

Write your name here

Surname

Other names

**Pearson Edexcel  
International Lower  
Secondary Curriculum**

Centre Number

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Candidate Number

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# Mathematics

Year 9

**Achievement Test**

Thursday 4 June 2015 – Afternoon  
**Time 1 hour 20 minutes**

Paper Reference

**LMA01/01**

**You must have:**

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks



## Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- Calculators are allowed.

## Information

- The total mark for this paper is 80.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

## Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

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Turn over ►

**PEARSON**

## SECTION A

Answer ALL questions.

In Section A put a cross in one box  to indicate your answer. If you change your mind, put a line through the box  and then put a cross in another box .

Each question in Section A is worth one mark.

1 What is the Highest Common Factor of 18 and 24?

3

6

72

432

2 Katherine has 10 cards, numbered 1 to 10

She chooses one at random.

What is the probability that she chooses a number that is less than 3?

$\frac{2}{8}$

$\frac{2}{10}$

$\frac{3}{7}$

$\frac{3}{10}$

3 Calculate the size of angle  $a$ .

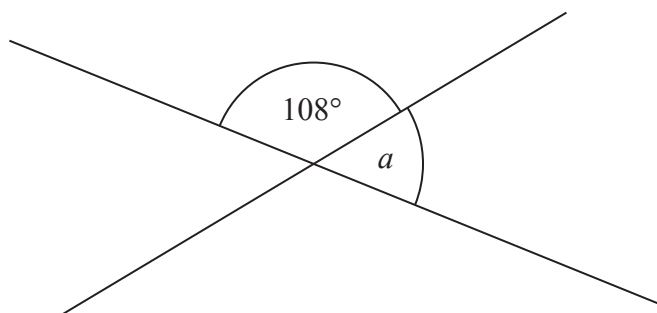


Diagram **NOT** accurately drawn

$54^\circ$

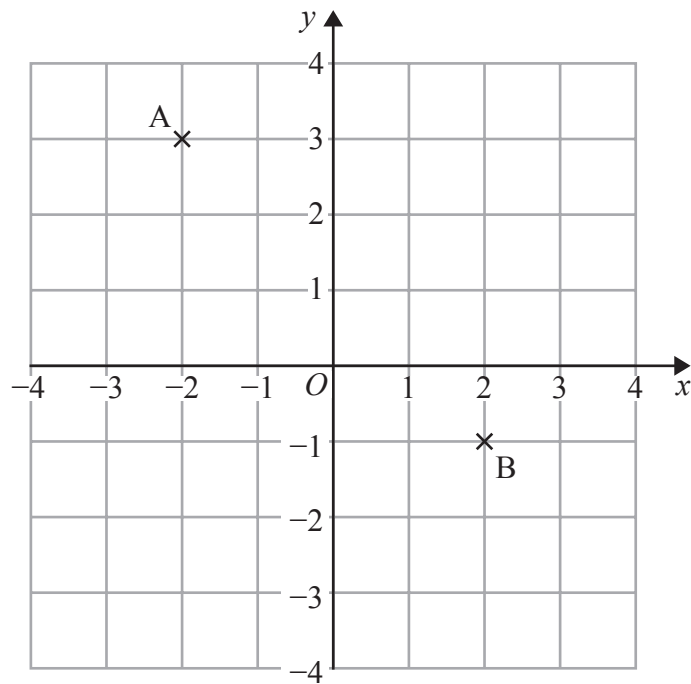
$72^\circ$

$108^\circ$

$252^\circ$



4 What are the coordinates of the points A and B on the diagram below?



(-2, 3) and (-1, 2)    (3, -2) and (-1, 2)    (3, -2) and (2, -1)    (-2, 3) and (2, -1)

5 What is  $\frac{36}{64}$  written in its simplest form?

6 What is  $\frac{3}{8}$  of 240?



7 There are 30 children in a class.

6 of the children have brown hair.

Sadiq draws a pie chart to show the hair colours of children in the class.

What size should the sector be that represents children with brown hair?

$5^\circ$

$20^\circ$

$36^\circ$

$72^\circ$

8 Saima answers 32 out of 40 questions on a test.

What percentage of the questions did she answer?

