



THIRD SPACE
LEARNING

Mathematics

Paper 2

(Calculator)

Higher Tier

Edexcel GCSE

SET 1A

Mathematics Paper 2 (Calculator) Higher Tier Edexcel GCSE

SET 1A

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 not 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.

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 Summer 2022 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) Calculate $\sqrt{4.02 + 12.7} + (19.2 - 3.73)^3$. Write down all the digits on your calculator display.

(2)

- (b) Round your answer to 3 significant figures.

(1)

(Total for Question 1 is 3 marks)

- 2 The ratio of male:female employees in a company is 5:8. There are 27 more female employees than male employees. How many employees does the company have?

(Total for Question 2 is 2 marks)

- 3 Lorraine and Megan go on holiday to Rome.

Lorraine converts £150 to euros.

The exchange rate is £1=€1.19.

- (a) How many euros does she each receive?

€ -----

(2)

- (b) On the last evening they go for a meal.

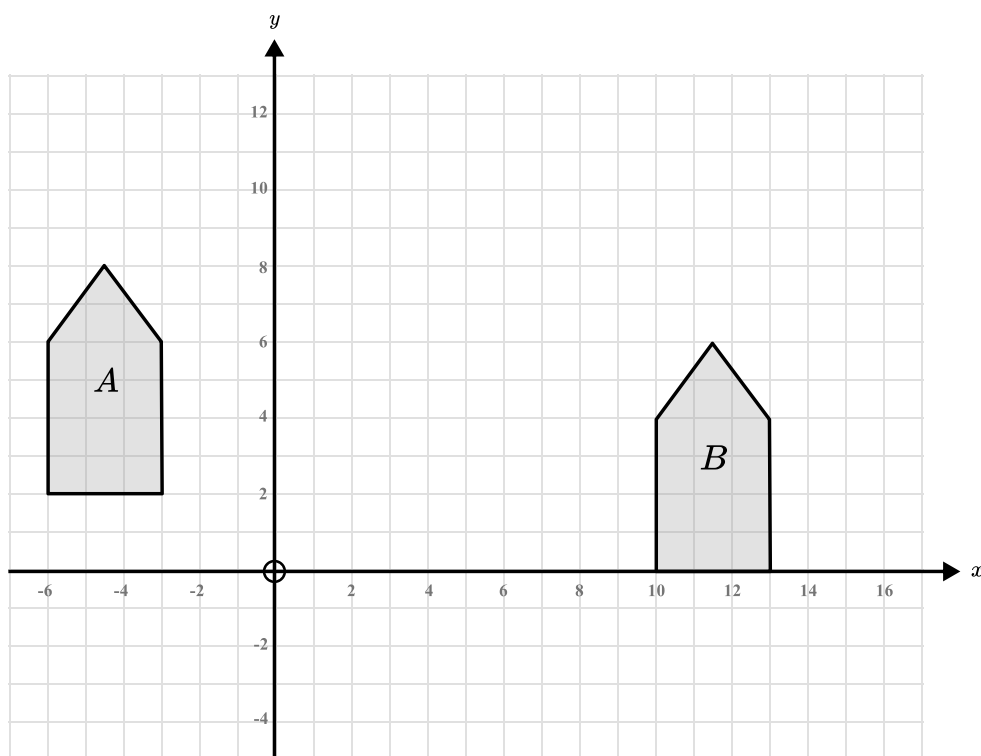
Pizza	€10
Pasta	€11.0
Ice cream	€4.25
Tiramisu	€4.20
Drink	€1.95

Lorraine orders a pizza, an ice cream and a drink and Megan orders a pizza, a tiramisu and a drink. Lorraine has €20 left and Megan has €15 left. Do they have enough money in total to pay for the meal? Show how you decide.

(2)

(Total for Question 3 is 4 marks)

4



(a) Rotate shape A 90° clockwise about the origin

(2)

(b) Mark says that the transformation to get from shape A to shape B is a translation of $\begin{pmatrix} 13 \\ -2 \end{pmatrix}$

Is Mark correct? Explain your answer.

.....
.....

(2)

(Total for Question 4 is 5 marks)

5 (a) Expand and simplify $3(7q+5) - 2(3q-4)$

(2)

(b) Factorise $x^2 + 6x$

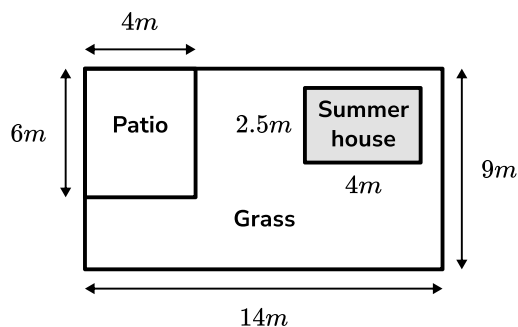
(1)

(c) Expand and simplify $(2x + 3)(3x - 5)$

(2)

(Total for Question 5 is 5 marks)

- 6 Here is a diagram of Nooha's garden.



- (a) Find the total grassed area.

----- m^2
(3)

- (b) Convert the area to cm^2 .

----- cm^2
(2)

(Total for Question 6 is 5 marks)

- 7 A car is bought for £12000. The value of the car depreciates by 10% per year. Find the value of the car after 2 years.

(Total for Question 7 is 3 marks)

- 8 Simplify $\frac{6a^3b^2 \times 2a^4b}{3a^2b^3}$

(Total for Question 8 is 2 marks)

- 9 (a) Amber, Ollie and Tommy each complete some homework. Tommy takes 12 minutes longer than Ollie and Amber takes twice as long as Tommy. Altogether they spend 2 hours and 16 minutes on homework. Form an equation using this information.

(2)

- (b) Solve your equation and hence work out how long they each spend doing homework.

Amber -----

Ollie -----

Tommy -----

(2)

(Total for Question 9 is 4 marks)

-
- 10 The weight of a horse is 350kg to the nearest 10kg. Complete the error interval for the mass of the horse.

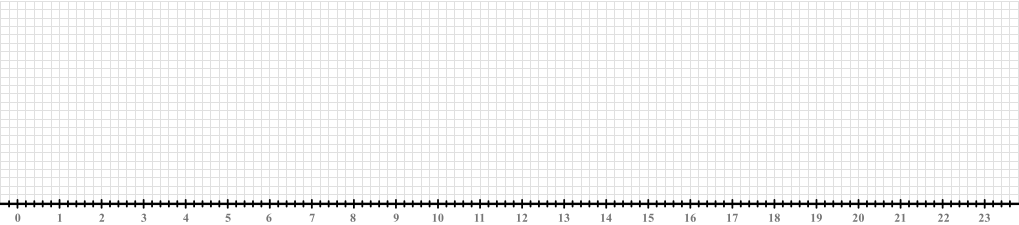
----- \leq mass (kg) $<$ -----

(Total for Question 10 is 2 marks)

11 There are 11 dogs in group A. Here are their weights in kg:

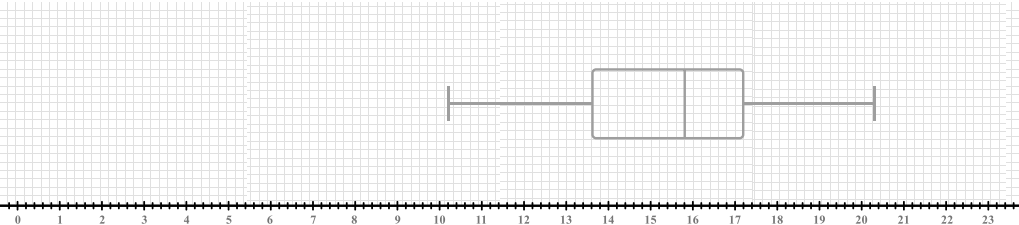
6.4 13.1 8.9 17.5 11.0 9.4 11.7 19.1 12.4 11.6 8.2

(a) Draw a box and whisker diagram to show this data.



(3)

(b) Here is a box and whisker diagram showing information about the weights of the dogs in group B.



Compare the distributions of the weights of the dogs in group A and group B.

.....

.....

(2)

(Total for Question 11 is 5 marks)

12 (a) Here are the equations of 4 lines:

$$y - 3x + 4 = 0 \qquad 4y + 3x = 10 \qquad y = \frac{2}{3}x - 2 \qquad y = 2 - \frac{3}{4}x$$

Write down the equations of the two lines that are parallel.

----- and -----
(2)

(b) Find the equation of the line that is parallel to $y = 5x + 7$ and passes through the point (1, 2)

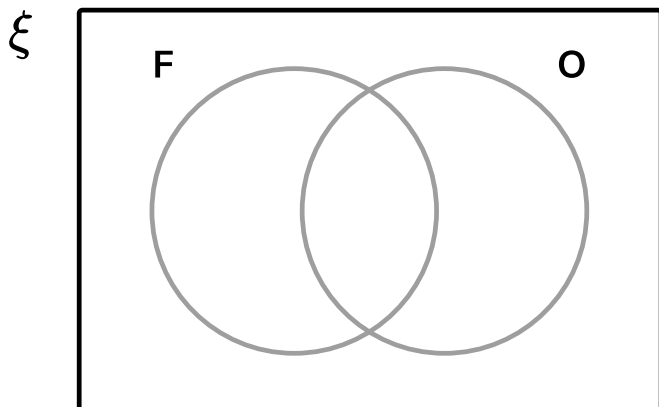
(2)
(Total for Question 12 is 4 marks)

13 $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$

F=factors of 12

O=odd numbers

(a) Complete the Venn diagram.



(2)

(b) One of the numbers is chosen at random.

Write down $P(F \cap O)$

(2)

(c) Another number is chosen at random. Given that it is not a factor of 12, find the probability that it is an odd number.

(2)

(Total for Question 13 is 6 marks)

14 (a) y is inversely proportional to the square root of x . $y=30$ when $x=25$.

Find the value of y when $x=16$.

(Total for Question 14 is 2 marks)

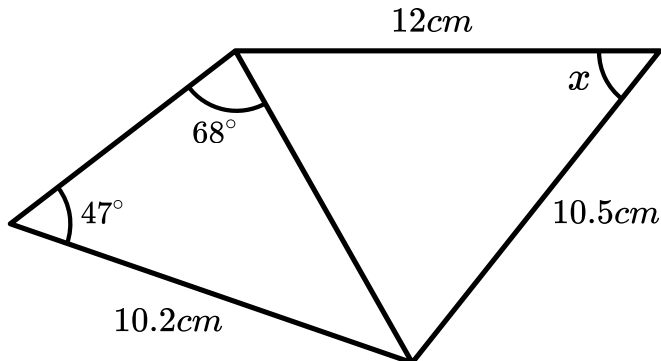
- 15** Emma wants to know the number of rabbits living on an area of farmland. One day Emma captures and tags 24 rabbits. A few days later, she captures 30 rabbits and 8 of them are tagged. Estimate the number of rabbits living on the farmland.

(Total for Question 15 is 2 marks)

- 16** Solve $x^2 \leq x + 20$.

(Total for Question 16 is 3 marks)

- 17** Work out the size of angle x . Give your answer correct to 3 significant figures.



(Total for Question 17 is 4 marks)

18 $f(x) = x^2 + 4$ and $g(x) = 2x - 1$

(a) Find $g^{-1}(x)$

(2)

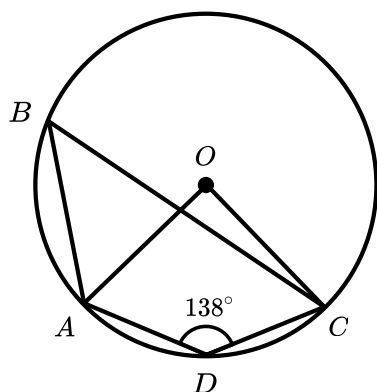
(b) Find $gf(x)$, giving your answer in its simplest form.

(2)

(Total for Question 18 is 4 marks)

(Total for Question 17 is 4 marks)

19 (a) Work out the size of the acute angle AOC.

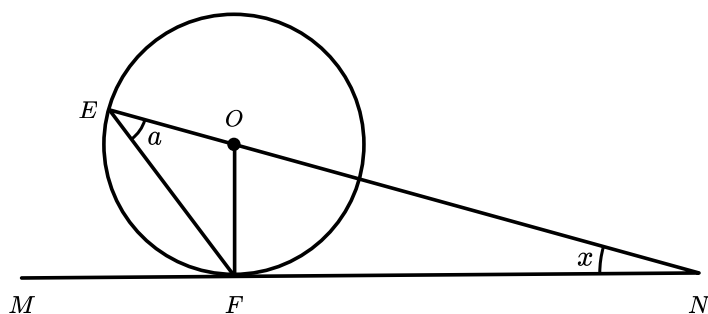


(2)

(b) The points E and F lie on the circumference of the circle.

O is the centre of the circle.

The straight line MN is a tangent to the circle.



