



GCSE



C300U20–1

WEDNESDAY, 4 JUNE 2025 – MORNING

MATHEMATICS – COMPONENT 2

CALCULATOR – ALLOWED

MATHEMATICS

FOUNDATION TIER

**2 hours 15 minutes plus your additional
time allowance**

**THE USE OF A CALCULATOR WILL
BE REQUIRED IN THIS EXAMINATION**

Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	4	
2.	5	
3.	6	
4.	4	
5.	5	
6.	2	
7.	2	
8.	5	
9.	5	
10.	5	
11.	8	
12.	8	
13.	5	
14.	5	
15.	4	
16.	4	
17.	8	
18.	7	
19.	6	
20.	5	
21.	5	
22.	6	
23.	6	
Total	120	

ADDITIONAL MATERIALS

An additional Formulae Booklet.

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

**ITEMS INCLUDED WITH QUESTION
PAPER**

A separate Formula List.

A separate Diagram Booklet.

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 this booklet, taking care to number the question(s) correctly.

Take π as $3 \cdot 142$ 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.

You are reminded of the need for good English and orderly, clear presentation in your answers.

(Turn over)

Answer ALL questions.

- 1. (a) Write twelve million three hundred thousand in figures.**

[1 mark]

- (b) Write these numbers in order of size.**

Start with the smallest number.

2•45

2•07

2•6

2•174

smallest

largest

[1 mark]

continued on the next page . . .

(Turn over)

Question 1 continued

- 1. (c) Look at the diagram for Question 1 (c) in the separate Diagram Booklet. Shade $\frac{2}{7}$ of the regular shape shown.**

[1 mark]

continued on the next page . . .

(Turn over)

Question 1 continued

1. (d) Circle the **INCORRECT** statement below.

$-12 < -9$
$-9 < 12$
$-9 > -12$
$-9 < -12$
$12 > -9$

[1 mark]

(Turn over)

2. Look at the tables for Question 2 in the separate Diagram Booklet. There are two tables: Table 1 and Table 2

Edugym offers exercise classes and sells drinks and supplements.

The two tables show some of the costs.

(a) Last week Henry exercised at Edugym.

He attended a circuits class and a spin class.

He bought a bottle of water and an energy gel.

continued on the next page . . .

(Turn over)

Question 2 (a) continued

**How much did Henry spend at
Edugym last week?**

[1 mark]

continued on the next page . . .

(Turn over)

Question 2 continued

- 2. (b) After an exercise class, Edugym received £13.23 from the sale of isotonic drinks.**

How many isotonic drinks were sold?

[2 marks]

continued on the next page . . .

(Turn over)

Question 2 continued

- 2. (c) Edugym offer a pay monthly deal for exercise classes.**

**Pay monthly deal:
£40 per month for unlimited classes**

Jade attends three circuits classes, four bodymax classes and two kettlebells classes a month.

Should Jade use the pay monthly deal?

Yes ☐ **No** ☐

continued on the next page . . .

(Turn over)

Question 2 (c) continued

Give the reason for your answer.

[2 marks]

(Turn over)

- 3. (a) Look at the diagram for Question 3 (a) in the separate Diagram Booklet. The diagram shows 6 shapes: Shape A, Shape B, Shape C, Shape D, Shape E and Shape F, on a grid.**

Complete the following sentences about the shapes on the grid.

Shape _____ has exactly one line of symmetry.

Shape _____ has rotational symmetry of order two.

Shapes _____ and _____ are congruent.

[3 marks]

continued on the next page . . .

(Turn over)

Question 3 continued

- 3. (b) (i) Look at the diagram for Question 3 (b) (i) in the separate Diagram Booklet. The diagram is NOT drawn to scale. The diagram shows a right angled triangle labelled *ABC*.**

In the diagram:

Angle *ABC* = x°

Angle *BAC* = x°

Angle *ACB* is a right angle.

Calculate the value of *x*.

(Turn over)

$x =$ _____

[2 marks]

continued on the next page . . .

(Turn over)

Question 3 (b) continued

- 3. (b) (ii) Look at the diagram for Question 3 (b) (ii) in the separate Diagram Booklet. The diagram is NOT drawn to scale. The diagram shows four angles. Two of the angles are labelled. One of these angles is 132° and the other angle is $6y^\circ$. Calculate the value of y .**
-
-
-
-
-
-

(Turn over)

$y =$ _____

[1 mark]

(Turn over)

4. Look at the diagram for Question 4 in the separate Diagram Booklet. The diagram is a grid showing a map of a park.

(a) Write down the coordinates of the playground.

(_____ , _____)

[1 mark]

(b) There is a climbing wall at the midpoint between the bus stop and the information centre.

Mark with a cross (×) the position of the climbing wall on the map.

[1 mark]

continued on the next page . . .

(Turn over)

Question 4 continued

4. (c) The scale on the map is:

**Each side of a square
represents 45 metres**

**Caelan walks directly from the
picnic area to the toilets in a
straight line.**

**He walks back to the picnic area
along the same straight line.**

**How far did Caelan walk
altogether?**

Give your answer in metres.

Distance = _____ metres
[2 marks]

- 5. (a) Look at the diagram for Question 5 (a) in the separate Diagram Booklet. The diagram is a pie chart.**

Each student in a group was asked to choose their favourite pet.

The pie chart shows the results.

What fraction of the students chose hamster?

Give your answer in its simplest form.

[2 marks]

continued on the next page . . . (Turn over)

Question 5 continued

- 5. (b) Look at the diagram for Question 5 (b) in the separate Diagram Booklet. The diagram shows a probability scale.**

One student is chosen at random from the group.

D is the probability that the student's favourite pet is a dog

C is the probability that the student's favourite pet is a cat

R is the probability that the student's favourite pet is a rabbit.

Mark D, C and R on the probability scale.

[3 marks]

(Turn over)

6. A rectangle has an area of 42 cm^2 and a perimeter of 34 cm .

Calculate the length and width of the rectangle.

Length = _____ cm

Width = _____ cm

[2 marks]

7. Rita writes down two numbers.

Her numbers satisfy the following conditions.

- **Both numbers are greater than 12**
- **Both numbers are prime numbers.**
- **The sum of the two numbers is 40**

Which two numbers does Rita write down?

(Turn over)

The numbers that Rita writes down
are _____ and _____

[2 marks]

- 8. Look at the table for Question 8 in the separate Diagram Booklet. The table shows some stationery items and their costs.**

Assume that:

- each pencil costs the same amount**
- each protractor costs the same amount**
- each pencil sharpener costs the same amount.**

Complete the table on the next page to show the cost of each item.

(Turn over)

Stationery item	Cost
	
	
	

[5 marks]
(Turn over)

9. **Demitri, Greta and their friends play air hockey matches throughout the summer.**

Each player calculates their points total using the formula given for Question 9 in the separate Diagram Booklet.

- (a) So far this summer, Demitri has 7 wins, 8 draws and 9 losses.**

What is his points total for the matches he has played?

[2 marks]

continued on the next page . . .

(Turn over)

Question 9 continued

- 9. (b) So far this summer, Greta has a points total of 48**
She has won 6 matches and had no losses.

How many matches has she drawn?

(Turn over)

[3 marks]

- 10. The temperature in Nuuk, Greenland was recorded at midday for each of the days Monday to Saturday. The temperatures, in $^{\circ}\text{C}$, are listed below.**

−9 −8 −4 −5 −1 −8

- (a) What is the mode of these temperatures?**

[1 mark]

continued on the next page . . .

(Turn over)

Question 10 continued

The temperatures, in $^{\circ}\text{C}$, are repeated below.

−9 −8 −4 −5 −1 −8

10. (b) What is the median of these temperatures?

[2 marks]

continued on the next page . . .

(Turn over)

Question 10 continued

The temperatures, in $^{\circ}\text{C}$, are repeated below.

-9 -8 -4 -5 -1 -8

10. (c) The temperature at midday on Sunday was recorded.

The mean midday temperature for the 7 days was -6°C .

What was the temperature at midday on Sunday?

(Turn over)

The temperature at midday on Sunday
was _____ °C

[2 marks]

11. (a) Write down the next two terms in the sequence.

−15, −12, −9, −6, _____, _____

[2 marks]

continued on the next page . . .

(Turn over)

Question 11 continued**11. (b) Simplify $16y - 3(2y + 7)$**

[2 marks]**(c) Factorise $12w - 9$**

[1 mark]**continued on the next page . . .****(Turn over)**

Question 11 continued**11. (d) Solve $5x + 3 = 14$**

[2 marks]**continued on the next page . . .****(Turn over)**

Question 11 continued

11. (e) Layla is trying to solve the equation $\sqrt[3]{y} = 5$

She uses the method shown below.

$$\sqrt[3]{y} = 5$$

$$y = 5 \times 3$$

$$\text{So, } y = 15$$

Explain why Layla's method is incorrect.

