GCSE

3300U20-1

WEDNESDAY, 14 JUNE 2023 – MORNING

MATHEMATICS

UNIT 2: CALCULATOR – ALLOWED

FOUNDATION TIER

1 hour 30 minutes plus your additional time allowance

A CALCULATOR WILL BE REQUIRED FOR THIS EXAMINATION

Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	3	
2.	3	
3.	3	
4.	3	
5.	2	
6.	4	
7.	2	
8.	4	
9.	3	
10.	5	
11.	4	
12.	3	
13.	3	
14.	4	
15.	3	
16.	3	
17.	5	
18.	3	
19.	5	
Total	65	

ADDITIONAL MATERIALS

A ruler, a protractor and a pair of compasses may be required.

ITEMS INCLUDED WITH QUESTION PAPER

A separate Formula List.

A separate Diagram Booklet.

Models for Question 4 (a) and Question 17.

The Diagram Booklet MUST be handed in to the invigilators and sent for marking.

INSTRUCTIONS TO CANDIDATES

Use black ink, black ball – point pen, black felt tip or your usual method.

Write your name, centre number and candidate number in the spaces on the front cover.

Answer ALL questions.

Write your answers in the spaces provided.

If you run out of space, use the additional page(s) at the back of the booklet.
Question numbers must be given for the work written on the additional page(s).

Take π as $3{\cdot}14$ or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part – question.

In question 10, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

1. (a) Calculate the sum of 8732 and 6482

[1 mark]

continued on the next page . . .

Question 1 continued

1. (b) What number, when multiplied by 69, gives the answer 345?

[1 mark]

continued on the next page . . .

Question 1 continued

1. (c) Calculate the difference between

9756 and 8932

[1 mark]

2. Choose the best expression from those given below to complete the following sentences.

IMPOSSIBLE
UNLIKELY
AN EVEN CHANCE
LIKELY
CERTAIN

(a) It is _____ that I will eat or drink something this week.

[1 mark]

(b) It is _____ that I will roll a 7 when a fair six – sided dice is thrown.

[1 mark]

(c) It is _____ that I will win a raffle if I buy one ticket and 400 are sold.

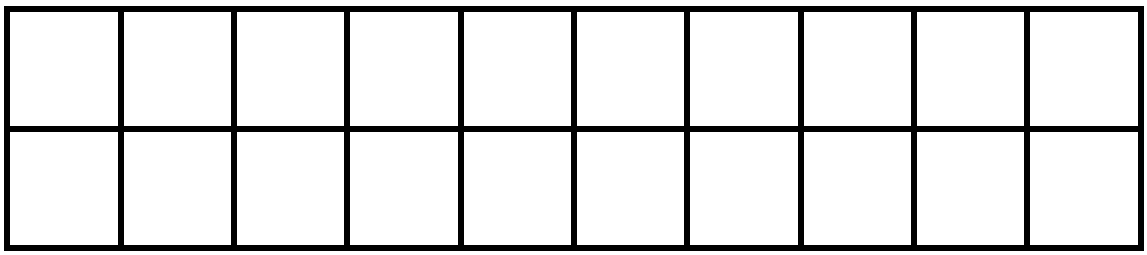
[1 mark]

3. (a) Circle ALL the fractions that are NOT equal to $\frac{2}{9}$

$\frac{22}{99}$	$\frac{4}{18}$	$\frac{12}{19}$	$\frac{16}{72}$	$\frac{42}{79}$

[2 marks]

(b) Shade $\frac{1}{5}$ of the diagram below.



[1 mark]

4. Ask for the model for Question 4.

The model is labelled shape A.

Look at the diagram for Question 4 in the separate Diagram Booklet.

The diagram shows shape B and shape C.

Write down the special name of each of the shapes.

(a) Shape A is a:

_____

[1 mark]

(b) Shape B is a:

_____

[1 mark]

(c) Shape C is a:

_____

[1 mark]

5. Find the median of the numbers listed below.

22 13 29 20 17 15 11

[2 marks]

6. **Look at the table for Question 6 in the separate Diagram Booklet.**

In the table, the letters *d*, *e*, *f* and *g* represent different numbers.

The total for each row is given at the side of the table.

Find the values of *d*, *e*, *f* and *g*.

***d* =** _____

***e* =** _____

***f* =** _____

***g* =** _____

_____

_____

_____

_____

_____

_____

[4 marks]

7. (a) What is the special name given to an angle greater than 0° and less than 90° ?

_____

_____

[1 mark]

(b) What is the special name of a quadrilateral with rotational symmetry of order four?

