

OCR

Oxford Cambridge and RSA

Mock Test Papers - Paper3 - Test3

Paper 3 (Foundation Tier)

Time allowed: 1 hour 30 minutes

F

You must have:

- the Formulae Sheet for Foundation Tier (inside this document)

You can use:

- a scientific or graphical calculator
- geometrical instruments
- tracing paper

Please write clearly in black ink. Do not write in the barcodes.

Centre number

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Candidate number

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First name(s)

Last name

INSTRUCTIONS

- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
 - Write your answer to each question in the space provided. If you need extra space use the lined pages at the end of this booklet. The question numbers must be clearly shown.
 - Answer all the questions.
 - Where appropriate, your answer should be supported with working.
- Marks might be given for using a correct method, even if your answer is wrong.
- Use the π button on your calculator or take π to be 3.142 unless the question says something different.

INFORMATION

- The total mark for this paper is **100**.
 - The marks for each question are shown in brackets [].
- This document has 24 pages.

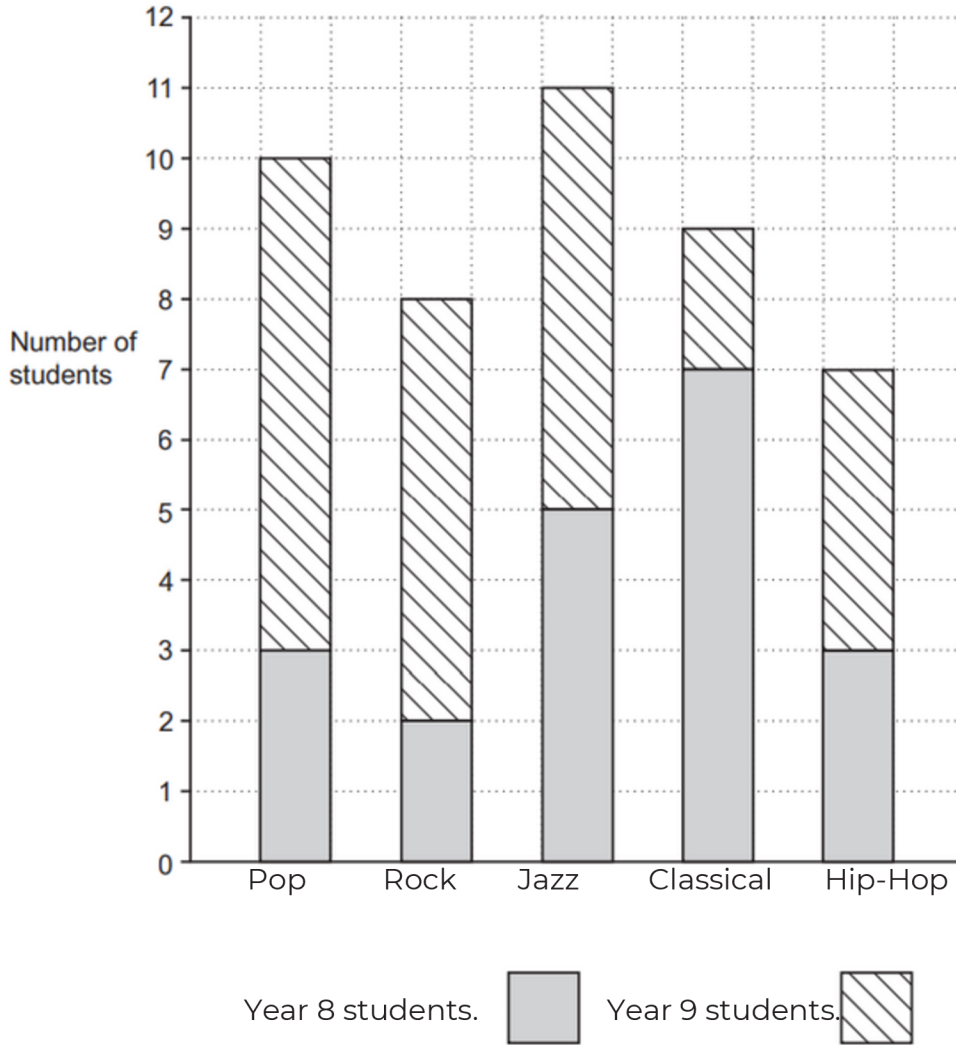
ADVICE

- Read each question carefully before you start your answer.