[1 mark]

(Turn over)

12. (a) Calculate 37% of 650

[2 marks]

continued on the next page . . .

(Turn over)

Question 12 continued

12. (b) A piece of elastic is 477 mm long.

It can be stretched by $\frac{2}{9}$ of its

length before it snaps.

**What is the length of the elastic
when it snaps?**

(Turn over)

**The length of the elastic when it snaps
is _____ mm.**

[3 marks]

continued on the next page . . .

(Turn over)

Question 12 continued

- 12. (c) Write 54 as a percentage of 171**
Give your answer correct to
1 decimal place.

[3 marks]

(Turn over)

13. Look at the recipe for Question 13 in the separate Diagram Booklet. The recipe is used to make a small pumpkin pie.

(a) The recipe can be changed to make a large pumpkin pie to serve 12 people.

Peter makes a large pumpkin pie.

How many grams of pumpkin does Peter need?

[2 marks]

continued on the next page . . .

(Turn over)

Question 13 continued

13. (b) Grace made a number of SMALL pumpkin pies for a Halloween party.

She used a total of 1•65 litres of double cream to make her pies.

How many small pumpkin pies did Grace make?

(Turn over)

[3 marks]

(Turn over)

14. Igor invests £2500 in a savings account.

The account pays 5.4% simple interest per year.

The interest is added to the account at the end of each year.

After how many years will the amount of money in the savings account be greater than £3500?

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.

[5 marks]

**15. Ahmed buys 1.4 kg of Brazil nuts
and 0.8 kg of cashew nuts.**

He pays a total of £21.84

**The cost of 1 kg of Brazil nuts
is £9.60**

**What is the cost of 1 kg of
cashew nuts?**

(Turn over)

(Turn over)

The cost of 1 kg of cashew nuts
is _____

[4 marks]

(Turn over)

16. Look at the diagram for Question 16 in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

$PQRS$ is a parallelogram.

U is a point on the line PS .

T is a point on the line PR .

In the diagram:

Angle $PTU = 53^\circ$

Angle $QPR = 48^\circ$

Angle $TUS = 112^\circ$

Angle $USR = x$

Show that $x = 73^\circ$

Give a reason for each step of your answer.

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)

[4 marks]

(Turn over)

17. Use the information for Question 17 in the separate Diagram Booklet to answer the following questions.

(a) Look at the Motorway sign for Question 17 in the separate Diagram Booklet. Heidi is travelling to Exeter on the M5 motorway.

Motorway signs display the distances in MILES.

continued on the next page . . .

(Turn over)

Question 17 (a) continued

**Heidi passes the sign shown
at 5:35 p.m.**

**She intends to travel at an average
speed of 80 km/h for the
remainder of her journey
to Exeter.**

**At what time does Heidi expect to
arrive in Exeter?**

**Give your answer to the nearest
minute.**

You must show all your working.

(Turn over)

60

(Turn over)

**Heidi expects to arrive in Exeter
at _____**

[5 marks]

continued on the next page . . .

(Turn over)

Question 17 continued

17. (b) At the start of the journey, Heidi stopped at a garage to fill her fuel tank with diesel.

The cost of diesel was £1.52 per litre.

Heidi spent £102.60 on diesel.

How many GALLONS of diesel did Heidi buy?

(Turn over)

Heidi buys _____ gallons of diesel.

[3 marks]

(Turn over)

- 18. Look at the diagram for Question 18 in the separate Diagram Booklet.**
- The diagram is a scatter diagram.**
- When selling an apartment, the selling price can be calculated using the price per square metre of floor area.**
- The scatter diagram shows the price per square metre of 12 apartments and their distance from Educastle city centre.**
- It also shows the line of best fit for the data.**

continued on the next page . . .

Question 18 continued

- 18. (a) Describe the relationship between the price per square metre of an apartment and its distance from Educastle city centre.**

[1 mark]

continued on the next page . . .

(Turn over)

Question 18 continued

- 18. (b) Use the line of best fit to estimate the price per square metre of an apartment that is 4 miles from Educastle city centre.**
-
-

[1 mark]

continued on the next page . . .

(Turn over)

Question 18 continued

18. (c) Ellie says,

“All apartments $7\frac{1}{2}$ miles from

**Educastle city centre cost
£4000 per square metre.”**

Is Ellie’s statement correct?

Yes ☐ **No** ☐

Give the reason for your answer.

(Turn over)

[1 mark]

continued on the next page . . .

(Turn over)

Question 18 continued

18. (d) Look at the table for Question 18 (d) in the separate Diagram Booklet. The table shows information about the house prices of 35 houses on a street outside Educastle city centre.

Calculate an estimate for the mean house price on the street.

(Turn over)

70

[4 marks]

(Turn over)

19. Greg has been saving 10p and 20p coins in a money jar.

The ratio of the number of 10p coins to the number of 20p coins in Greg's money jar is 2:7

Greg gives all the 20p coins to his children, Rona and Jamie, in the ratio 3:4

The 20p coins that Rona was given have a total value of £3.60

What was the total value of the coins in Greg's money jar?

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)

[6 marks]

[illegible]

20. Look at the diagram for Question 20 in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

The diagram shows a square inside a circle.

Each corner of the square lies on the circumference of the circle.

The length of each side of the square is 13 cm.

Calculate the area of the circle.

Give your answer 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.

(Turn over)

Area of the circle = _____ cm²

[5 marks]

(Turn over)

21. (a) Look at the diagram for Question 21 (a) in the separate Diagram Booklet. The diagram shows five straight – line graphs. Their equations are shown in the table below.

Complete the table to match each graph to its equation.

One has been completed for you.

Equation	Graph
$y = 2x + 1$	
$y = x$	Graph A
$y = -x - 1$	
$y = 2x$	
$y = -2x + 1$	

[2 marks]

continued on the next page . . .

(Turn over)

Question 21 continued

21. (b) Circle the equation of the straight line that is parallel to $y = 3x + 5$

$3y = x + 5$
$y = -3x$
$2y = 6x + 8$
$y = \frac{1}{3}x + 5$
$y + 3x = 7$

(Turn over)

[1 mark]

continued on the next page . . .

(Turn over)

Question 21 continued

21. (c) Make y the subject of the following formula.

$$\frac{y}{t} + u = x$$

[2 marks]

(Turn over)

22. Yasmin has two bags, Bag *A* and Bag *B*.

Each bag contains some red counters and some blue counters.

Bag *A* contains 2 red counters and 3 blue counters.

In Bag *B* the number of red counters is three times the number of blue counters.

Yasmin randomly chooses one counter from Bag *A* and then one counter from Bag *B*.

continued on the next page . . .

(Turn over)

Question 22 continued

- 22. (a) Look at the diagram for Question 22 (a) in the separate Diagram Booklet. The diagram shows an incomplete probability tree diagram.**
- Complete the probability tree diagram.**

[3 marks]

continued on the next page . . .

(Turn over)

Question 22 continued

**22. (b) Calculate the probability that
Yasmin chooses at least one blue
counter.**

[3 marks]

(Turn over)

23. (a) Look at the diagram for Question 23 (a) in the separate Diagram Booklet. The diagram is NOT drawn to scale. The diagram shows triangle ABC .

In the diagram:

$$AC = 15 \text{ cm}$$

$$\text{Angle } BAC = 38^\circ$$

Angle ABC is a right angle.

Calculate the length of AB .

(Turn over)

[3 marks]

continued on the next page . . .

(Turn over)

Question 23 continued

- 23. (b) Look at the diagram for Question 23 (b) in the separate Diagram Booklet. The diagram is NOT drawn to scale. The diagram shows triangle *DFE*.**

In the diagram:

$$\mathbf{DF = 19\text{ cm}}$$

$$\mathbf{FE = 17\text{ cm}}$$

Angle *DFE* is a right angle.

Calculate the size of angle *DEF*.