_____

_____

[1 mark]

8. (a) Describe IN WORDS the rule for continuing each of the following sequences.

(i) 62, 51, 40, 29, ……..

Rule: _____

_____

_____

[1 mark]

(ii) 2, 8, 32, 128, ……..

Rule: _____

_____

_____

[1 mark]

continued on the next page . . .

Question 8 continued

8. (b) Solve the following equations.

(i) $4x = 124$

[1 mark]

(ii) $w + 6{\cdot}9 = 110$

[1 mark]

9. (a) Calculate $\frac{3}{8}$ of 142

Write your answer as a decimal.

_____

_____

_____

[2 marks]

(b) Evaluate $3 \cdot 4^2 + \sqrt{31 \cdot 36}$

Write your answer as a decimal.

_____

_____

_____

[1 mark]

10. IN THIS QUESTION, YOU WILL BE ASSESSED ON THE QUALITY OF YOUR ORGANISATION, COMMUNICATION AND ACCURACY IN WRITING.

Steve has a bag containing 10 discs.

Some of the discs are red. The others are blue.

If a disc is selected at random, the probability of selecting a red disc is $\frac{2}{5}$

10 more blue discs are added to Steve's bag.

He now selects one disc at random.

What is the probability that the disc Steve selects is red?

You must show all your working.

[3 marks + 2 marks OCW]

11. (a) Look at the diagram for Question 11 (a) in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

The diagram shows shape *ABCD*.

In the diagram,

Angle *BAD* = 97°

Angle *ADC* = 115°

Angle *ABC* = 42°

Angle *BCD* = *x*°

Calculate the value of *x*.

[2 marks]

continued on the next page . . .

Question 11 continued

11. (b) Look at the diagram for Question 11 (b) in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

The diagram shows an isosceles triangle, labelled PQR.

In the diagram,

$PR = PQ$

Angle $RPQ = 78^\circ$

Angle $PQR = y^\circ$

Calculate the value of y.

[2 marks]

12. (a) Which ONE of the following fractions can be written as a recurring decimal? Circle your answer.

$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{6}$	$\frac{1}{8}$	$\frac{1}{10}$

_____

_____

_____

[1 mark]

(b) Which THREE numbers from the list below are prime numbers?

27 31 35 39 43 47 51 55

The three prime numbers are:

_____ **,** _____ **and** _____

[2 marks]

13. **Alice is 9 years younger than Isaac.**

Nadia is one third of Isaac's age.

Dewi is twice Nadia's age.

Alice is 27 years old.

What are the ages of Isaac, Nadia and Dewi?

_____

_____

Isaac is _____ years old.

Nadia is _____ years old.

Dewi is _____ years old.

[3 marks]

14. (a) Write down the next two numbers in the following sequence.

-26 -20 -14 -8 _____ _____

[2 marks]

continued on the next page . . .

Question 14 continued

14. (b) $f = 3g + 2h$

Calculate the value of f when

$g = 9{\cdot}3$ **and** $h = -13{\cdot}6$

[2 marks]

15. **A box contains different – coloured balls. Some are red, some are blue and the others are green.**

Look at Diagram 1 for Question 15 in the separate Diagram Booklet.

Diagram 1 is a bar chart.

The bar chart shows how many balls of each colour are in the box.

Look at Diagram 2 for Question 15 in the separate Diagram Booklet.

Diagram 2 is a pie chart.

Draw an accurate pie chart to compare the number of coloured balls in the box.
Part of the pie chart has been completed for you.

[3 marks]

16. A journey of 45 miles is travelled in 1 hour 15 minutes.

Calculate the average speed of this journey.

Give your answer in mph.

[3 marks]

17. Ask for the model for Question 17.

The model is NOT made to scale.

The model represents a solid metal cuboid.

The solid metal cuboid has dimensions

4 cm, 5 cm and 20 cm.

The cuboid is melted down. The metal is used to make solid cubes, each with sides 3 cm.

How many complete cubes will be made?

You must show all your working.

[5 marks]

18. (a) Look at the diagram for Question 18 (a) in the separate Diagram Booklet.
The diagram is NOT drawn to scale.

(i) What is the bearing of point *B* from point *A*?

_____

[1 mark]

(ii) What is the bearing of point *A* from point *B*?

_____

[1 mark]

continued on the next page . . .

Question 18 continued

18. (b) Points P, Q, R and S are all 5 km from point X.

P is on a bearing of 005° from X.

Q is on a bearing of 100° from X.

R is on a bearing of 240° from X.

S is on a bearing of 355° from X.

