GCSE
Mathematics: Calculator
Paper 3

Specification EDEXCEL A

Time allowed
 - 30 minutes.

For this paper you must have
 - A ballpoint pen with black ink.
 - A ruler with millimetre measurements.
 - A pencil.
 - A scientific calculator.

Instructions
 - Do all rough work in this question booklet.
 - Answer **all** the questions.
 - You **must** show your working for all questions.

You should give non-exact answers correct to 3 significant figures unless another degree of accuracy is specified in the question or is clearly appropriate.
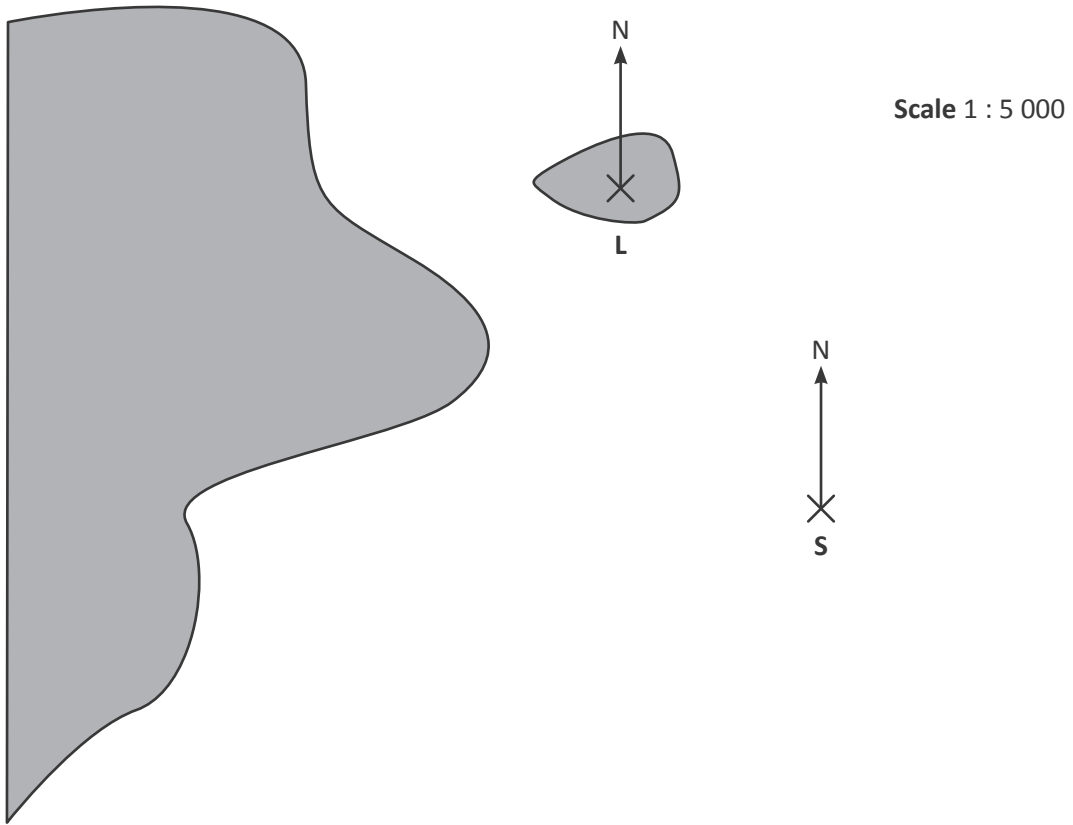
The maximum mark for this paper is 40.

Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
TOTAL	

Grade Boundaries

A* **32**
A **26**
B **21**
C **15**
D **7**

1. Here is a map of a coastline with a lighthouse, **L**, and a ship, **S**.

N

Scale 1 : 5 000

L

N

S

(a) Find the bearing of the ship from the lighthouse.

.... °

(1 mark)

(b) Work out the actual distance between the ship and the lighthouse.
Give your answer in kilometres.

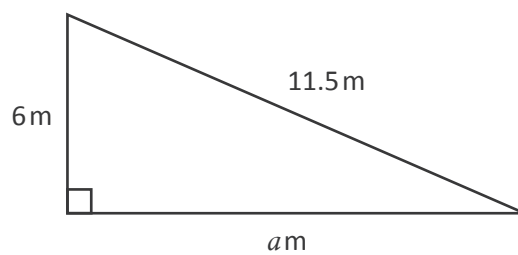...................................... km

(2 marks)

(c) A second ship has bearing from the lighthouse of 195⁰ and from ship **S** of 270⁰.
Mark the position of the second ship on the map. Label the second ship **P**.

(2 marks)

(d)   In 120 minutes ship **S** moves 37.7 km.

Calculate the average speed of the ship during this time.
Give your answer in kilometres per hour.

.... kmh⁻¹

(2 marks)

2.   Here is a triangle.

Calculate the value of a.