Turn over

Answer all the questions.

- 1 In a survey, some students chose their favorite type of music from a list of five genres. The bar chart shows the results.



- (a) (i) How many students chose Pop music?

(a)(i) [1]

- (ii) How many Year 9 students chose Rock music?

(ii) [1]

(b) What type of music was chosen by the most Year 9 students?

(b) [1]

(c) How many Year 8 students took part in the survey?

(c) [2]

(d) 45 students took part in the survey.

Write the ratio number of Year 8 students taking part : number of Year 9 students taking part in its simplest form.

(d) : [3]

Turn over

2 Use your calculator to work out.

(a) $\sqrt{625} + 45$

(a) [1]

(b) 6^3

(b) [1]

3 There are 200 marbles in a box.

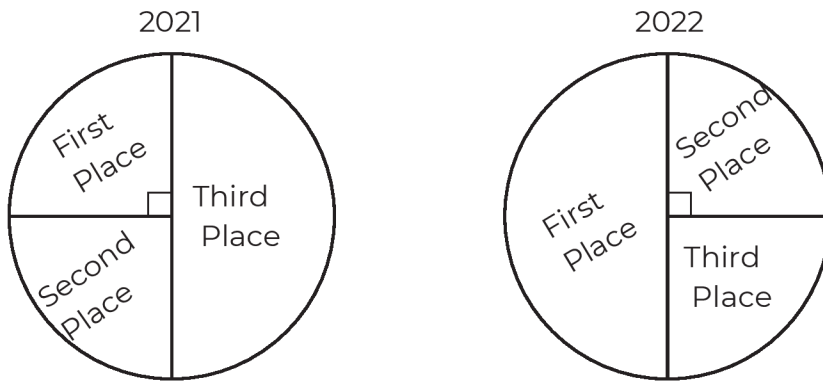
- 25% of the marbles are red.
- $\frac{1}{5}$ of the marbles are blue.
- The rest of the marbles are green.

Each red marble is worth 5p, each blue marble is worth 10p, and each green marble is worth 15p.

Work out the total value, in £, of the 200 marbles.
You must show your working.

£ [6]

- 4 A school choir participated in the same number of singing competitions in 2021 and 2022. The two pie charts below summarize their results for each year.



- (a) What fraction of the competitions did the choir place first in 2021 ?

(a) [1]

- (b) Did the choir's performance improve in 2022 ?
Explain how you know.

..... because

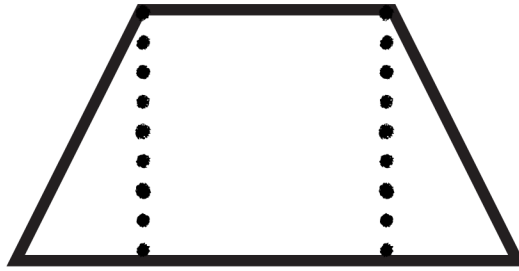
.....[1]

- 5 Increase 800 by 20%.

.....[3]

Turn over

- 6 A trapezoid is made by attaching two right triangles, one on each side of a rectangle.



Not to scale

- (a) If each right triangle has one 45° angle, what are the four angles of the trapezoid?

(a) $^\circ$, $^\circ$, $^\circ$, $^\circ$ [1]

- (b) If the rectangle inside the trapezoid has a length of 6 cm and a width of 4 cm, what is the perimeter of the trapezoid?

(b),,, [2]

- 7 A printer can print 40 pages in 8 minutes.
If another identical printer is used at the same time, how many pages can they print together in 12 minutes?

..... [2]

- 8 Simplify.

$$9t + 6u - 2t - 4u$$

..... [2]