Which TWO of the four points P, Q, R and S are closest to each other?
You can use the SPACE FOR SKETCH provided for Question 18 (b) in the separate Diagram Booklet to help you.
Point X has been drawn for you.

The two points closest to each other are

_____ and _____

[1 mark]

19. A bus going to a WELSH HERITAGE conference has 43 people on board.

There are 38 students, 4 tutors and a driver on the bus.

At the conference, each student will attend a session on LANGUAGE, a session on HISTORY or both sessions.

- All the students will attend at least one session.
- 18 students will attend both sessions.
- 25 students will attend the session on HISTORY.
- The tutors and driver will not attend either of the sessions.

continued on the next page . . .

Question 19 continued

19. (a) Look at the diagram for Question 19 (a) in the separate Diagram Booklet.
The diagram is an incomplete Venn diagram.

Complete the Venn diagram to show this information.

The universal set, ε , contains all of the 43 people on the bus.

[3 marks]

continued on the next page . . .

Question 19 continued

19. (b) One of the people on the bus is chosen at random.

What is the probability that this person will attend the session on LANGUAGE?

[2 marks]

END OF PAPER

TOTAL 65 MARKS

Question number	Additional pages, if required. Write the question number(s) in the left - hand margin.

Question number	Additional pages, if required. Write the question number(s) in the left - hand margin.

GCSE

3300U20-1

WEDNESDAY, 14 JUNE 2023 – MORNING

MATHEMATICS

UNIT 2: CALCULATOR – ALLOWED

FOUNDATION TIER

The Diagram Booklet MUST be handed in to the invigilators and sent for marking.

