



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	

(Turn over)

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.

(Turn over)

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 3.14 or use the π button on your calculator.

(Turn over)

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.

(Turn over)

5

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

[1 mark]

continued on the next page . . .

(Turn over)

Question 1 continued

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

[1 mark]

continued on the next page . . .

(Turn over)

Question 1 continued

- 1. (c) Calculate the difference between
9756 and 8932**

[1 mark]

(Turn over)

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]

continued on the next page . . .

(Turn over)

Question 2 continued

2. (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]

(Turn over)

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]

(Turn over)

- 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]

continued on the next page . . .

(Turn over)

Question 4 continued

4. (b) Shape B is a:

[1 mark]

(c) Shape C is a:

[1 mark]

(Turn over)

5. Find the median of the numbers listed below.

22 13 29 20 17 15 11

[2 marks]

(Turn over)

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 .

$d =$ _____

$e =$ _____

$f =$ _____

$g =$ _____

(Turn over)

[illegible]

[4 marks]
(Turn over)

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]

(Turn over)

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

(i) 62, 51, 40, 29, ...

Rule: _____

[1 mark]

continued on the next page . . .

(Turn over)

Question 8 (a) continued

8. (a) (ii) 2, 8, 32, 128, ...

Rule: _____

[1 mark]

continued on the next page . . .

(Turn over)

Question 8 continued

8. (b) Solve the following equations.

(i) $4x = 124$

[1 mark]

continued on the next page . . .

(Turn over)

Question 8 (b) continued

8. (b) (ii) $w + 6 \cdot 9 = 110$

[1 mark]

(Turn over)

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

Write your answer as a decimal.

[2 marks]

continued on the next page . . .

(Turn over)

Question 9 continued

9. (b) Evaluate $3 \cdot 4^2 + \sqrt{31.36}$

Write your answer as a decimal.

[1 mark]

(Turn over)

**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 $\frac{2}{5}$**

continued on the next page . . .

(Turn over)

Question 10 continued

**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.

(Turn over)

25

[illegible]

[3 marks + 2 marks OCW]
(Turn over)

- 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,

$$\text{Angle } BAD = 97^\circ$$

$$\text{Angle } ADC = 115^\circ$$

$$\text{Angle } ABC = 42^\circ$$

$$\text{Angle } BCD = x^\circ$$

Calculate the value of x .

(Turn over)

[2 marks]

continued on the next page . . .

(Turn over)

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,

$$**$PR = PQ$**$$

$$**\text{Angle } RPQ = 78^\circ**$$

$$**\text{Angle } PQR = y^\circ**$$

Calculate the value of y .

(Turn over)

29

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

[2 marks]
(Turn over)

- 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]

continued on the next page . . .

(Turn over)

Question 12 continued

12. (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]

(Turn over)

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]

(Turn over)

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

-26 -20 -14 -8 _____ _____

[2 marks]

continued on the next page . . .

(Turn over)

Question 14 continued

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

Calculate the value of f when

$g = 9.3$ and $h = -13.6$

[2 marks]

(Turn over)

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.

continued on the next page . . .

(Turn over)

Question 15 continued

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.

(Turn over)

[3 marks]

(Turn over)

**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.

(Turn over)

40

[3 marks]

(Turn over)

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.

(Turn over)

[illegible]

(Turn over)

[illegible]

(Turn over)

[5 marks]

(Turn over)

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 . . .

(Turn over)

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 .

continued on the next page . . .

(Turn over)

Question 18 (b) continued

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]

(Turn over)

**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.**

continued on the next page . . .

(Turn over)

Question 19 continued

- **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 . . .

(Turn over)

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, $\mathcal{E}$, contains all of the 43 people on the bus.

(Turn over)

[3 marks]

continued on the next page . . .