(Turn over)

[3 marks]

END OF PAPER
TOTAL 120 MARKS

(Turn over)

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

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GCSE



C300U20 – 1

WEDNESDAY, 4 JUNE 2025 – MORNING

MATHEMATICS – COMPONENT 2

CALCULATOR – ALLOWED MATHEMATICS

FOUNDATION TIER

Diagram Booklet

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

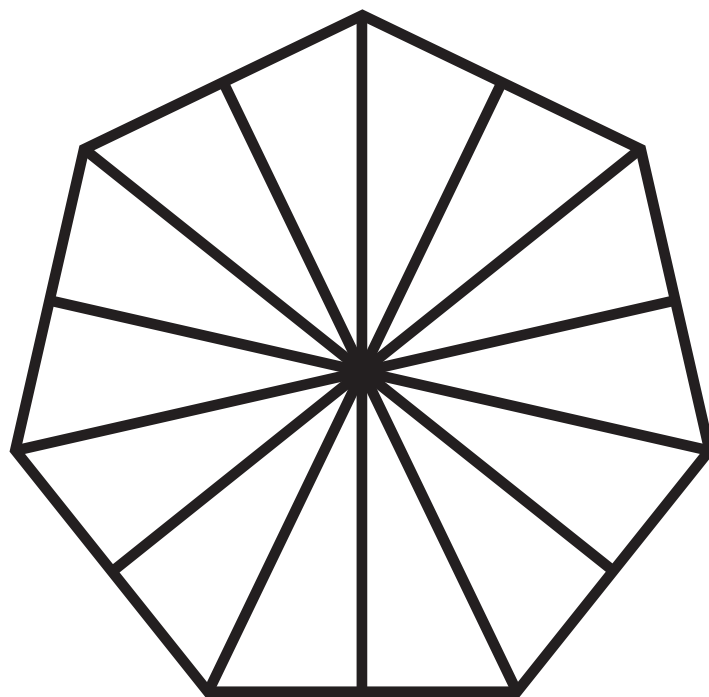
Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

Question 1 (c)



Question 2

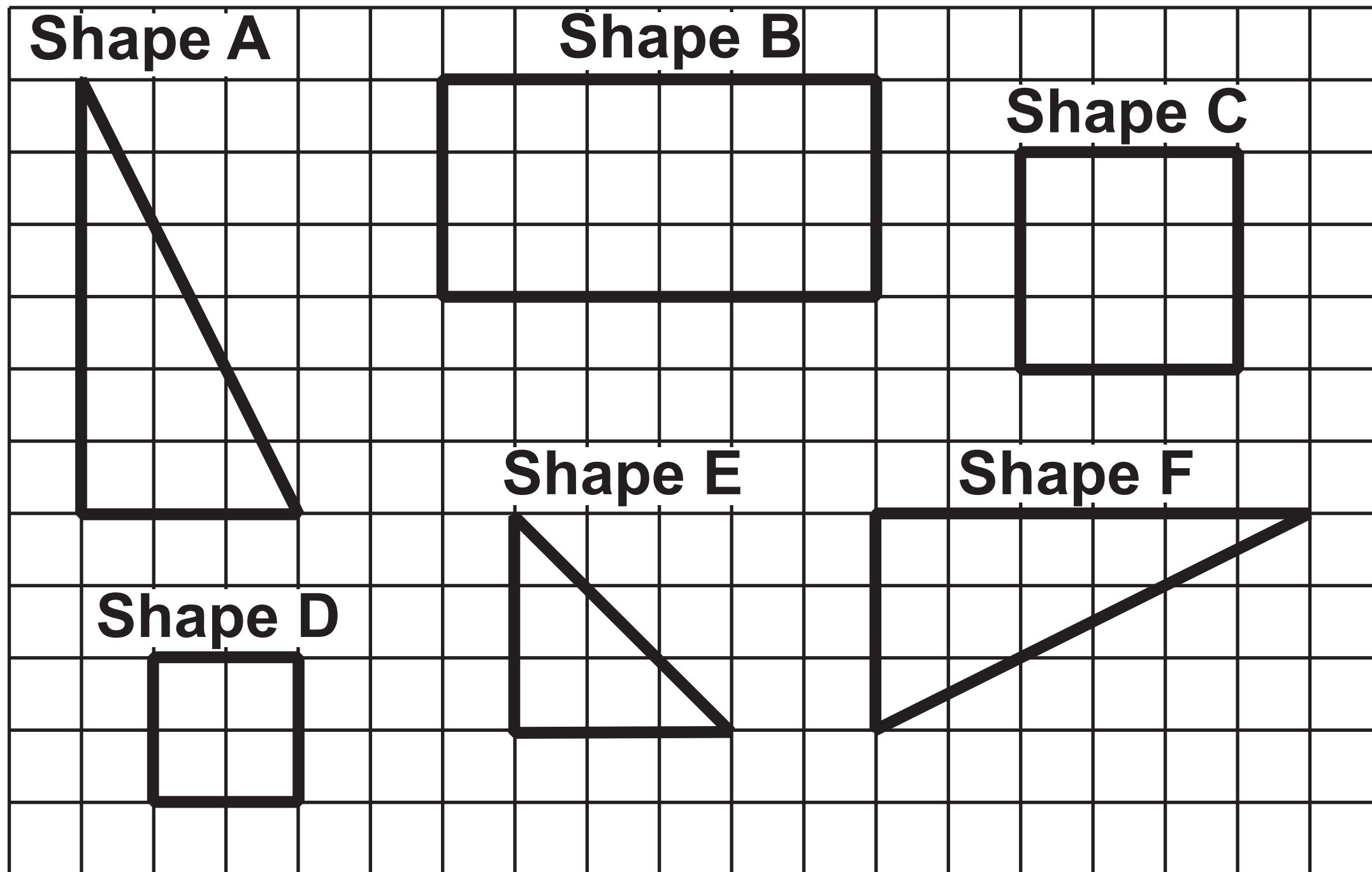
Table 1

Exercise Class	Cost per class
Bodymax	£4.75
Circuits	£6.70
Kettlebells	£4.25
Spin	£5.50

Table 2

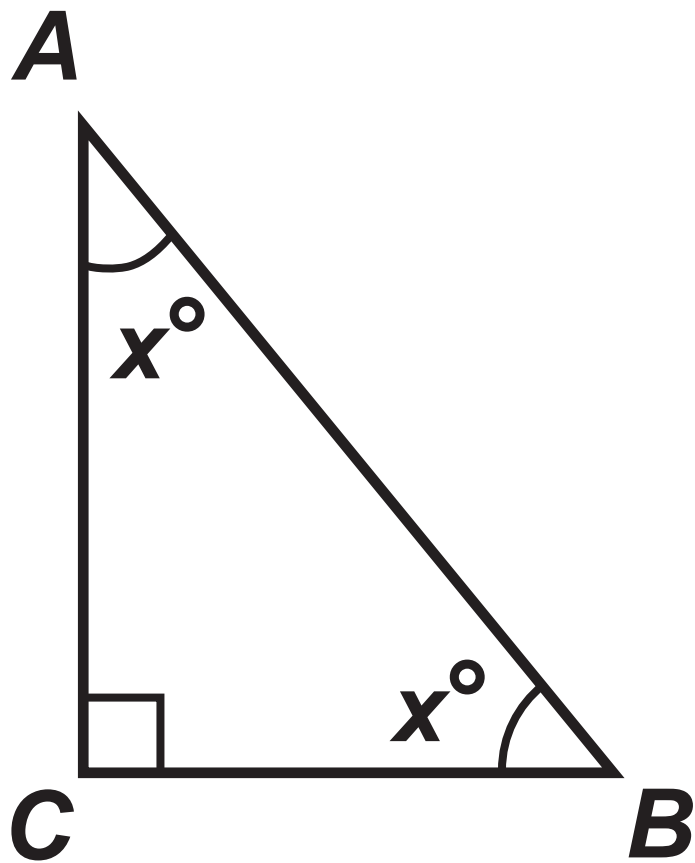
Drinks and supplements	Cost
Bottle of water	85p
Isotonic drink	£1.89
Energy gel	£2.29

Question 3 (a)



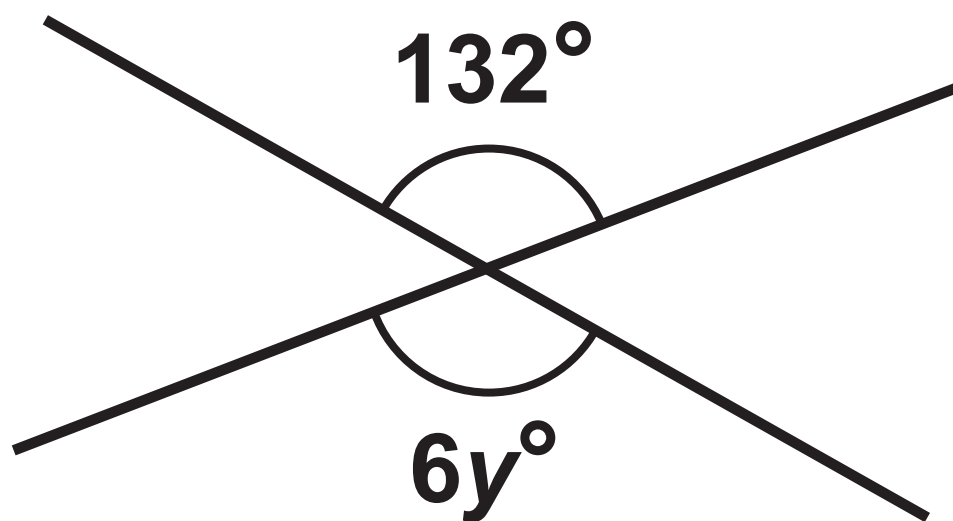
Question 3 (b) (i)

Diagram NOT drawn to scale

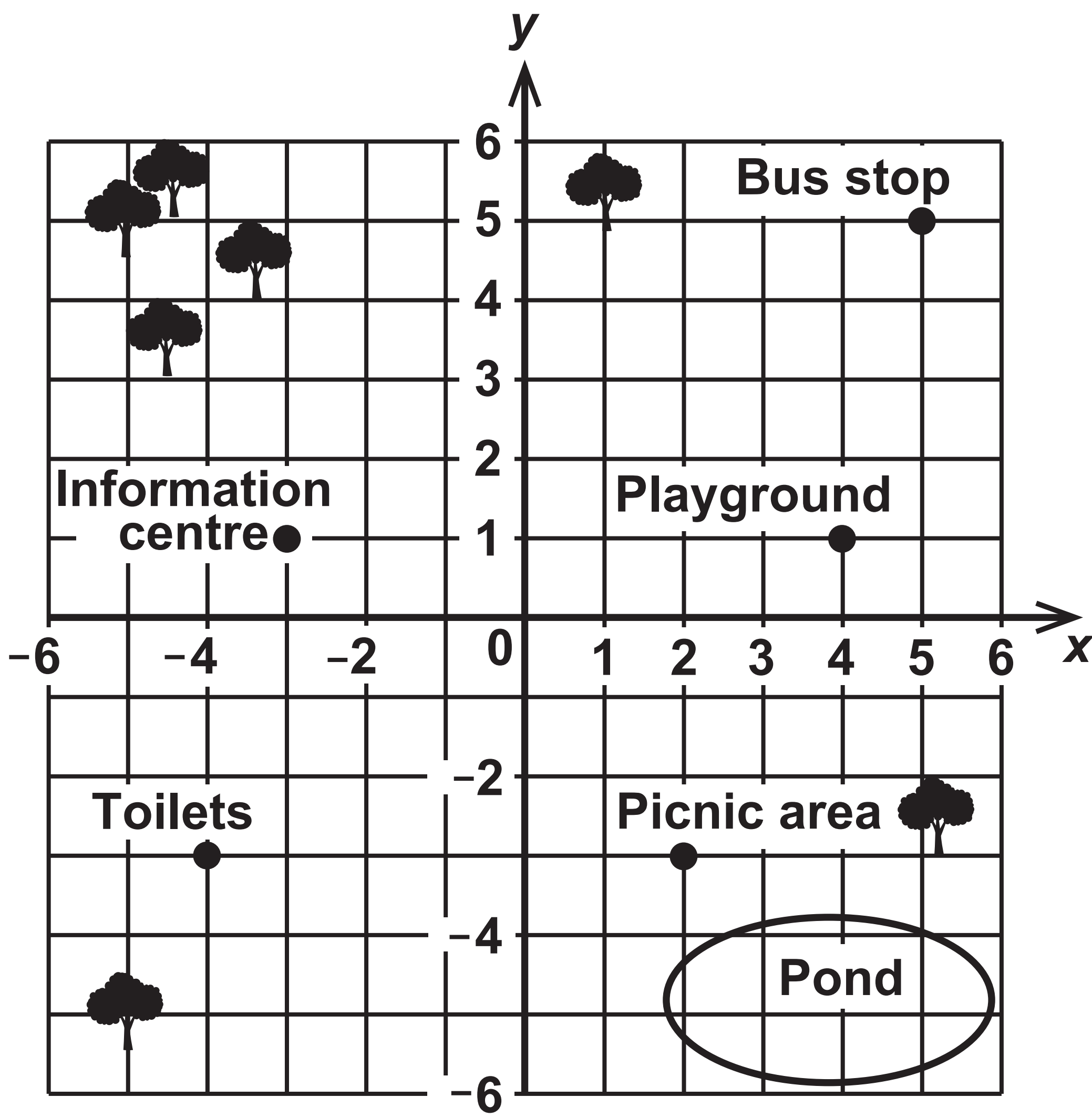


Question 3 (b) (ii)

Diagram NOT drawn to scale



Question 4



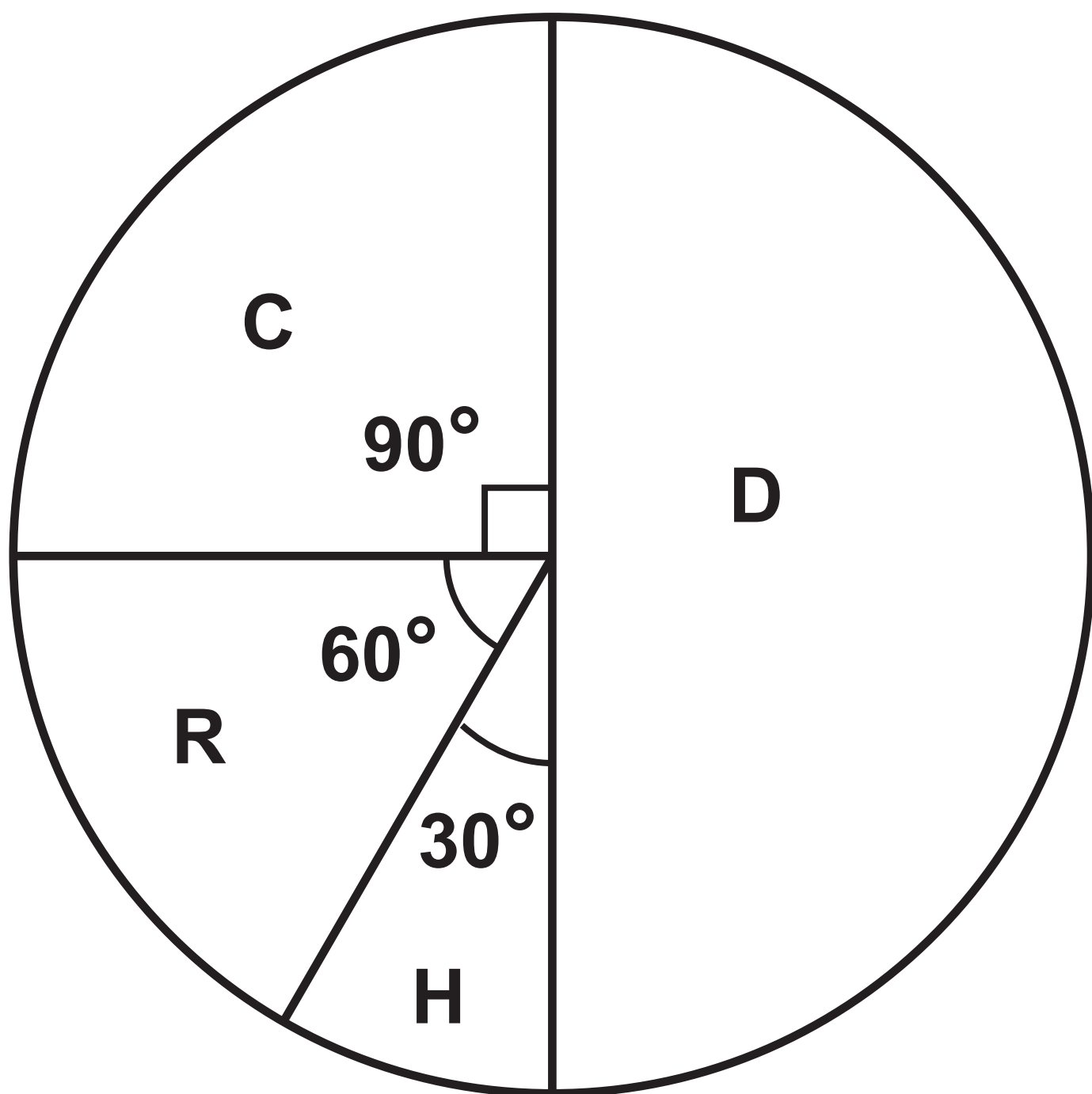
Question 5 (a)

Key: C = cat

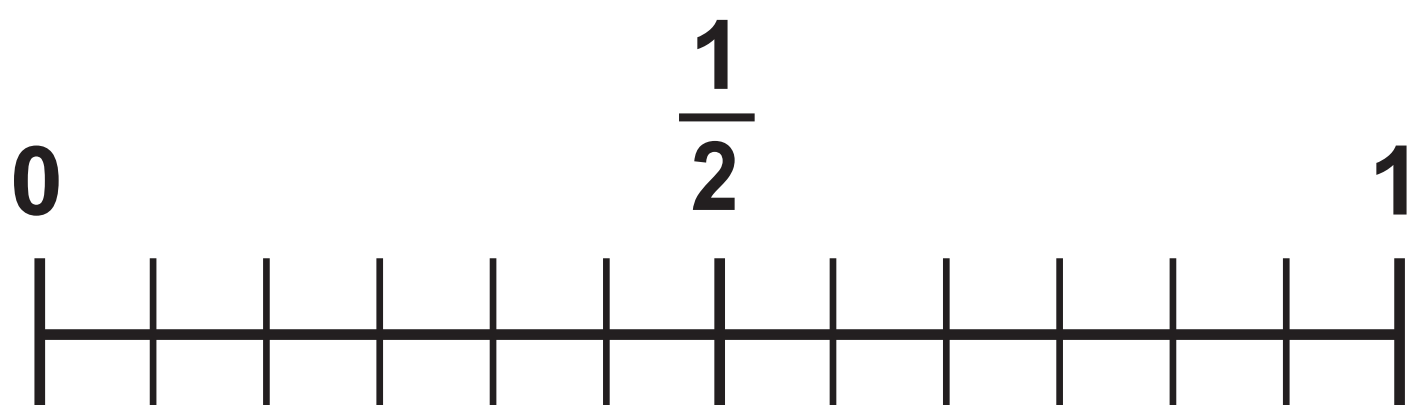
D = dog

H = hamster

R = rabbit



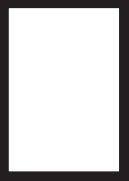
Question 5 (b)



Question 8

Table

Key:  pencil  protractor  pencil sharpener

Stationery items	Total cost
   	£4.39
    	£3.20
    	£5.38

Question 9

Formula

$$\text{Points total} = 3 \times \begin{matrix} \text{number of} \\ \text{wins} \end{matrix} + 2.5 \times \begin{matrix} \text{number of} \\ \text{draws} \end{matrix} - \begin{matrix} \text{number of} \\ \text{losses} \end{matrix}$$

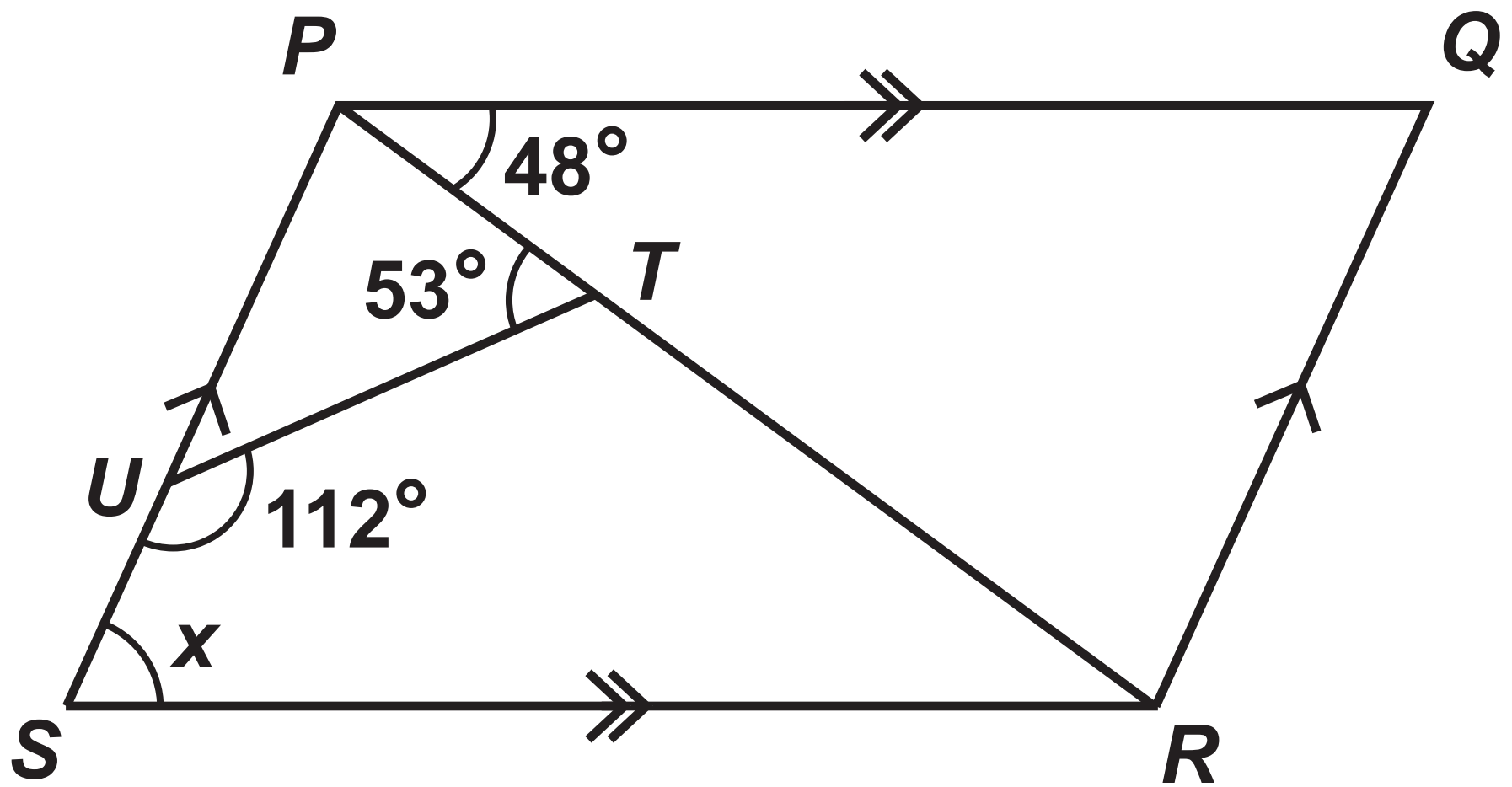
Question 13

Small pumpkin pie (serves 8)

340 g	shortcrust pastry
450 g	pumpkin
2	large eggs
75 g	brown sugar
275 ml	double cream
$\frac{1}{2}$ tsp	cinnamon

