

**Friday 14 June 2013 – Morning**

**GCSE MATHEMATICS A**

**A503/01** Unit C (Foundation Tier)

Candidates answer on the Question Paper.

**OCR supplied materials:**

None

**Other materials required:**

- Scientific or graphical calculator
- Geometrical instruments
- Tracing paper (optional)

**Duration:** 1 hour 30 minutes



|                    |  |                   |  |
|--------------------|--|-------------------|--|
| Candidate forename |  | Candidate surname |  |
|--------------------|--|-------------------|--|

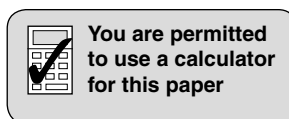
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|---------------|--|--|--|--|--|--|------------------|--|--|--|--|
| Centre number |  |  |  |  |  |  | Candidate number |  |  |  |  |
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**INSTRUCTIONS TO CANDIDATES**

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (\*).
- Use the  $\pi$  button on your calculator or take  $\pi$  to be 3.142 unless the question says otherwise.
- The total number of marks for this paper is **100**.
- This document consists of **20** pages. Any blank pages are indicated.



This paper has been pre modified for carrier language

## Formulae Sheet: Foundation Tier

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



**Volume of prism** = (area of cross-section)  $\times$  length



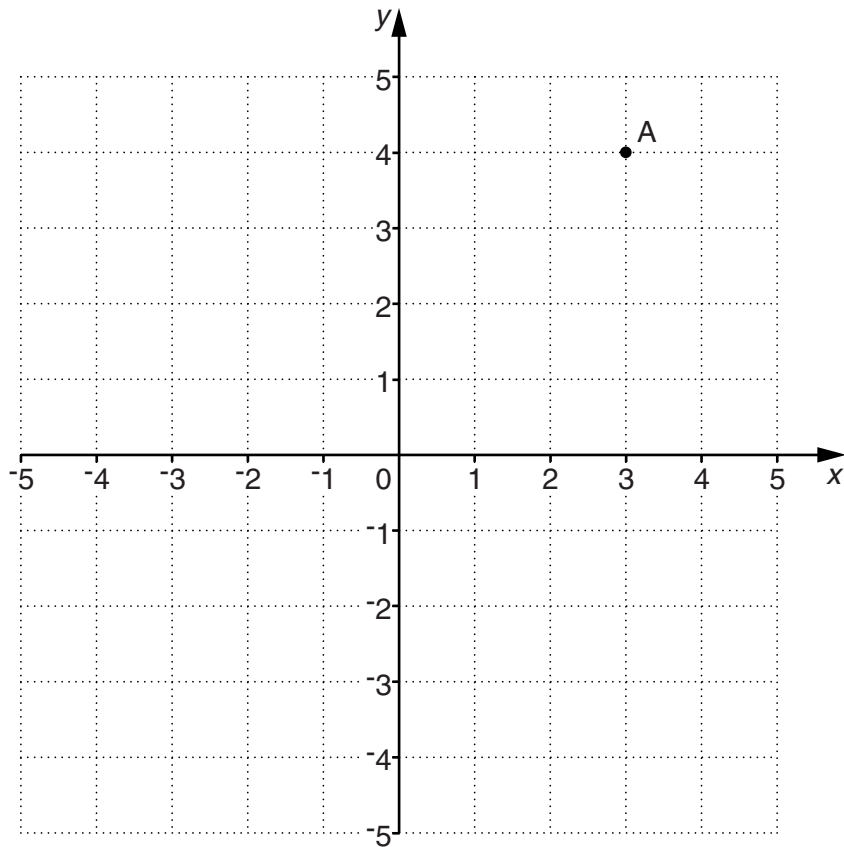
**PLEASE DO NOT WRITE ON THIS PAGE**

- 1 A flowerbed has 4 rows of plants.  
Each row has 8 plants.

How many plants are there altogether in this flowerbed?

\_\_\_\_\_ [1]

- 2 Here is a grid.



- (a) Write down the coordinates of point A.