(Turn over)

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?**

(Turn over)

[2 marks]

END OF PAPER

TOTAL 65 MARKS

(Turn over)

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

[illegible]

(Turn over)

[illegible]



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MATHEMATICS

**UNIT 2: CALCULATOR – ALLOWED
FOUNDATION TIER**

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

Diagram Booklet

Surname: _____

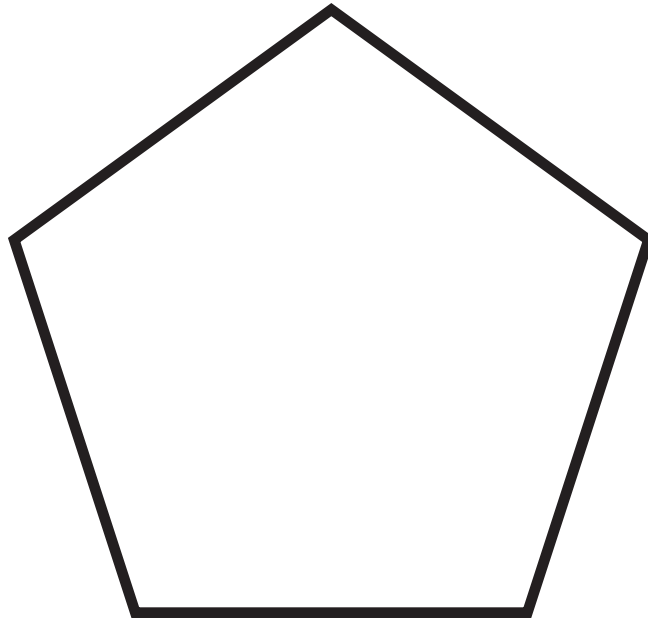
First name(s): _____

Centre Number: _____

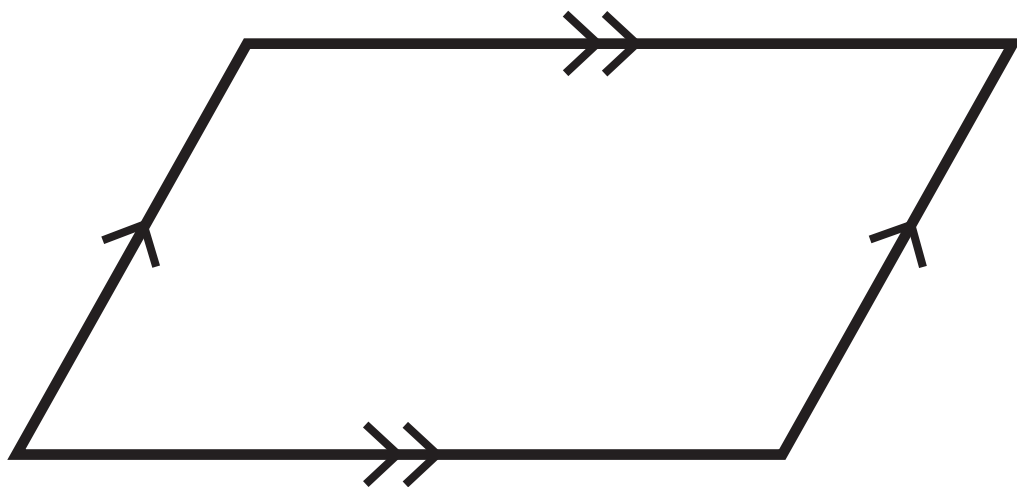
Candidate Number: 0 _____

Question 4

Shape B



Shape C



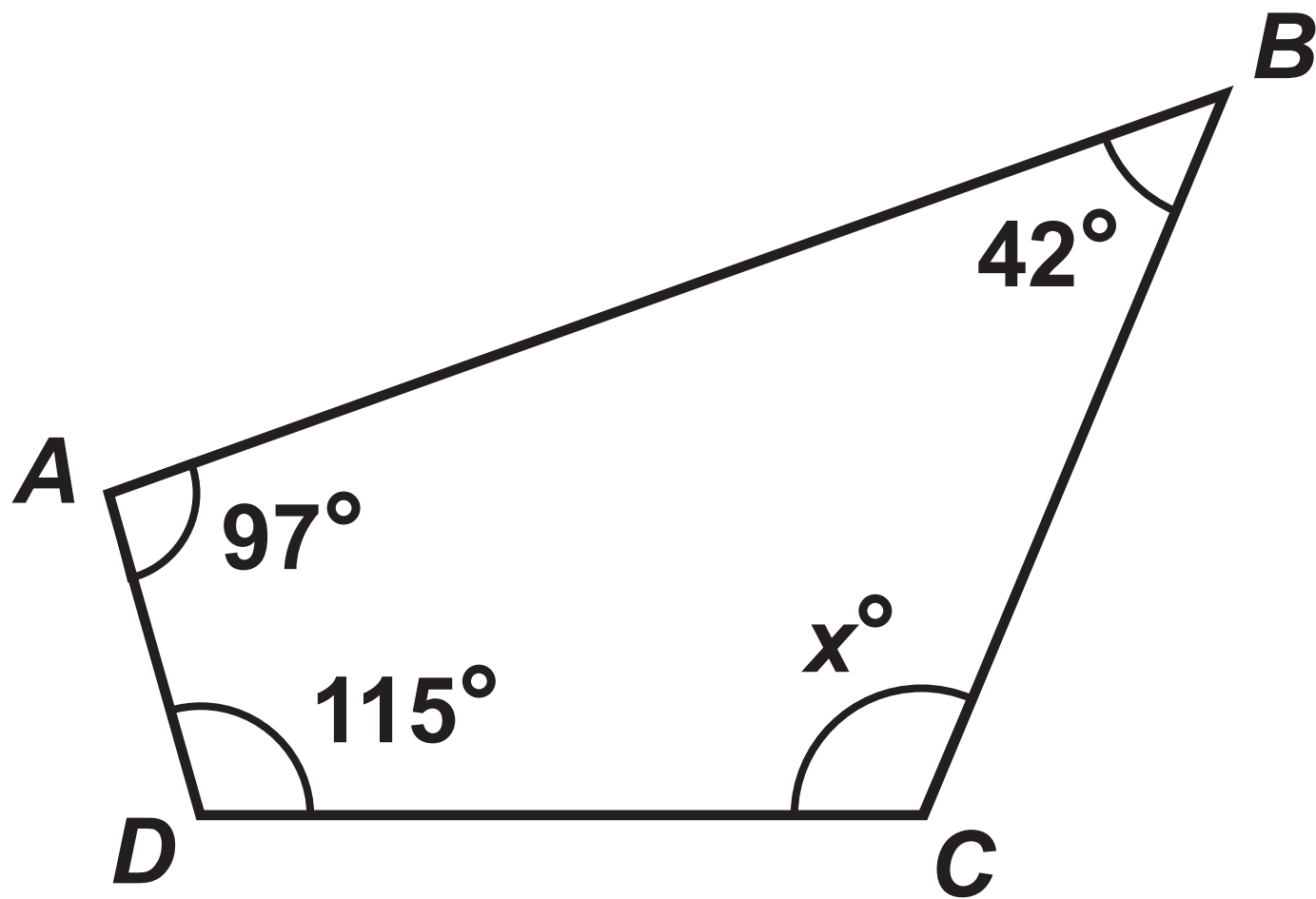
Question 6

Table

<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	120
<i>e</i>	<i>d</i>	<i>d</i>	<i>d</i>	107
<i>e</i>	<i>e</i>	<i>f</i>	<i>f</i>	114
<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	100