Question 16

Diagram NOT drawn to scale



Question 17

Information

1 mile = 1.6 km
1 gallon = 4.5 litres

Motorway sign

M5

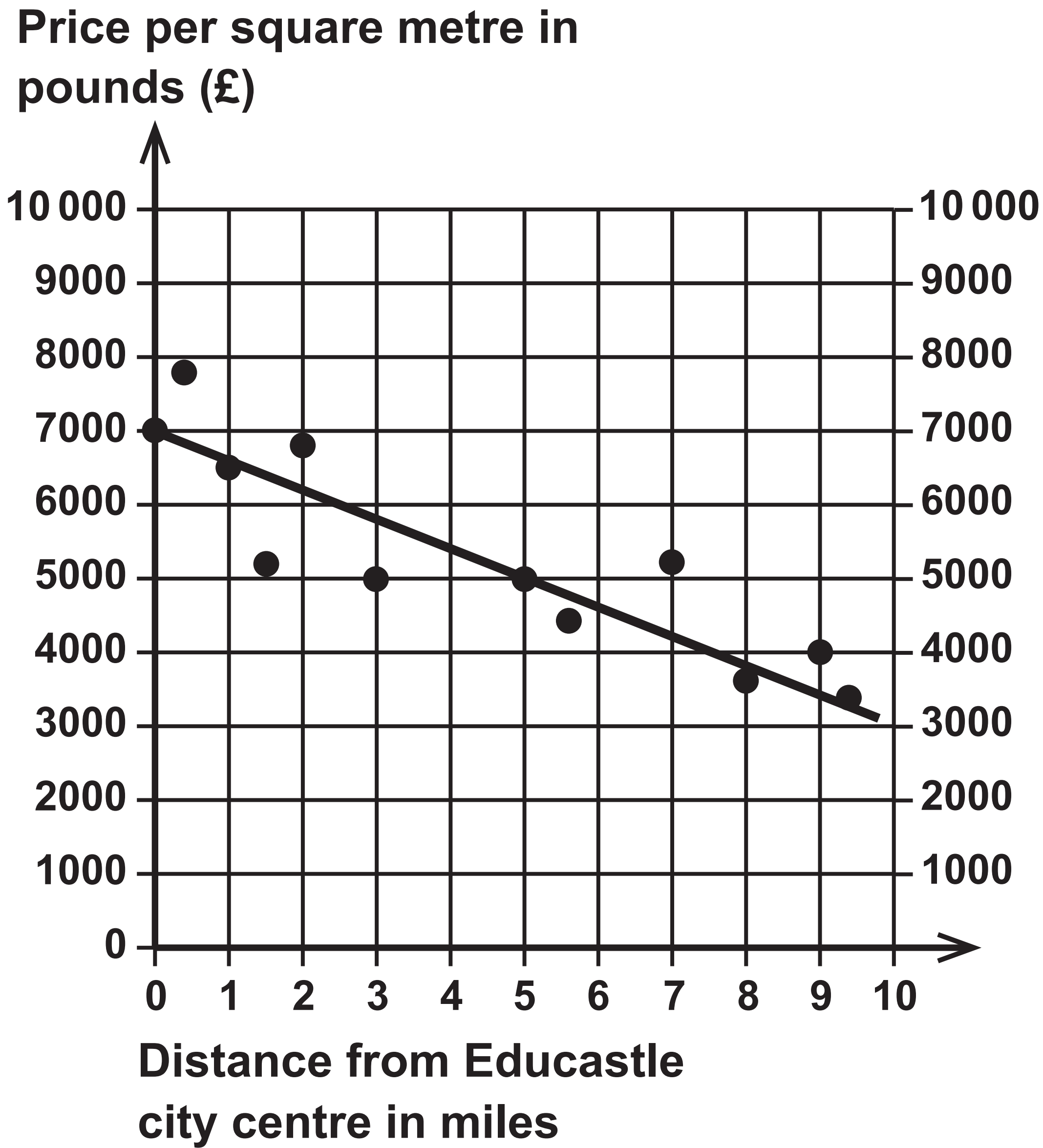
The South West

Weston – s – Mare 10

Taunton 32

Exeter 64

Question 18



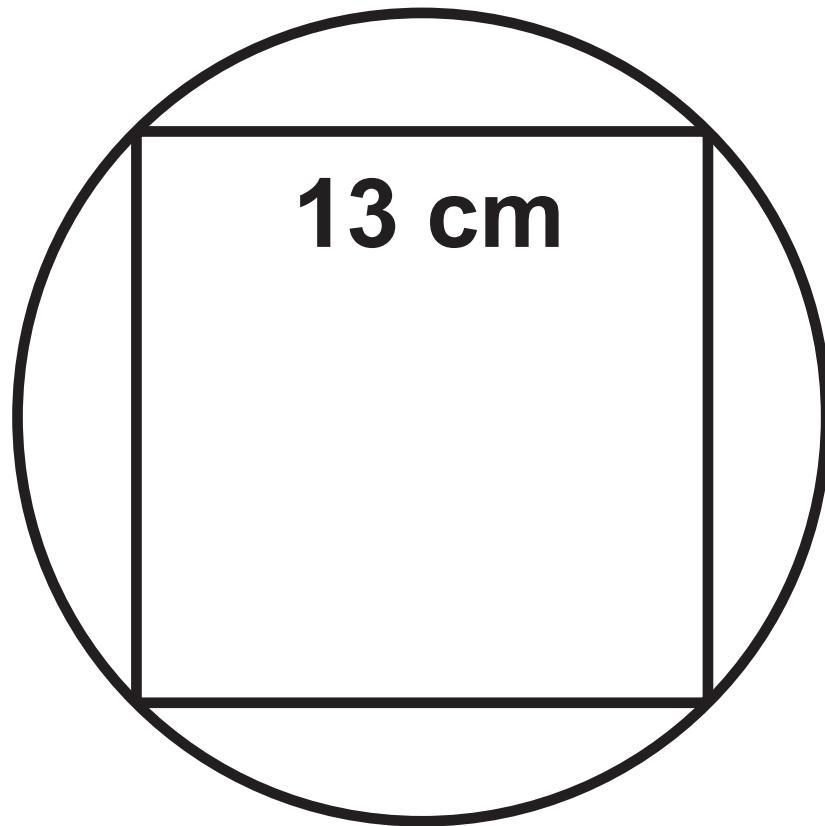
Question 18 (d)

Table

Price, p , thousand pounds	Frequency
$100 < p \leq 150$	8
$150 < p \leq 200$	12
$200 < p \leq 250$	9
$250 < p \leq 300$	5
$300 < p \leq 350$	1

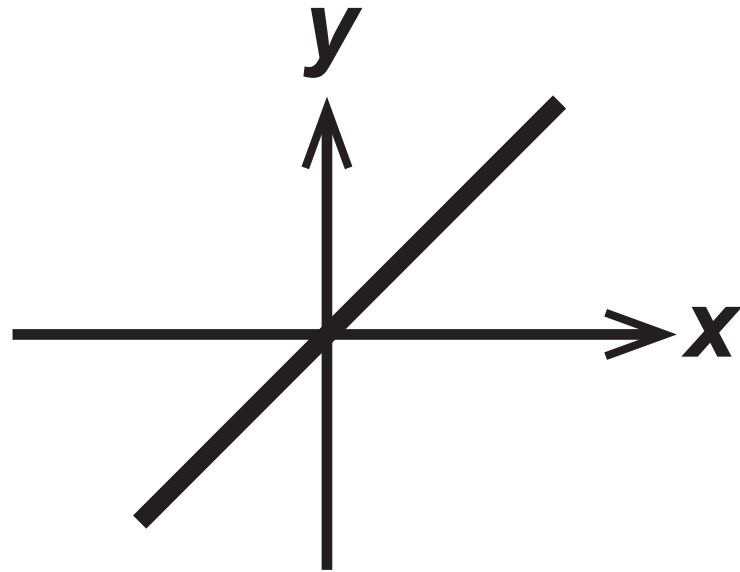
Question 20

Diagram NOT drawn to scale

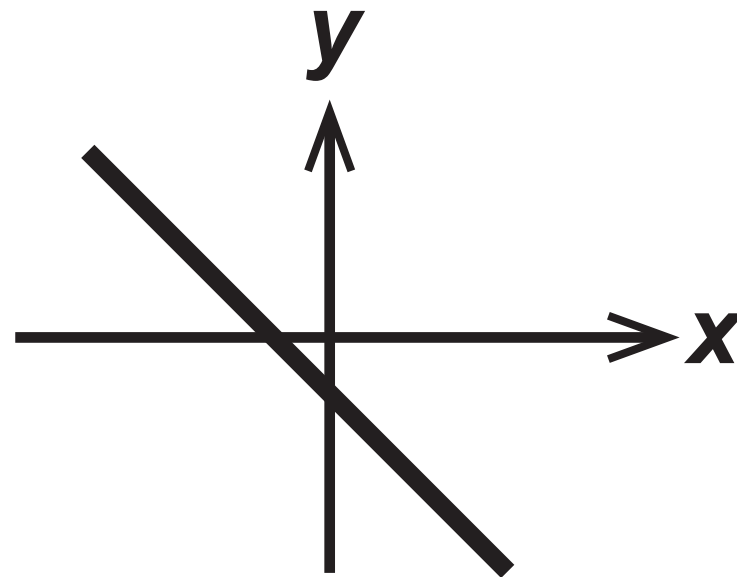


Question 21 (a)