20%

48%

64%

80%

9 Factorise  $20h + 15$

$20(h + 15)$

$5(4h + 15)$

$15(20h + 1)$

$5(4h + 3)$

10 The  $n$ th term of an arithmetic sequence is  $8n - 3$

What is the 12th term in this sequence?

85

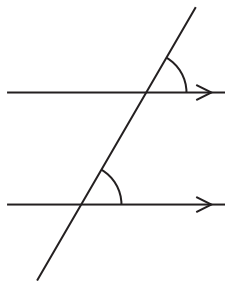
93

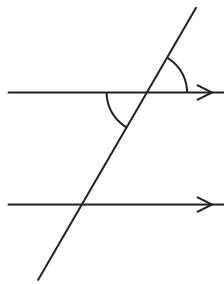
101

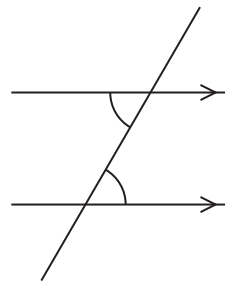
809

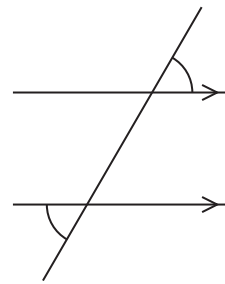


11 Which of these diagrams shows a pair of corresponding angles?










12 A circle has diameter 6 cm.

Which of these calculations will give the area of the circle?