(a) ( \_\_\_\_\_ , \_\_\_\_\_ ) [1]

- (b) Plot the point (1, -4) and label it B.

[1]

3 (a) Complete each sentence using an appropriate **metric** unit.

(i) The distance from Liverpool to Leeds is 110 \_\_\_\_\_ . [1]

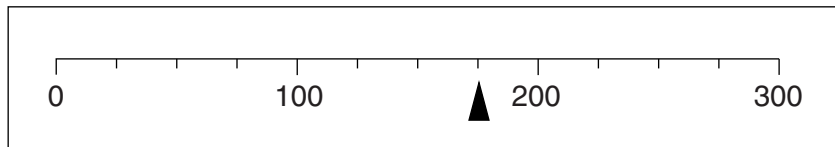
(ii) When she was born, Lauren weighed 3.5 \_\_\_\_\_ . [1]

(iii) One gallon is roughly the same as 4.5 \_\_\_\_\_ . [1]

(iv) Mr Smith's height is 1.73 \_\_\_\_\_ . [1]

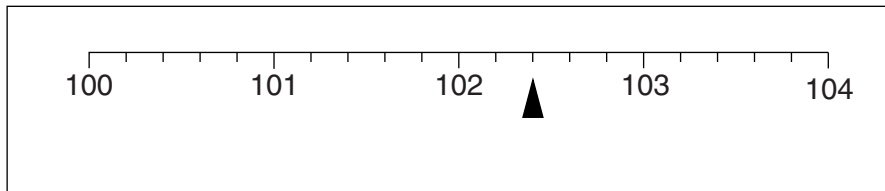
(b) Write down the reading shown on each of these scales.

(i)



(b)(i) \_\_\_\_\_ [1]

(ii)



(ii) \_\_\_\_\_ [1]

(c) Rachel is at the train station one afternoon and looks at the station clock.



(i) Her train leaves in 25 minutes.

At what time does her train leave?

(c)(i) \_\_\_\_\_ [1]

(ii) She gets off the train at 16:10.

How long does Rachel's train journey last?

(ii) \_\_\_\_\_ minutes [1]

4 Arrange the following weights in order, starting with the lightest.

2.3 kg

340 g

2 kg

2200 g

\_\_\_\_\_ [2]  
*lightest*

- 5 (a) At a charity dinner, eight people each put money in an envelope.



One of these envelopes is chosen at random.

Choose one word from those below to complete each sentence.

|            |         |          |       |        |
|------------|---------|----------|-------|--------|
| impossible | certain | unlikely | evens | likely |
|------------|---------|----------|-------|--------|

- (i) It is \_\_\_\_\_ that the envelope contains £20. [1]
- (ii) It is \_\_\_\_\_ that the envelope contains £50. [1]
- (iii) It is \_\_\_\_\_ that the envelope contains less than £10. [1]

- (b) At the same charity dinner, another eight people each put money in an envelope.

Here are some facts about these eight envelopes:

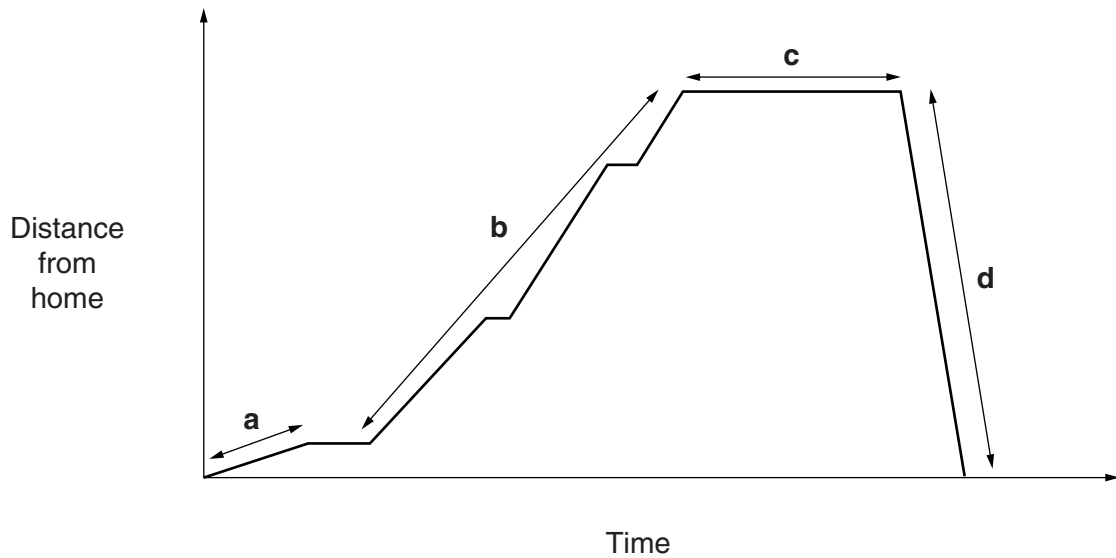
- each person places **one note or one coin only** in their envelope
- if one envelope is chosen at random, it is evens that it contains £10
- if one envelope is chosen at random, it is more likely to contain £5 than £20
- the total amount of money in all eight envelopes is £71.