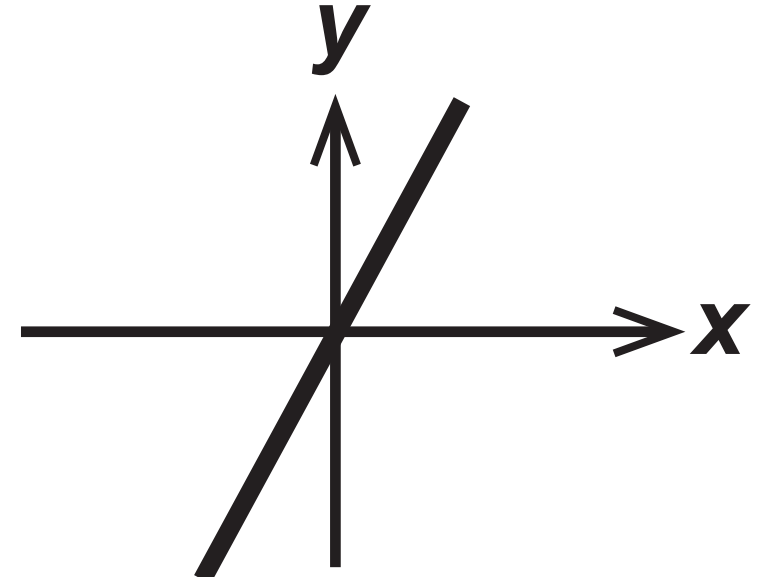
Graph A



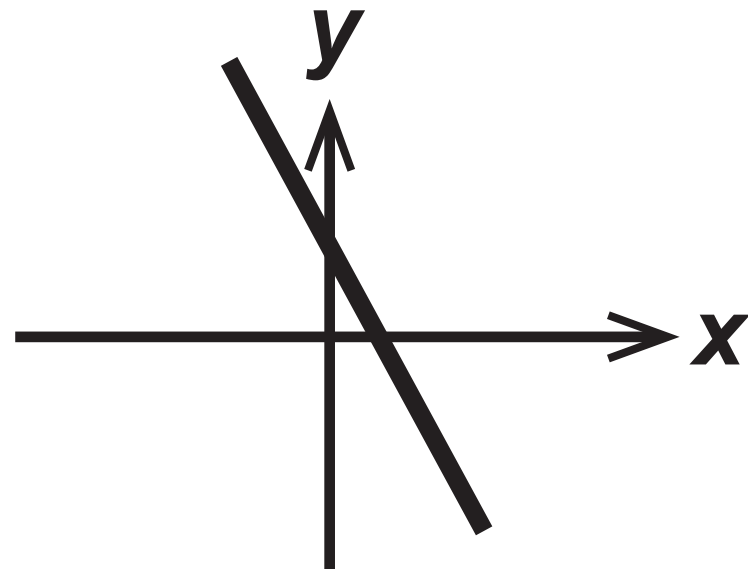
Graph B



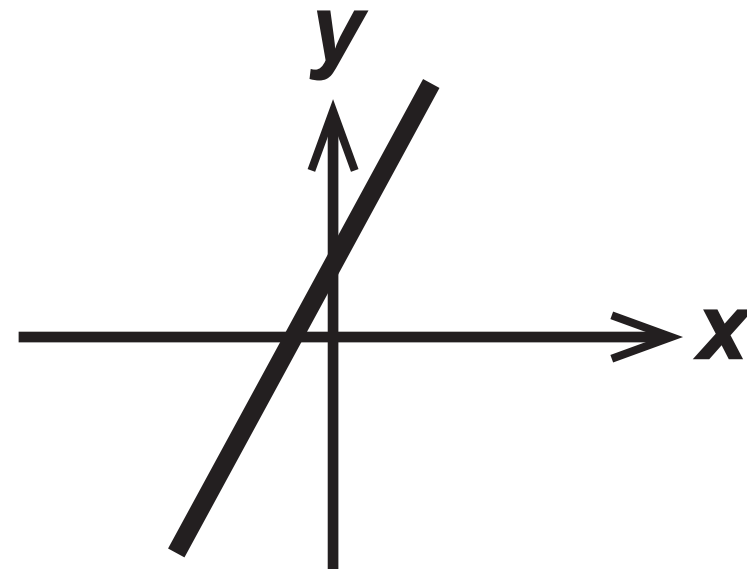
Graph C



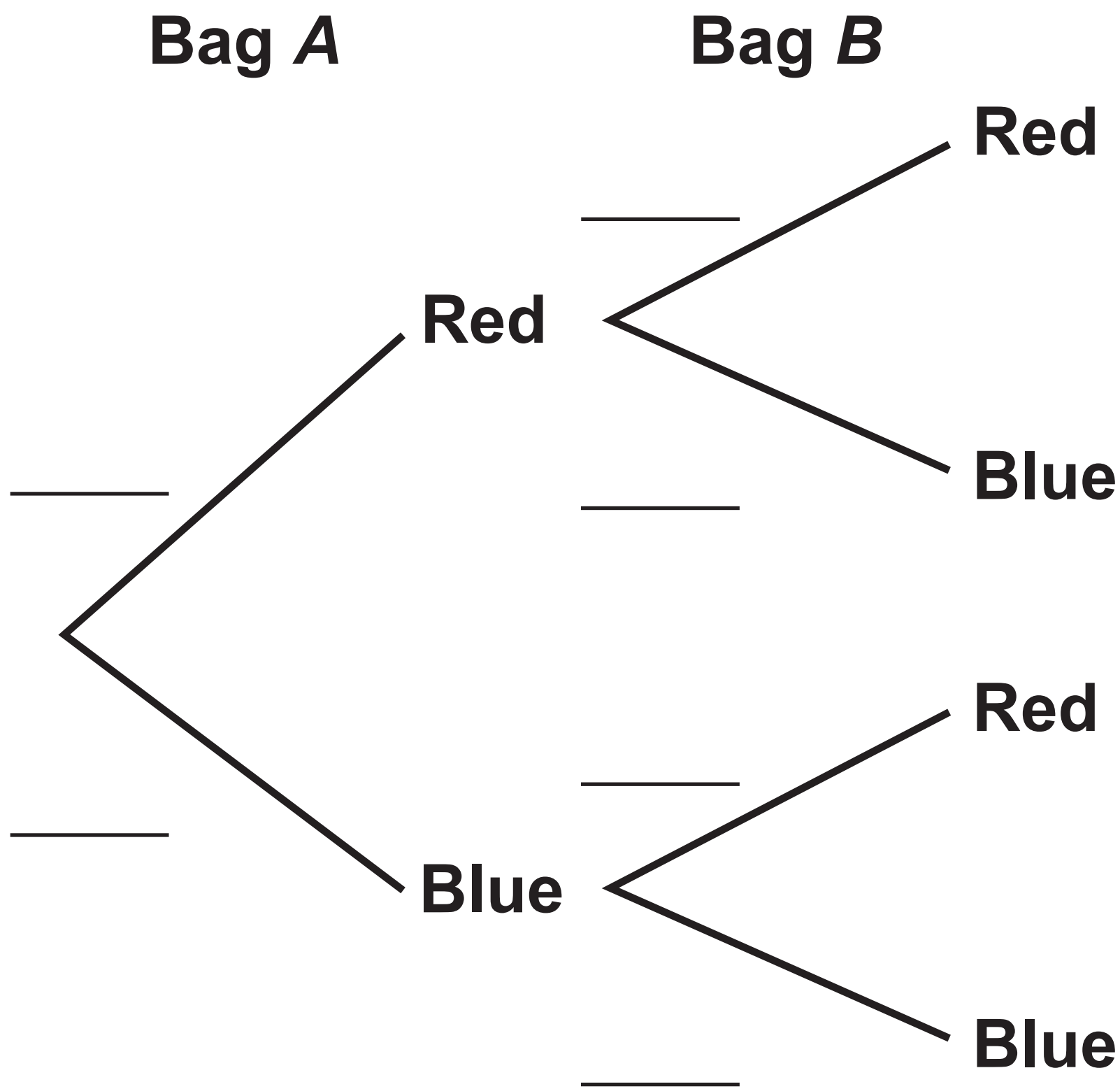
Graph D



Graph E

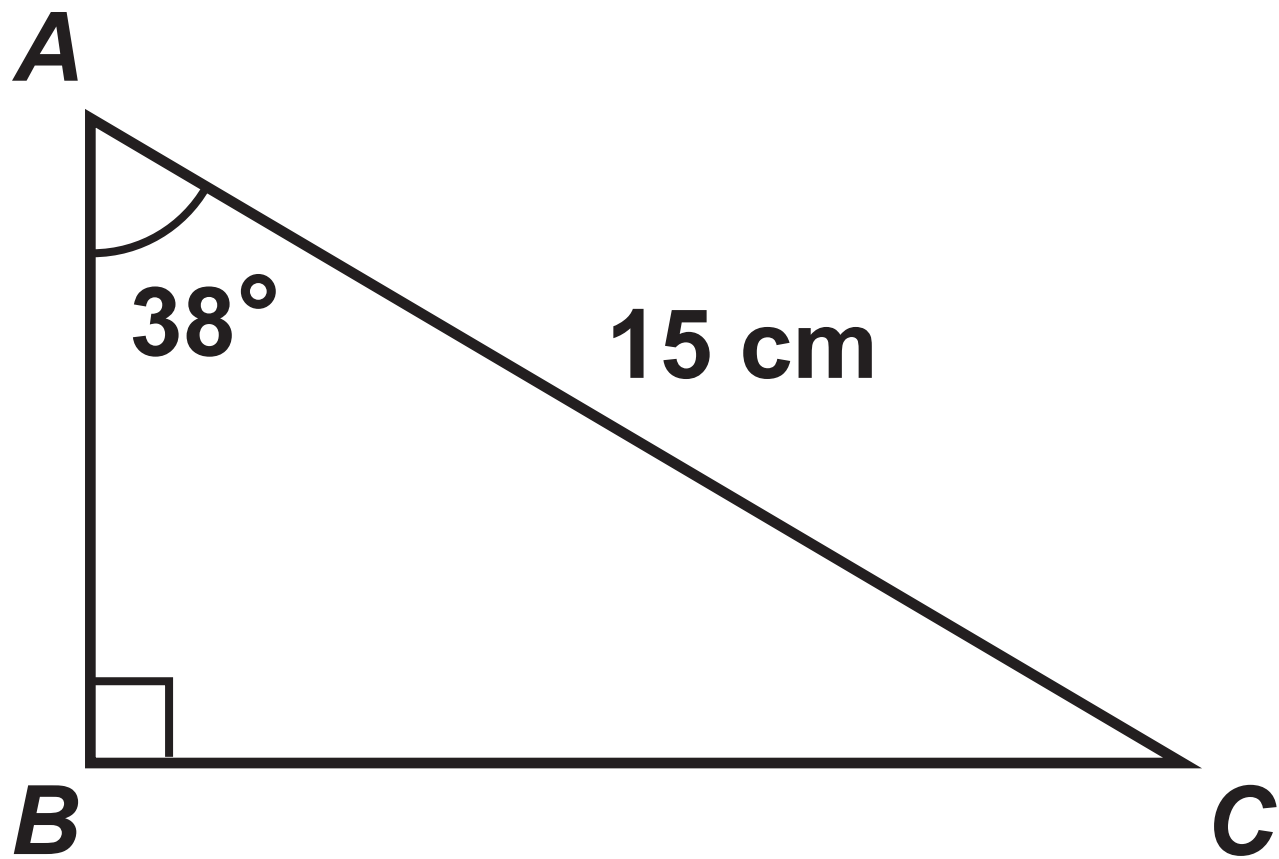


Question 22 (a)