Diagram Booklet

Surname: _____

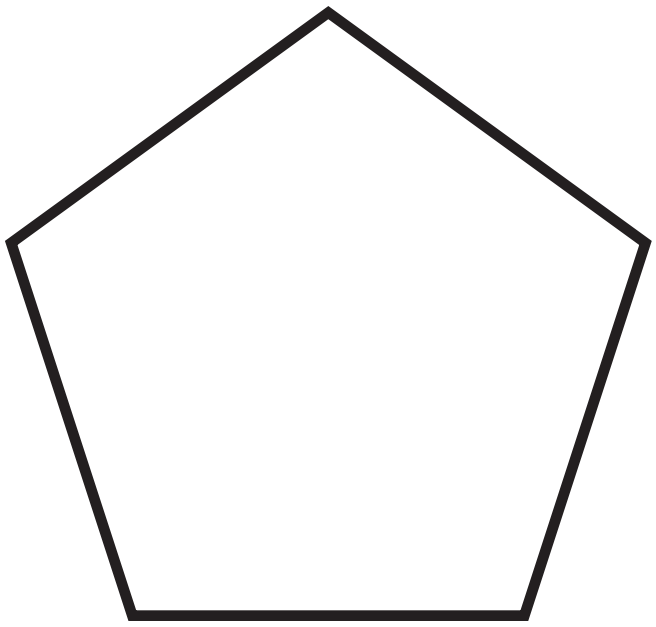
First name(s): _____

Centre Number: _____

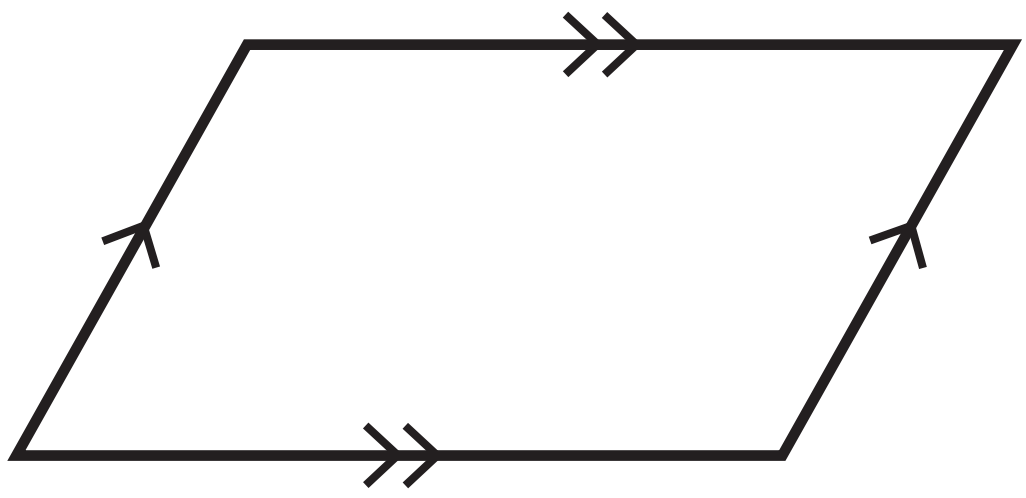
Candidate Number: 0 _____

Question 4

Shape B