$$\pi \times 3$$

$$\pi \times 6$$

$$\pi \times 3 \times 3$$

$$\pi \times 6 \times 6$$

13 What is  $-3(4v+5) - 7v+14$  in its simplest form?

$$-5v - 1$$

$$-5v + 1$$

$$-19v - 1$$

$$-19v + 1$$

14 What is  $\frac{5}{8} + \frac{5}{9}$ ?

$$\frac{10}{17}$$

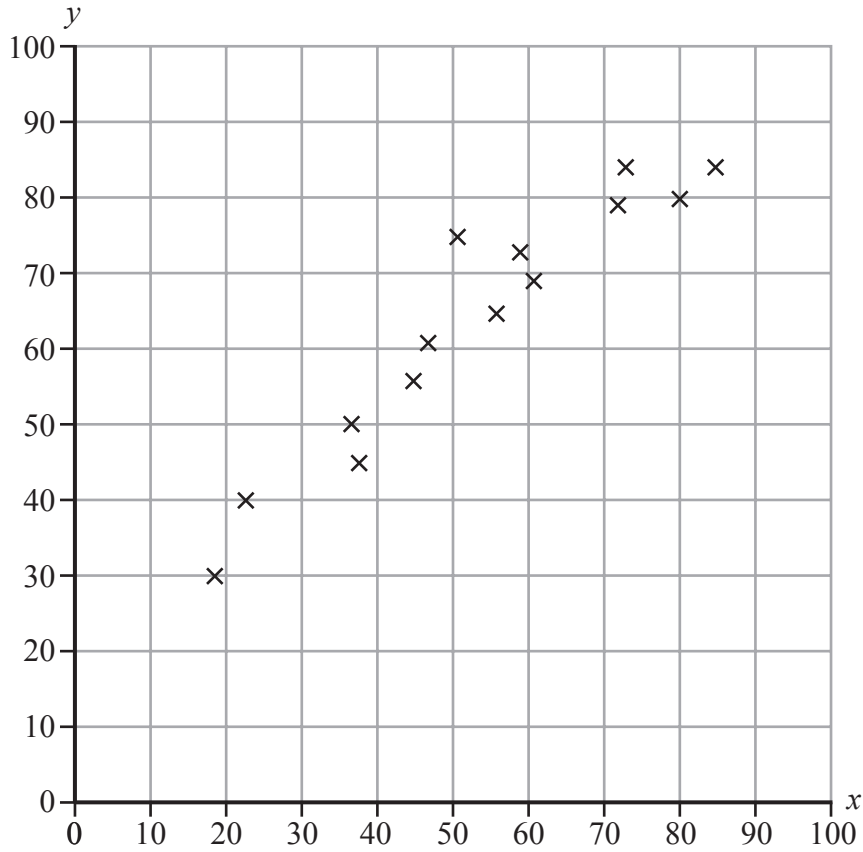
$$\frac{10}{72}$$

$$\frac{85}{17}$$

$$\frac{85}{72}$$



15 What phrase describes the correlation on the scatter graph?



Positive correlation

Negative correlation

Direct correlation

No correlation

16 Barry records the colour of a number of cars then writes the relative frequency of each colour in the table below.

Colour	Red	Silver	Black	Other
Relative frequency	$\frac{7}{20}$	$\frac{13}{40}$		$\frac{1}{10}$

What is the relative frequency of selecting a black car?

$\frac{1}{4}$

$\frac{9}{40}$

$\frac{19}{40}$

$\frac{49}{70}$



17 What is 142 000 000 written in standard form?

$1.42 \times 10^6$



$142 \times 10^6$



$14.2 \times 10^7$



$1.42 \times 10^8$



18 What is  $4m(5m + 6) - 6(m^2 - 3m)$  written in its simplest form?

$14m^2 + 6m$



$14m^2 + 42m$



$20m^3$



$56m^3$



19 What is the modal class of this set of data?

Class interval	Frequency
$0 \leq t < 10$	27
$10 \leq t < 20$	25
$20 \leq t < 30$	56
$30 \leq t < 40$	67
Total	175

$0 \leq t < 10$



27



$30 \leq t < 40$



67



20 What is the  $n$ th term of the sequence?

3, 12, 27, 48, 75, ...

$9n - 6$



$3n + 9$



$3n^2$



$n^3$



21 Fully factorise  $x^2 + 8x + 12$

$x(x + 8) + 12$



$x^2 + 4(2x + 3)$



$(x + 2)(x + 6)$



$(x + 4)(x + 3)$



22 The length of a line is 5.7 cm, correct to the nearest millimetre.

What is the minimum possible length of the line?

5.6 cm

5.65 cm

5.69 cm

5.7 cm

23 Round 2.178946 to 3 significant figures.

2.17

2.18

2.178

2.179

24 A vehicle travelled 18 kilometres in 9 minutes.

What was its average speed?

0.5 km/h

2 km/h

120 km/h

162 km/h

25 What is  $3.83 \times 10^{-4}$  written as an ordinary number?

0.0000383

-0.000383

0.000383

38 300

26 Expand and simplify  $(2x+3)(3x-2)$

$6x^2 - 6$

$6x^2 + 5x - 6$

$6x^2 + 13x - 6$

$6x^2 + 13x + 6$





27 The diagram shows part of a circle, centre  $O$ , radius 4 cm.

Using  $\pi = 3.14$ , calculate the length of the arc from A to B to the nearest millimetre.

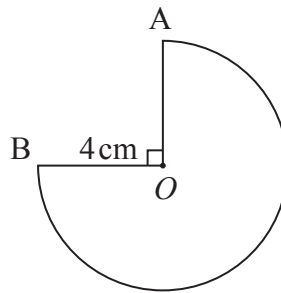


Diagram **NOT** accurately drawn

9.4 cm



18.8 cm



37.7 cm



150.7 cm



28 Which of these is the equation of a line that is parallel to  $y = 4x + 3$ ?

$y = 4x - 3$



$2y = 4x + 3$



$y = 8x + 6$



$y = 8x + 3$



29 Rohit has two fair, six-sided dice that both have faces numbered 1 to 6

He rolls both dice and adds their scores together.

What is the probability that the total is 11?

$\frac{1}{12}$



$\frac{2}{12}$



$\frac{1}{36}$



$\frac{2}{36}$



30 What is the value of  $(4^{-3})^{\frac{1}{2}}$ ?

-32



$\frac{1}{32}$



$\frac{1}{8}$



8



**TOTAL FOR SECTION A IS 30 MARKS**



**SECTION B**

**Answer ALL questions.  
You must show all your working.**

**31** (a) What is 60% of 240?

.....  
(1)

(b) Put these values in order, starting with the smallest.

