# Collins

# AQA GCSE Mathematics

# SET B – Paper 3 Foundation Tier

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## Materials

### For this paper you must have:

- calculator
- mathematical instruments

## Instructions

• Use black ink or black ball-point pen. Draw diagrams in pencil.

- Answer **all** questions.
- You must answer the questions in the space provided.
- In all calculations, show clearly how you work out your answer.

## Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may use additional paper, graph paper and tracing paper.

Name:

Time allowed: 1 hour 30 minutes

Answer all questions in the spaces provided.

Here is a shape drawn on a grid of squares.

1 (a) Circle the number of lines of symmetry of the shape. [1 mark] 0 1 2 3 4 1 (b) Circle the order of rotational symmetry of the shape. [1 mark] 0 2 3 1 4 A piece of wood is 20 cm long measured correct to the nearest centimetre. 2 [1 mark] Circle the correct interval showing the limits of the length, *l*. 19.5 < *l* < 20.5 19.5 ≤ *l* < 20.5 19.5 *< l* ≤ 20.5 19.5 ≤ *l* ≤ 20.5 3 Circle the number that is **not** a prime number. [1 mark]

7

9

1

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3

4 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.

#### [3 marks]



Front elevation



#### Side elevation

5 Work out all the factors of 20.

[2 marks]



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

Stacksbridge Pool Open: Monday to Saturday: 6 am to 8 pm Sunday: 8 am to 2 pm					
	Adult (16 and over)	Senior citizens (60 and over)	Child (5 years to 15 years)	Infant (Under 5)	
Peak					
Monday – Friday 6 am to 9 am	64 50	£4.00	£2.50	£1.00	
Monday – Friday 5 pm to 8 pm	£4.50				
Saturday and Sunday – All day					
Off-peak	(2.50	(2.00	(2.00	C1 00	
Monday – Friday 9 am to 5 pm	£3.50	£3.00	£2.00	±1.00	

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

How much does he pay each week?

[2 marks]

Answer £ (b) The Watson family go swimming on Friday at 1 pm. 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 marks]

Answer £

9

9

9 (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?



**11** Here are eight numbers.



[2 marks]

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13 (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<sup>3</sup>.

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

Small cuboids

Large cuboids

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.

[3 marks]

[3 marks]

Answer

15 The table shows information about three journeys.

Complete the table.

Journey	Distance	Time	Average speed
А	32 km		64 km/h
В		1h 30 mins	50 km/h
С	50 km	50 mins	

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



16 (a) The scatter graph shows positive correlation.

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

[1 mark]

16 (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 marks]
	Answer	
17	A two-digit prime number is one <b>more</b> than a square number.	
	Work out a possible value of the prime number.	
		[2 marks]
	Answer	
18	£3000 is invested in an account that pays 3% compound interest per year.	
	How much will be in the account after three years?	
		[3 marks]
	Answer £	

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									[1 mark]
19	<b>(b)</b> Simplify x	$x^{12} \div x^2$			Answe	r			
					Answe	r			[1 mark]
20	Here are two co	olumn vect	tors.						
	$a = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$	b =	(6 (-2)						
	Work out 2a +	b.							
									[2 marks]
					Answe	r			
21	I Work out the next two terms of this quadratic sequence.								
	3	5	8	12	17	23			
									[2 marks]
	Answer			anc	d				

[2 marks]



Two inequalities are shown.



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

[2 marks]

24 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

#### [1 mark]



#### 25 Match each graph to the equations.



Answer Pa/hour

#### 3x + 2y = 2

x + 4y = 9

#### [3 marks]

x = \_\_\_\_\_ y = \_\_\_\_\_

28 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 mark]



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

Answer

[3 marks]

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The quadratic equation  $x^2 + x - 6 = 0$  will factorise to (x - 2)(x + 3) = 029 Circle the correct solutions to the equation. [1 mark] x = 2 and 3x = 2 and -3x = -2 and 3 x = -2 and -3(a) Factorise  $x^2 - 25$ 30 [1 mark] Answer **(b)** Show that  $(x + 2)^2 - (x + 1)^2 \equiv 2x + 3$ 30 [3 marks] (a) Show that the length x in the triangle below is 6.36 cm to 2 decimal places. 31 [1 mark] Not drawn 32° accurately 12 cm x

**31** (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 =  $\pi \times \text{radius of base} \times \text{slant height}$ 

**32** The diagram shows a right angled triangle.

One of the other angles is 60°.



Not drawn accurately

Circle the **exact** value of sin 60°.

[1 mark]



 $\frac{\sqrt{3}}{2}$ 

0.866

 $\frac{2}{\sqrt{3}}$