Shape C



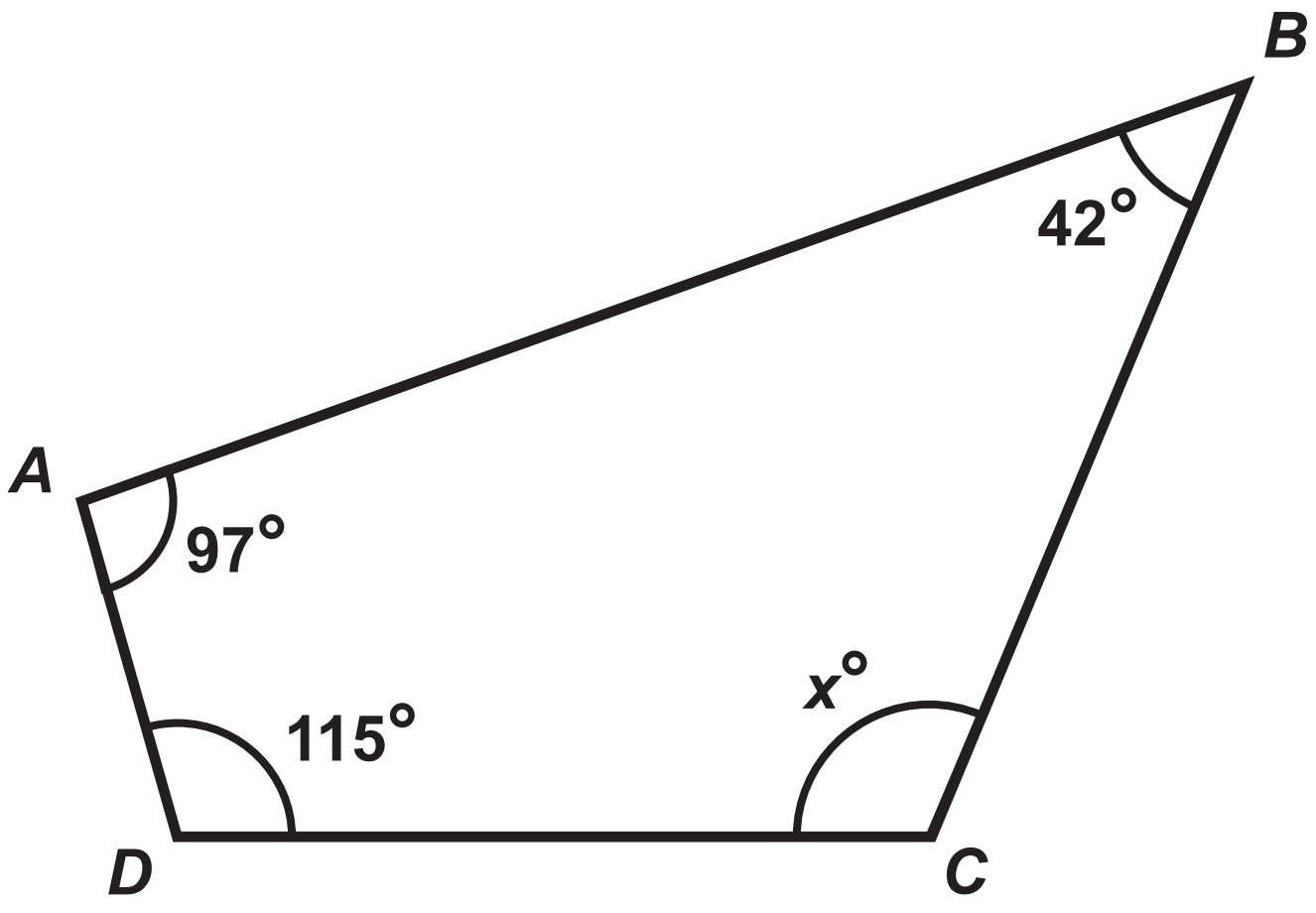
Question 6

Table

d	*d*	*d*	*d*	120
e	*d*	*d*	*d*	107
e	*e*	*f*	*f*	114
d	*e*	*f*	*g*	100

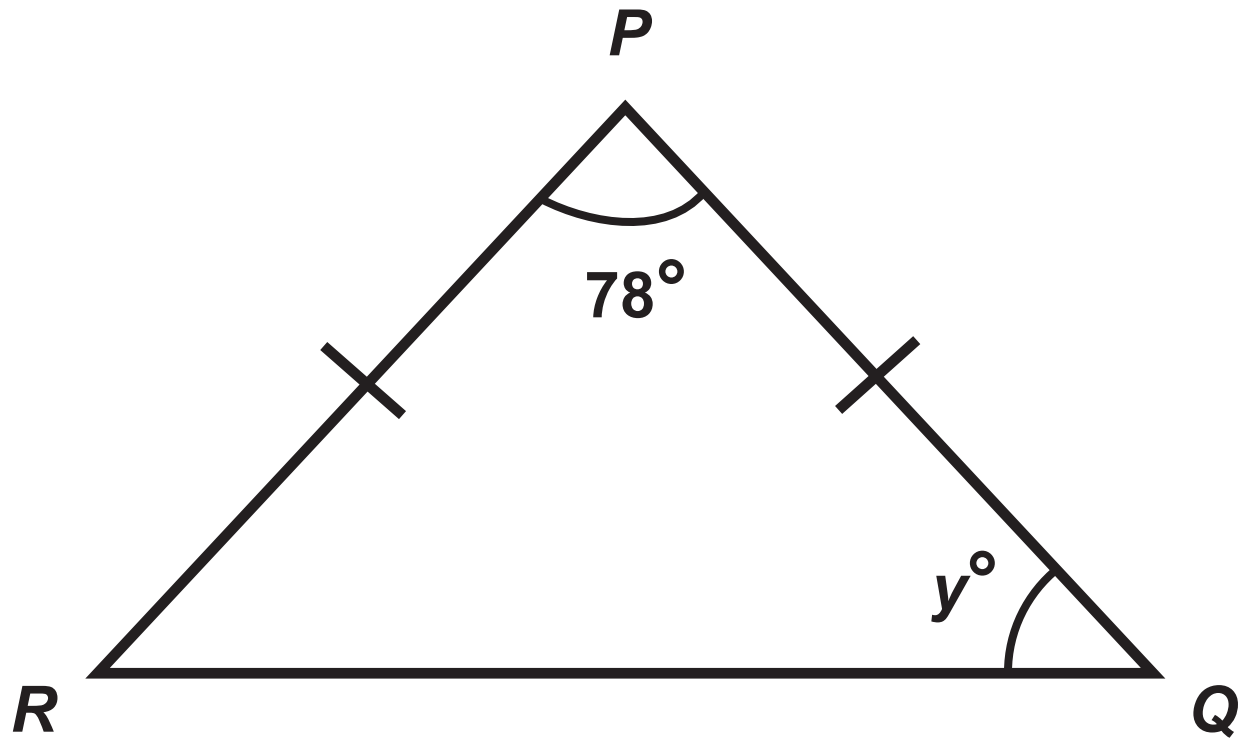
Question 11 (a)

Diagram NOT drawn to scale



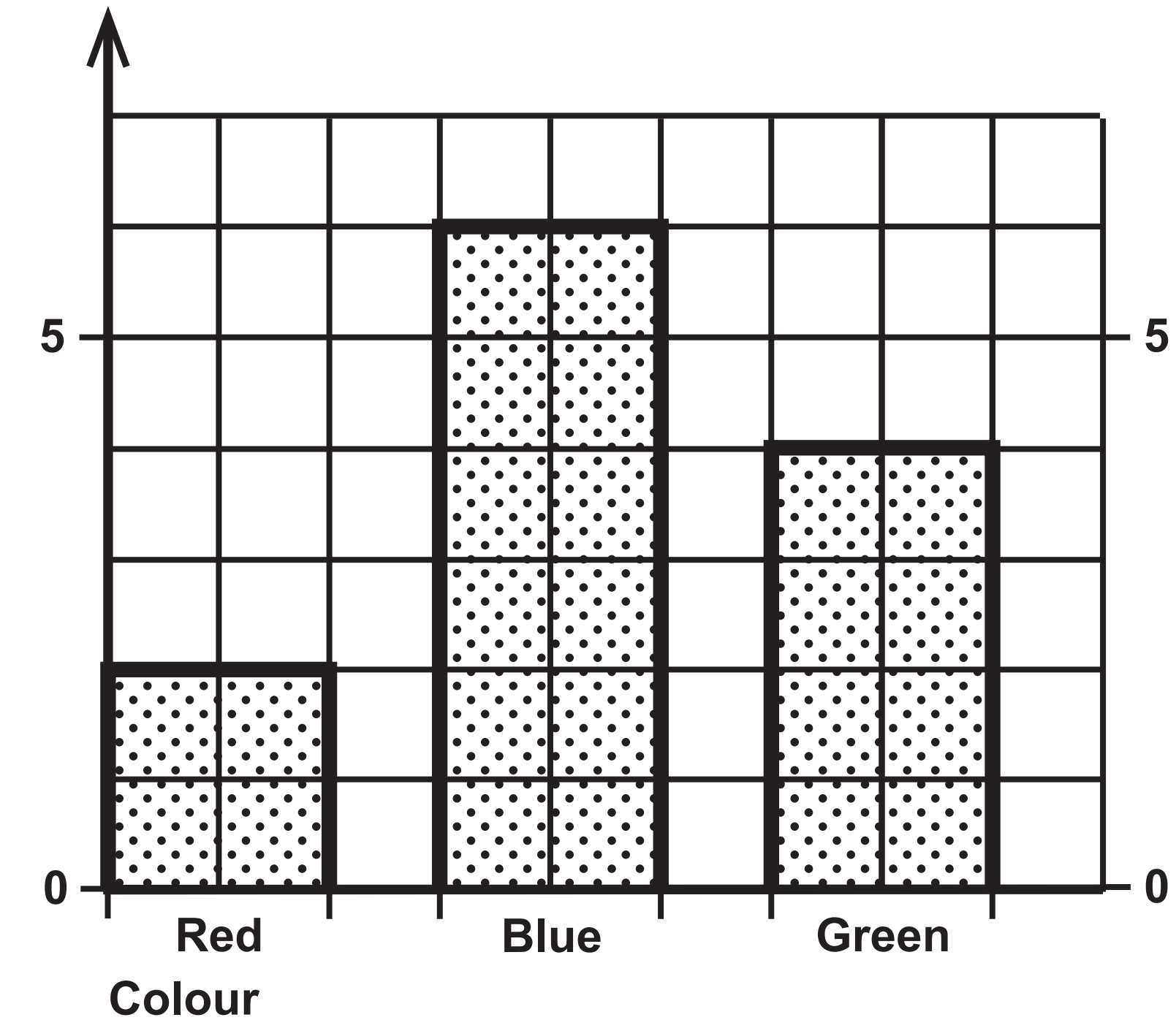
Question 11 (b)