Turn over

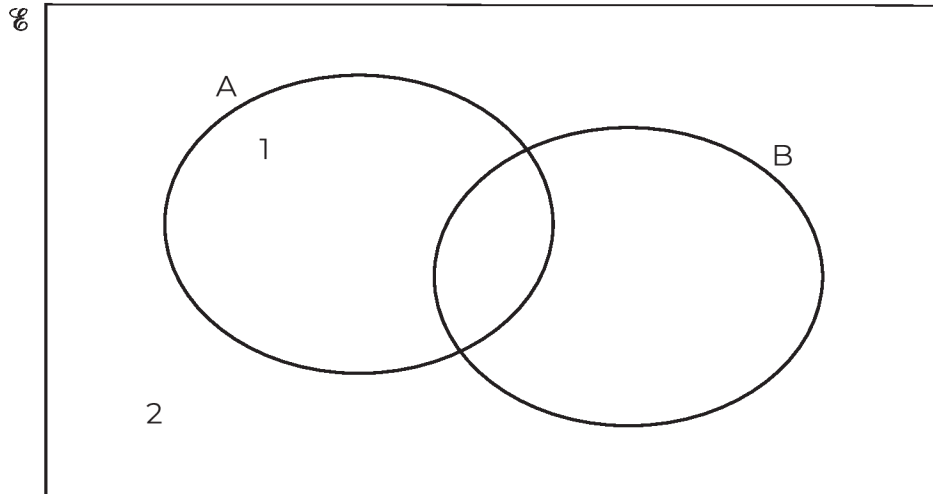
9 $\mathcal{U} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15\}$

Set A = {even numbers}

Set B = {multiples of 5}

(a) The elements 1 and 2 have been entered on this Venn diagram.

Complete the Venn diagram to show all of the elements.



[3]

(b) \mathcal{E} = {all positive integers}

Set L = {even numbers}

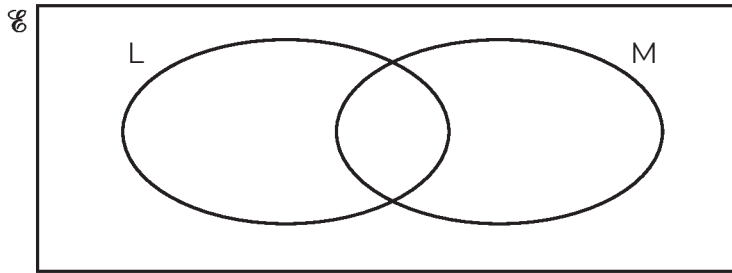
Set M = {multiples of 3}

Three Venn diagrams, numbered 1 to 3, are shown below.

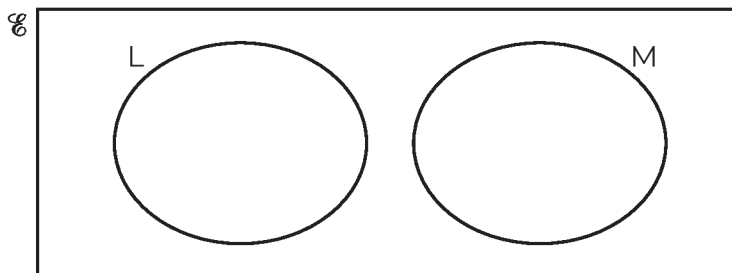
Which diagram best shows the relationship between Set L and Set M?

Give a reason for your choice.

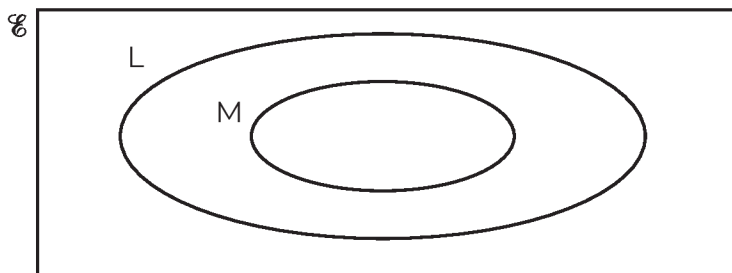
Venn diagram 1:



Venn diagram 2:



Venn diagram 3:



Venn diagram because
 [2]

Turn over

10 Eeshu has a bag containing 24 balls.

(i) The probability that a ball taken from the bag at random is green is $\frac{1}{3}$.

How many of the 24 balls are green?

..... [2]

(ii) 12 of the 24 balls are blue.

Eeshu takes a ball from the bag at random and then puts it back.
She then takes a ball again at random.

What is the probability that both balls are blue?

..... [2]

11 Here are some algebraic statements.

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

$$p + 3q$$

$$4z - 7 > 5$$

$$5(x + 3) = 5x + 15$$

$$3y \leq 12$$

From the list above, write down an example of each of the following.

(a) An expression.

(a) [1]

(b) An inequality.

(b) [1]

(c) An equation.

(c) [1]

12 Rearrange this formula to make s the subject.

$$K = 2r + 4s$$

..... [2]

Turn over

- 13 Maya has 45 meters of ribbon.
She cuts the ribbon into lengths of 80 cm.