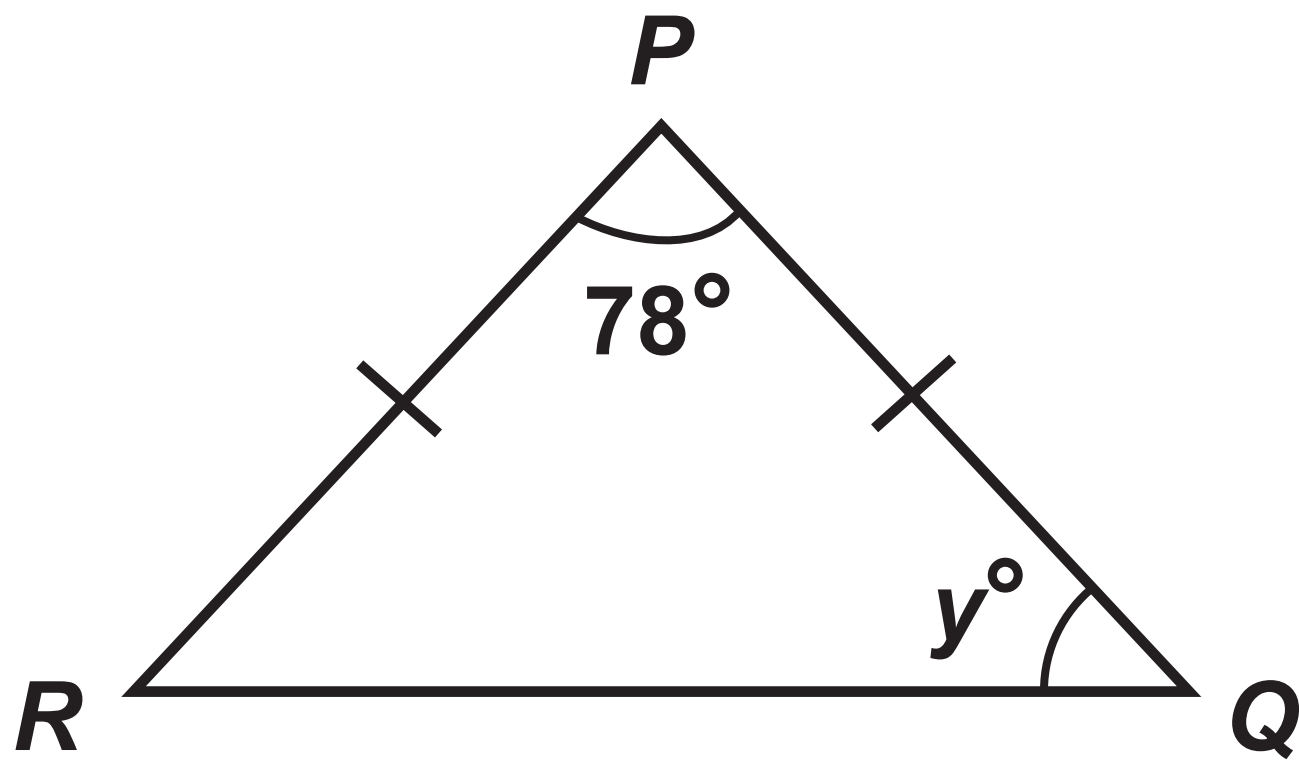
Question 11 (a)

Diagram NOT drawn to scale



Question 11 (b)