47%                   $\frac{7}{20}$                   0.45                   $\frac{2}{5}$

.....  
(2)

(c) (i) Calculate  $\frac{3}{8} \times \frac{2}{5}$

.....  
(1)

(ii) Show that  $\frac{5}{12} - \frac{2}{5} = \frac{1}{60}$

.....  
(2)

**(Total for Question 31 is 6 marks)**



32 (a) Here are the weights of 9 letters in grams.

28, 37, 15, 17, 92, 84, 55, 112, 17

What is the median weight?

..... g  
(1)

(b) The weights of another 40 letters are recorded in the table below.

Weight (g)	Frequency
$0 \leq w < 10$	17
$10 \leq w < 20$	9
$20 \leq w < 30$	11
$30 \leq w < 40$	3

Calculate an estimate of the mean weight of these 40 letters.

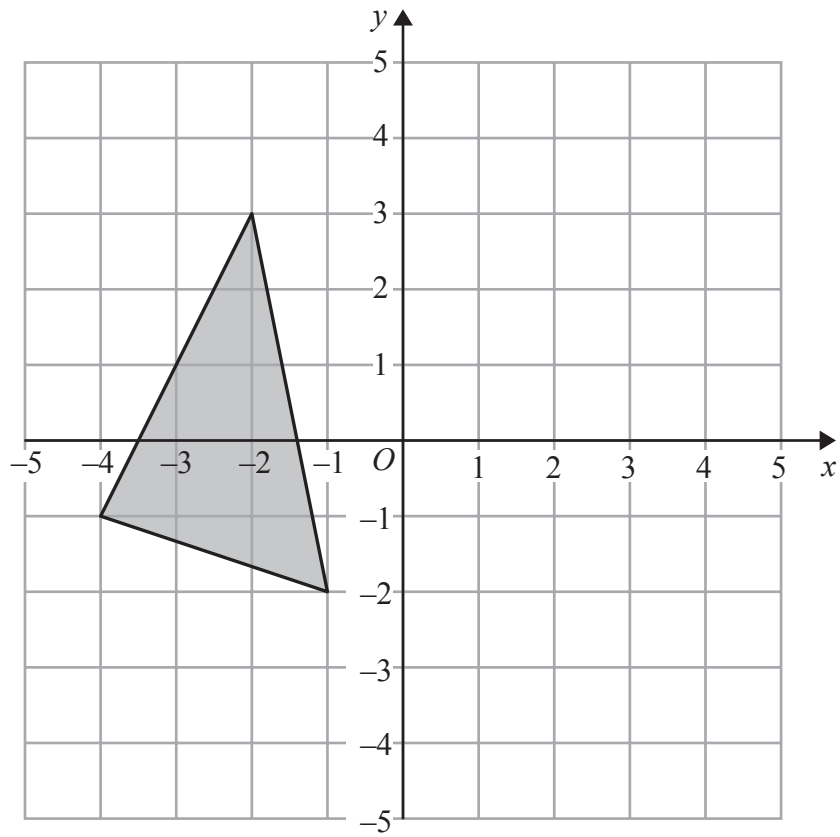
You must show your working.

..... g  
(3)

(Total for Question 32 is 4 marks)



33 (a) Reflect the shaded triangle below in the  $y$ -axis.



(1)

(b) Find the area of the triangle below.

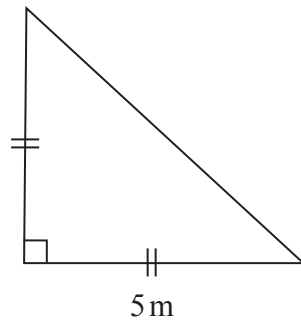


Diagram **NOT** accurately drawn

.....  $\text{m}^2$   
(1)



(c) Calculate the size of the angle marked  $a$ .

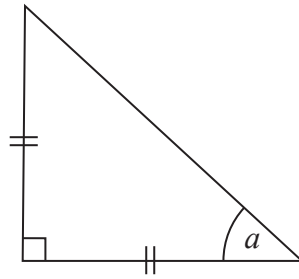


Diagram **NOT**  
accurately drawn

.....  
(1)

(d) Calculate the size of the angle marked  $b$ .

