



THIRD SPACE
LEARNING

Mathematics

Paper 3

(Calculator)

Higher Tier

Edexcel GCSE

SET 5

Mathematics Paper 3 (Calculator) Higher Tier Edexcel GCSE

SET 5

Name

Total marks



Paper length: 1hr 30mins

Instructions

- Use black ink or ball-point pen.
- Fill in the boxes at the top of this page with your name, centre number and candidate number.
- Answer all questions.
- Answer the questions in the spaces provided – there may be more space than you need.
- You must show all your working.
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- Calculators may be used.

Information

- The total mark for this paper is 80
- The marks for each question are shown in brackets – use this as a guide as to how much time to spend on each question.

Question	Mark
1	
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Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

This practice paper is based on the topics from the **advanced information for the November 2026 exam series**.

Please note, this practice paper is an example to help revision, these topics can be tested in other ways and other topics may be included in the actual papers

1 (a) Simplify $q^7 \times q^5$

(1)

(b) Simplify $\frac{8p^9}{4p^2}$

(2)

(c) Write down the value of a and b if $(2m^a)^3 = bm^{12}$

$a =$ -----

$b =$ -----

(2)

(Total for Question 1 is 5 marks)

2 Bobby has £350 000. He wants to purchase a house.

When Bobby purchases a house, he will need to pay legal fees of £2000 as well as stamp duty tax at the following rates:

The first £120 000 of the property price	No stamp duty
The second £125 000 (£125 000 – £250 000)	2%
Anything above £250 000	5%

Bobby decides he wants to buy a house for £330 000.

Can Bobby afford to buy the house and pay the fees and stamp duty?

Show how you decide.

(Total for Question 2 is 4 marks)

3 (a) Ben is a hockey goalkeeper.

The probability that Ben saves a goal is 0.7.

What is the probability that Ben does not save a goal?

(1)

(b) In one hockey season, there are 200 shots at the goal.

Work out an estimate for the number of goals Ben will save.

(1)

(Total for Question 3 is 2 marks)

4 (a) Write 0.000 034 in standard form

(1)

(b) Write 2.71×10^4 as an ordinary number

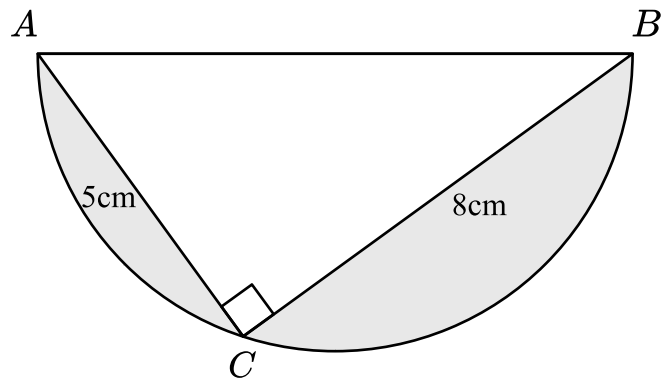
(1)

(c) Write the fraction $\frac{3 \times 10^8}{4.5 \times 10^9}$ in its simplest form

(1)

(Total for Question 4 is 3 marks)

5 Here is a right angled triangle inside a semi-circle.



(a) Work out the length AB .

Give your answer to 2 decimal places.

(2)

(b) Work out the shaded area.

Give your answer to 2 decimal places.

(4)

(Total for Question 5 is 6 marks)

- 6 The mean of three numbers is 120
The three numbers are $3a$, $5a + 2$ and $2a + 8$
Work out the value of the smallest number.

(Total for Question 6 is 4 marks)

- 7 Here are five numbers.

$$47^{11} \quad 47^{34} \quad 47^{55} \quad 47^{60} \quad 47^{93}$$

Find the lowest common multiple of the numbers.

(Total for Question 7 is 1 mark)

- 8 It takes 3 builders 8 hours to build a 20 metre wall.
How long would it take 4 builders to build a 40m wall?