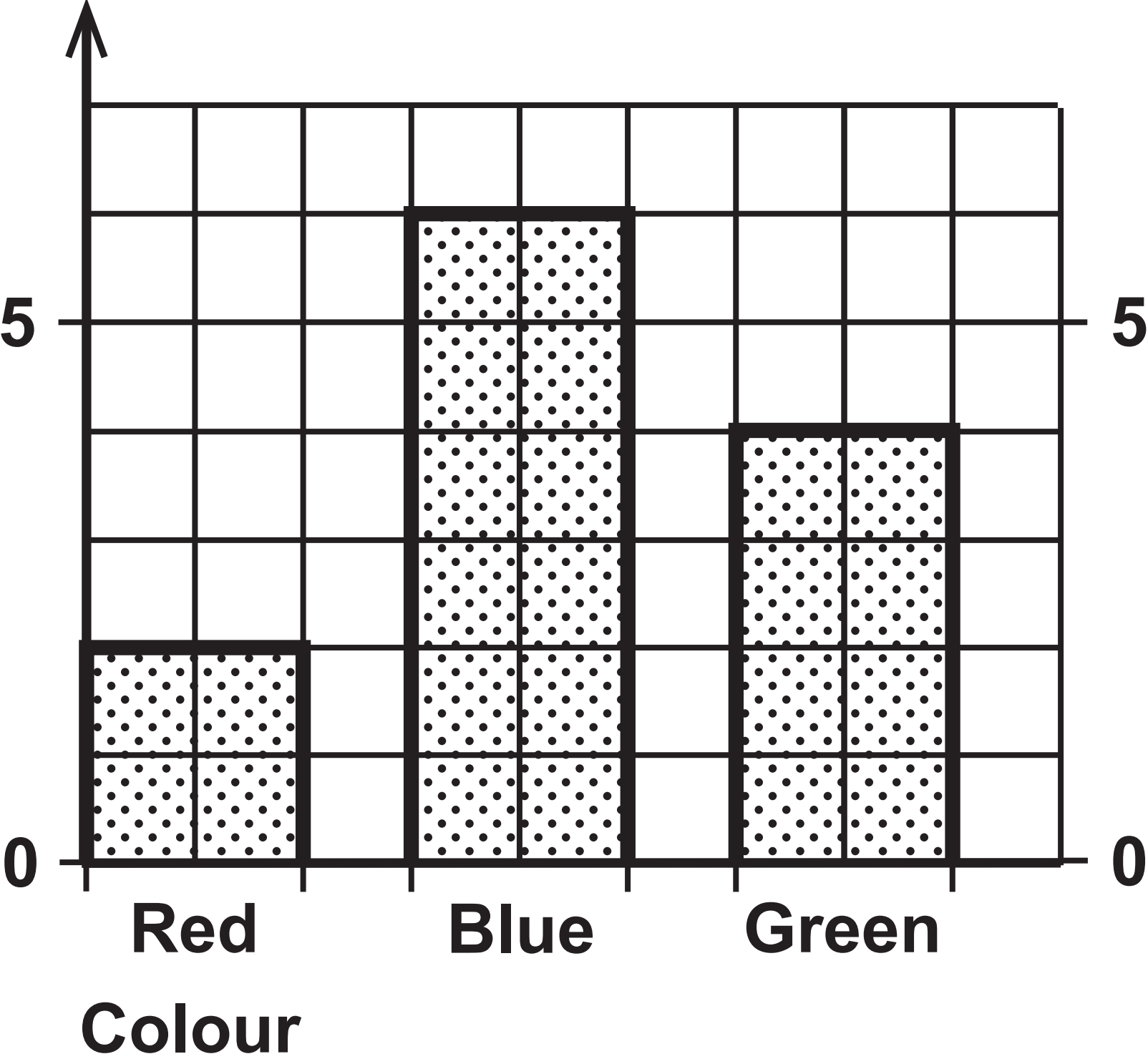
Diagram NOT drawn to scale



Question 15

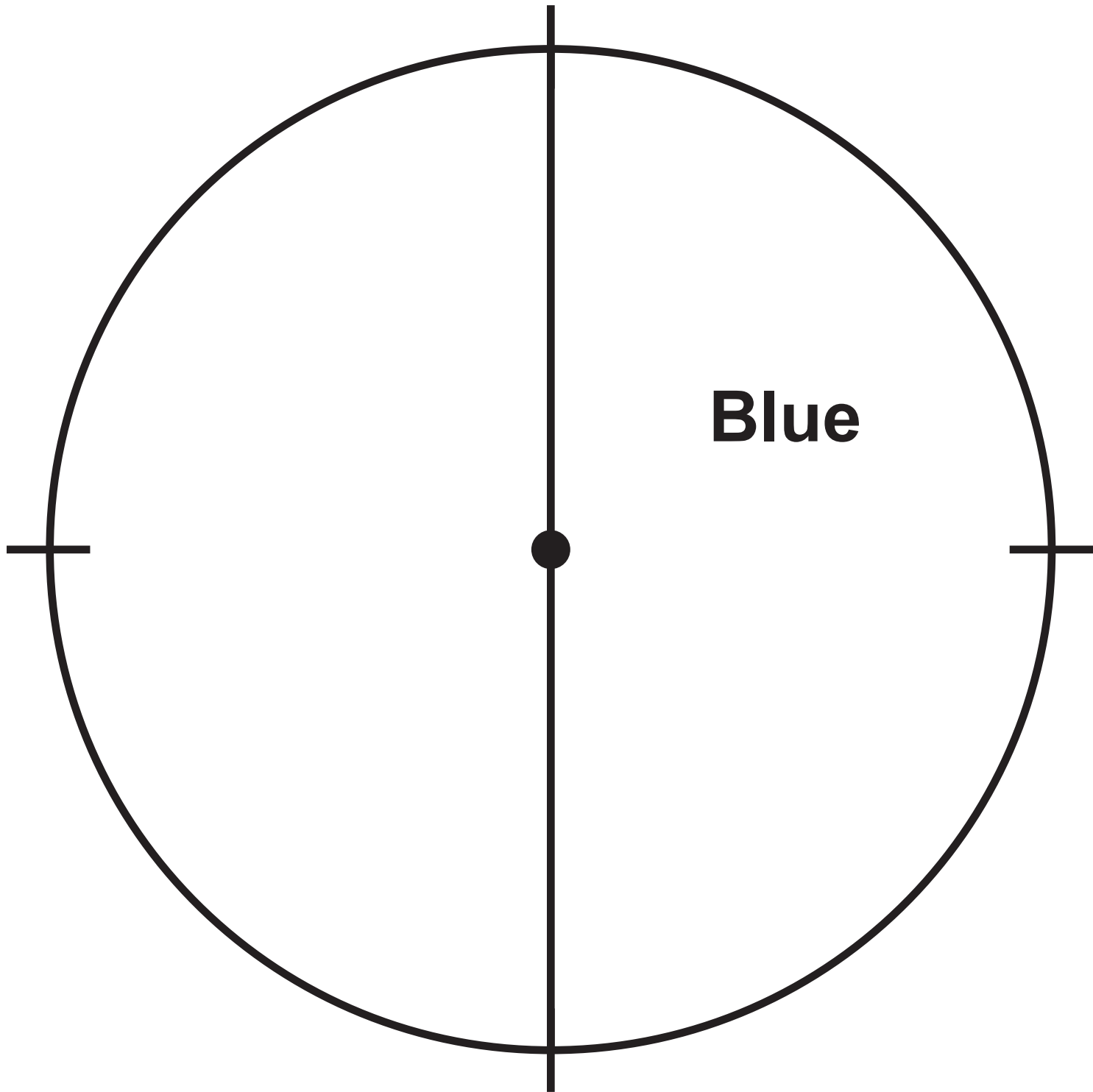
Diagram 1

Number of balls



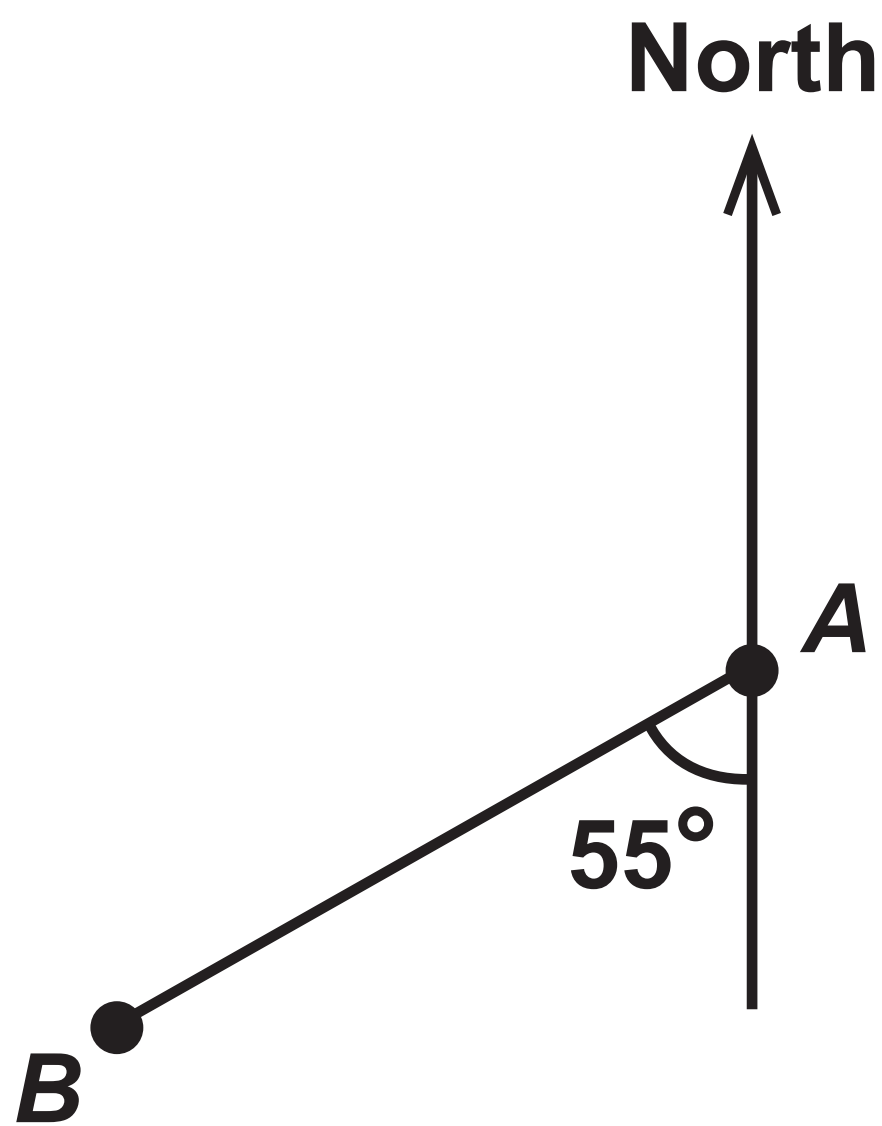
Question 15

Diagram 2



Question 18 (a)

Diagram NOT drawn to scale

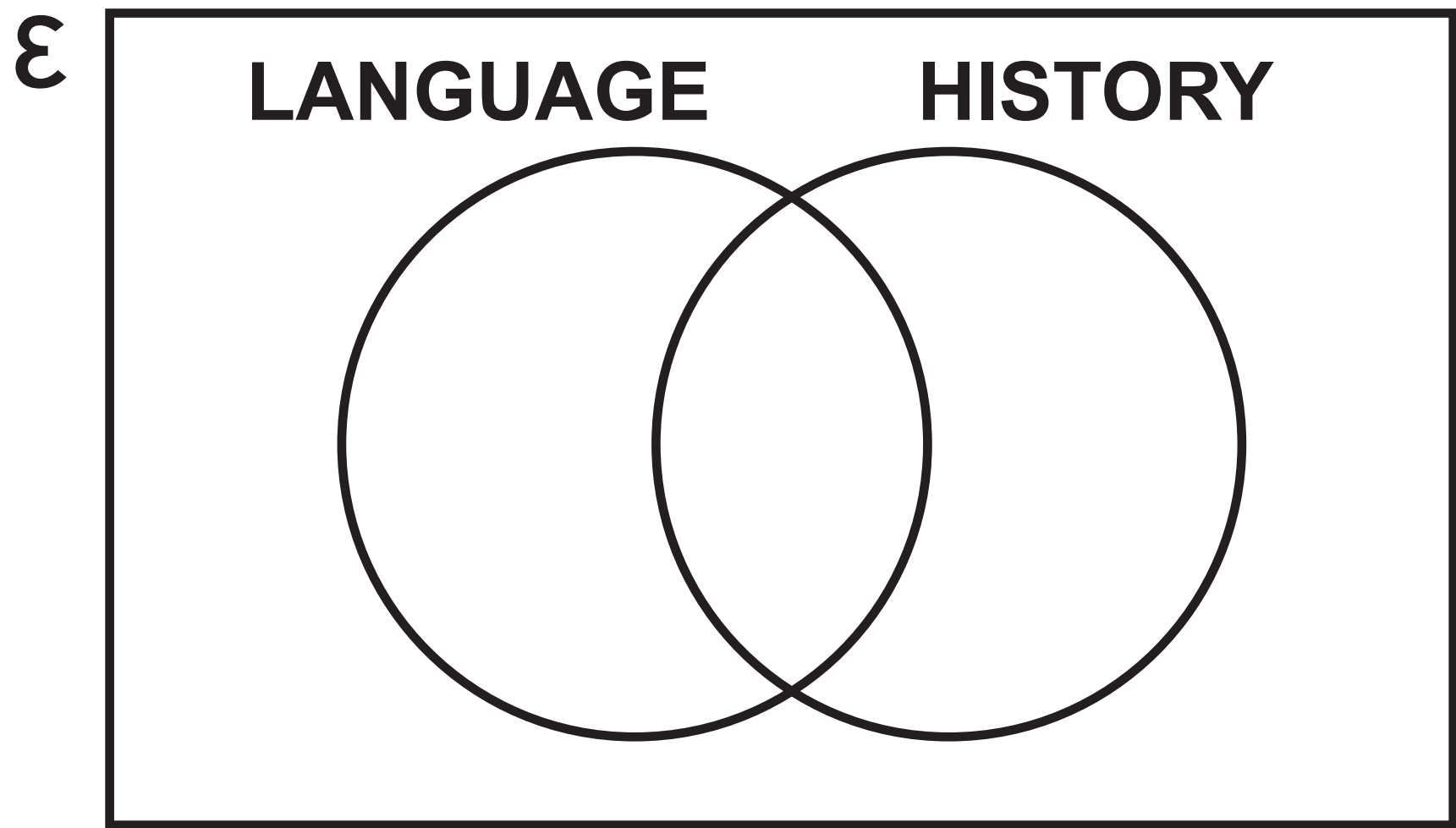


Question 18 (b)

SPACE FOR SKETCH

•
x

Question 19 (a)



**GCSE
MATHEMATICS
and
NUMERACY**



**FORMULA LIST
FOUNDATION TIER
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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 $= \frac{1}{2} (a + b) h$