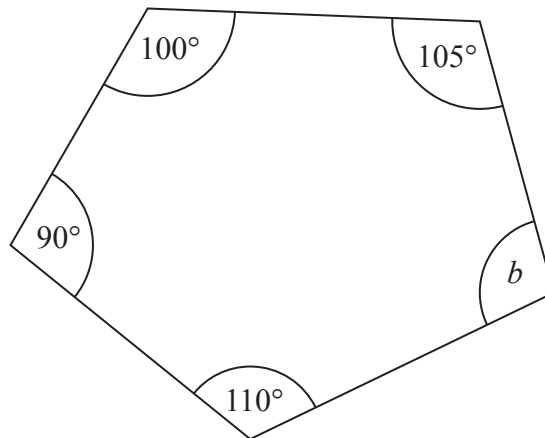


Diagram **NOT**  
accurately drawn

.....  
(2)

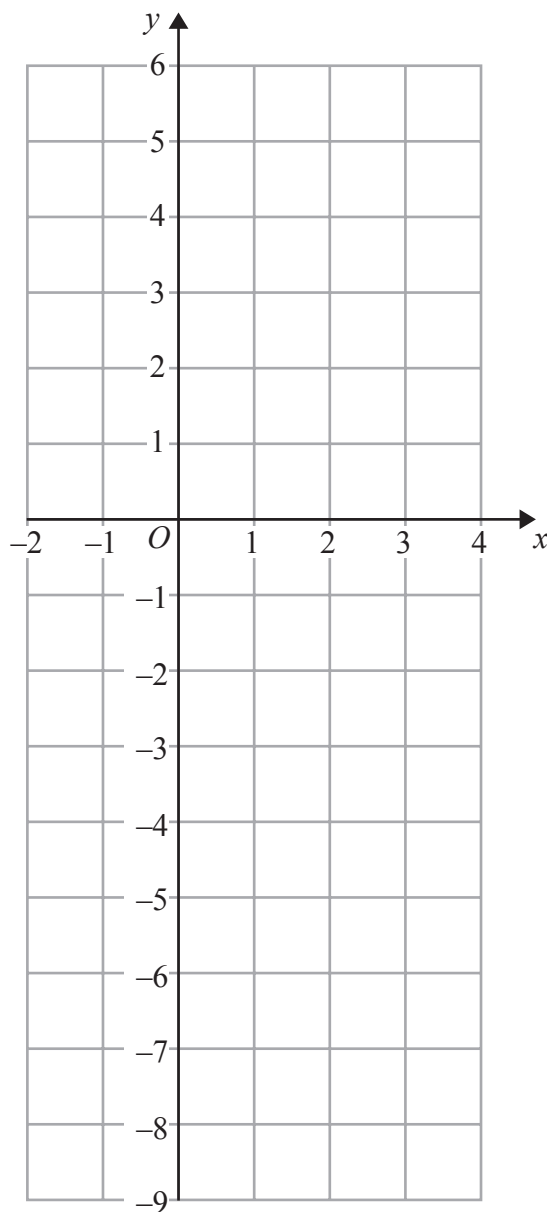
(Total for Question 33 is 5 marks)



34 (a) (i) Complete this table of values for  $y = 3x - 5$

$x$	-1	0	1	2	3
$y$		-5	-2		4

(ii) Draw the graph of  $y = 3x - 5$  on the grid.



(2)

(b) Write down the  $n$ th term of this arithmetic sequence.

4, 7, 10, 13, 16, ...

.....  
(2)

(Total for Question 34 is 4 marks)



35 (a) Sketch the net of a cube on the dotted grid.



(1)

(b) Find the surface area of a cube with edge 3 cm.

..... cm<sup>2</sup>  
(1)

(c) A cube with edge 3 cm is cut in half to make the prism below.