What is the least length of ribbon, in cm, that can be left over?
You must show your working.

..... cm [5]

14 (a) Marcus invests £500 at a rate of 1.5% per year compound interest.

Find the value of the investment after 3 years.

Give your answer correct to the nearest penny.

(a) £ [4]

(b) By what percentage has the value of Marcus's investment increased after 3 years?

(b) % [3]

Turn over

15 Emma, Noah, and Ivy share an apartment.

(a) The monthly rent is £900.
They share the rent in the ratio 3 : 4 : 5.

How much does Noah pay for rent each month?

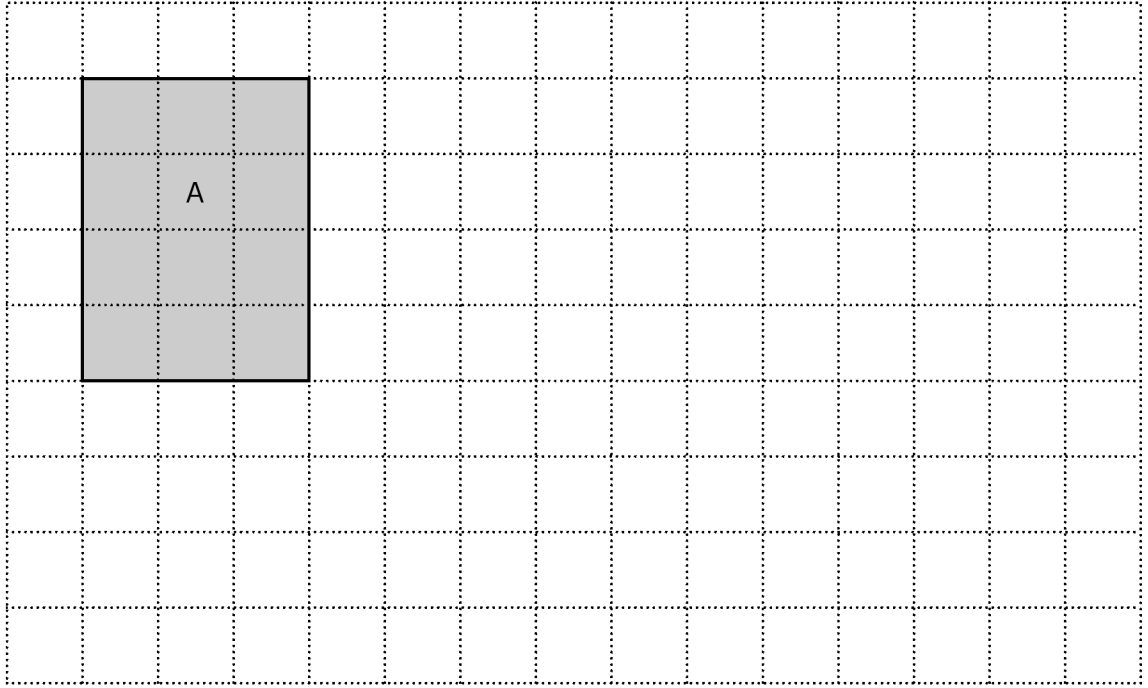
(a) £ [2]

(b) Emma, Noah, and Ivy also share the internet bill in the ratio 3 : 4 : 5.
Ivy pays £40 for the internet each month.

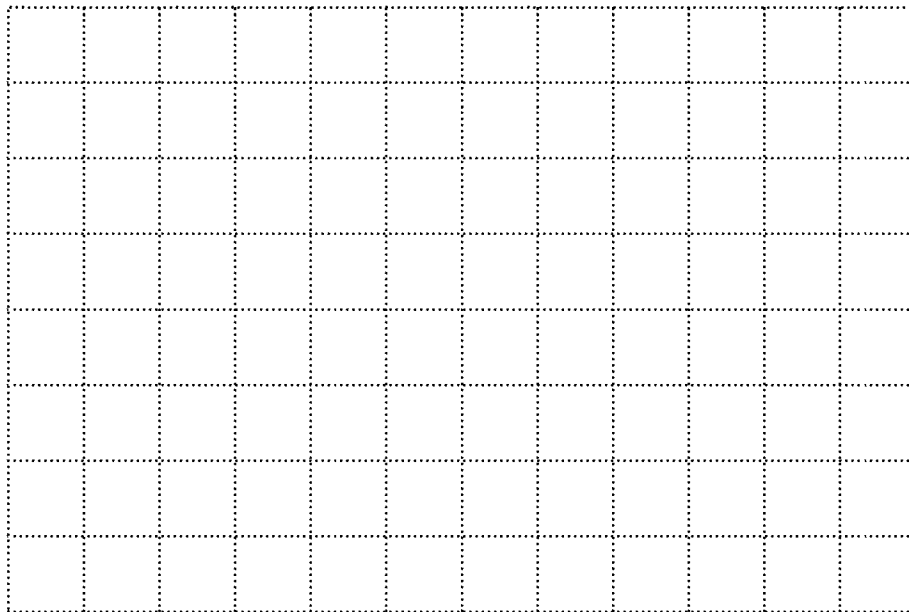
How much does Emma pay for the internet each month?