Diagram NOT drawn to scale



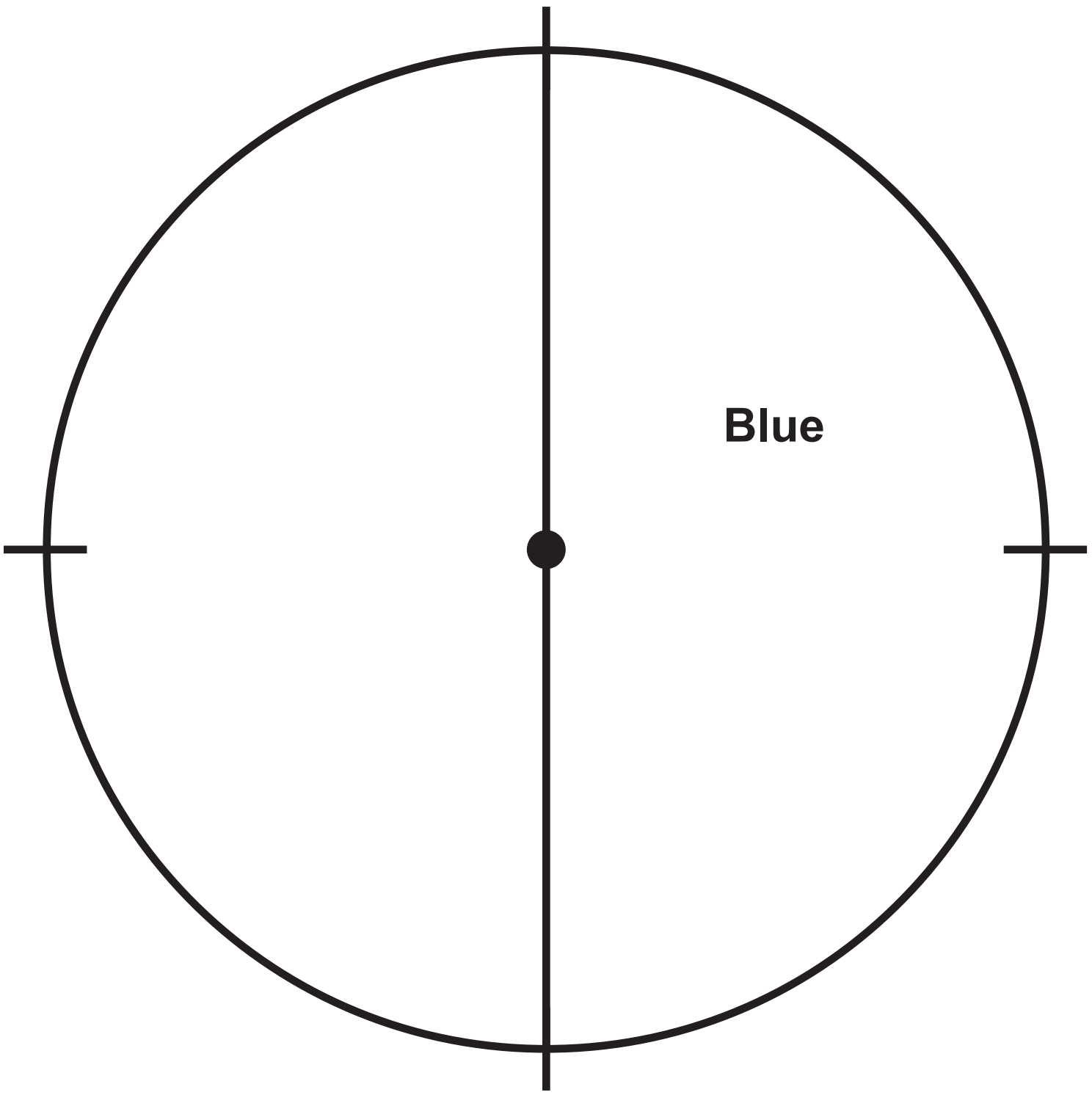
Question 15

Diagram 1



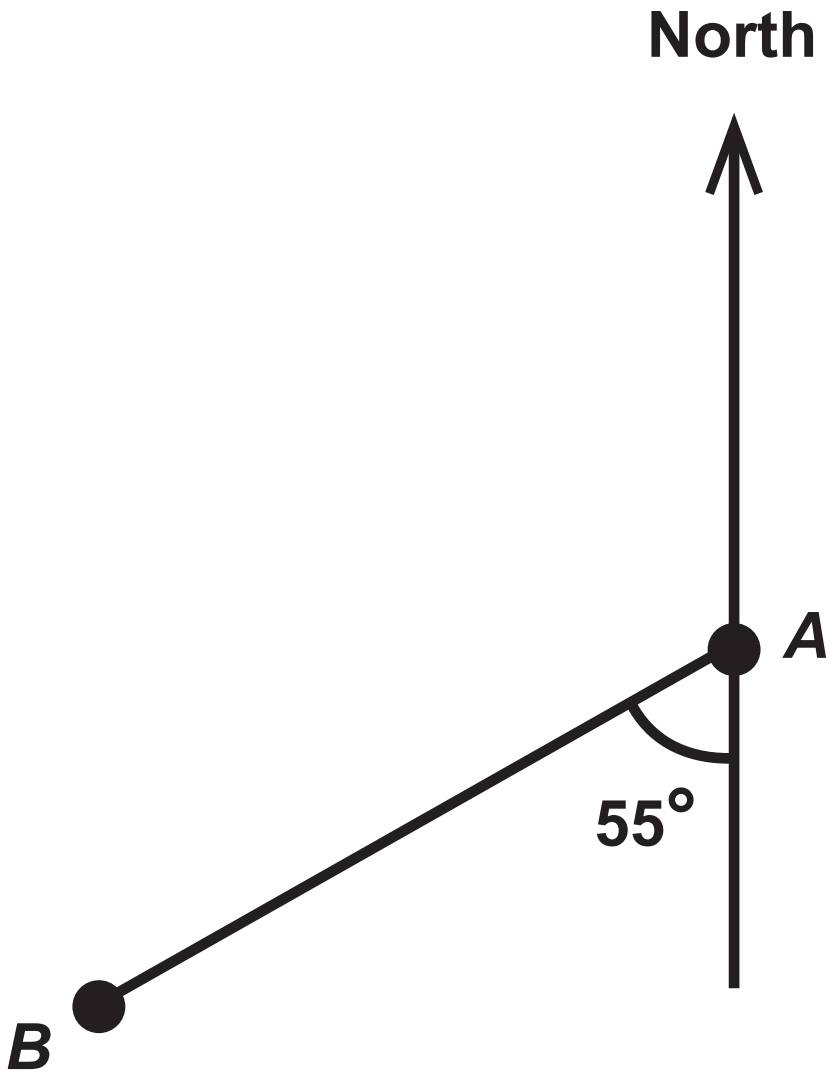
Question 15

Diagram 2



Question 18 (a)