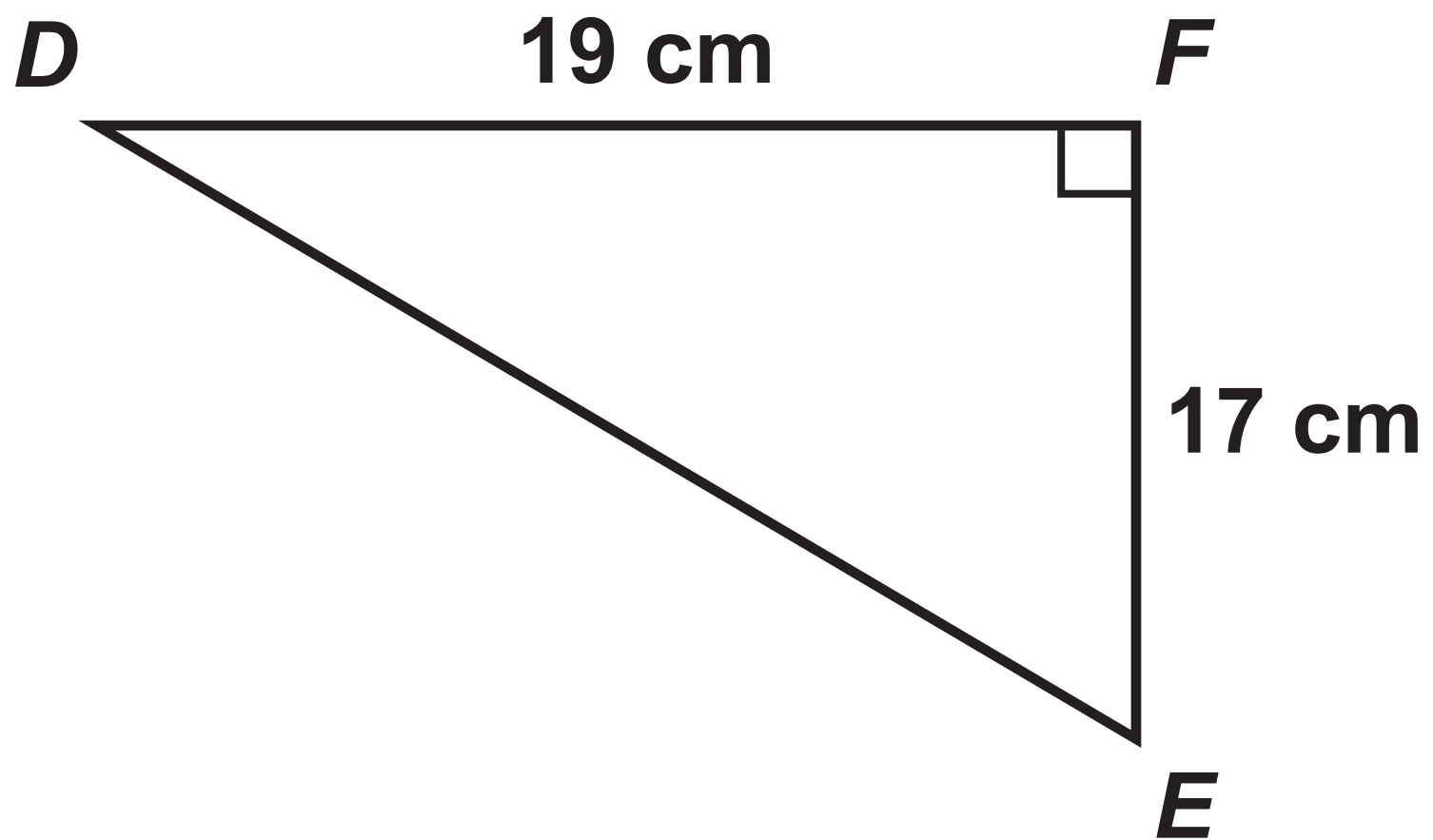
Question 23 (a)

Diagram NOT drawn to scale



Question 23 (b)

Diagram NOT drawn to scale



MATHEMATICS

**FORMULA LIST
FOUNDATION TIER
AND HIGHER TIER
GCSE**

You must not write on these formulae pages.

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

AREA AND VOLUME FORMULAE

Where r is the radius of the sphere or cone,
 l is the slant height of a cone and
 h is the perpendicular height of a cone:

Curved surface area of a cone = $\pi r l$

Surface area of a sphere = $4\pi r^2$

Volume of a sphere = $\frac{4}{3}\pi r^3$

Volume of a cone = $\frac{1}{3}\pi r^2 h$

KINEMATICS FORMULAE

Where a is constant acceleration,
 u is initial velocity, v is final velocity,
 s is displacement from the position
when $t = 0$ and t is time taken:

$$v = u + at$$

$$s = ut + \frac{1}{2}at^2$$

$$v^2 = u^2 + 2as$$

C300U20-1A

WEDNESDAY, 4 JUNE 2025 – MORNING

MATHEMATICS

FOUNDATION TIER

Additional Formulae

PERIMETER, AREA AND VOLUME

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

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

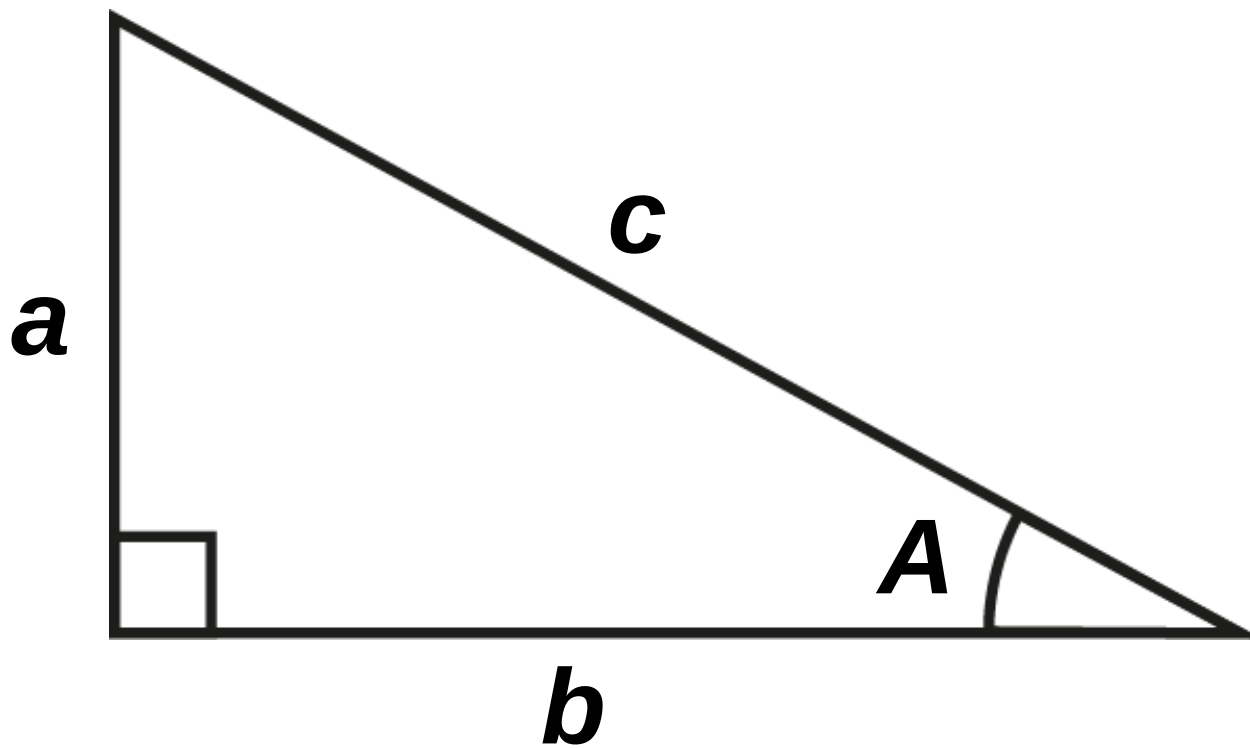
Volume of a prism =
area of cross section $\times$ length

Where r is the radius and
 d is the diameter:

$$\text{Circumference of a circle} = 2\pi r = \pi d$$

$$\text{Area of a circle} = \pi r^2$$

PYTHAGORAS' THEOREM AND TRIGONOMETRY



In any right – angled triangle where a , b and c are the length of the sides and c is the hypotenuse:

$$a^2 + b^2 = c^2$$

In any right – angled triangle ABC where a , b and c are the length of the sides and c is the hypotenuse:

$$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$$

COMPOUND INTEREST

Where P is the principal amount,
 r is the interest rate over a given period
and n is number of times that the
interest is compounded:

$$\text{Total accrued} = P \left(1 + \frac{r}{100} \right)^n$$

PROBABILITY

Where $P(A)$ is the probability of
outcome A and $P(B)$ is the probability
of outcome B :

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$