WJEC 2014 Online Exam Review

GCSE Applications of Mathematics Unit 2 Higher 4362-02

All Candidates' performance across questions

Question Title	N	Mean	S D	Max Mark	F F	Attempt %
1	658	2.3	1.5	4	57.4	99.3
2	662	7.3	3.1	11	66.1	99.8
3	663	6.2	0.9	7	89.1	100
4	662	6.3	2	9	70.1	99.8
5	651	5.7	1.7	8	71.7	98.2
6	663	4	2.5	9	44.8	100
7	652	6	4.2	12	50.3	98.3
8	630	1.9	1.7	4	47.3	95
9	634	2.2	1.8	4	56.1	95.6
10	588	1	1.3	3	34.9	88.7
11	660	5.7	3.1	11	52.1	99.5
12	656	3.1	2.2	7	44.2	98.9
13	654	5	3	11	45.4	98.6

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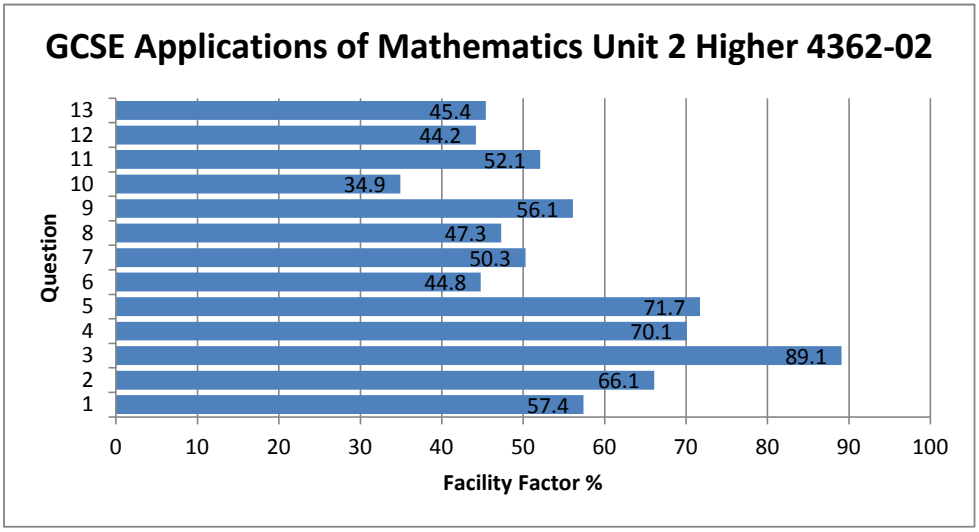
4b
6
7



