

Please check the examination details below before entering your candidate information

Candidate surname

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**Pearson Edexcel
Functional Skills**

Centre Number

Candidate Number

Set 7

Time: 1 hour 30 minutes

Paper Reference **PMAT2/C07**

Mathematics

Level 2

Section B (Calculator)



You must have:

Pen, calculator, HB pencil, eraser, ruler graduated in cm and mm, protractor, pair of compasses. Tracing paper may be used.

Total Marks

My signature confirms that I will not discuss the content of the test with anyone.

Signature: _____

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.
- Sign the declaration.
- Answer **all** questions.
- Write your final answers in the boxes provided.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You **must** show clearly how you get your answers in the spaces provided. Marks will be awarded for your working out.
- Check your working and answers at each stage.
- Diagrams are **not** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a π button take the value of π to be 3.14

Information

- The total mark for this section is 48.
- The total mark for this paper is 64.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- This sign ☒ shows where marks will be awarded for showing your checks.

Advice

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

Turn over ►

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.CG Maths.
Worked Solutions


Pearson

Please note that these worked solutions have neither been provided nor approved by Pearson Education and may not necessarily constitute the only possible solutions. Please refer to the original mark schemes for full guidance.

Any writing in blue should be written in the exam.

Anything written in green in a rectangle doesn't have to be written in the exam.

If you find any mistakes or have any requests or suggestions, please send an email to curtis@cgmaths.co.uk

SECTION B

Answer ALL questions. Write your answers in the spaces provided.

- 1 Here is a formula.

$$K = \frac{3(U + 7.15)}{V}$$

Work out the value of K when $U = 2.9$ and $V = 6$

(3)

$$\frac{3(2.9 + 7.15)}{6}$$

← Substituting 2.9 for U and 6 for V and typing it into the calculator exactly as it is above

5.025

(Total for Question 1 is 3 marks)

2 Shona and Erica are gymnasts.

Here are the scores Shona got in the last 7 competitions.

12.9	14.3	14.1	13.0	13.2	13.9	13.1
------	------	------	------	------	------	------

Erica only took part in six of these competitions and had a

- mean score of 13.4
- median score of 13.3
- range of scores of 1.5

Shona thinks on average her scores were better than Erica's scores.
Erica does not agree.

Explain how Shona and Erica could both be correct.
You **must** show your working.

(3)

$$12.9 + 14.3 + 14.1 + 13.0 + 13.2 + 13.9 + 13.1$$
$$94.5 \div 7 = 13.5$$

Working out the mean for Shona. Adding all the scores then dividing by 7 as there are 7 scores. So the mean for Shona is 13.5

12.9, 13.0, 13.1, 13.2, 13.9, 14.1, 14.3

Working out the median for Shona. Putting the scores in order from smallest to largest then underlining from both ends until the number in the middle is found. So the median for Shona is 13.2

Shona has a greater mean. Erica has a greater median

The mean for Shona was 13.5, which is greater than the mean of 13.4 for Erica. The median for Erica was 13.3, which is greater than the median of 13.2 for Shona. Ignore the range as this has nothing to do with average

(Total for Question 2 is 3 marks)

- 3 Archie puts an advert for his company online.
He has to pay £0.85 each time someone clicks on his advert.

At the end of week 1 Archie pays £650.25 for the total number of clicks on his advert.

Archie estimates that each week the total number of clicks on his advert will increase by 20% on the previous week.

Archie thinks that in week 3 more than 1000 people will click on his advert.

Is he correct?

Show why you think this.

(4)

$$650.25 \div 0.85 = 765$$

Dividing the £650.25 paid by the £0.85 per click works out that there were 765 clicks in week 1

$$\frac{100 + 20}{100}$$

Adding 20% to 100% expresses the percentage it increases to each week. Putting this over 100 converts it to the decimal multiplier 1.2

