

Edexcel

GCSE

Mathematics

F

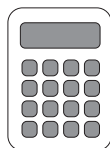
SET B – Paper 3 Foundation Tier (Calculator)

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Time allowed: 1 hour 30 minutes

You must have:

- Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator.



Instructions

- Use **black** ink or black ball-point pen.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may be used.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

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.*
- 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.

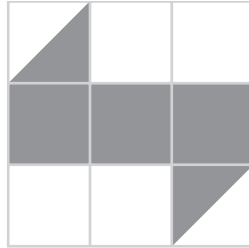
Name:

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages of your working.

- 1** Here is a shape drawn on a grid of squares.



- (a)** Write down the number of lines of symmetry of the shape.

.....
(1)

- (b)** Write down the order of rotational symmetry of the shape.

.....
(1)

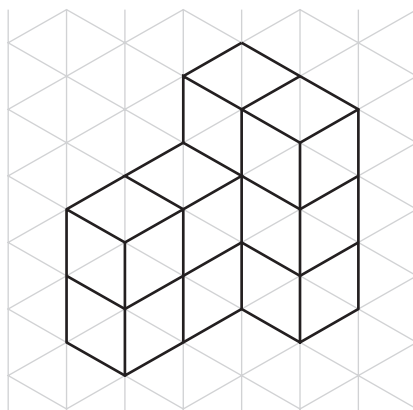
(Total for Question 1 is 2 marks)

- 2** A piece of wood is 20 cm long measured correct to the nearest centimetre.

Write down the interval showing the limits of the length, l .

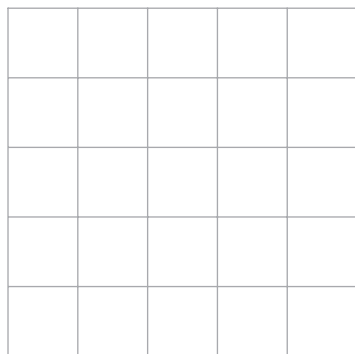
.....
(Total for Question 2 is 2 marks)

- 3 A shape made with 10 centimetre cubes is shown on the isometric grid.

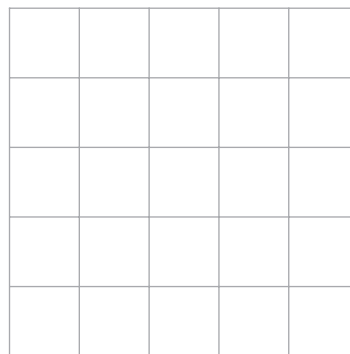


On the grids below draw the plan, side elevation and front elevation.

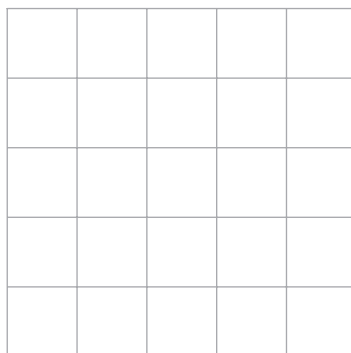
Plan



Front elevation



Side elevation

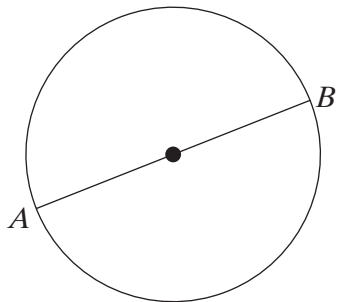


(Total for Question 3 is 3 marks)

4 Work out all the factors of 20.

(Total for Question 4 is 2 marks)

5 Complete the sentence.



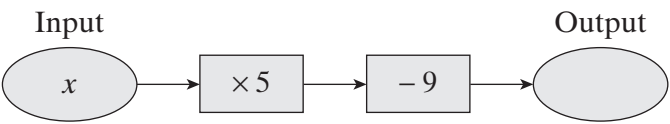
AB is a of the circle.

(Total for Question 5 is 1 mark)

6 Rod has 3 pairs of jeans, 4 T-shirts and 2 jackets.
He always wears jeans, a T-shirt and a jacket.
How many possible different outfits could he wear?

(Total for Question 6 is 2 marks)

7 Here is a number machine.



(a) Work out the output when the input is 5.

(1)

(b) Work out the input when the output is 11.

(2)

(Total for Question 7 is 3 marks)

8 This table shows the entry cost for using a swimming pool.

Stacksbridge Pool				
Open: Monday to Saturday: 6am to 8pm				
Sunday: 8am to 2pm				
	Adult (16 and over)	Senior citizens (60 and over)	Child (5 years to 15 years)	Infant (Under 5)
Peak Monday – Friday 6am to 9am Monday – Friday 5pm to 8pm Saturday and Sunday – All day	£4.50	£4.00	£2.50	£1.00
Off-peak Monday – Friday 9am to 5pm	£3.50	£3.00	£2.00	£1.00

- (a)** Neil is 18 years old and swims each day Monday to Friday from 8am to 9am.

How much does he pay each week?

(2)

- (b)** The Watson family go swimming on Friday at 1pm.

In the family are:

Mr and Mrs Watson who are both 45 years old

Andy who is 17 years old

Edie who is 13 years old

Ben who is 4 years old

Bill who is 68 years old.

How much do they pay altogether?

(3)

- (c)** The swimming pool introduces a 'Leisure Card' that costs £55 a month.

This will allow a holder of the card to swim at anytime.

Assuming that Neil would normally swim for 20 days a month, how much will he save by buying a Leisure Card?

(2)

(Total for Question 8 is 7 marks)

- 9 Here are some coins.



Tom and Jerry divide the coins.

The amount of money they now have is in the ratio 3 : 4

What coins do they each have now?

Tom

Jerry

(Total for Question 9 is 3 marks)

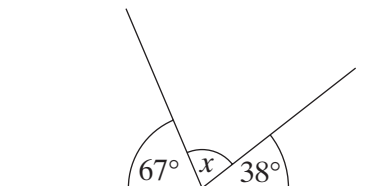
- 10 Here are eight numbers.

3 8 6 9 11 12 5 2

Work out the mean of the numbers.

(Total for Question 10 is 2 marks)

- 11 Work out the size of angle x .



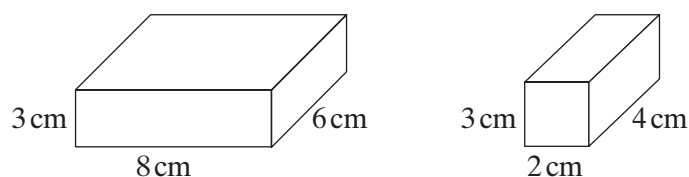
Not drawn
accurately

$x =$ $^{\circ}$

(Total for Question 11 is 2 marks)

12 Large cuboids are 8 cm by 6 cm by 3 cm.

Small cuboids are 2 cm by 4 cm by 3 cm.



(a) Show that the volume of **one** large cuboid is the same as the total volume of **six** small cuboids.

(2)

(b) The large and small cuboids are stacked in alternate layers.

The bottom layer is one large cuboid.

The next layer is made from **six** small cuboids.

The total volume of the stack is 720 cm^3 .

How many of each type of cuboid are used in the stack?

Small cuboids

Large cuboids

(3)

(Total for Question 12 is 5 marks)

13 Cereal is sold in two sizes.

A small packet contains 350 grams and costs 79p

A large box contains 750 grams and costs £1.85

Which size is the best value?

You **must** show your working.

(Total for Question 13 is 3 marks)

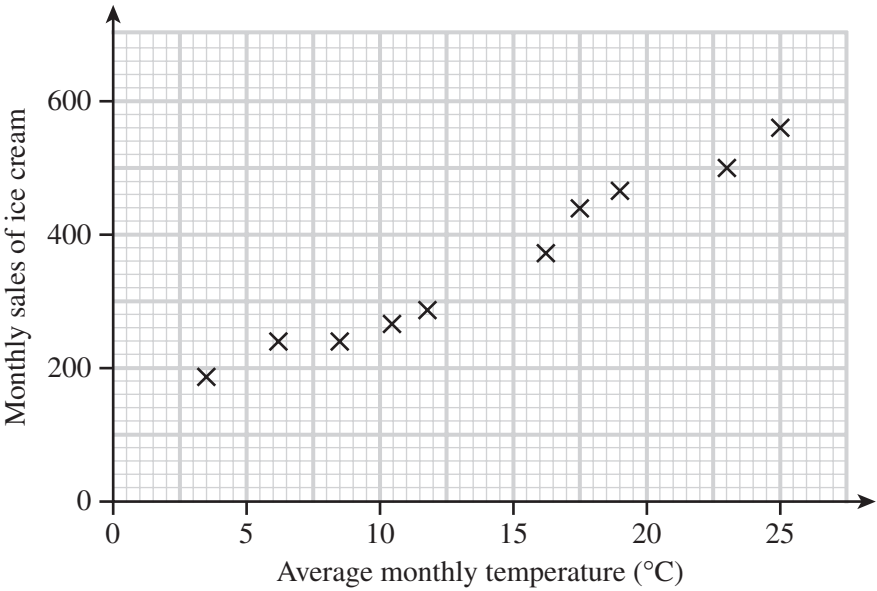
14 The table shows information about three journeys.

Complete the table.

Journey	Distance	Time	Average speed
A	32 km		64 km/h
B		1h 30 mins	50 km/h
C	50 km	50 mins	

(Total for Question 14 is 3 marks)

15 A café owner records the average monthly temperature and monthly sales of ice cream over 10 months.



(a) The scatter graph shows positive correlation.

Write down the relationship between average monthly temperature and monthly sales of ice cream.

.....

.....

(1)

- (b) The average monthly temperature for the next month is predicted to be 22°C.

Use the graph to estimate the sales of ice cream that month.

You **must** show your working.

(2)

(Total for Question 15 is 3 marks)

- 16 A two-digit prime number is one **more** than a square number.

Work out a possible value of the prime number.

(Total for Question 16 is 2 marks)

- 17 £3000 is invested in an account that pays 3% compound interest per year.

How much will be in the account after three years?

(Total for Question 17 is 3 marks)

- 18 (a) Simplify $x^3 \times x^6$

(1)

- (b) Simplify $x^{12} \div x^2$

(1)

(Total for Question 18 is 2 marks)

- 19 Here are two column vectors.

$$\mathbf{a} = \begin{pmatrix} 2 \\ 3 \end{pmatrix} \quad \mathbf{b} = \begin{pmatrix} 6 \\ -2 \end{pmatrix}$$

Work out $2\mathbf{a} + \mathbf{b}$

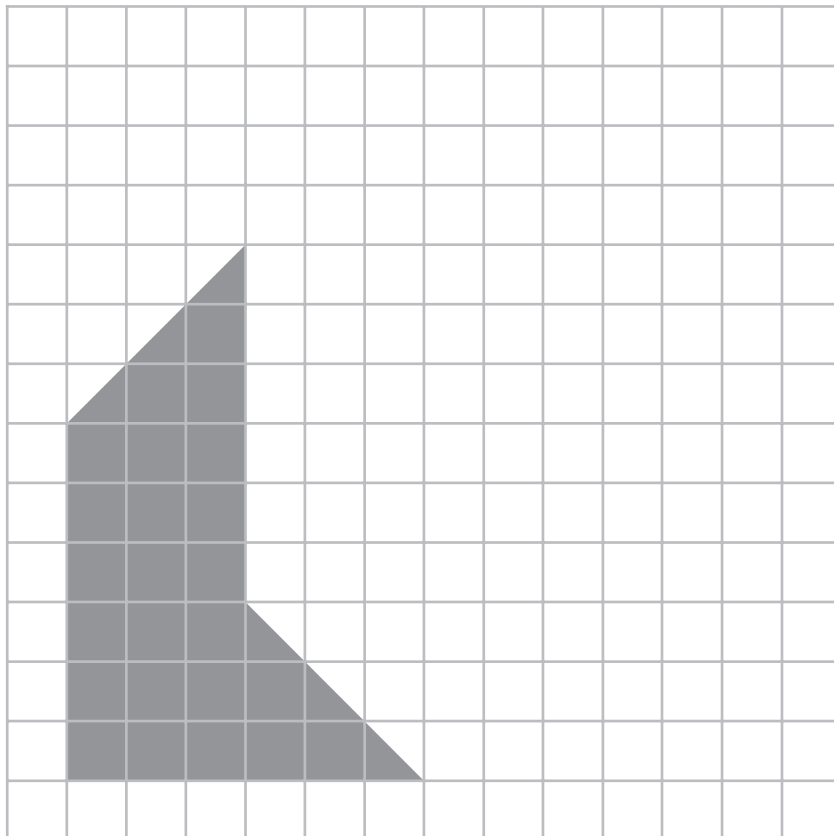
(Total for Question 19 is 2 marks)

- 20 Work out the next two terms of this quadratic sequence.

3 5 8 12 17 23

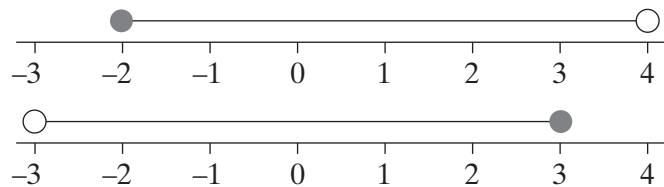
(Total for Question 20 is 2 marks)

- 21 Enlarge the shape by a scale factor of $\frac{1}{3}$



(Total for Question 21 is 2 marks)

22 Two inequalities are shown.



Write down the integers that are in **both** inequalities.

(Total for Question 22 is 2 marks)

23 Here are the equations of four lines.

Line A: $y = 3x - 4$

Line B: $y = 4x - 3$

Line C: $y = 3x + 3$

Line D: $y = -4x - 4$

(a) Which two lines are parallel?

(1)

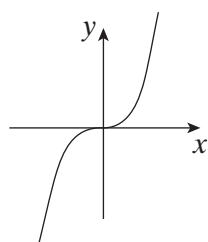
(b) Which two lines intersect on the y -axis?

(1)

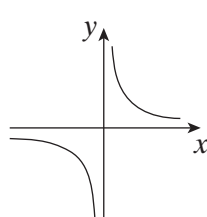
(Total for Question 23 is 2 marks)

24 Match each graph to the equations.

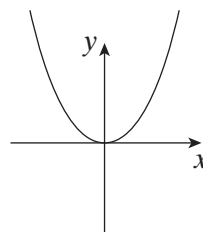
Graph A



Graph B



Graph C



$y = x^2$ matches graph

$y = x^3$ matches graph

$y = \frac{1}{x}$ matches graph

(Total for Question 24 is 2 marks)

25 A large candle exerts a pressure of 2 Pa on its base.

As the candle burns the pressure decreases.

After 2 hours the pressure is 0.5 Pa

Work out the rate of change of pressure.

Give your answer in Pa/hour.

(Total for Question 25 is 2 marks)

26 Solve the simultaneous equations

$$3x + 2y = 2$$

$$x + 4y = 9$$

(Total for Question 26 is 3 marks)

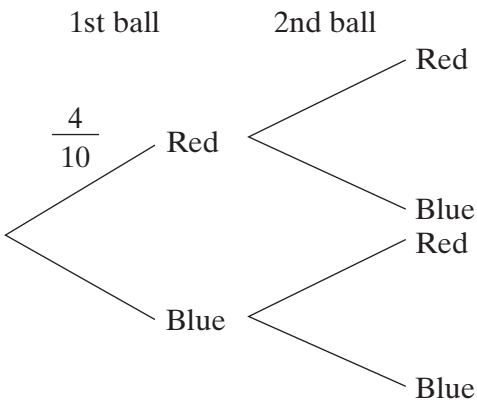
27 A bag contains 10 balls.

4 of the balls are red and 6 are blue.

A ball is taken at random from the bag.

The ball is replaced and another ball is taken at random from the bag.

(a) Complete the tree diagram.



(1)

(b) Use the tree diagram, or otherwise, to work out the probability that both balls were the same colour.

(3)

(Total for Question 27 is 4 marks)

28 The quadratic equation $x^2 + x - 6 = 0$ will factorise to $(x - 2)(x + 3) = 0$

Write down the solutions to the equation.

(Total for Question 28 is 2 marks)

29 (a) Factorise $x^2 - 25$

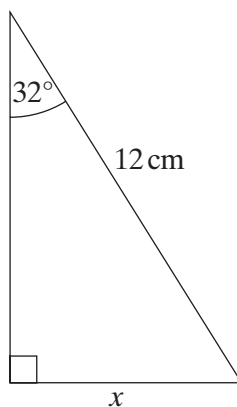
(1)

(b) Show that $(x + 2)^2 - (x + 1)^2 \equiv 2x + 3$

(3)

(Total for Question 29 is 4 marks)

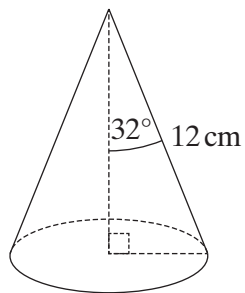
30 (a) Show that the length x in the triangle below is 6.36 cm to 2 decimal places.



Not drawn
accurately

(1)

- (b) A cone has a half vertical angle of 32° and a slant height l of 12 cm.



Work out the curved surface area of the cone.

The formula for the curved surface area of a cone is:

Curved surface area = $\pi \times \text{radius of base} \times \text{slant height}$

..... cm²
(2)

(Total for Question 30 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS