



GCSE

3300U40 –1

WEDNESDAY, 11 JUNE 2025 – MORNING

MATHEMATICS

UNIT 2: CALCULATOR – ALLOWED

INTERMEDIATE TIER

**1 hour 45 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.	4	
4.	1	
5.	4	
6.	3	
7.	5	
8.	7	
9.	3	
10.	4	
11.	7	
12.	5	
13.	2	
14.	4	
15.	6	
16.	4	
17.	2	
18.	2	
19.	5	
20.	6	
Total	80	

ADDITIONAL MATERIALS

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

ITEMS INCLUDED WITH QUESTION PAPER

A separate Formula List.

A separate Diagram Booklet.

A cut out shape for Question 6 (b).

Model for Question 20.

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 the questions in the spaces provided.

If you run out of space, use the additional page(s) at the back of this booklet.

Question numbers must be given for all work written on the additional page.

Take π as $3 \cdot 14$ 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 8, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

(Turn over)

1. Using ONLY the numbers listed below,

120 121 122 123 124 125 126

write down

(a) a square number,

[1 mark]

(b) a cube number,

[1 mark]

(c) a multiple of 14

[1 mark]

(Turn over)

2. Use the formula $18x + 5y = t$ to find the value of y when $x = 2 \cdot 5$ and $t = 60$

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.

(Turn over)

7

[3 marks]

(Turn over)

3. (a) Calculate

$$\sqrt{12 \cdot 3 - 3 \cdot 4 + 15 \cdot 7^2}$$

**Give your answer correct to 1
decimal place.**

[2 marks]

continued on the next page . . .

(Turn over)

Question 3 continued

3. (b) Find $13\frac{5}{100}\%$ of 63

[2 marks]

(Turn over)

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

The diagram shows five quadrilaterals: Square, Trapezium, Rhombus, Kite and Parallelogram.

Which ONE of the quadrilaterals has

- rotational symmetry of order 2, AND**
- 2 lines of symmetry?**

Circle the correct shape below.

Square
Trapezium
Rhombus
Kite
Parallelogram

[1 mark]

(Turn over)

5. Look at the three lengths of time given below:

1 day and 14 hours
2 days and 3 hours
73 hours

Calculate the mean of the three lengths of times.

Give your answer in days and hours.

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.

(Turn over)

13

The mean = _____ days
and _____ hours

[4 marks]

(Turn over)

- 6. (a) Look at the diagram for Question 6 (a) in the separate Diagram Booklet. The diagram shows a shape on a square grid. Enlarge the shape by a scale factor of 4**

[2 marks]

- (b) Look at the diagram for Question 6 (b) in the separate Diagram Booklet. The diagram shows a shape on a coordinate grid. Translate the shape 3 squares to the right and 5 squares down. A cut out shape is available for this question.**

[1 mark]

(Turn over)

- 7. (a) Look at the diagram for Question 7 (a) in the separate Diagram Booklet. The diagram shows some tiles in part of a tessellation.**

The tiles are all identical regular hexagons.

Each of the interior angles is 120°

Explain why the tiles tessellate.

You must give a reason, based on angle facts, for your answer.

(Turn over)

[1 mark]

continued on the next page . . .

(Turn over)

Question 7 continued

- 7. (b) Explain why tiles that are identical
REGULAR PENTAGONS will not
tessellate.**

**You must show working to support
your explanation.**

(Turn over)

[4 marks]

(Turn over)

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

Look at the diagrams for Question 8 in the separate Diagram Booklet.

There are two diagrams:

Diagram 1 is a pie chart. Diagram 2 is a pictogram.

continued on the next page . . .

(Turn over)

Question 8 continued

Two groups of people, Group A and Group B, took part in Adam's survey. Adam asked each person this question:

“From the colours Red, Blue and Green, which is your favourite colour?”

There are 92 people in Group A. The results for Group A are shown in the pie chart.

The results for Group B are shown in the pictogram.

continued on the next page . . .

(Turn over)

Question 8 continued

**Adam chose one person at random
from all the people in both groups.**

**What is the probability that this person
chose GREEN?**

(Turn over)

[5 marks + 2 marks OCW]

(Turn over)

9. Look at the diagram for Question 9 in the separate Diagram Booklet.

The diagram shows six blocks.

In the diagram, the expression in each block in the top two rows is found by using the following rule:

“The expression in any block is the sum of the expressions in the two blocks below it.”

Some expressions are already shown. Use the rule to fill in the empty blocks in the diagram.

You must simplify your answers.

(Turn over)

24

[3 marks]

(Turn over)

10. Look at the diagram for Question 10 in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

The diagram shows a sketch of a circle that fits exactly inside a square.

The radius of the circle is 5 cm.

Calculate the total area of the shaded regions.

Give your answer as a decimal.

You must show all your working.

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.

(Turn over)

Total area of the shaded regions

= _____

[4 marks]

(Turn over)

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

The diagram shows two towns, *A* and *B*, on a map.

The scale of the map is 1 cm represents 4.5 km.

(a) Find the straight-line distance from town *A* to town *B*.

Give your answer in kilometres.

(Turn over)

The straight – line distance from *A* to *B*

= _____ km

[2 marks]

**(b) Find the bearing of town *A* from
town *B*.**

[1 mark]

continued on the next page . . .

(Turn over)

Question 11 continued

- 11. (c) On the map, shade the region containing all the points that are:**
- closer to town *A* than to town *B*,**
 - AND**
 - less than 27 km from town *B*.**

[4 marks]

(Turn over)

12. Look at the diagram for Question 12 in the separate Diagram Booklet.

The diagram shows a fair spinner with sections labelled 1, 2, 3, 4 and 5

A charity is organising a game using this fair spinner.

In the game, each player spins the spinner once.

100 players each pay £ x to play the game once.

Each player who gets an EVEN NUMBER on the spinner wins £3

The charity expects to make a PROFIT of £130

continued on the next page . . .

(Turn over)

Question 12 continued

Find the value of x .

You must show all your working.

(Turn over)

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.

(Turn over)

34

[5 marks]

(Turn over)

13. Make t the subject of the formula

$$7t + 5 = u$$

[2 marks]

(Turn over)

14. A solution of the equation

$$x^3 + 5x = 25$$

lies between 2 and 3

Use the method of trial and improvement to find this solution correct to 1 decimal place.

You must show all your working.

(Turn over)

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.

[4 marks]

(Turn over)

15. (a) Look at the diagram for Question 15 (a) in the separate Diagram Booklet. The diagram is NOT drawn to scale.

The diagram shows a triangle labelled PQR .

In the diagram:

$$\mathbf{PR = 19.3 \text{ cm}}$$

$$\mathbf{QR = 16.8 \text{ cm}}$$

Angle PQR is a right angle.

Calculate the length of PQ .

(Turn over)

[3 marks]

continued on the next page . . .

Question 15 continued

- 15. (b) Look at the diagram for Question 15 (b) in the separate Diagram Booklet. The diagram is NOT drawn to scale. The diagram shows a triangle labelled *STU*.**

In the diagram:

$$\mathbf{SU = 20 \cdot 5 \text{ cm}}$$

$$\mathbf{TU = 15 \cdot 4 \text{ cm}}$$

Angle *STU* is a right angle.

Calculate the size of angle *x*.

(Turn over)

42

[3 marks]

(Turn over)

16. $\frac{3}{7}$ of £180.60 is shared in the ratio
4 : 5

Calculate the value of the smaller share.

You must show all your working.

(Turn over)

Smaller share = _____

[4 marks]

(Turn over)

17. Look at the diagram for Question 17 in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

In the diagram, the triangles ABC and DBE are MATHEMATICALLY SIMILAR.

$CB = 8$ cm, $DB = 7.5$ cm and $BE = 5$ cm.

Angle $ACB =$ angle DEB .

Angle ABC is a right angle.

Calculate the length of AB .

[2 marks]

- 18. A number has been decreased by 20% to give an answer of 84
What was the original number?**

[2 marks]

(Turn over)

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

A bag contains 5 red balls and 4 blue balls.

Megan chooses a ball from the bag at random.

She replaces the ball in the bag. Then she chooses a second ball from the bag at random.

Complete the tree diagram.

[2 marks]

continued on the next page . . .

(Turn over)

Question 19 continued

19. (b) Find the probability that Megan chooses two balls of the same colour.

(Turn over)

50

[3 marks]

(Turn over)

20. Ask for the model for Question 20.

The model is NOT made to scale.

The model is a cuboid.

The measurements of the cuboid are:

Length = 12 cm

Width = 4.5 cm

Height = x cm

The TOTAL SURFACE AREA of all

6 faces of the cuboid is 240 cm^2

Find the volume of the cuboid.

You must show all your working.

(Turn over)

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.

(Turn over)

Volume of the cuboid

= _____ cm³

[6 marks]

END OF PAPER

TOTAL 80 MARKS

(Turn over)

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

(Turn over)

[illegible]

(Turn over)

[illegible]



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Diagram Booklet

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

Surname: _____

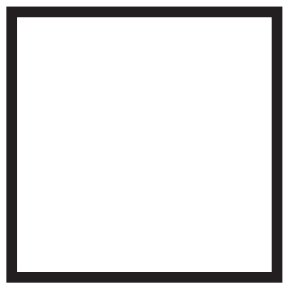
First name(s): _____

Centre Number: _____

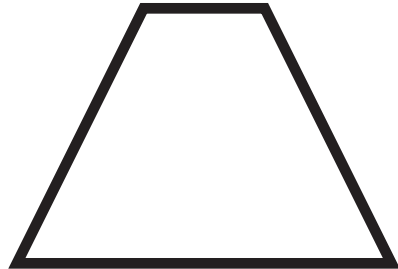
Candidate Number: 0 _____

Question 4

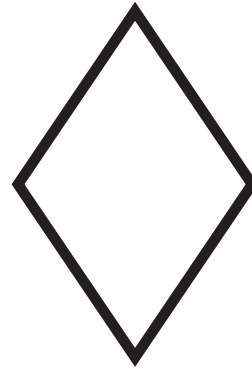
Square



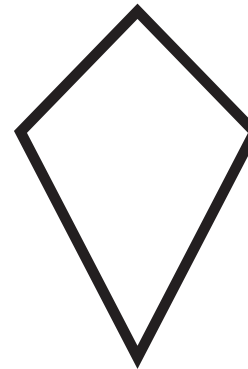
Trapezium



Rhombus



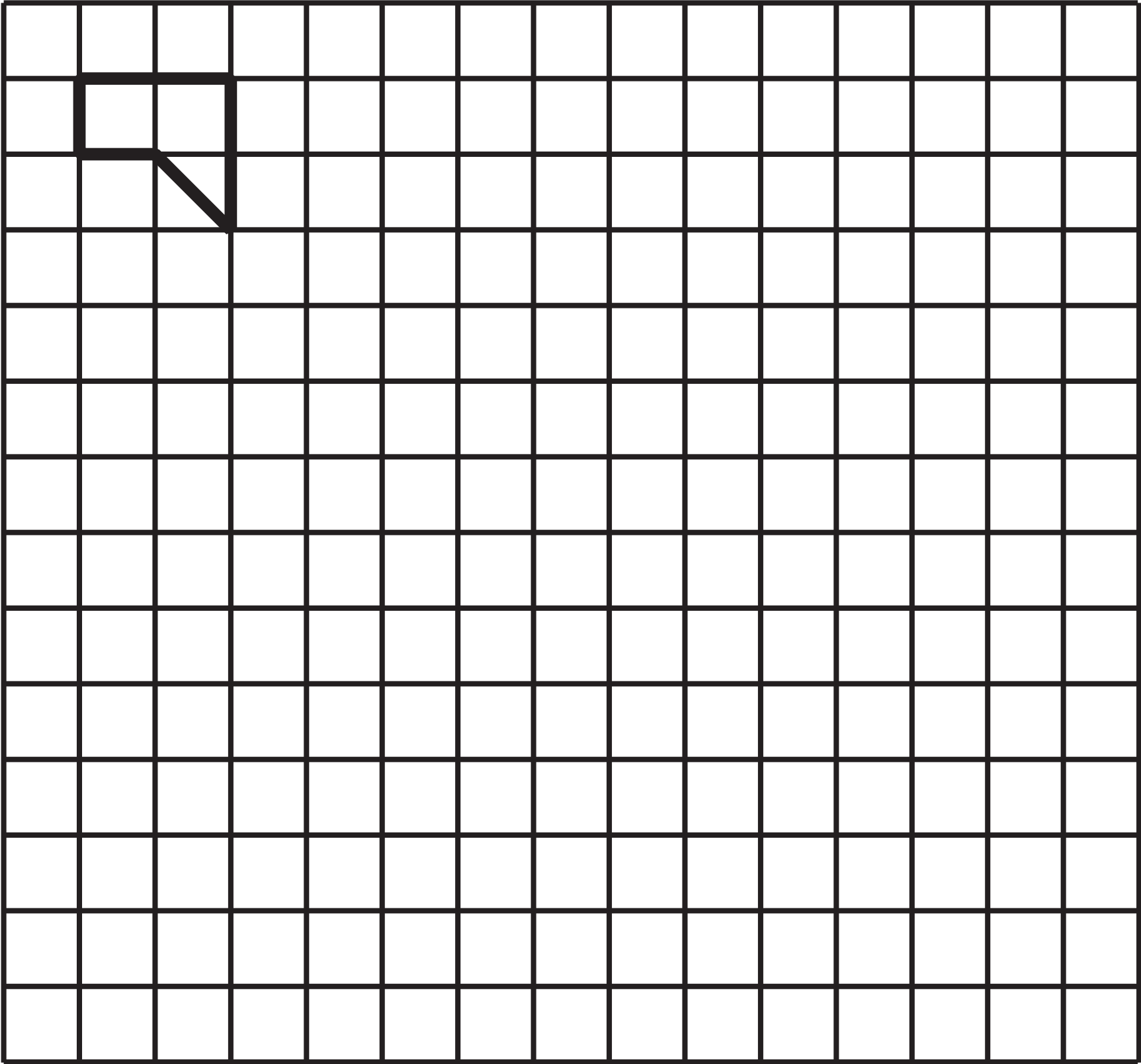
Kite



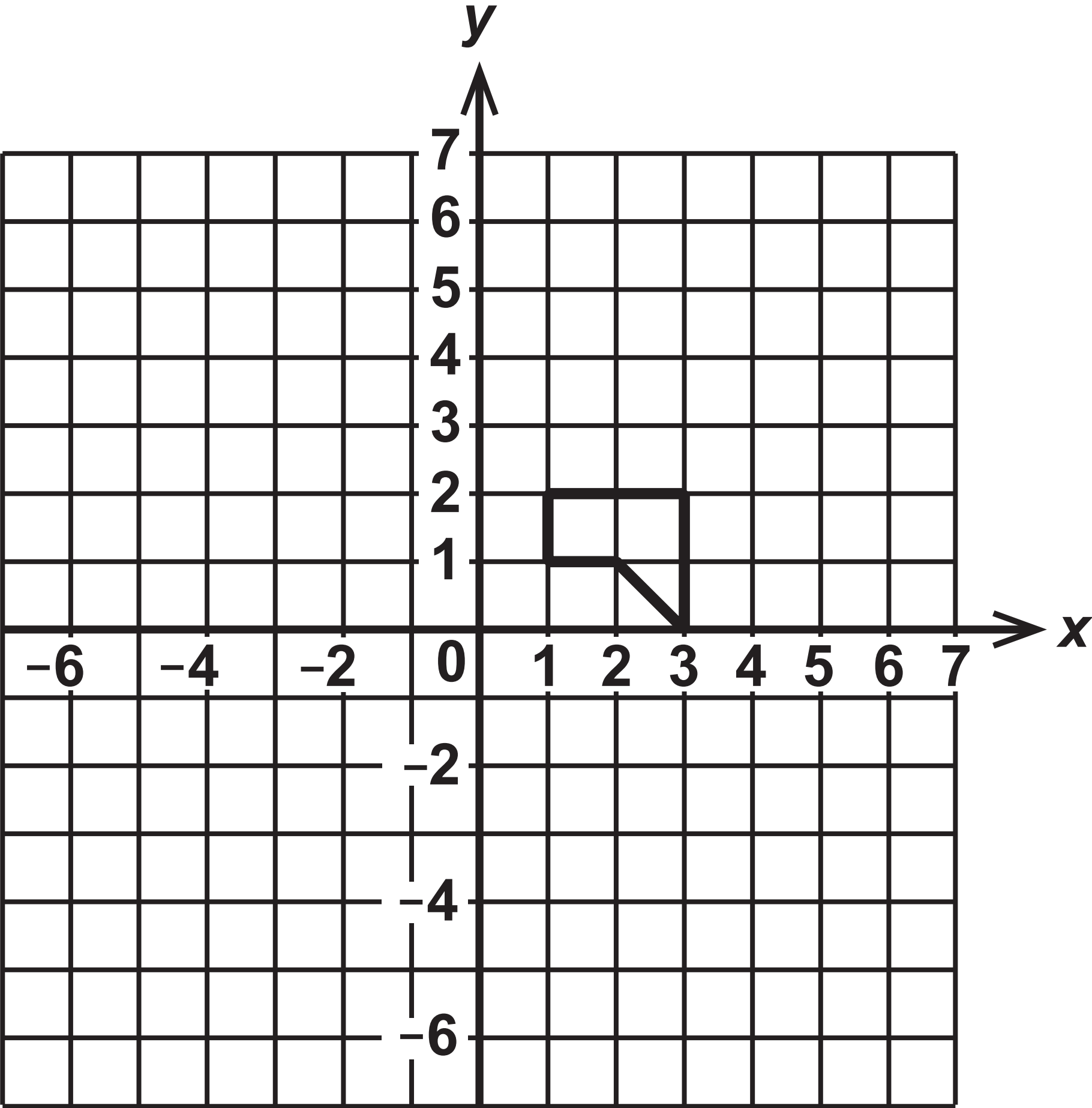
Parallelogram



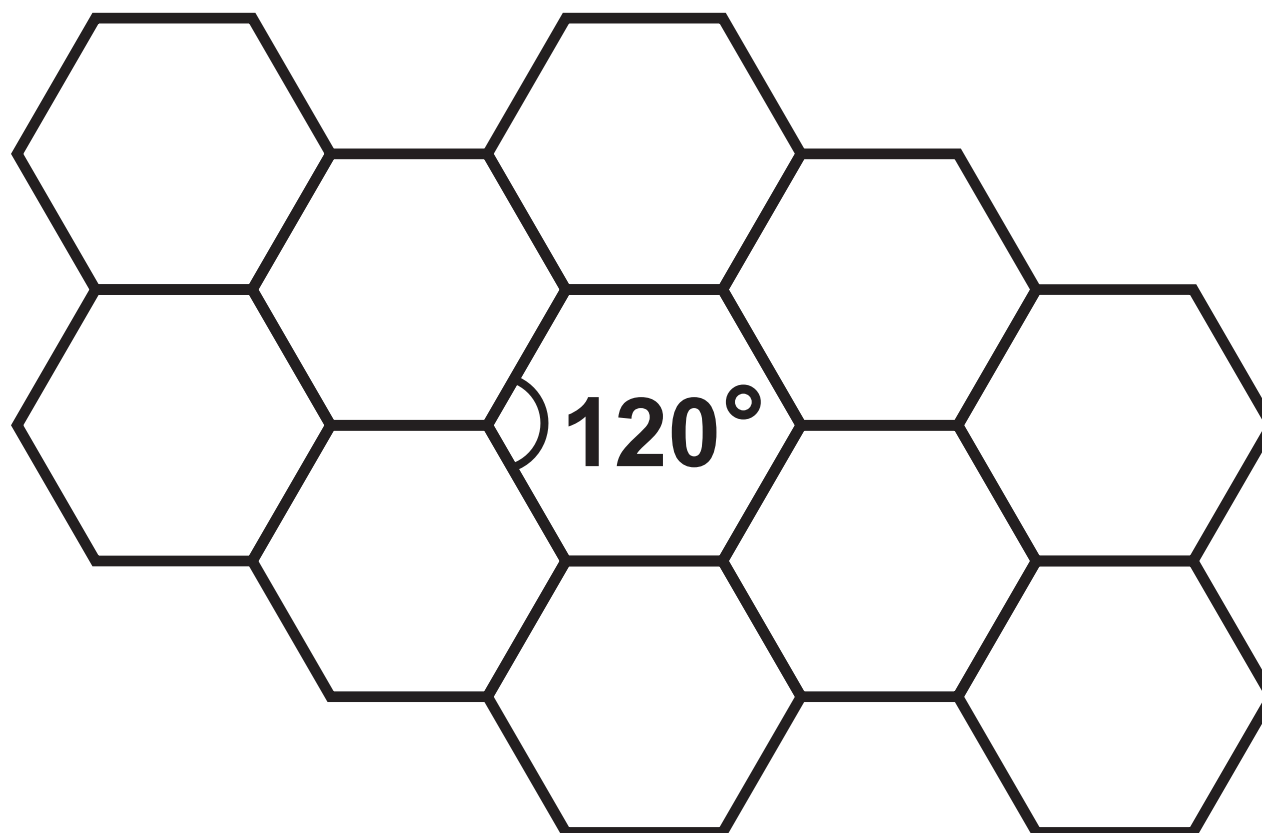
Question 6 (a)



Question 6 (b)



Question 7 (a)



Question 8

Diagram 1
GROUP A

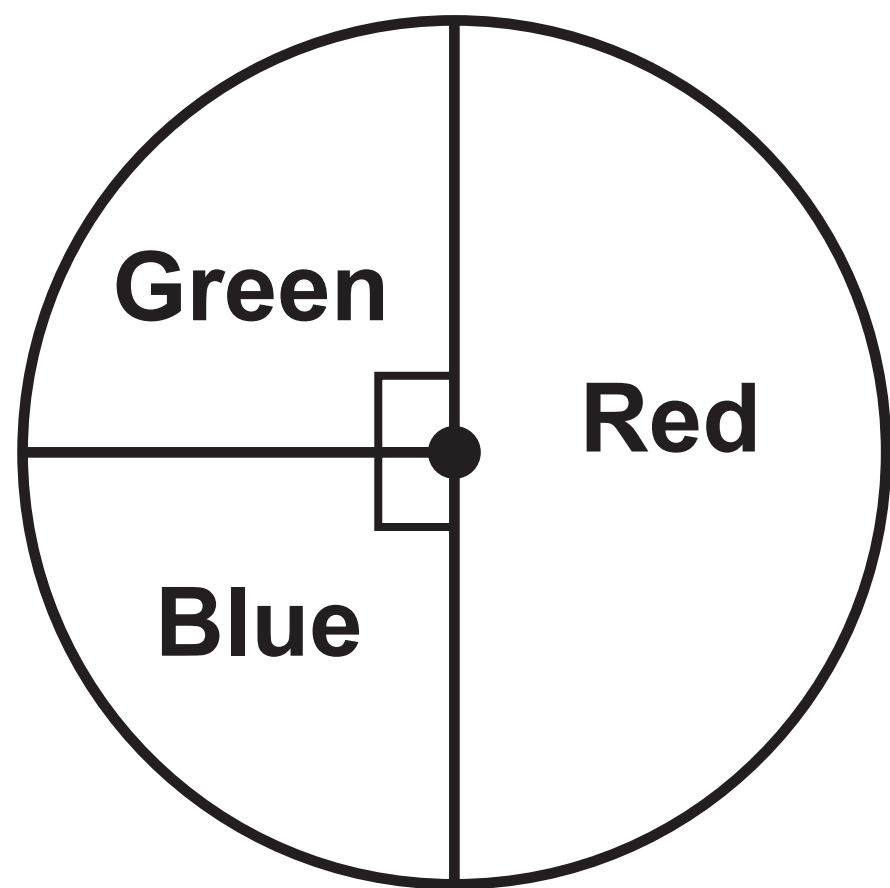
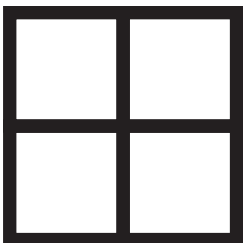
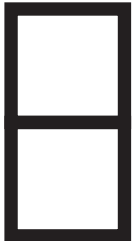
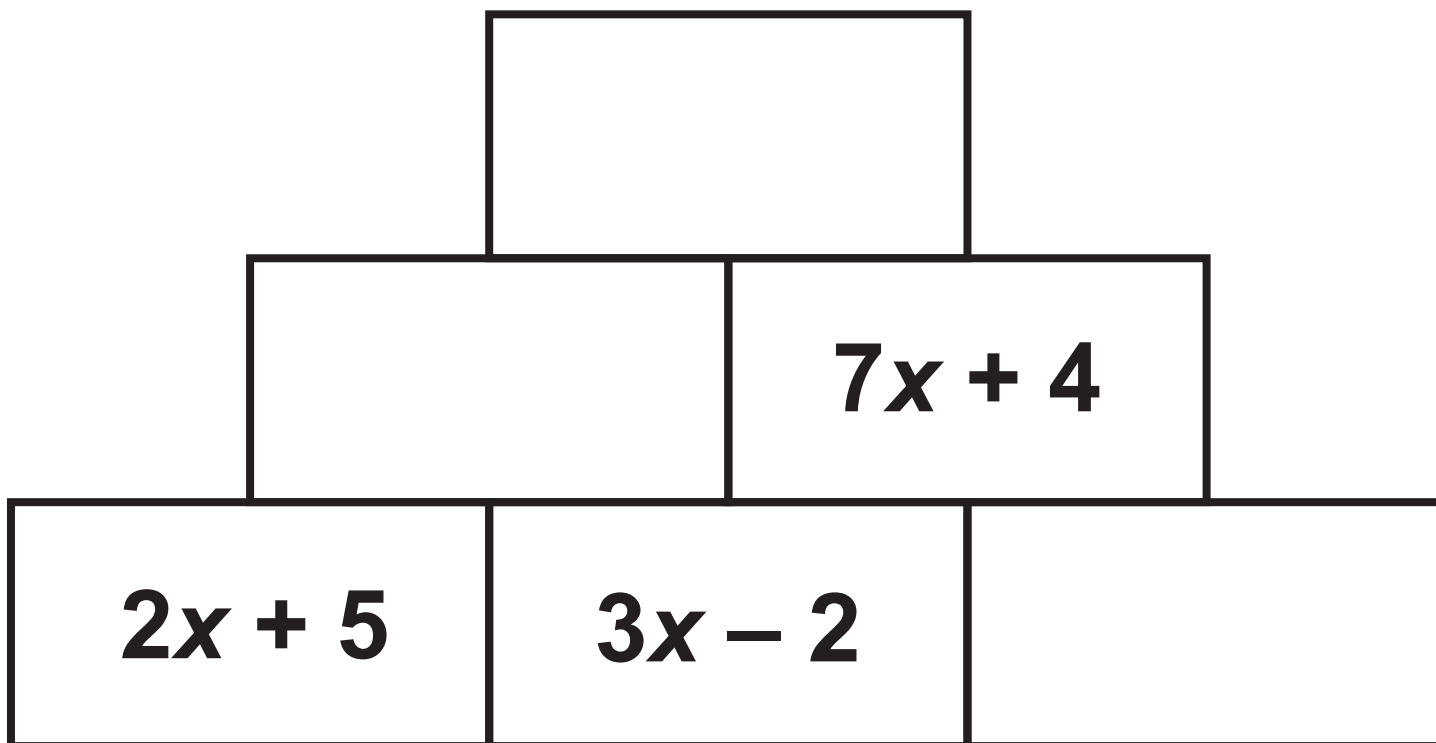


Diagram 2
GROUP B

KEY:  represents 16 people

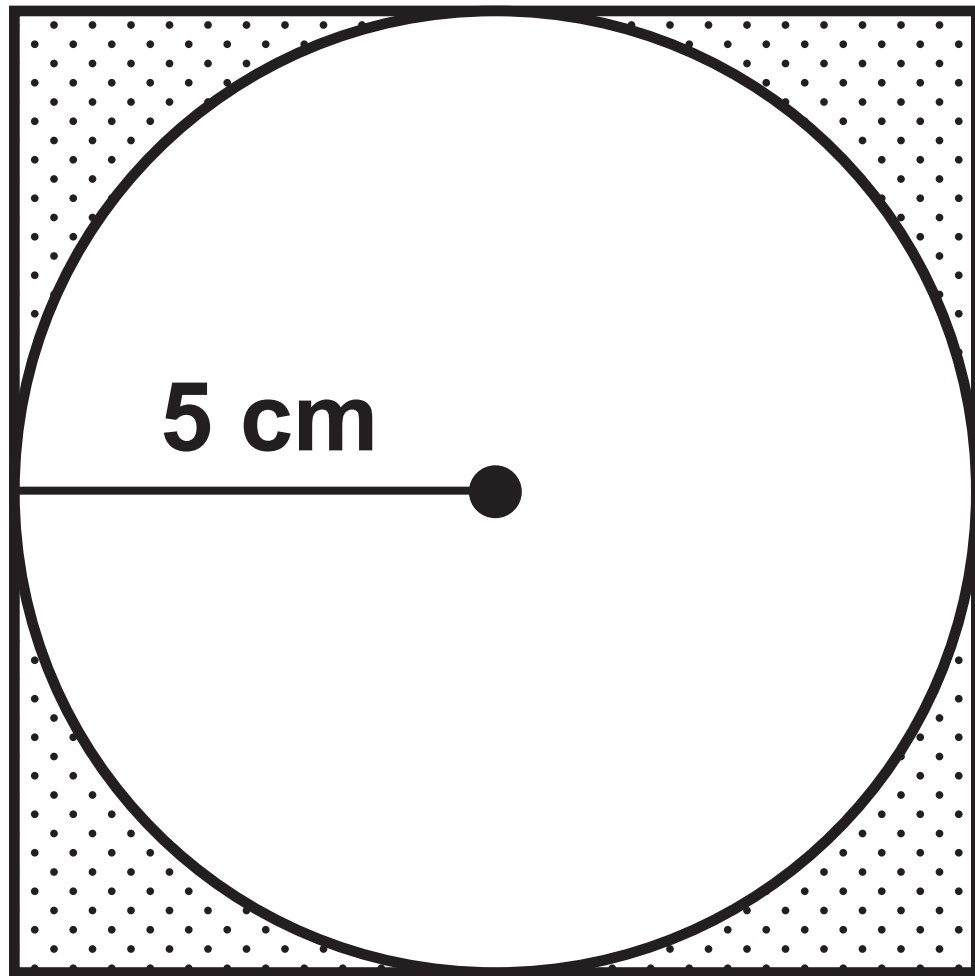
Red	
Green	
Blue	

Question 9



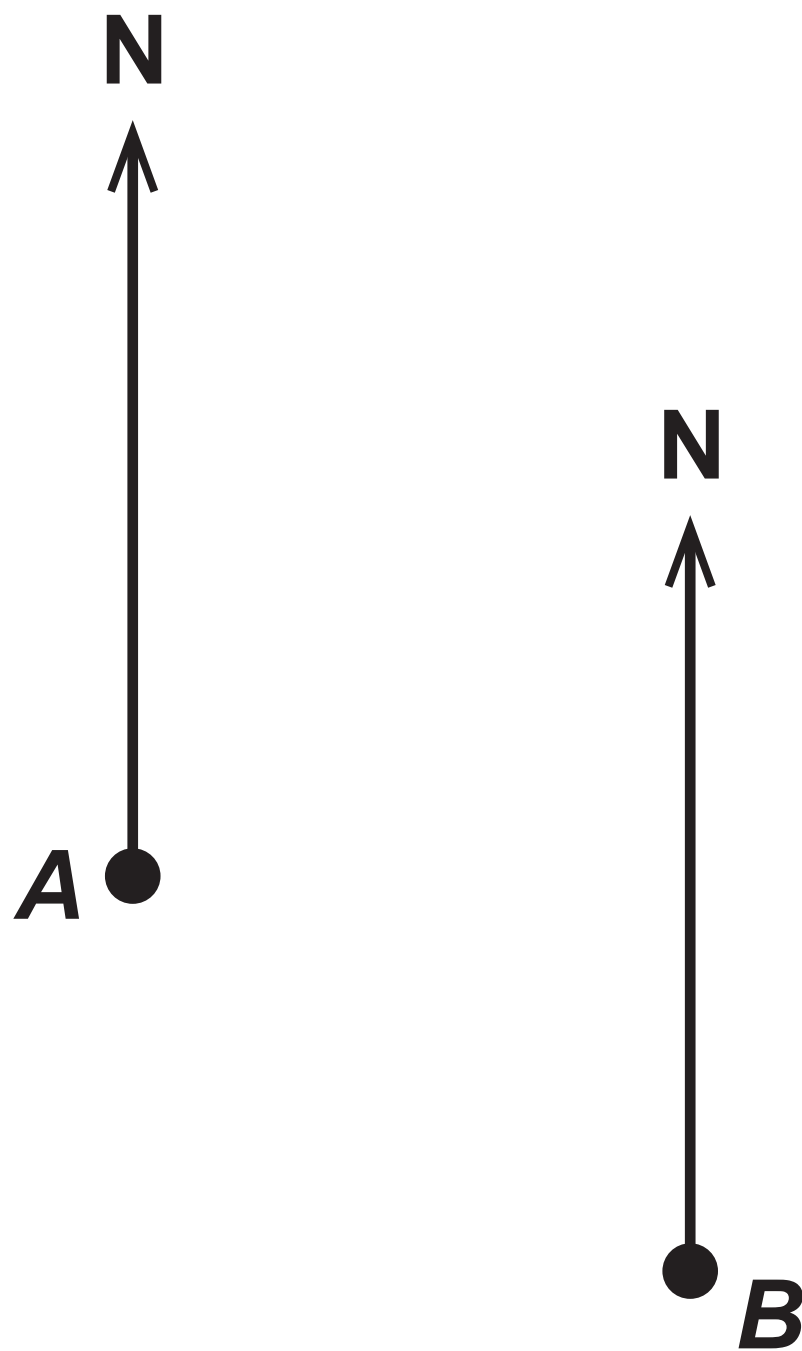
Question 10

Diagram NOT drawn to scale

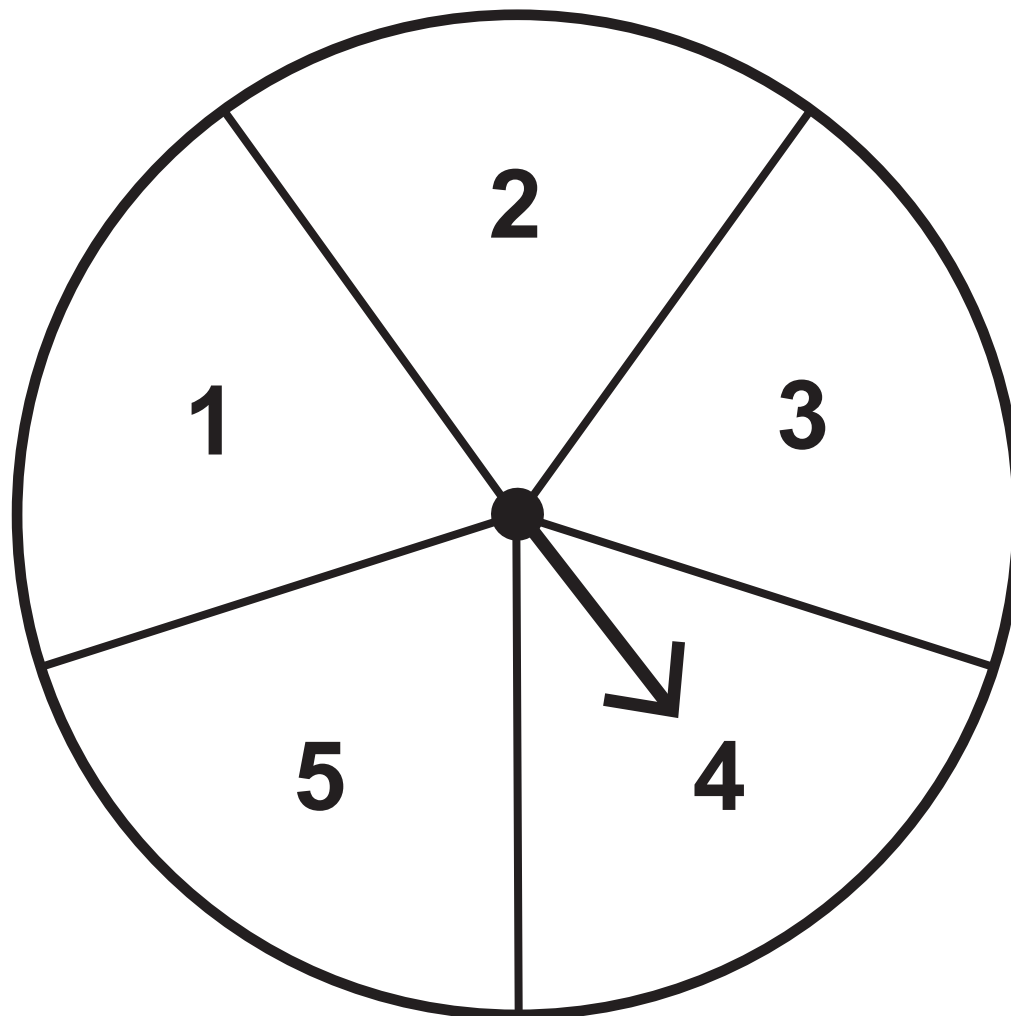


Question 11

Scale: 1 cm represents 4.5 km

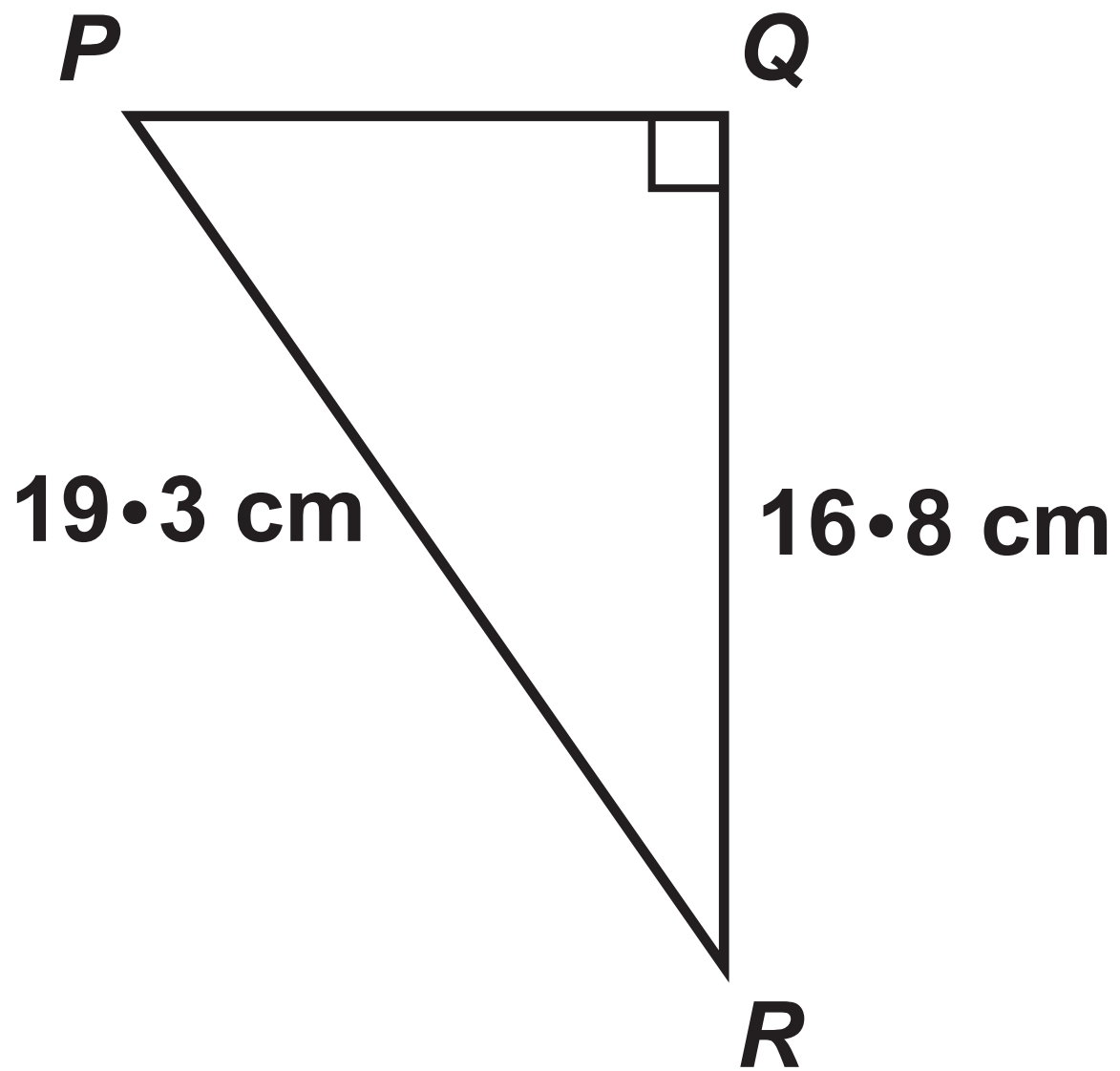


Question 12



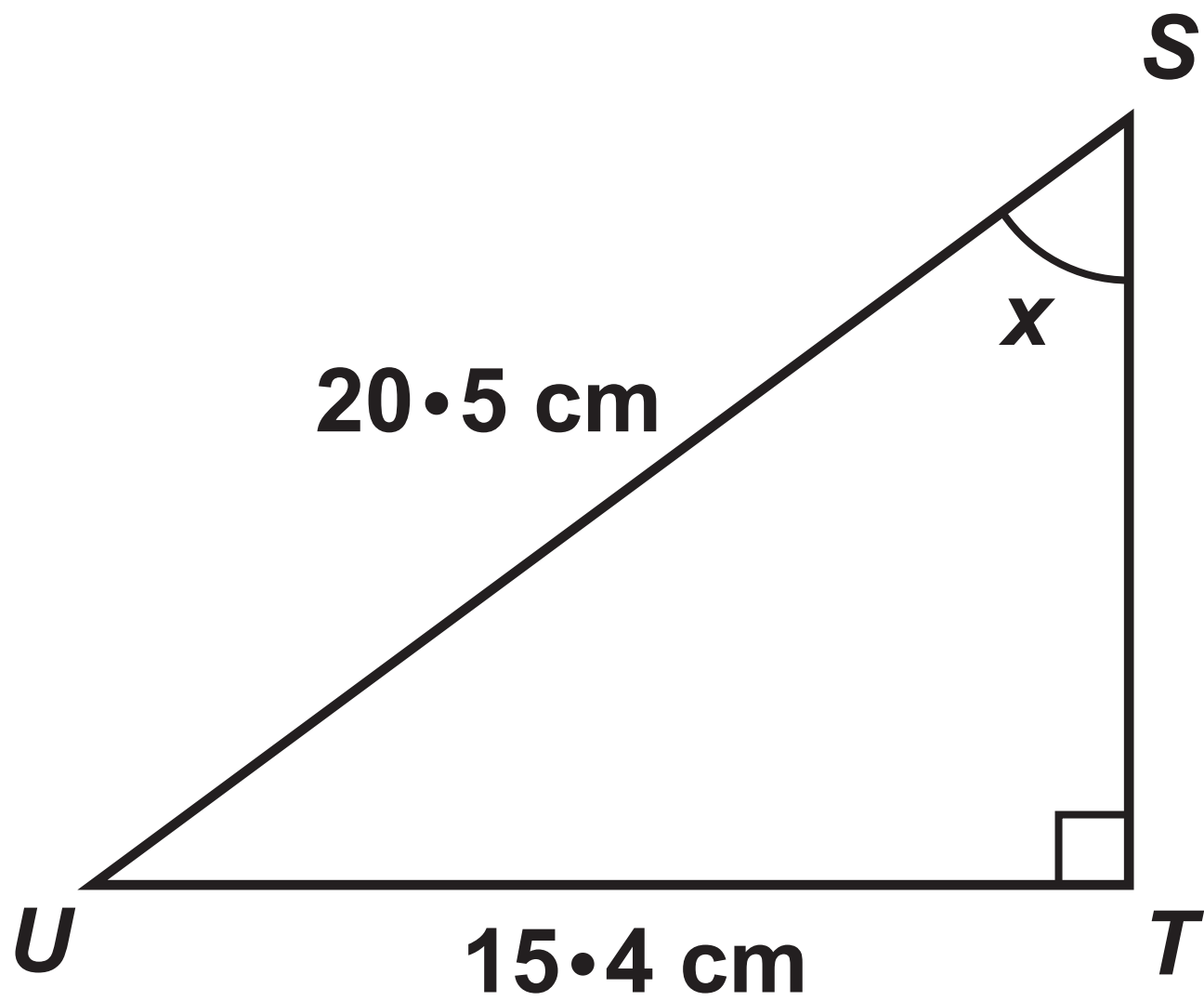
Question 15 (a)

Diagram NOT drawn to scale



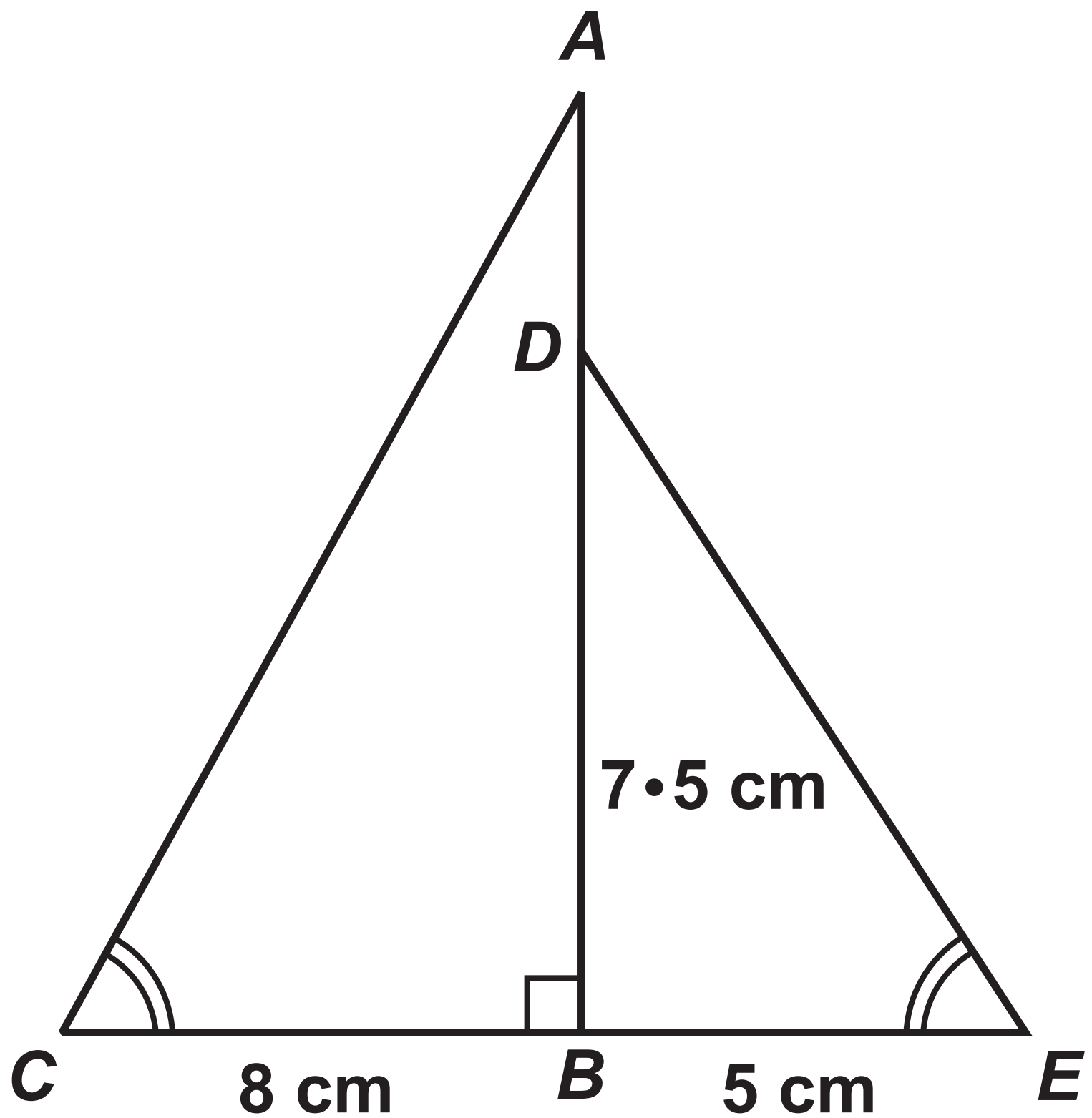
Question 15 (b)

Diagram NOT drawn to scale

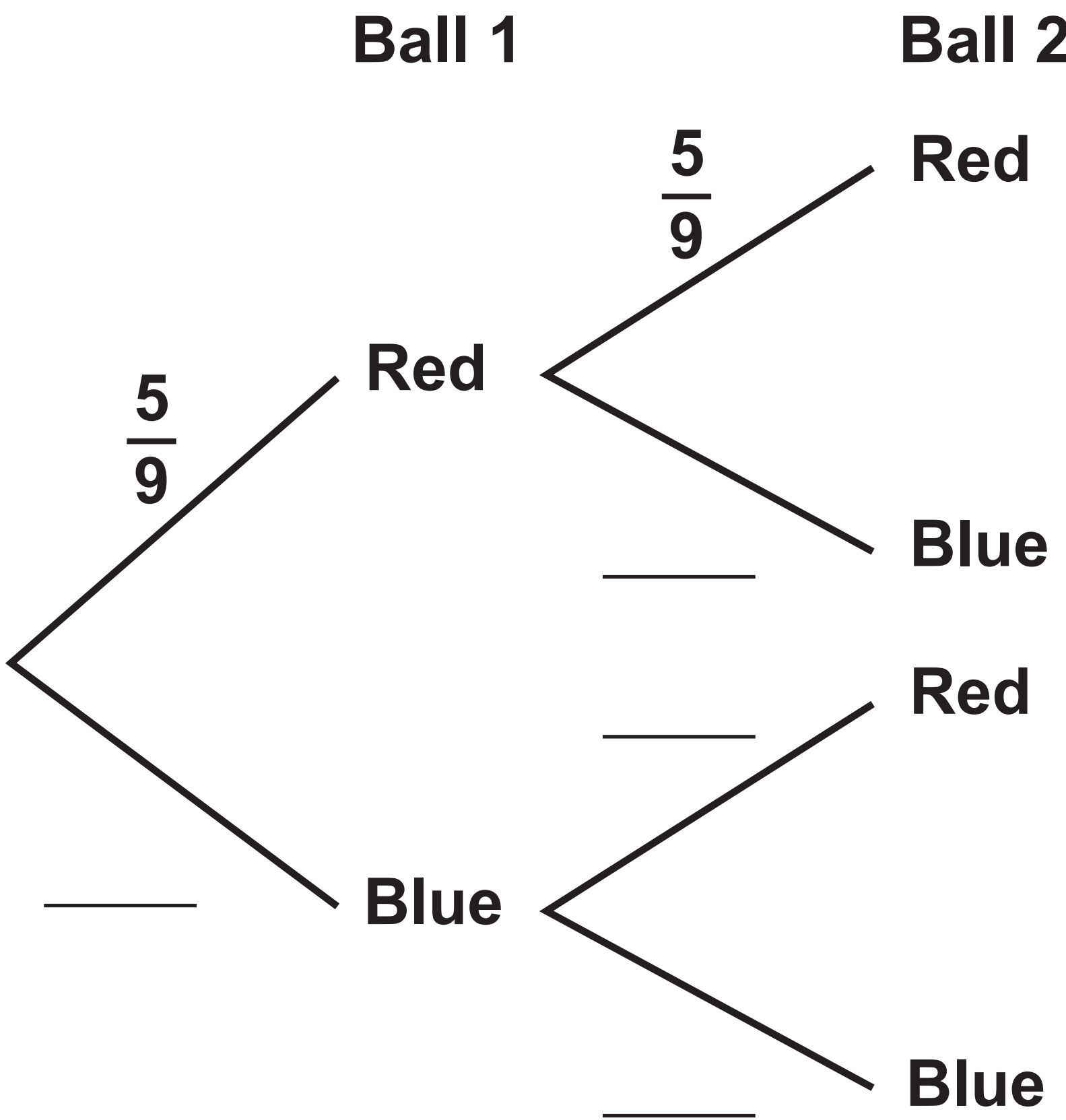


Question 17

Diagram NOT drawn to scale



Question 19 (a)



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and

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MATHEMATICS – NUMERACY



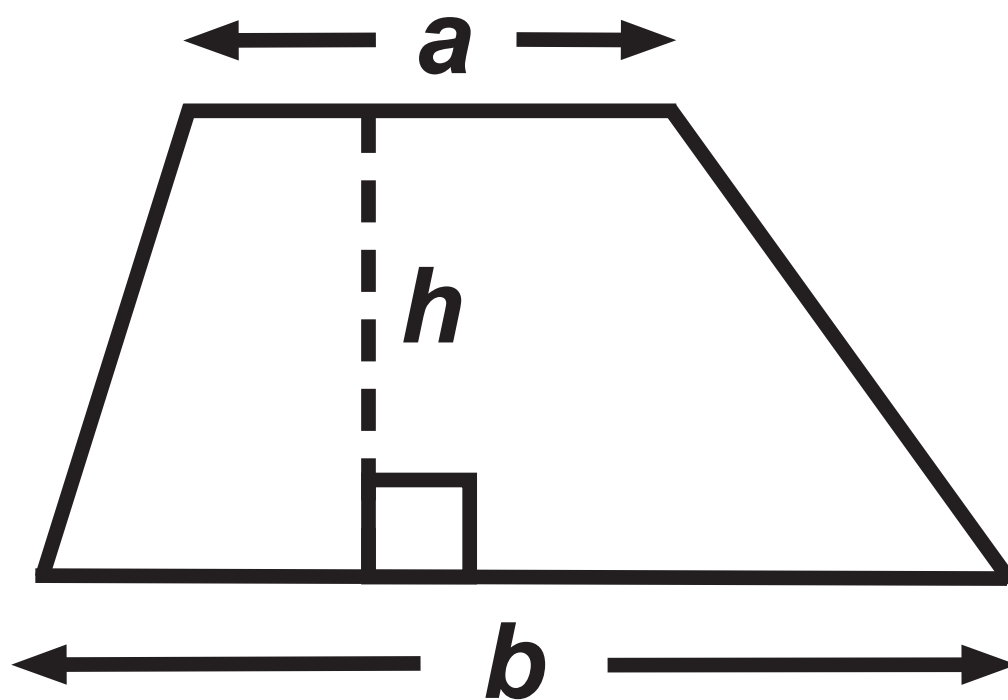
**FORMULA LIST
INTERMEDIATE TIER
GCSE**

**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 $= \frac{1}{2} (a + b) h$



Volume of prism =

area of cross – section $\times$ length