$$765 \times 1.2^2 = 1101.6$$

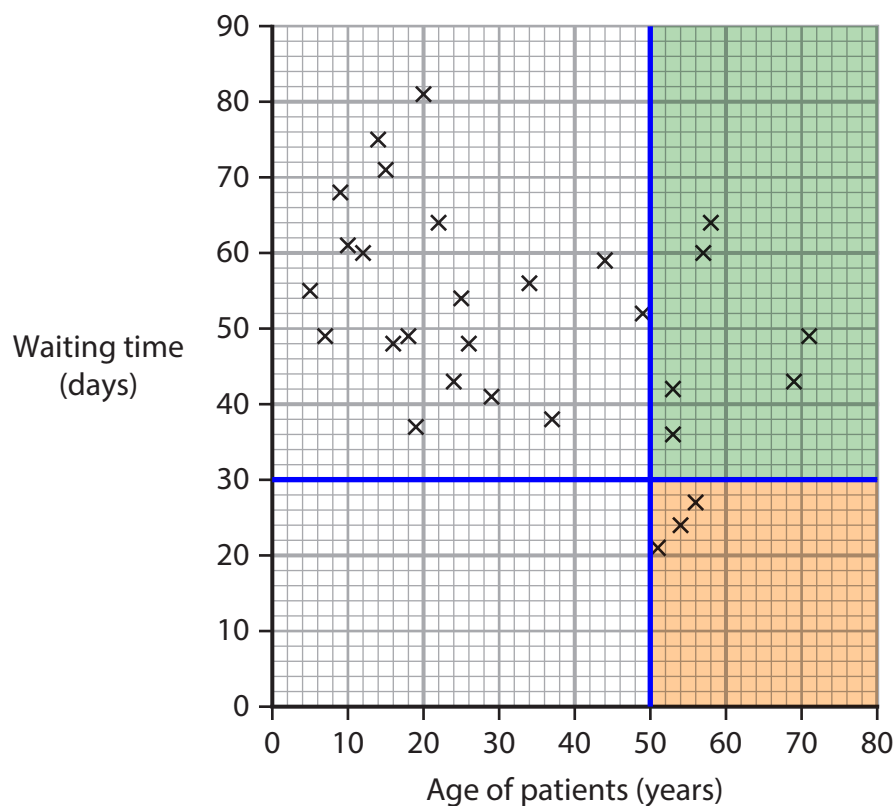
Multiplying the 765 clicks by 1.2 twice increases it by 20% twice

1101.6 is more than 1000

Yes

(Total for Question 3 is 4 marks)

- 4 The scatter diagram shows information about the age of patients and the waiting time for these patients to get an appointment.



- (a) Describe the relationship between the age of patients and the waiting time.

Negative correlation

As one variable (age of patients) increases, generally the other variable (waiting time) decreases

(1)

- (b) Work out the fraction of patients aged over 50 who had a waiting time greater than 30 days.

(2)

The region highlighted in green is patients over 50 who had a waiting time greater than 30 days. The region highlighted in orange is patients over 50 who did not have a waiting time greater than 30 days. 6 out of the 9 patients over 50 had waiting time greater than 30 days

6

9

(Total for Question 4 is 3 marks)

5 Kelly works in a grocery shop.

She wants to order 120 chocolate eggs.

Kelly finds this offer.

box of 30 chocolate eggs
normal price £65
now 16% off the normal price

She thinks she can buy 120 chocolate eggs for less than £200 with this offer.

(a) Is Kelly correct?

Show why you think this.

(4)

$$120 \div 30 = 4$$

Dividing the 120 eggs by the 30 eggs in the offer works out that the offer needs to be used 4 times

$$65 \div 100$$

Dividing the £65 by 100 works out that 1% of the £65 is £0.65

$$0.65 \times 16$$

Multiplying the value of 1% by 16 works out that 16% of £65 is £10.40

$$65 - 10.40$$

Subtracting the value of 16% from the £65 works out that the offer costs £54.60

$$54.60 \times 4 = 218.40$$

Multiplying the cost of the offer by the 4 times it needs to be used to get 120 eggs works out that she can buy 120 eggs for £218.40

£218.40 is not less than £200

→ No



(b) Use a reverse calculation to show a check of your answer.

(1)