Examiner only

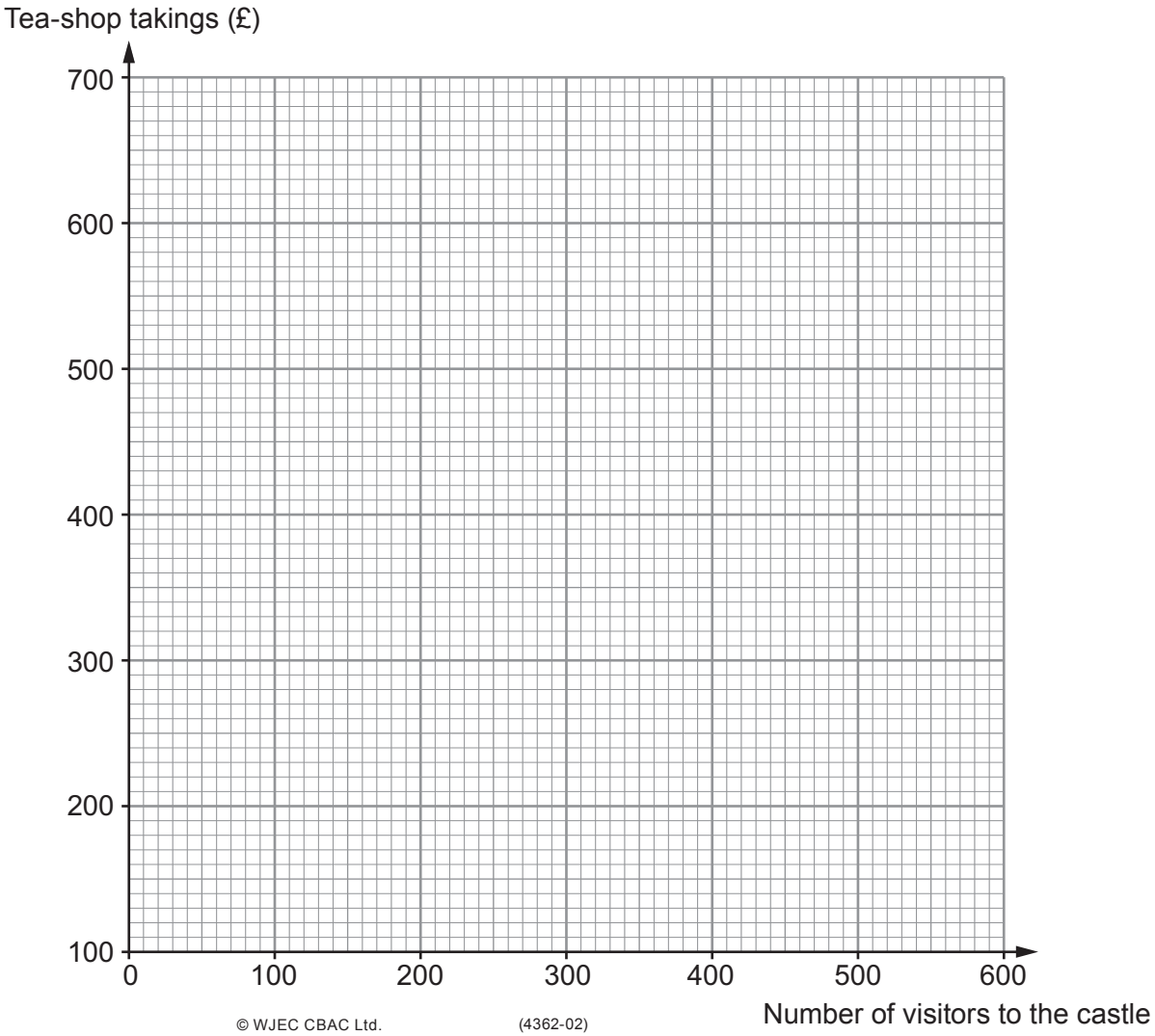
3.

The manager of a tea-shop at a castle kept some records every day for 7 days.
The manager recorded:

- The number of visitors to the castle.
- The total money taken at the tea-shop.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Number of visitors to the castle	120	180	400	320	460	550	420
Tea-shop takings (£)	150	230	500	380	560	660	490

(a) On the graph paper provided, draw a scatter diagram of these results. [2]



Examiner only

(b) Draw, by eye, a line of best fit on your scatter diagram opposite. [1]

(c) Describe the correlation between the number of visitors to the castle and the tea-shop takings. [1]

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(d) The manager of the tea-shop states,

'My records tell me that each visitor to the castle spends more than £1 each at the tea-shop.'

(i) Explain why the manager might have come to this conclusion. [2]

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(ii) The statement is not necessarily true.
Explain why this statement may not be true. [1]

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Turn over.

(c) Describe the correlation between the number of visitors to the castle and the tea-shop takings. [1]

A strong positive correlation. As visitors rise so do takings

(d) The manager of the tea-shop states,

'My records tell me that each visitor to the castle spends more than £1 each at the tea-shop.'

(i) Explain why the manager might have come to this conclusion. [2]

As the amount of takings is larger than the amount of people. This means that a disbalance from a 1:1 ratio. The money spent is more. However, not every visitor will go in the shop

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As not all people will visit the shop and some people may spend much more than £1 and some less so it still goes above the idea that everyone only spends a pound.

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'My records tell me that each visitor to the castle spends more than £1 each at the tea-shop.'

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because the number of visitors to the castle is always a smaller number than the tea-shop takings, suggesting people spend more than a pound in the teashop.