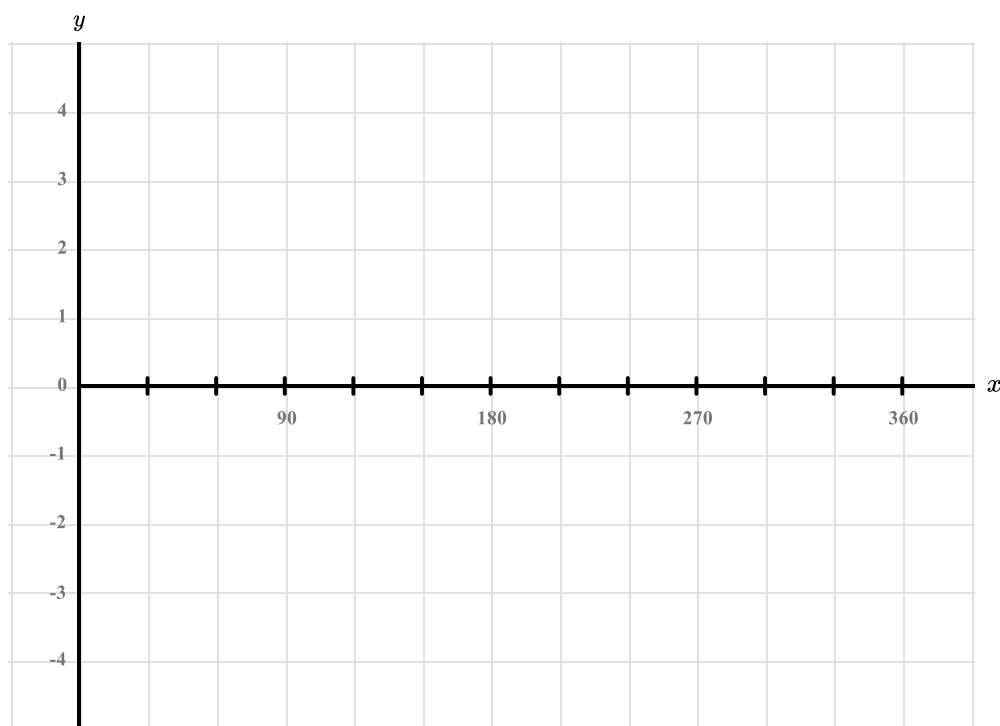
Show that angle $a = 45 - \frac{1}{2}x$

Give a reason for each step of your working.

(4)

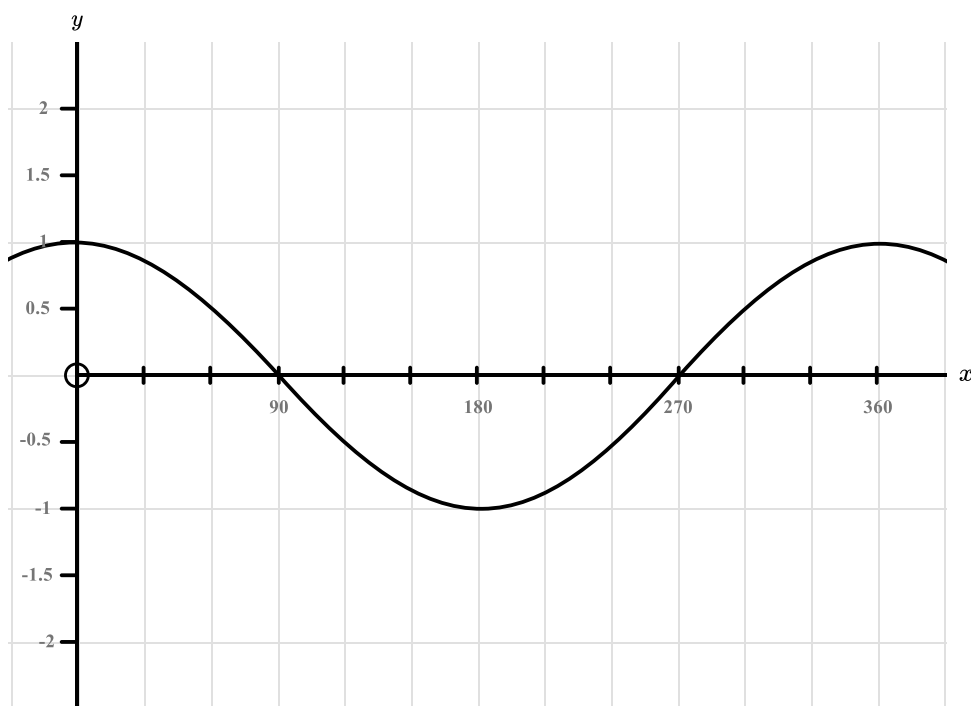
(Total for Question 19 is 6 marks)

20 (a) Sketch the graph of $y = \tan(x)$ for $0^\circ \leq x \leq 360^\circ$.



(1)

(b) Here is the graph of $y = \cos(x)$:



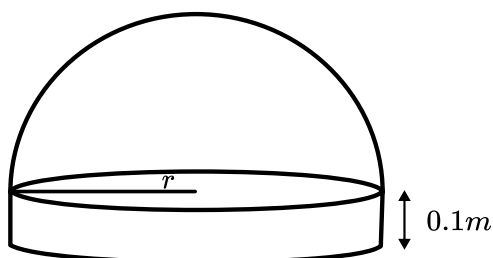
Write down the coordinates of the minimum point of the graph of $y = \cos(x) - 1$ in the range $0^\circ \leq x \leq 360^\circ$.

(2)

(Total for Question 20 is 3 marks)

- 21** A sculpture is formed by placing a hemisphere on top of a cylinder.

$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$



- (a) Show that the volume of the sculpture is given by $\pi r^2(0.1 + \frac{2}{3}r)$

(2)

- (b) The sculpture exerts a force of 800N on the table. The pressure on the table is 2825N/m^2 .

Work out the volume of the sculpture. Give your answer correct to 2 significant figures.

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

----- m^3
(4)

(Total for Question 21 is 6 marks)

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