$$218.40 \div 4$$

$$54.60 + 10.40 = 65$$

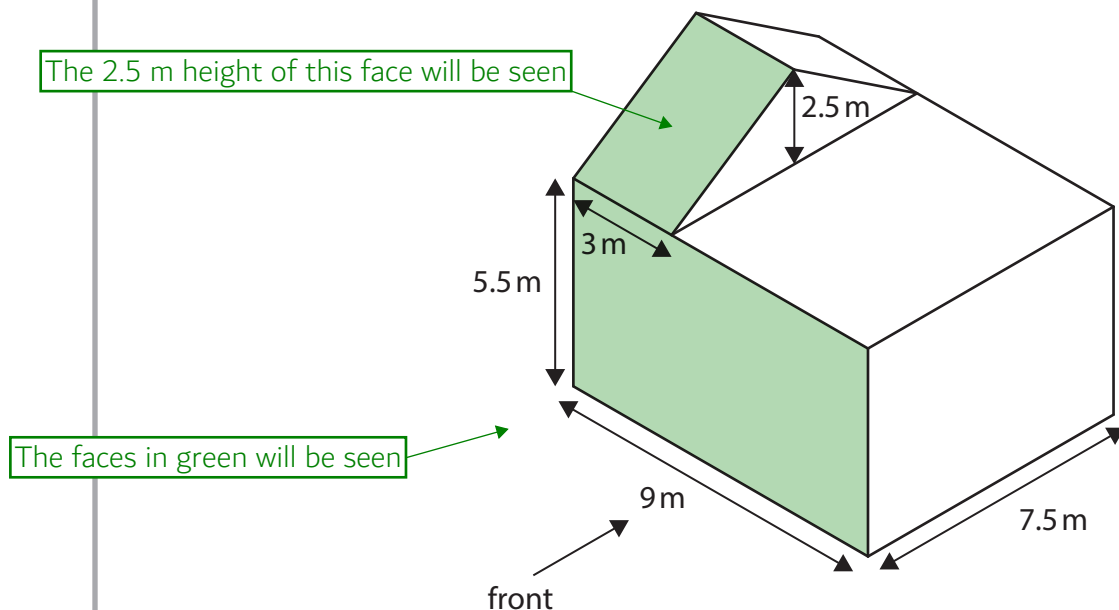
$$10.40 \div 16$$

$$0.65 \times 100 = 65$$

$$4 \times 30 = 120$$

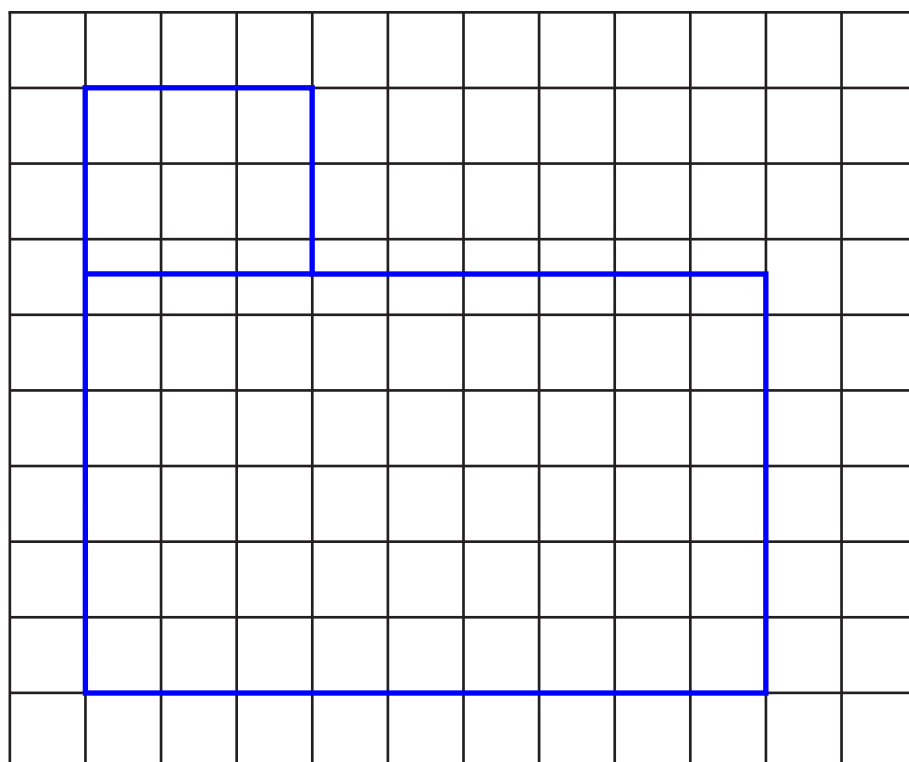
(Total for Question 5 is 5 marks)

- 6 Abdul is an apprentice architect.
He has this diagram of a building.



Draw the front elevation of this building on the centimetre grid.
Use a scale of 1 : 100

(3)



(Total for Question 6 is 3 marks)

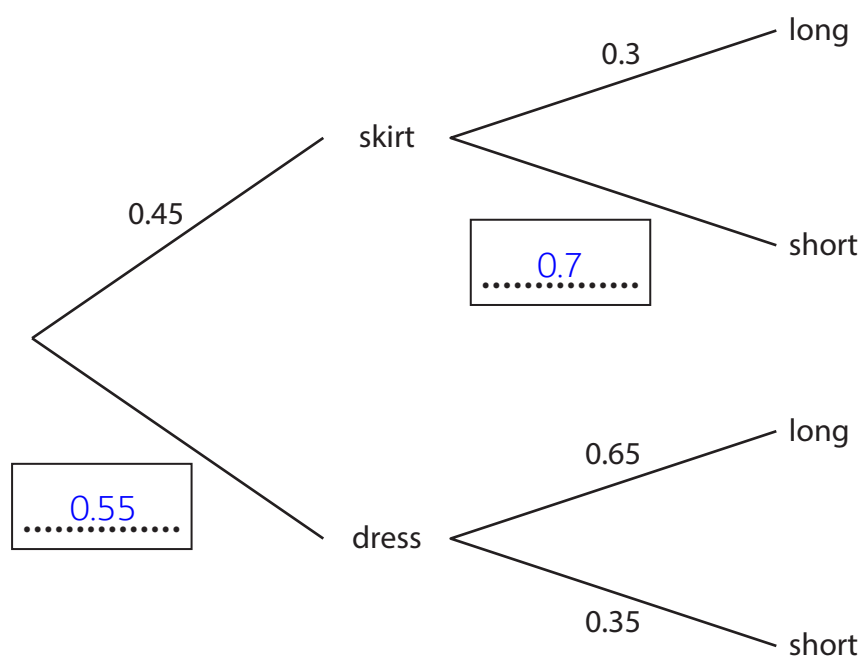
There are 100 cm in 1 m. So multiplying each of the lengths by 100 converts them to centimetres. But using the scale, dividing by 100 works out how many centimetres represent them. Multiplying by 100 is the opposite of dividing by 100. So each of the lengths in metres can be drawn as the same number of centimetres

7 The tree diagram shows the probability that an item of clothing selected at random is

- a skirt or a dress
- long or short.

(a) Complete the probability tree diagram.

(2)



Each set of branches must add up to 1. Subtracting the known probability from 1 works out the missing probability. $1 - 0.45 = 0.55$ and $1 - 0.3 = 0.7$

An item of clothing is chosen at random.

(b) Work out the probability that this item is a long skirt.

(2)

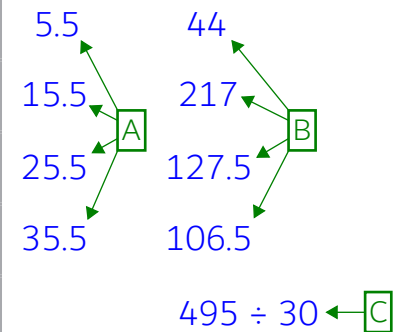
0.45×0.3 ← Skirt AND long. AND means to multiply the probabilities
 0.135

(Total for Question 7 is 4 marks)

8 Takeshi is the manager at a laboratory.

The table shows information about the number of tests done at the laboratory each day in April.

Number of tests	Frequency (days)
1 to 10	8
11 to 20	14
21 to 30	5
31 to 40	3
Total	30



Takeshi expects the mean number of tests done each day in May to be 12.5% greater than the estimated mean number of tests done each day in April.

The laboratory is open for 31 days in May.

Each test brings an income of £130 for the laboratory.

Work out the expected income for the laboratory in May.
You **must** show your working.

A: Working out the midpoints for each category as this is the best estimate of what all the numbers of tests were in each category. This can be done by doing the mean of the lowest and highest possible value in each category. For example for the 1 to 10 category: $1 + 10 = 11$ then $11 \div 2 = 5.5$. (6)

B: Multiplying the midpoints by the frequency for each category works out the estimated total number of tests for each category. For example for the 1 to 10 category: $5.5 \times 8 = 44$.

C: Adding all the estimated totals gives an overall estimated total of 495. Dividing this by the 30 days works out that the estimated mean is 16.5 tests each day in April

$16.5 \div 100$ ← Dividing the estimated mean by 100 works out that 1% of the estimated mean is 0.165
 0.165×12.5 ← Multiplying the value of 1% by 12.5 works out that 12.5% of the estimated mean is 2.0625
 $16.5 + 2.0625$ ← Adding the value of 12.5% to the estimated mean works out that 18.5625 is the expected mean number of tests done each day in May
 18.5625×31 ← Multiplying the expected mean number of tests done each day in May by the 31 days in May works out that 575.4375 tests are expected in May
 575.4375×130 ← Multiplying the 575.4375 tests expected in May by the £130 income from each test works out the expected income in May

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DO NOT WRITE IN THIS AREA

The answer is rounded to the nearest penny

£ 74806.88

(Total for Question 8 is 6 marks)

9 Jasper organises large events.

Last week 23 workers took 4 hours to build a stage for a concert.

Next week Jasper wants to hire workers to build the same stage in 3 hours.

Work out the minimum number of workers needed to build the stage in 3 hours.

(3)

$$23 \times 4$$

Multiplying the 23 workers by the 4 hours works out that an expected 92 hours worth of work needs to be done

$$92 \div 3$$

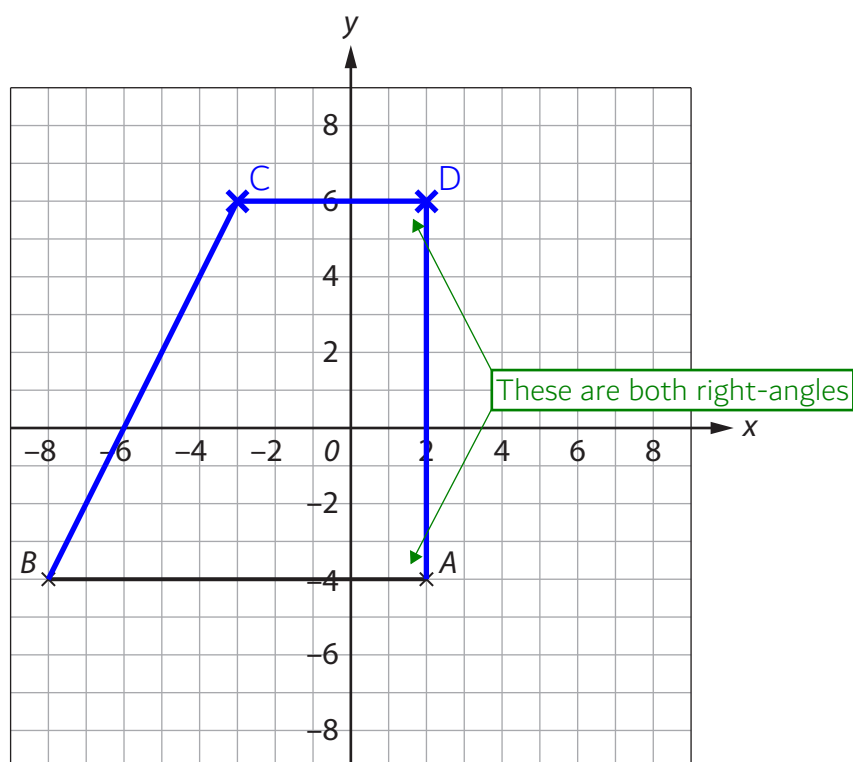
Dividing the expected 92 hours worth of work by the 3 hours works out how many workers are needed to do it in 3 hours

30.6... is rounded up to the next whole number. 30 would not be enough

31

(Total for Question 9 is 3 marks)

10 Here is a coordinate grid.



- (a) Plot and label the point C at $(-3, 6)$

x-coordinate y-coordinate

(1)

Sylvie wants to draw a trapezium $ABCD$ on the grid.

She will use the straight line AB as the base of the trapezium.

Sylvie wants the trapezium to have two right angles.

- (b) Plot and label a point D on the grid to complete the trapezium for Sylvie.

(2)

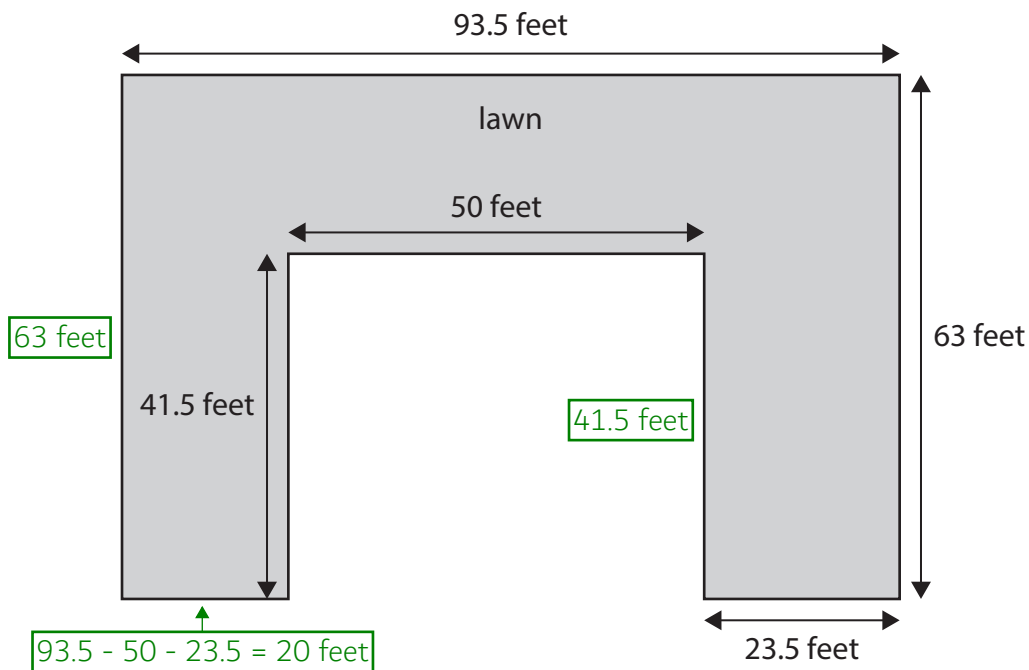
A trapezium is a four-sided shape with one pair of parallel sides. AB could be parallel to CD

(Total for Question 10 is 3 marks)

11 Vicky works in a park.

She needs to put edging around a lawn in the park.

The diagram shows the dimensions of the lawn.
The lawn is made up of rectangles.



Vicky will buy edging in 5 metre lengths.
She can cut and join the lengths of edging.
She knows that 1 metre is 3.3 feet.

Each length of edging costs £38.99
Vicky has £1000 to buy the edging.

Does Vicky have enough money to buy all the edging she needs?

(5)

$$93.5 + 63 + 23.5 + 41.5 + 50 + 41.5 + 20 + 63$$

← Adding all the outside sides works out that 396 feet of edging is needed

$$396 \div 3.3$$

← Dividing the 396 feet by the 3.3 works out that 120 metres are needed

$$120 \div 5$$

← Dividing the 120 metres needed by the 5 metres of each length of edging works out that 24 lengths of edging are needed

$$24 \times 38.99$$

← Multiplying the 24 lengths of edging by the £38.99 cost of each works out that the total cost of the edging is £935.76

$$935.76$$

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£1000 is more than the £935.76 needed

→ Yes

(Total for Question 11 is 5 marks)

12

(a) Write as a number

seven million four hundred and thirty thousand nine hundred.

(1)

It could help to write the number backward starting with the 900

7430900

Dorothy reads an article about a talent show.

The article states that 17 424 people applied to enter the show last year.
Each person that applied was either a singer or a dancer.

The ratio of the number of singers to the number of dancers was 3 : 5

This year 19 500 people applied to enter the show.
39% of these people were singers.

Dorothy thinks that at least 1200 more singers applied to enter the show this year
than last year.

(b) Is she correct?

Show why you think this.

(5)

$$17424 \div 8$$

3 + 5 = 8 parts in total which represent eh 17424 people. So dividing the 17424 people by 8 works out that 1 part of the ratio is worth 2178 people

$$2178 \times 3 = 6534$$

Multiplying the value of 1 part of the ratio by the 3 parts which represent the singers works out that there were 6534 singers last year

$$19500 \div 100$$

Dividing the 19500 people by 100 works out that 1% of the people this year is 195

$$195 \times 39$$

Multiplying the value of 1% by 39 works out that 39% of the people this year is 7605, which is the number of singers this year

$$7605 - 6534 = 1071$$

Subtracting the 6534 singers last year from the 7605 singers this year works out that there were 1071 more singers this year than last year

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

1071 is not at least 1200 people

→ No

(Total for Question 12 is 6 marks)

TOTAL FOR SECTION B IS 48 MARKS
TOTAL FOR PAPER IS 64 MARKS