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Explain why this statement may not be true. [1]

It depends what they buy. Most people may buy things that come to over a pound, whereas another person may buy something less than a pound in the shop.

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Examiner only

4 *(b)* The luggage shop owner has illustrated, in a pictogram, the number of suitcases sold in a week.

Key:  is 20 suitcases

(i) Selwyn looks at the pictogram and says,

'The number of suitcases sold on Sunday was 40% higher than the number of suitcases sold on Wednesday.'

Is Selwyn correct?
You must show all your working to justify your answer. [2]

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(ii) Looking at the pictogram again, Selwyn says,

'More money was spent on buying suitcases in this shop on Sunday than on any other day.'

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Turn over.

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Sunday = 90

Wednesday = 50

$\frac{50}{90} \times 100 = 55.5\%$.

no, Selwyn is wrong. It is 55.5% higher.

(ii) Looking at the pictogram again, Selwyn says,

'More money was spent on buying suitcases in this shop on Sunday than on any other day.'

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Examiner only

6. Levi owns a snack bar.
All the sandwiches are the same price and all the drinks are the same price.

During the first hour of the day, Levi sells 3 sandwiches and 2 drinks costing £7.20 altogether.
During the second hour of the day, Levi sells 2 sandwiches and 5 drinks costing £8.10 altogether.

Levi writes down the following simultaneous equations:

$$3x + 2y = 720$$
$$2x + 5y = 810.$$

(a) What do the x and y represent in Levi's equations? [2]

x represents .....

y represents .....

(b) Solve the simultaneous equations using an algebraic method. [4]

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$3x + 2y = 760$ (1)

$2x + 5y = 810$ (2)

(1) $\times 2 =$ (3)

$6x + 4y = 1520$ (3)

(2) $\times 3 =$ (4)

$6x + 15y = 2430$ (4)

(4) $-$ (3)

$11y = 910$

$y = \frac{910}{11}$

$y = 82$

Sub in

$3x + (2 \times 82) = 720$

$3x + 164 = 720$

$3x = 606$

$x = \frac{606}{3}$

$= 200$

$(2 \times 200) + (5 \times 82) = 810$

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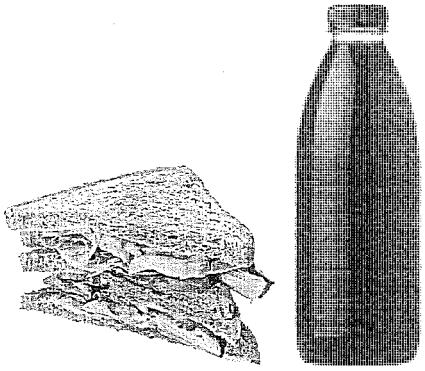

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① $3x+2y=720$

② $2x+5y=810$

② $\times 1.5 =$ ③ $\quad 3x + 7.5y = 1215$

③ $-$ ①

$5.5y = 495$ → put y in ① → $3x + 180 = 720$

$y = 90$ → $x = 180$

check in ②

$2(180) + 5(90) = 810$

$360 + 450 = 810$

$810 = 810$ //

So $y = 90$ and $x = 180$

Examiner only

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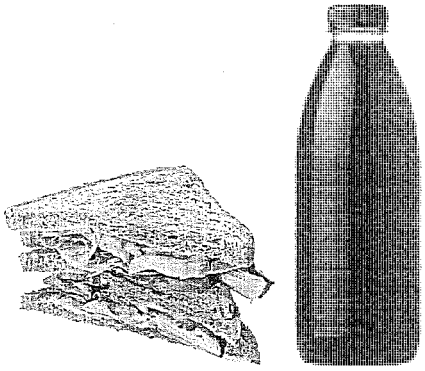

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5.5y = 495 → put y in ① 3x + 180 = 720

y = 90 x = 180

check in ②

2(180) + 5(90) = 810

360 + 450 = 810

810 = 810

So y = 90 and x = 180

Examiner only

7. Thutmose lives in Egypt and has an interest in pyramids.

(a) The Egyptians built right pyramids.
Thutmose visits a pyramid that has a square base measuring 230 metres by 230 metres.
The vertical height of this pyramid is 146 metres.
Thutmose makes his way up from the ground to the top of the pyramid along one of the sloping edges.

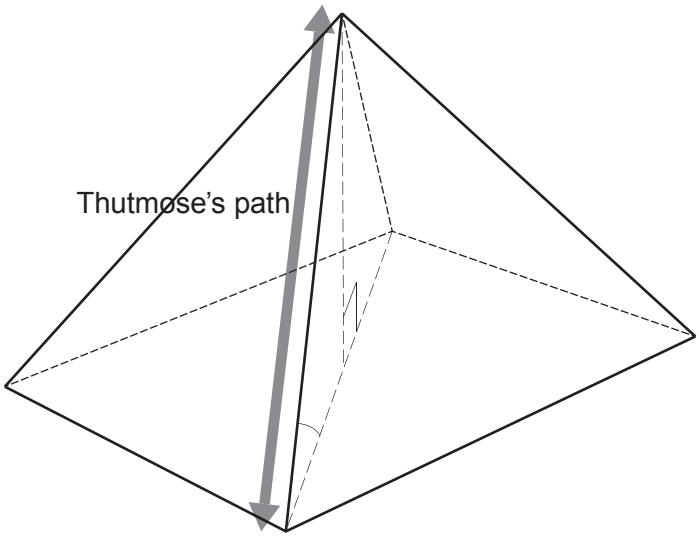

Diagram not drawn to scale

(i) Calculate the length of Thutmose's path along the edge of the pyramid, as shown in the diagram above. [5]

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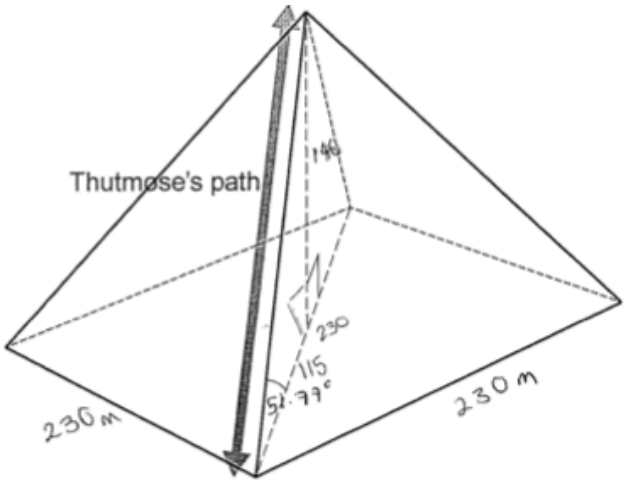

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SOHCAHTOA

* $\tan\theta = \frac{\text{opp}}{\text{adj}}$

$\tan\theta = \frac{146}{115}$

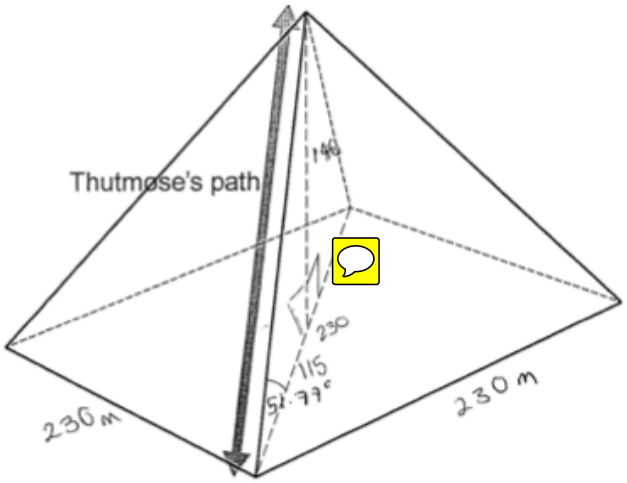
$\theta = \tan^{-1}\left(\frac{146}{115}\right)$

$\theta = 51.77$

$\cos 51.77 = \frac{115}{x}$

$x = \frac{115}{\cos 51.77}$

$x = 185.8\text{m}$ (to 1dp)



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$S^{O}H\,C^{A}\,t\,I\,T^{O}A$

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