Write a possible amount of money for each of the eight envelopes.



[3]

- 6 Salima goes to the post office and then into town before returning home. The graph shows her journey.



On her journey, Salima travels by taxi and by bus, and she also walks. The bus makes 2 stops during its journey.

- (a) Complete each of the following. Use letter **a**, **b** or **d**, with a reason for your choice.

The part of the graph that shows Salima travelling by taxi is letter \_\_\_\_\_

because \_\_\_\_\_ .

The part of the graph that shows Salima walking is letter \_\_\_\_\_

because \_\_\_\_\_ .

The part of the graph that shows Salima travelling by bus is letter \_\_\_\_\_

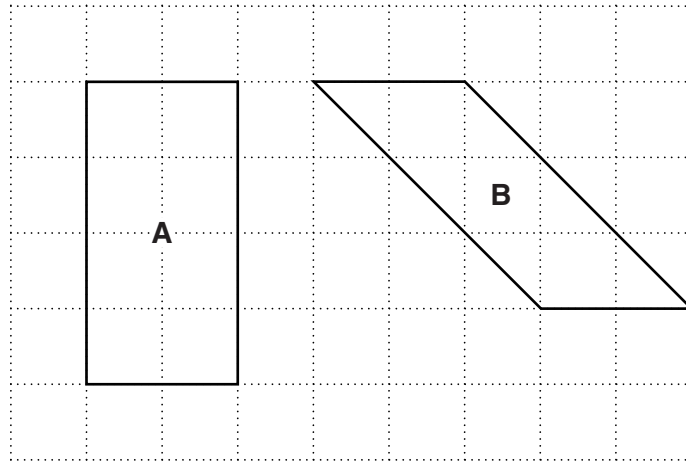
because \_\_\_\_\_ .

[3]

- (b) Describe what could be happening at **c**.

\_\_\_\_\_ [1]

7 Shapes **A** and **B** are drawn on the one-centimetre squared grid.



(a) Work out the area of

(i) shape **A**,

(a)(i) \_\_\_\_\_ cm<sup>2</sup> [1]

(ii) shape **B**.

(ii) \_\_\_\_\_ cm<sup>2</sup> [1]