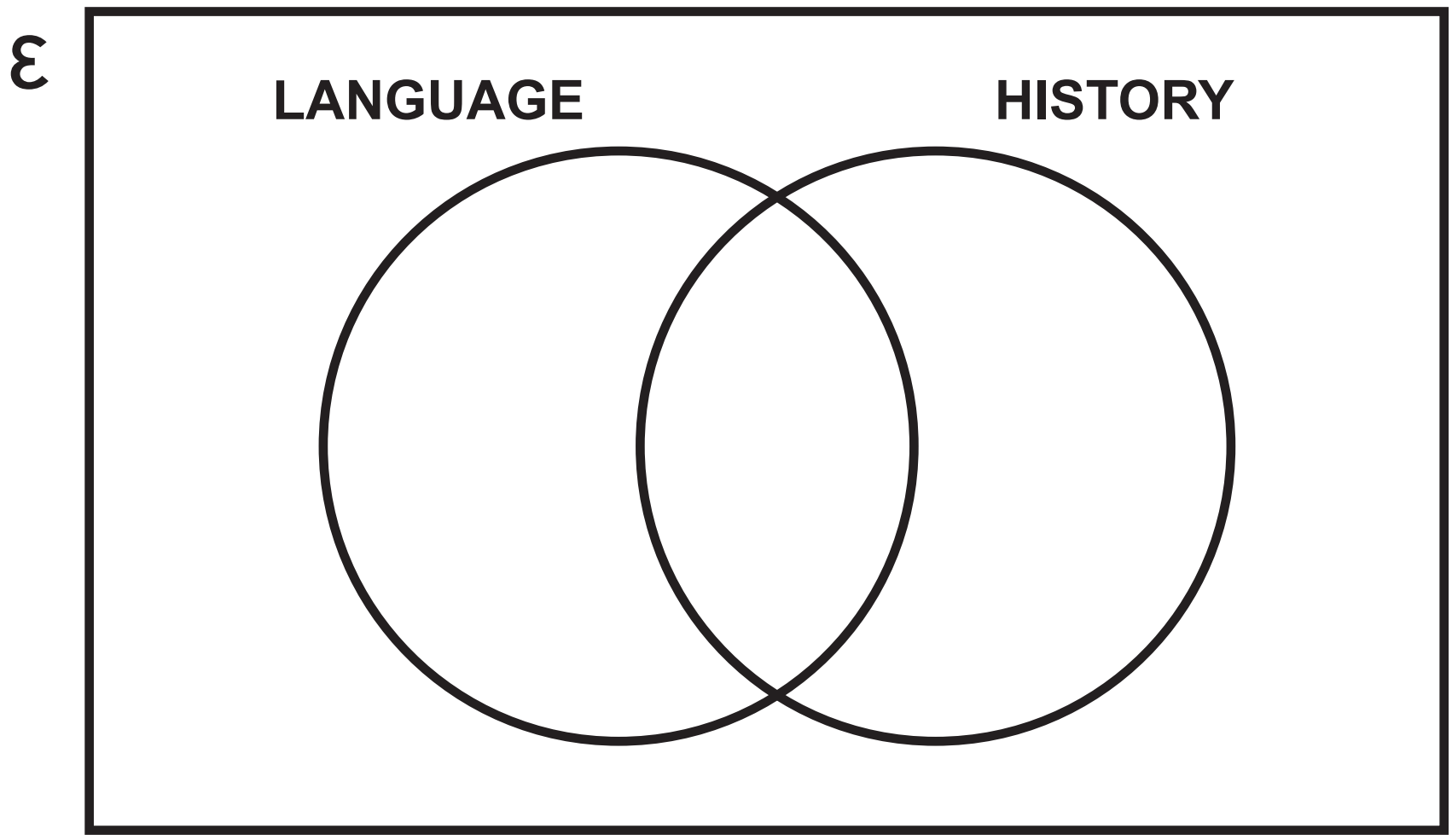
Diagram NOT drawn to scale



Question 18 (b)

SPACE FOR SKETCH

Question 19 (a)



GCSE
MATHEMATICS
and
NUMERACY

FORMULA LIST
FOUNDATION TIER
GCSE

You must not write on these formula pages.

Anything you write on these formula pages will gain NO credit.

Formula List – Foundation Tier

Area of trapezium $= \frac{1}{2}(a + b)h$