Write your name here

| Surname	Other Names

Mathematics

June 2018 Paper 1 (Non Calculator)
Part 2 (Second half of the paper)
Edexcel Higher Tier

Time: 45 minutes

Q	Topic	Max Mark	My Marks
11	Circle Theorems	5	
12	Algebraic Proof	4	
13	Surds	3	
14	Direct and Inverse proportion	5	
15	Difference of Two Squares	4	
16	Sharing Ratio, Probability and Relative Freq	3	
17	Simplifying Algebraic Fractions	3	
18	Transformations of Graphs (Trigonometric)	2	
19	Gradient of a Line, Perpendicular Lines	5	
20	Solving Quadratic Inequalities	5	
	Total	39	

11
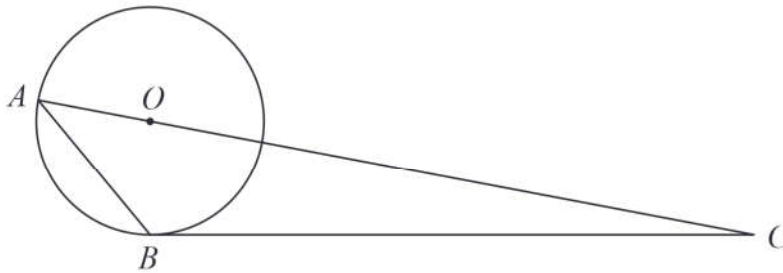
A and *B* are points on a circle, centre *O*.

BC is a tangent to the circle.
AOC is a straight line.
Angle $ABO = x°$.

Find the size of angle *ACB*, in terms of *x*.
Give your answer in its simplest form.
Give reasons for each stage of your working.

(Total for Question 11 is 5 marks)

12 Prove that the square of an odd number is always 1 more than a multiple of 4

13 $\sqrt{5}(\sqrt{8} + \sqrt{18})$ can be written in the form $a\sqrt{10}$ where a is an integer.

Find the value of a.

$a =$ ....

14 y is inversely proportional to d^2
When $d = 10$, $y = 4$

d is directly proportional to x^2
When $x = 2$, $d = 24$

Find a formula for y in terms of x.
Give your answer in its simplest form.

....

(Total for Question 14 is 5 marks)

15 (a) Factorise $a^2 - b^2$

....

(b) Hence, or otherwise, simplify fully $(x^2 + 4)^2 - (x^2 - 2)^2$

....

(3)

(Total for Question 15 is 4 marks)

16 There are only red counters, blue counters and purple counters in a bag.
The ratio of the number of red counters to the number of blue counters is 3 : 17

Sam takes at random a counter from the bag.
The probability that the counter is purple is 0.2

Work out the probability that Sam takes a red counter.

....

(Total for Question 16 is 3 marks)

17 Simplify fully $\dfrac{3x^2 - 8x - 3}{2x^2 - 6x}$

....

(Total for Question 17 is 3 marks)

Turn over ▶

18 Here is the graph of $y = \sin x°$ for $-180 \leqslant x \leqslant 180$
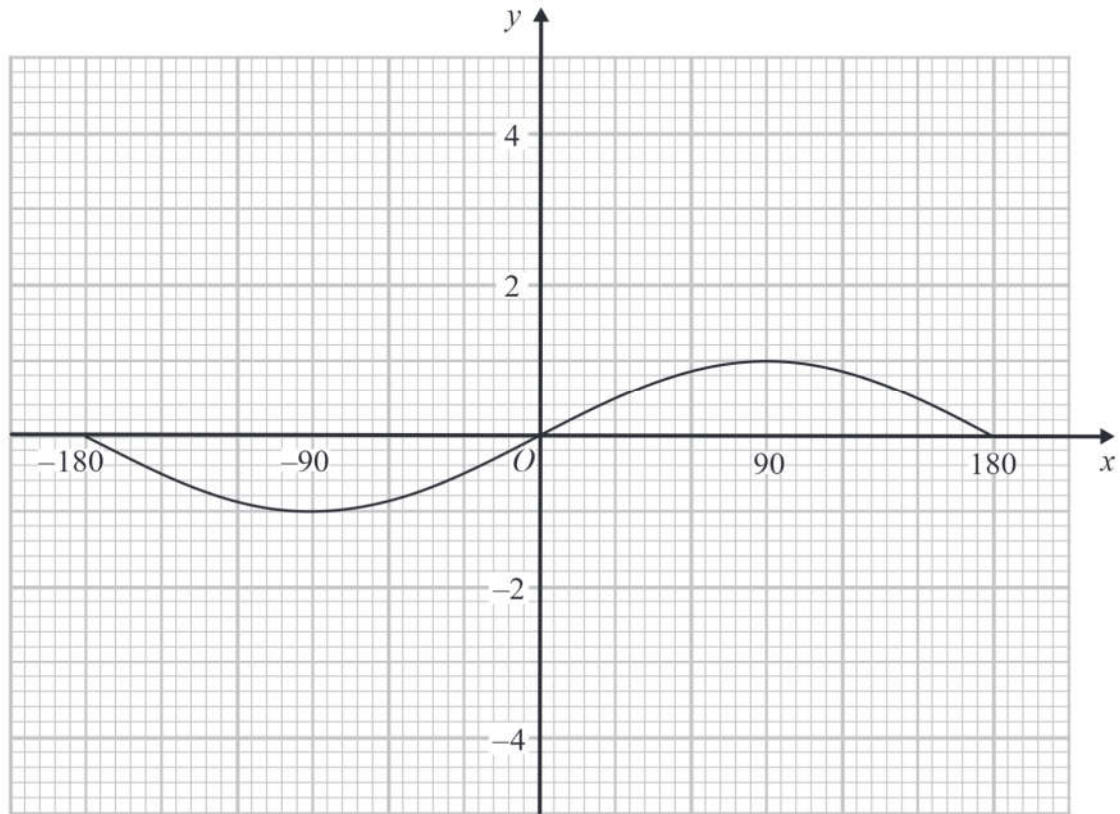
On the grid, sketch the graph of $y = \sin x° - 2$ for $-180 \leqslant x \leqslant 180$

(Total for Question 18 is 2 marks)

19 The point P has coordinates $(3, 4)$
The point Q has coordinates (a, b)

A line perpendicular to PQ is given by the equation $3x + 2y = 7$

Find an expression for b in terms of a.

(Total for Question 19 is 5 marks)

20 n is an integer such that $3n + 2 \leqslant 14$ and $\dfrac{6n}{n^2 + 5} > 1$

Find all the possible values of n.

TOTAL FOR PAPER IS 80 MARKS