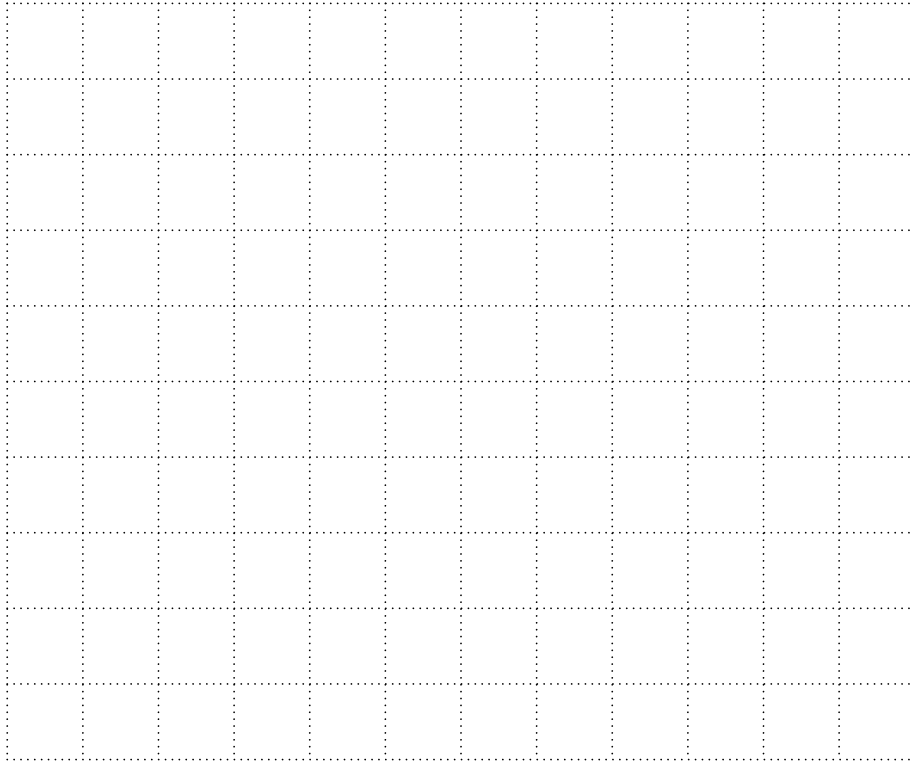
(b) Tick each statement that is true.

|  |                          |
|--|--------------------------|
| The perimeter of shape <b>A</b> is 8 cm            | <input type="checkbox"/> |
| The perimeter of shape <b>A</b> is 12 cm           | <input type="checkbox"/> |
| The perimeter of shape <b>B</b> is less than 10 cm | <input type="checkbox"/> |
| The perimeter of shape <b>B</b> is 10 cm           | <input type="checkbox"/> |
| The perimeter of shape <b>B</b> is more than 10 cm | <input type="checkbox"/> |

[2]



- (c) On the one-centimetre squared grid below, draw a right-angled triangle which has an area of  $8\text{ cm}^2$ .



[2]

- 8 Use your calculator to work these out.

(a)  $5.6^2 \times 2.61$

Give your answer correct to one decimal place.

(a) \_\_\_\_\_ [2]

(b)  $\frac{\sqrt{169}}{2.4}$

Give your answer correct to the nearest integer.

(b) \_\_\_\_\_ [2]

- 9 (a) Complete this calculation.

$$\frac{2}{3} + \frac{1}{4} = \frac{8}{12} + \frac{\square}{12} = \frac{\square}{\square}$$

[2]

- (b) Work out  $\frac{2}{5} \times \frac{1}{4}$ .

Give your answer as a fraction in its simplest form.

(b) \_\_\_\_\_ [2]

- (c) A newspaper recorded the attendance at a football match as 6500 correct to the nearest 100.

Complete the following.

The smallest number of people at the match could have been \_\_\_\_\_ .

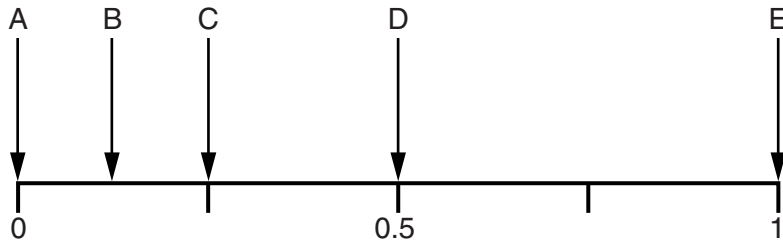
The largest number of people at the match could have been \_\_\_\_\_ .

[2]

10 Alyssa has 8 packets of crisps.  
The crisp flavours are:

- 4 salt and vinegar
- 2 plain
- 1 cheese and onion
- 1 chicken.

(a) She takes one packet at random.



State which arrow shows the probability that Alyssa takes a packet of

(i) salt and vinegar crisps,

(a)(i) Arrow \_\_\_\_\_ [1]

(ii) beef crisps,

(ii) Arrow \_\_\_\_\_ [1]

(iii) chicken crisps.

(iii) Arrow \_\_\_\_\_ [1]

(b) Alyssa puts the 8 packets of crisps into a box.  
She adds 6 more packets of crisps to the box.  
She takes one packet from the box at random.  
The probability that she takes a packet of plain crisps is now shown by arrow D on the probability line.

Work out the possible flavours of the 6 packets that she added to the box. [2]

11 (a) Simplify fully.

(i)  $p + p + p + 4p$

(a)(i) \_\_\_\_\_ [1]

(ii)  $a \times b \times 4$

(ii) \_\_\_\_\_ [1]

(iii)  $p \times p$

(iii) \_\_\_\_\_ [1]

(iv)  $5p \times 4$

(iv) \_\_\_\_\_ [1]

(v)  $3a + 5b - 4a + b$

(v) \_\_\_\_\_ [2]

(b) Work out the value of  $x^2 - 1$  when  $x = 3$ .

(b) \_\_\_\_\_ [1]

(c) Draw a line from each algebra statement to the correct word.

$$7x - 4 = 5$$

formula

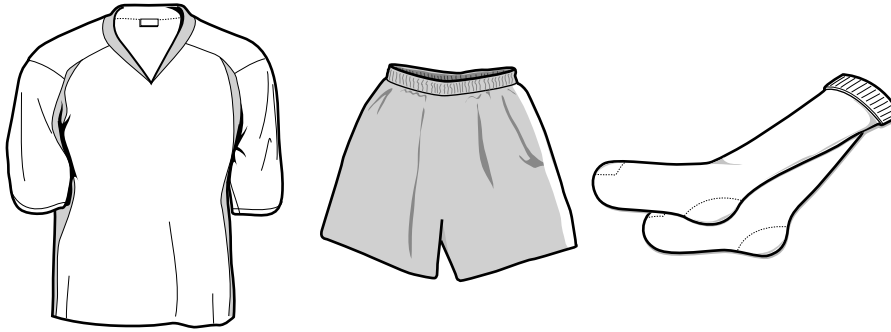
expression

$$F = ma$$

equation

[2]

- 12 Bob washes some football strips.  
Each individual strip has a shirt, shorts and a pair of socks.



He hangs some of the football strips on his washing line to dry.  
Each item of strip needs the length of washing line shown in the table.

| Item of strip | Length of washing line needed |
|---------------|-------------------------------|
| shirt         | 53 cm                         |
| shorts        | 40 cm                         |
| pair of socks | 25 cm                         |

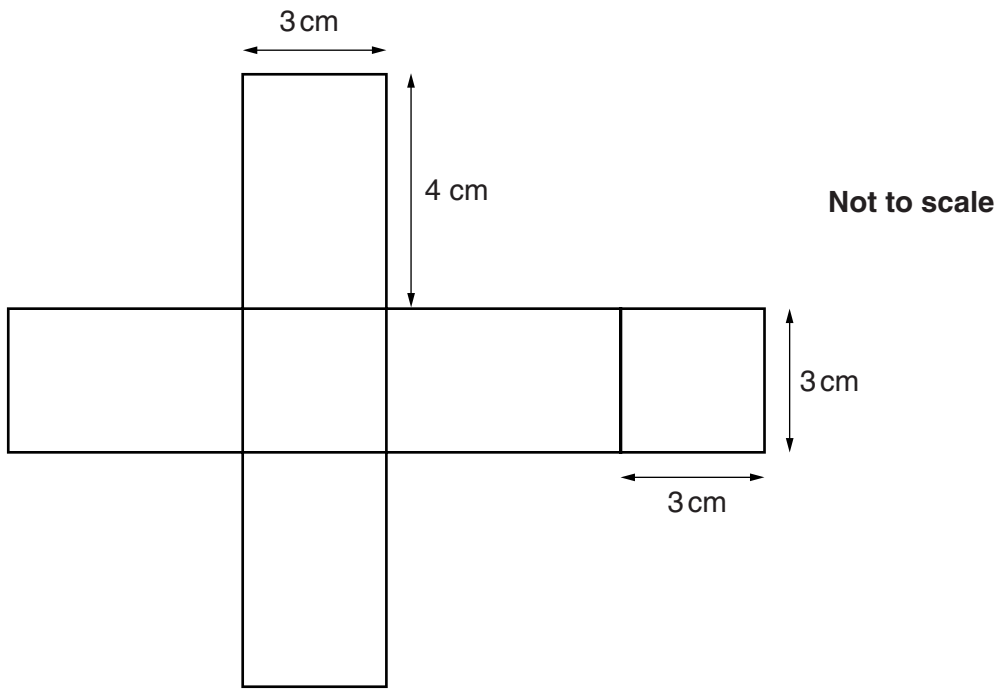
Bob's washing line is 9.7 metres long.

