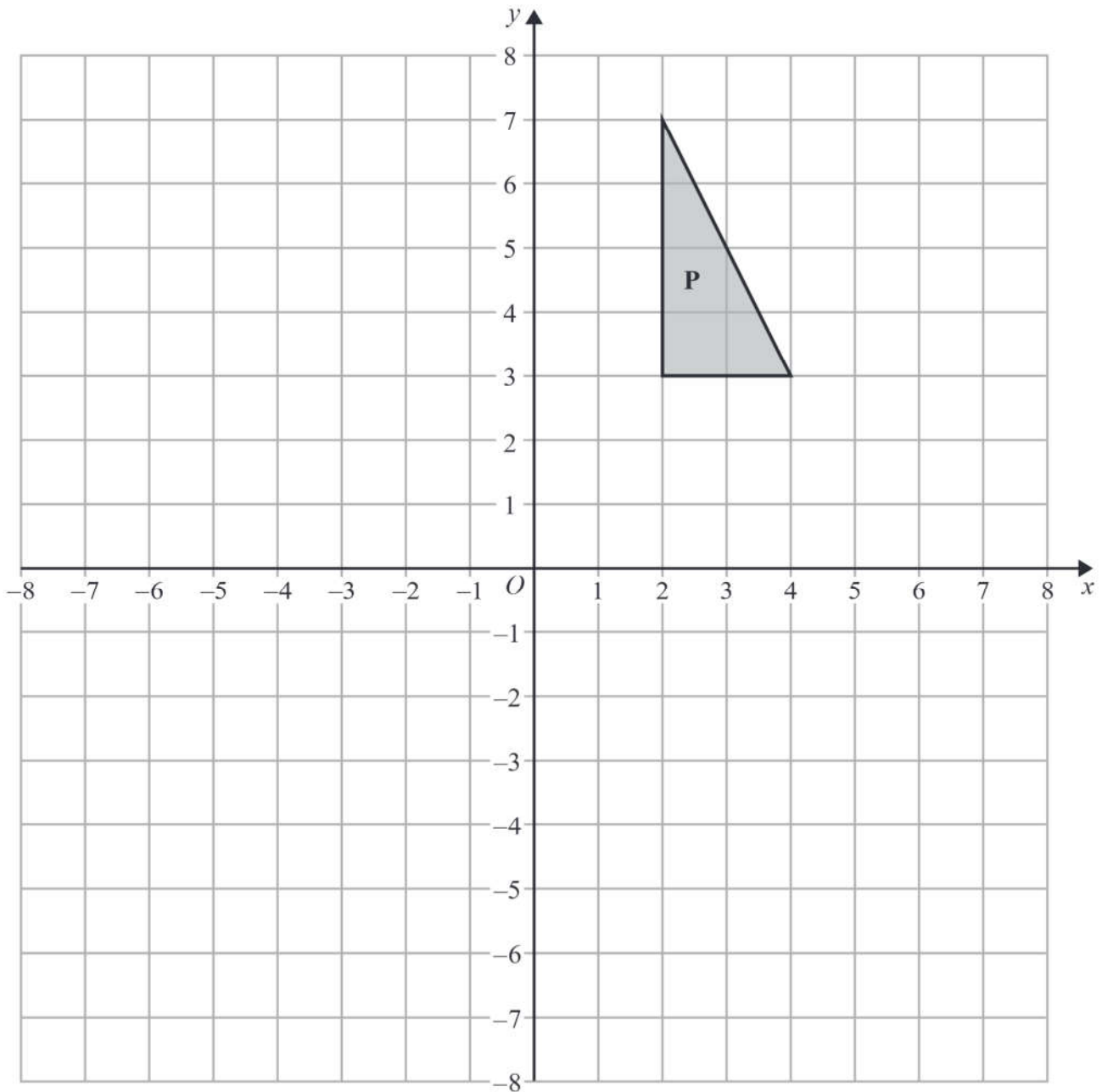
(Total for Question 16 is 3 marks)

17 n is an integer.

Prove algebraically that the sum of $\frac{1}{2}n(n+1)$ and $\frac{1}{2}(n+1)(n+2)$ is always a square number.