(Total for Question 8 is 3 marks)

- 9 a and b are integers such that

$$2 \leq a < 8$$

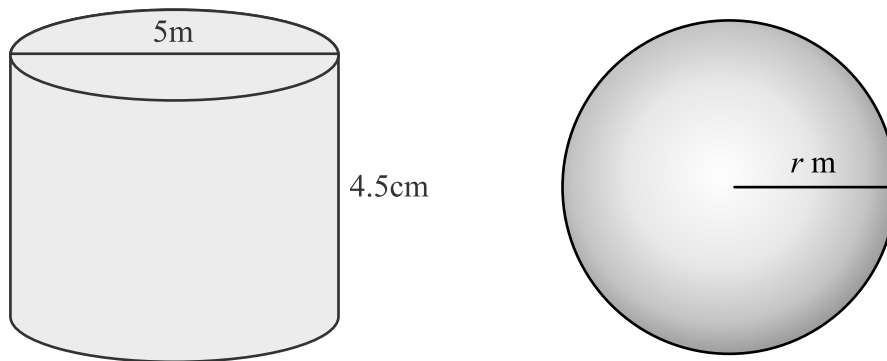
$$5 < b \leq 10$$

$$a + b = 11$$

Write down all the possible values of b .

(Total for Question 9 is 2 marks)

10 Here is a cylinder and a sphere.



The sphere has radius r metres.

Dante wants to paint both the cylinder and the sphere.

Dante has enough paint to cover 250m^2 .

Find the maximum value of r to ensure that Dante has enough paint to cover both objects.

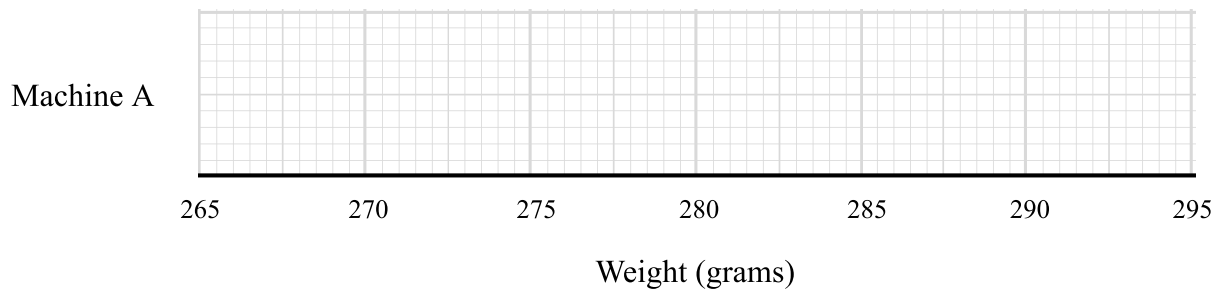
Give your answer to 3 significant figures.

(Total for Question 10 is 4 marks)

11 Jessie records the weights of the cakes produced by Machine A in a factory.

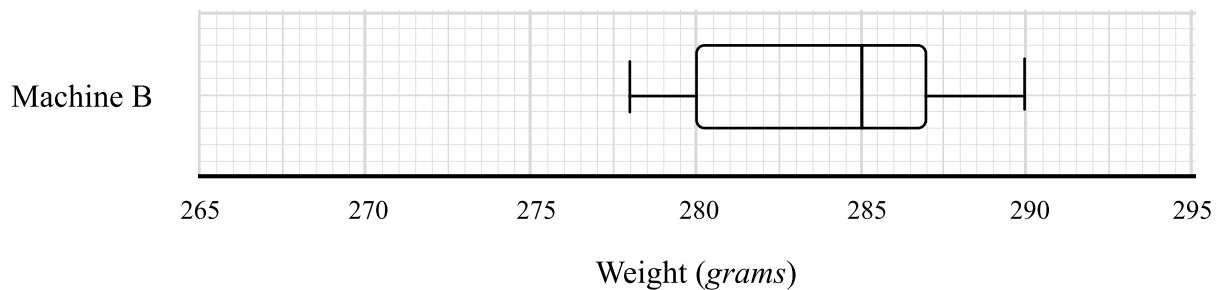
	Weight (grams)
Lowest value	270g
Lower quartile	275g
Median	281g
Interquartile range	10g
Highest value	290g

(a) Draw a box plot to show this information.



(3)

The results of the weights of the cakes produced by Machine B in the same factory are shown in the following box plot.



(b) Compare the distribution of the weights of the cakes produced by Machine A and Machine B.

(2)

(Total for Question 11 is 5 marks)

12 A restaurant has 5 starters, 8 main courses and 4 desserts.

Tristan is going to choose either:

- A starter and a main course OR
- A main course and a dessert OR
- A starter, a main course and a dessert

Show that there are 232 different options that Tristan could select.

(Total for Question 12 is 2 marks)

13 Here are the first five terms of a quadratic sequence

7 11 17 25 35

Find an expression in terms of n , for the n th term of the sequence.

(Total for Question 13 is 3 marks)

14 Alison rolls 2 dice and adds the values

Find the probability that the sum of the two values is greater than 7

(Total for Question 14 is 3 marks)

15 (a) Factorise $p^2 - q^2$

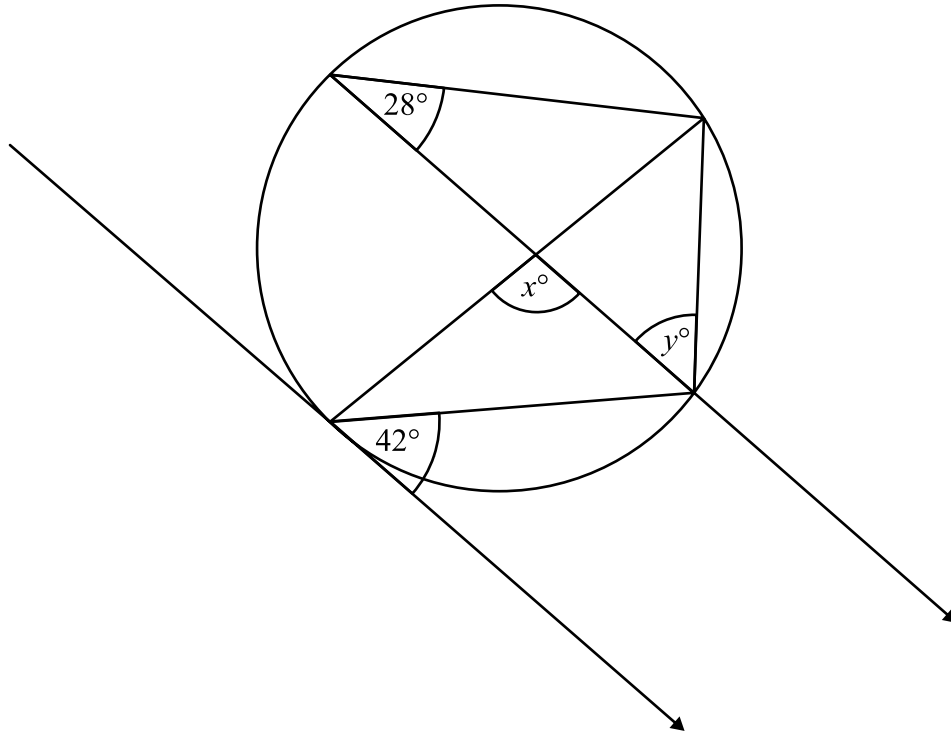
(1)

(b) Show how you could use your answer to part a to calculate $51^2 - 49^2$

(2)

(Total for Question 15 is 3 marks)

16



(a) Work out the size of angle x .

$x =$ _____ $^\circ$
(2)

(b) Work out the size of angle y .

$y =$ _____ $^\circ$
(2)

(Total for Question 16 is 4 marks)

- 17 At the end of 2024 there were 4200 fish in a lake.
By the end of 2025, the number of fish remaining was 4032

It is assumed that the number of fish in the lake is given by

$$F = ar^n$$

where F is the number of fish in the lake and n is the number of years after the end of 2024.

- (a) Write down the value of a .

$a =$ _____
----- (1)

- (b) Show that $r = 0.96$

(2)

- (c) Show that by the end of 2034, the number of fish in the lake is expected to have decreased by over 30%.

(3)

(Total for Question 17 is 6 marks)

18 M and N are two geometrically similar solids

The surface area of shape N is 448cm^2

The surface area of shape M is 1008cm^2

The volume of shape M is 1134cm^3

Work out the volume of shape N.

cm³

(Total for Question 18 is 3 marks)

19 Express $\frac{x}{x+3} + \frac{2x}{3x-1} - 5$ as a single fraction in its simplest form.

(Total for Question 19 is 3 marks)

20 $W = \frac{u - v}{t}$

$u = 14.1$ to 3 significant figures.

$v = 2.35$ to 2 decimal places.

$t = 0.47$ to 2 decimal places.

Work out the lower bound for W .

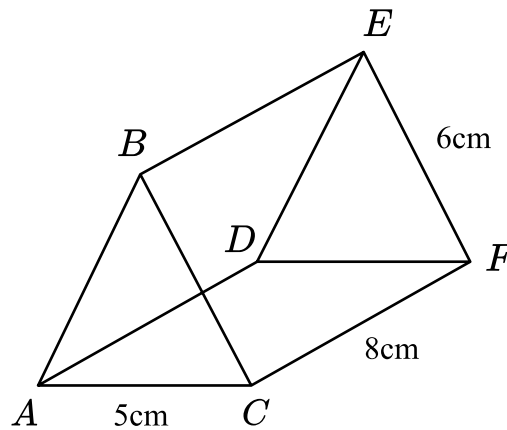
Give your answer to 2 decimal places.

(Total for Question 20 is 3 marks)

21 $ABCDEF$ is an isosceles triangular prism.

$AB = BC$

$AC = 5\text{cm}$, $CF = 8\text{cm}$ and $EF = 6\text{cm}$



Calculate the size of the angle between the line AE and the plane $ACFD$.

Give your answer to 1 decimal place.

(Total for Question 21 is 4 marks)

22 Here is a quadratic equation.

$$ax^2 + 6x + c = 0$$

The solutions to this equation are given by $x = \frac{-6 \pm 2\sqrt{42}}{6}$

Find the value of a and the value of c .

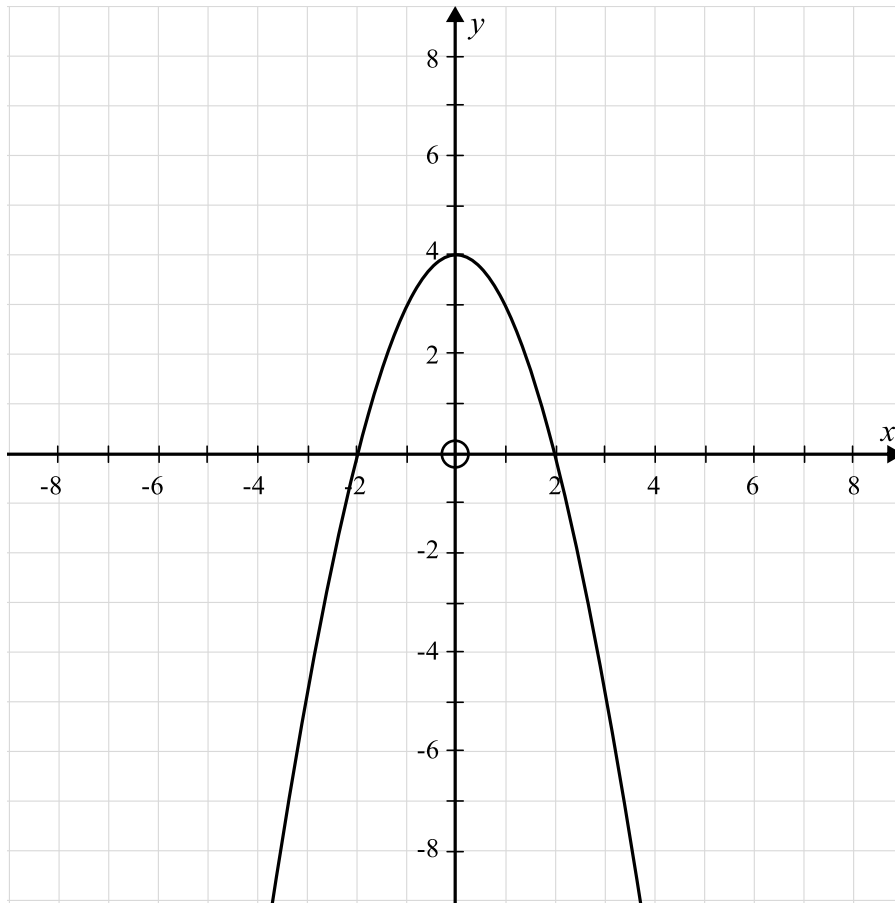
Show your working clearly.

$a =$

$c =$

(Total for Question 22 is 3 marks)

23 This is the graph of $y = f(x)$.



(a) On the grid above, draw the graph of $y = f(x - 2)$

(2)

(b) A translation of $\begin{pmatrix} -3 \\ 1 \end{pmatrix}$ is applied to $y = f(x)$.

Write down the equation of the new graph.

(2)


(Total for Question 23 is 4 marks)

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