How many **complete** strips (shirt, shorts and socks) can he hang on his washing line at one time?  
Show your working.

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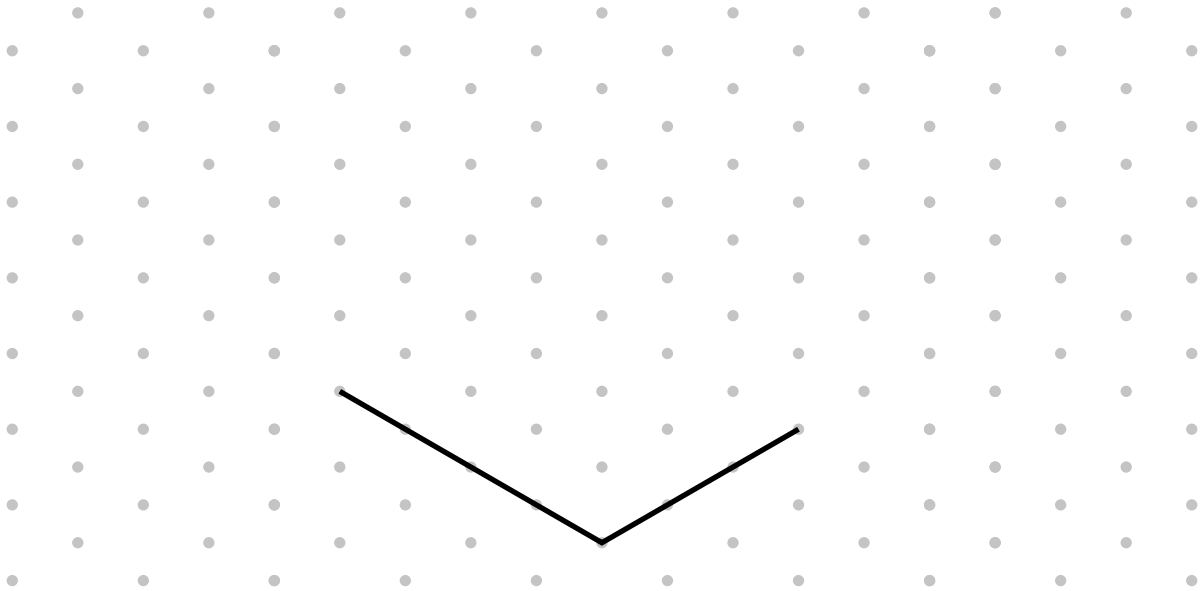
 [4]

13 This net consists of four identical rectangles and two identical squares.



The net is folded together to form a cuboid.

(a) On the isometric grid below, make a drawing of this cuboid. Two of the sides have been drawn for you.



[3]

(b) Calculate the volume of the cuboid.

(b) \_\_\_\_\_ cm<sup>3</sup> [2]

14 The cash price of a computer is £699.

It can also be bought using these credit terms.

Pay 12% of the cash price as deposit

PLUS

24 payments of £31

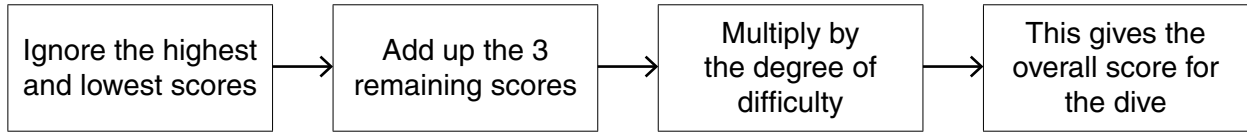
Kiera bought the computer using these credit terms.

How much more than the cash price did Kiera pay in total?

£ \_\_\_\_\_ [5]

15 Marco, Patrick and Leon take part in a diving competition.

The diagram shows how to work out the overall score for a dive.



The degree of difficulty is written to 1 decimal place.

(a) Marco has these 5 scores for his dive.

5.5

7

6.5

8

8.5

The degree of difficulty is 2.7.

Show that his overall score for the dive is 58.05.

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[2]



(b)\* Patrick has these 5 scores for his dive.

6.5            7            7.5            4.5            8

The degree of difficulty of Patrick's dive is 3.1.

Leon has these 5 scores for his dive.

5.5            5            5            6.5            4

Leon's dive has a higher **overall** score than Patrick's dive.

What is the minimum possible degree of difficulty for Leon's dive?

(b) \_\_\_\_\_ [5]

- 16 Tessa has a **biased** 6-sided dice.  
She wants to find the probability of getting a 4 when this dice is thrown.

Describe an experiment she could perform, and how the results could be used, to estimate the probability of throwing a 4.

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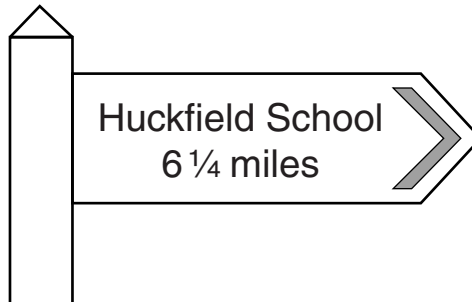


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[3]

- 17 Phil catches the bus to Huckfield School and back each day.

(a) This sign is next to the bus stop.



- (i) Calculate the total distance Phil travels to school and back during one week (Monday to Friday).

(a)(i) \_\_\_\_\_ miles [2]

- (ii) The bus travels at an average speed of 20 mph.

How long will the bus take to get Phil to school?  
Give your answer in minutes and seconds.

(ii) \_\_\_\_\_ minutes \_\_\_\_\_ seconds [4]

(b) One day 65 students catch the bus.

$\frac{2}{5}$  of these students are boys.

How many of these students are **girls**?

(b) \_\_\_\_\_ [3]

(c) Phil did a survey about how students at Huckfield School get to school.  
The table shows the probability of how a student, chosen at random, gets to school.

(i) Complete the table.

|             |     |      |      |       |
|-------------|-----|------|------|-------|
|             | Bus | Walk | Car  | Other |
| Probability | 0.4 | 0.33 | 0.15 |       |

[2]

(ii) What is the probability that a student, chosen at random, will use either the bus or a car to get to school?

(c)(ii) \_\_\_\_\_ [2]

(iii) There are 2500 students in the school.

How many of them would you expect to come to school by car?

(iii) \_\_\_\_\_ [2]

**TURN OVER FOR QUESTIONS 18 & 19**

- 18 (a) A circle has a diameter of 9.5 cm.

Calculate the circumference of the circle.

(a) \_\_\_\_\_ cm [2]

- (b) The circle in part (a) is enlarged by scale factor 3.

Work out the circumference of the enlarged circle.

(b) \_\_\_\_\_ cm [1]

- 19 (a) Solve the equation to find the value of  $x$ .

$$5x - 3 = 10$$

(a) \_\_\_\_\_ [2]

- (b) Multiply out and simplify fully.

$$3(x - 1) + 4(2x - 5)$$

(b) \_\_\_\_\_ [3]

**END OF QUESTION PAPER**

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