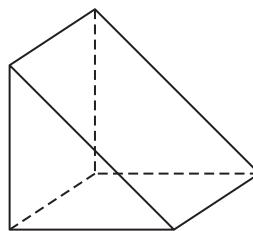


Diagram **NOT** accurately drawn

What is the volume of this prism?

..... cm<sup>3</sup>  
(2)

(Total for Question 35 is 4 marks)



36 (a) Expand

$$4(2p - 5)$$

.....  
(1)

(b) Solve the equation

$$-3(10q + 4) = 102$$

.....  
(2)

(c) Solve the inequality

$$7r - 6 \geq 50$$

.....  
(2)

(d) Factorise

$$x^2 - 49$$

.....  
(1)

---

(Total for Question 36 is 6 marks)

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37 A group of children took a science test.

Their scores are shown below.

43, 31, 49, 20, 47,

33, 43, 37, 35, 25

(a) Draw an ordered stem and leaf diagram for this data.

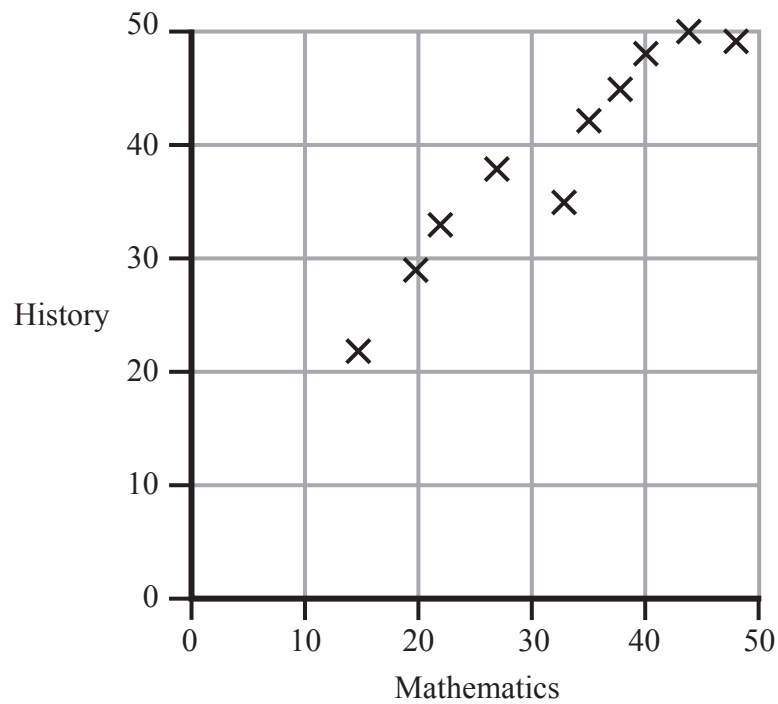


Key: | =

(3)

Another group of children took a mathematics test and a history test.

Their scores are recorded on the scatter graph.



(b) Raj was absent for his history test.

He scored 30 marks in his mathematics test.

Use the scatter graph to estimate his history mark.

(1)

(Total for Question 37 is 4 marks)



**38** Amy, Samir and Tom share a 330ml bottle of cola in the ratio 5:3:2

(a) How much cola does Tom get?

..... ml  
(2)

100ml of cola contains 38 calories.

(b) How many calories would the 330ml bottle of cola contain?

.....  
(2)

**(Total for Question 38 is 4 marks)**

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39 (a) Make  $t$  the subject of the formula below.

$$M = 3(t + 4p)$$

.....  
(2)

(b) Solve these simultaneous equations

$$5x + 3y = 38$$

$$8x + 6y = 65$$

$x =$ .....  $y =$ .....  
(3)

**(Total for Question 39 is 5 marks)**

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40 (a) Find the value of  $x$ .

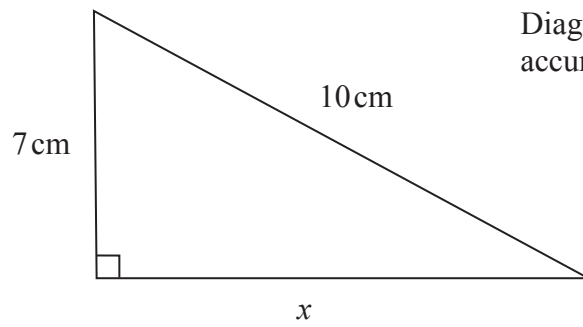


Diagram **NOT**  
accurately drawn

..... cm  
(2)

(b) Find the value of  $y$ .