(b) £ [2]

- 16 (a) (i) Draw a rectangle that is congruent to rectangle A.
Label it B. [1]
- (ii) Draw a rectangle that has the same perimeter as rectangle A, but a different area.
Label it C. [2]



- (b) Draw an isosceles triangle with area 8 cm^2 on the grid below.



[2]

17 Jamal rolls a six-sided dice 240 times. The table shows the frequencies of his results.

(a) Complete the table to show the relative frequencies.

Number on dice	1	2	3	4	5	6
Frequency	35	30	55	50	40	30
Relative frequency	0.15					

[2]

(b) Jamal thinks that the dice may be biased.

(i) Explain why evidence from the table could support their opinion.

.....

.....

.....[1]

(ii) Explain why the dice may, in fact, not be biased.

.....

.....

.....[1]

18 A sequence is generated using the rule

- multiply the previous term by 2
- then subtract 30.

The first term of the sequence is 50.

(a) Find the second term.

(a) [2]

(b) Find the fourth term.

(b) [2]

19 (a) Priya mentions:

"I usually type at a speed of 45 words per minute, so I estimate that my regular typing speed is approximately 225 characters per minute."

Assuming each letter, space, or punctuation mark is counted as a character, how many letters per word did Priya likely use in her calculation?

Show your reasoning.

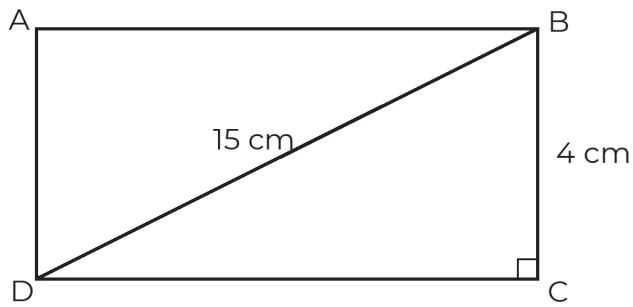
(a) [3]

(b) Priya begins a writing task, typing at her regular speed. She types 60 words in 1 minute and 15 seconds.

What might this indicate about the length of the words Priya typed? Show your reasoning.

.....
.....[3]

20 The diagram shows rectangle ABCD.



Not to scale

DB = 15 cm and BC = 4 cm.

Calculate the area of the rectangle.
You must show your working.

..... cm²

[5]

- 21 (a) A straight line has the equation $y = 3x - 5$

Write down the gradient of the line.

(a) [1]

- (b) Here are the equations of four straight lines.

$$y = 3x + 2 \quad y = -2x + 1 \quad y = \frac{1}{2}x + 4 \quad y = 3x - 1$$

- (i) Which of the four straight lines is parallel to $y = 3x - 5$?

(b)(i) [1]