.... cm

(3 marks)

Turn over for Question 3 ▶

3. Solve the following equations.

(a) $3(x + 2) = x - 1$

$x = $ ....

(2 marks)

(b) $4^{(6x - 10)} = 16$

$x = $ ....

(3 marks)

(c) $x^3 = 64$

$x = $ ....

(1 mark)

4. The number 6.32×10^7 is written in standard form.

(a) Work out $6.32 \times 10^7 \times 2.1 \times 10^3$.
Give your answer in standard form.

Answer ....

(1 mark)

(b) (i) In 2014 the population of the UK is 6.32×10^7.
One estimate is that the population of the UK is increasing by 252 900 people each year.

Using this estimate, calculate the population of the UK in 2015.
Give your answer in standard form to an **appropriate** number of significant figures to show this change.

Answer ....

(1 mark)

(ii) Calculate the percentage increase in the population of the UK between 2014 and 2016.

.... %

(2 marks)

5. A car society has 306 members.
Each member of the society owns either a Jaguar or a Bentley but not both.
There are 15 men in the society who own Bentleys.
There are twice as many women as men at the society.
The ratio of Jaguar owners to Bentley owners is 5 : 1.

Use this information to fill in the table.

	Male	Female	Total
Jaguar	....	....	....
Bentley	....	....	....
Total	....	....	**306**

Use this space for your workings.

6. A rectangle has length l cm and width w cm. The area of the rectangle is $45\,\text{cm}^2$.

(a) Write an expression for the area of the rectangle.

....

(1 mark)

(b) The rectangle is 32% longer than it is wide.

Calculate the length of the rectangle, correct to 2 decimal places.

.... cm

(3 marks)

7. The first term of a sequence is 4 and the fourth term is 19.
To get to the next term in the sequence you add b.

(a) Find b.

$b =$ ....

(1 mark)

(b) The sequence continues. Find the 125 th term in the sequence.

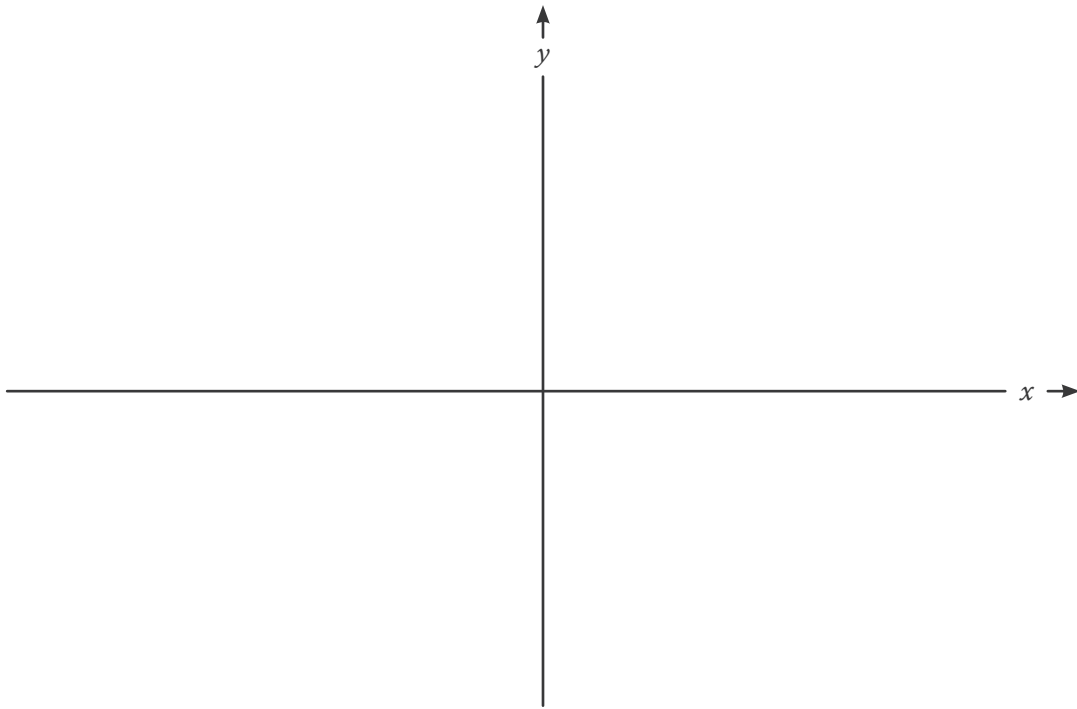..

(2 marks)

8. The equation $x^3 - 2x + 10 = 18$ has a solution between 2 and 3.

Use a trial and improvement method to find this solution to **one decimal place**.
You must show all your working.

$x =$ ....

(4 marks)

9. Sketch the graph of $y = 4 - x^2$, giving the coordinates of the points where the graph meets the x and y axes.

Coordinates where graph meets x axis

....

Coordinates where graph meets y axis

....

(4 marks)

END OF QUESTIONS