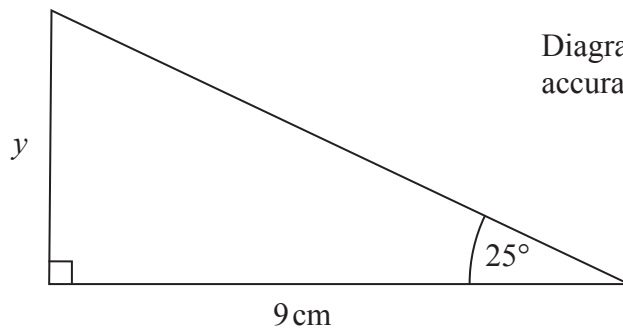


Diagram **NOT**  
accurately drawn

..... cm  
(3)

(Total for Question 40 is 5 marks)



41 The weight of a paper cup in kg is  $1.5 \times 10^{-3}$

A company makes 20 000 paper cups each week.

What is the total weight, in kg, of the paper cups produced each week?

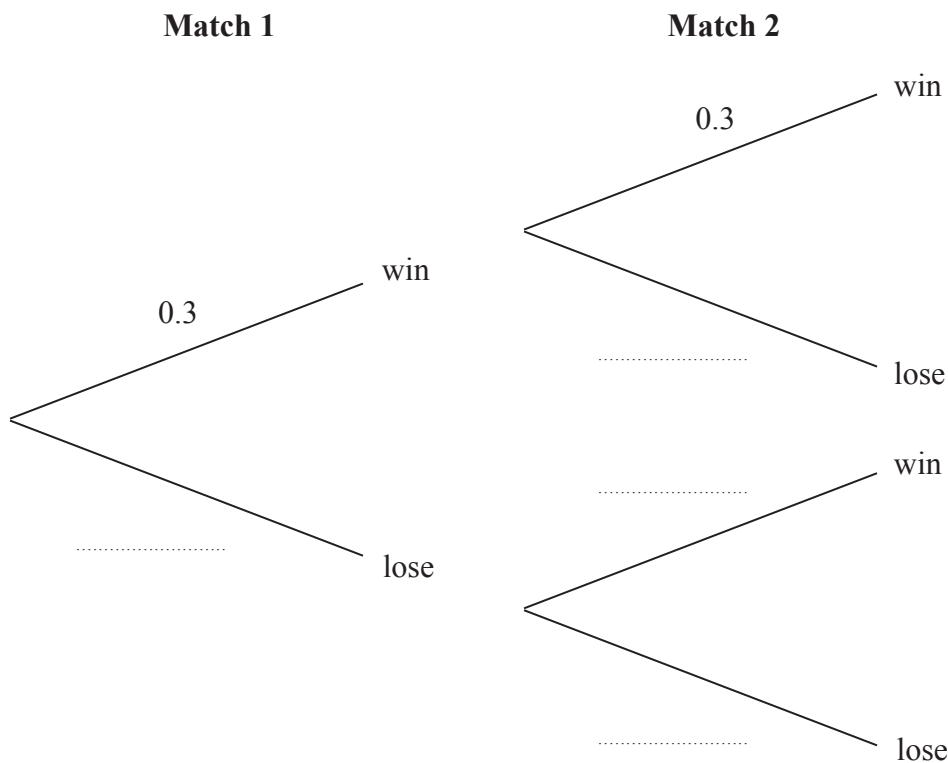
..... kg

**(Total for Question 41 is 1 mark)**

42 The probability that Stuart wins at tennis is 0.3

Stuart plays two tennis matches.

Complete the probability tree diagram to show this information.



**(Total for Question 42 is 2 marks)**

**TOTAL FOR SECTION B IS 50 MARKS  
TOTAL FOR PAPER IS 80 MARKS**



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