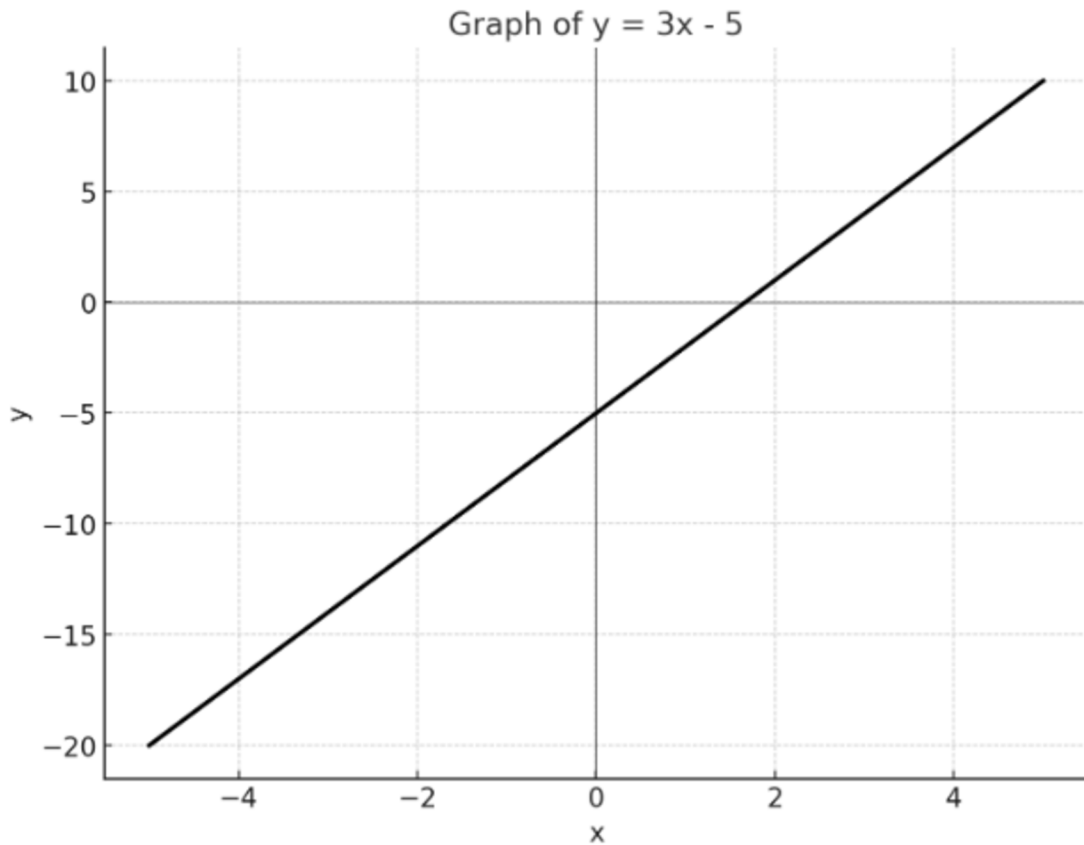
- (ii) A student says

$y = \frac{1}{2}x + 4$ is the steepest of the four straight lines because it has the largest number added.

Explain why the student is wrong.

.....
 [1]

(c) Here is part of the graph of $y = 3x - 5$



The line continues to the right.

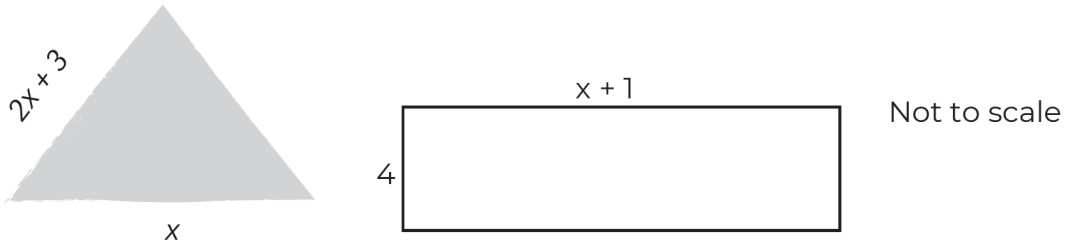
Will the line pass above, below or through the point $(25, 60)$?
Show how you decide.

The line $y = 3x - 5$ will pass the point $(25, 60)$ because

.....

.....[2]

22 In this question, all measurements are in centimetres.



The area of the triangle is equal to the area of the rectangle.

(a): Show that $x^2 + 3x - 8 = 0$

[3]

(b) Solve $x^2 + 3x - 8 = 0$

(b) $x = \dots\dots\dots$ or $x = \dots\dots\dots$ [3]

(c) Explain why one of the answers in part (b) is not possible in the context of the question.

.....
..... [1]

(d) Write down the following.

(i) The area of the triangle.

(d)(i) cm² [1]

(ii) The length of the rectangle.

(ii) cm [1]

Turn over for Question 23

23 A box of marbles contains red, blue, and green marbles.

The ratio of red marbles to blue marbles is $m : 3$

The ratio of blue marbles to green marbles is $4 : 2m$

Work out the ratio of red marbles to green marbles.
Give your answer in its simplest form.

..... :

[4]

END OF QUESTION PAPER