

## MR BRADDER MATHS



First name			
Last name			
Centre number		Candidate number	

## INSTRUCTIONS

- Use black ink. You may use an HB pencil for graphs and diagrams.
- Complete the boxes above with your name, centre number and candidate number.
- Answer all the questions.
- Read each question carefully before you start to write your answer.
- Where appropriate, your answers should be supported with working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided.
- Additional paper may be used if required but you must clearly show your candidate number, centre number and question number(s).
- Do not write in the barcodes.

## INFORMATION

- The total mark for this paper is 105
- The marks for each question are shown in brackets [ ].
- This document consists of 20 pages.

1 George recorded all the different types of tree in a wood.



(a) His results are shown in this table.

(b) Complete the bar chart to show George's results.



Type of tree



 **3** (a) Complete each statement by writing the missing value in the box.

4



[1]



```
(b) Work out 2^3 \times \sqrt{49}
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7 The front and side elevations of a prism, with a pentagon as its cross section, are drawn on this one-centimetre square grid.



(b) Calculate the volume of the prism.

(b)		cm <sup>3</sup> [	3]
(U)	•••••		[2]

- 8 Darren has these 20 crayons in a box:
  - 8 blue
  - 4 red
  - 5 black
  - 3 green.

(a) He chooses a crayon at random from the box.



(b) Darren buys 16 more crayons that are either blue or red.He puts these in the box with the 20 crayons he already has.

He now picks a crayon at random from the box. The probability that he picks a **blue** crayon is evens.

How many red crayons did he buy?

(b) .....**[3]** 



(c) State an assumption that has been made when the graph was drawn.

 [1]

(b) What is the distance from Sarah's home to the shopping centre?

(b) ..... km [1]

(c) Between which two times did Sarah stop? Explain how the graph shows this. From ...... to ...... shown on the graph by .....

	Cupcake ingredients
	Makes 20 cupcakes
120g	flour
140g	butter
4 egg	IS
60 g d	cocoa powder
50 ml	of water

(a) How many eggs does he need to make 60 cupcakes?

(a) .....**[1]** 

(b) How much butter is needed to make 5 cupcakes?

(b) ..... g **[2]** 

(c) Rashid has 210 g of cocoa powder and p	elenty of the other ingredients.	
He says that he car make at least 15 cu	ocakes there correct?	
Explain your reasoning.		
	[;	3]









Tim pays for fitting at a rate of £7.50 per square metre, with any fraction of a square metre rounded up.

Work out the total cost of the tiles and fitting.





EF and FB are straight lines.



## Complete the following statements.

$X = 55^{\circ}$	° because	 	 	 
y = 70°	because	 	 	 . [2]

20 Solve by factorising.



21 In a survey, 50 people were asked whether they have a car (C) or a bicycle (B).

The Venn diagram shows some of the results.



 $\frac{1}{2}$   $\frac{\sqrt{3}}{2}$   $\frac{1}{3}$   $\frac{\sqrt{3}}{3}$ 

The ratio of those that only have a car to those that only have a bicycle is 2 : 1.

One of the 50 people is chosen at random.

Find the probability that they have a bicycle.

You must show your working.

.....[5]

[1]

1 4

22 Circle the value of sin 30°.

23 In this question, assume all dimensions are in centimetres.



(i) Write an expression for the perimeter of her rectangle.

Give your answer in its simplest form.

(i).....**[2]** 

(iii) An expression for the **area** of her rectangle is  $6ab + 6b^2$ .

Factorise this expression fully.

(ii) .....**[2]** 

24 Imran joins two tiles together as shown below.One tile is a regular hexagon and the other tile is a regular pentagon.



(a) Show that angle *a* is 132°.

.....[3]

- 25 A bag contains 4 red counters and 3 blue counters only. Jack picks a counter at random and then replaces it. Jack then picks a second counter at random.
  - (a) Complete the tree diagram.



[2]

(b) Work out the probability that Jack picks two red counters.