(Total for Question 17 is 2 marks)



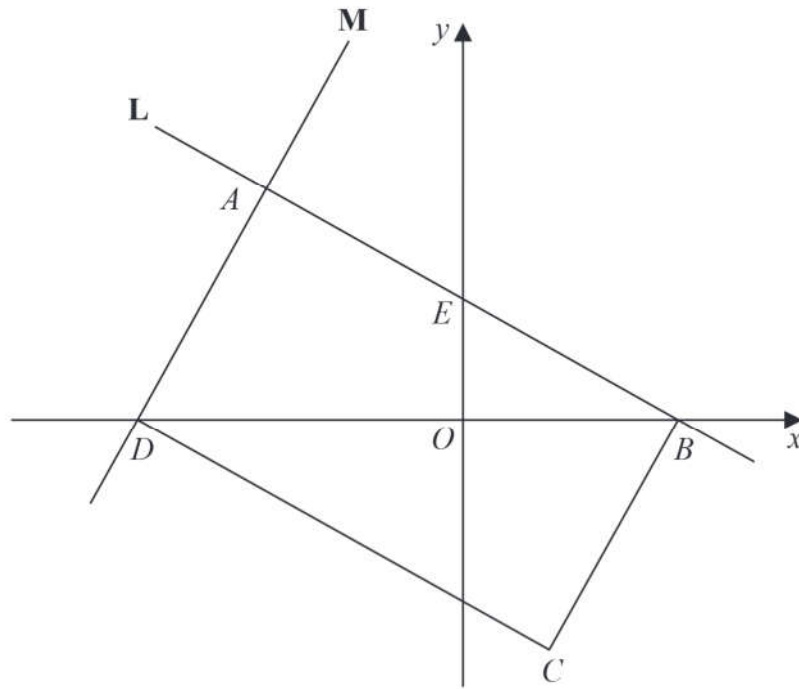


Enlarge shape **P** by scale factor $-\frac{1}{2}$ with centre of enlargement (0, 0).

Label your image **Q**.

(Total for Question 18 is 2 marks)





$ABCD$ is a rectangle.

A , E and B are points on the straight line L with equation $x + 2y = 12$
 A and D are points on the straight line M .

$$AE = EB$$

Find an equation for M .

(Total for Question 19 is 4 marks)



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20 The table shows some values of x and y that satisfy the equation $y = a \cos x^\circ + b$

x	0	30	60	90	120	150	180
y	3	$1 + \sqrt{3}$	2	1	0	$1 - \sqrt{3}$	-1

Find the value of y when $x = 45$

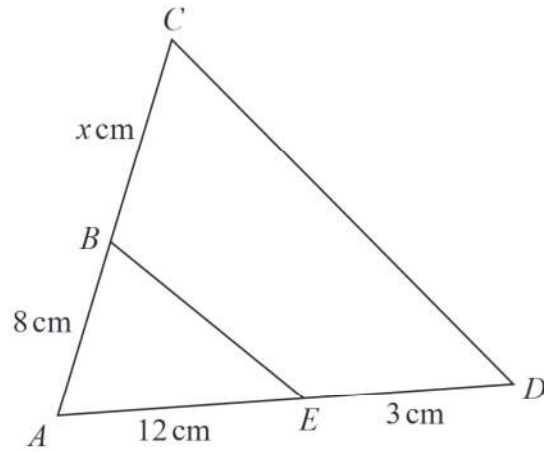
(Total for Question 20 is 4 marks)

21 Show that $\frac{6 - \sqrt{8}}{\sqrt{2} - 1}$ can be written in the form $a + b\sqrt{2}$ where a and b are integers.

(Total for Question 21 is 3 marks)



22 The two triangles in the diagram are similar.



There are two possible values of x .

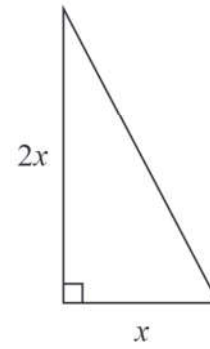
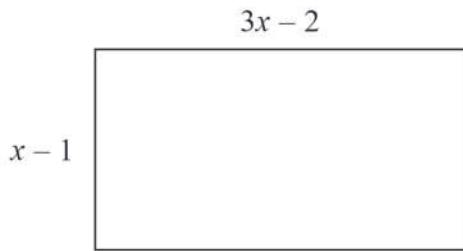
Work out each of these values.

State any assumptions you make in your working.

(Total for Question 22 is 5 marks)



23 Here is a rectangle and a right-angled triangle.



All measurements are in centimetres.

The area of the rectangle is greater than the area of the triangle.

Find the set of possible values of x .

(Total for Question 23 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS

