WJEC 2014 Online Exam Review

GCSE Mathematics Unit 3 4353-02

All Candidates' performance across questions

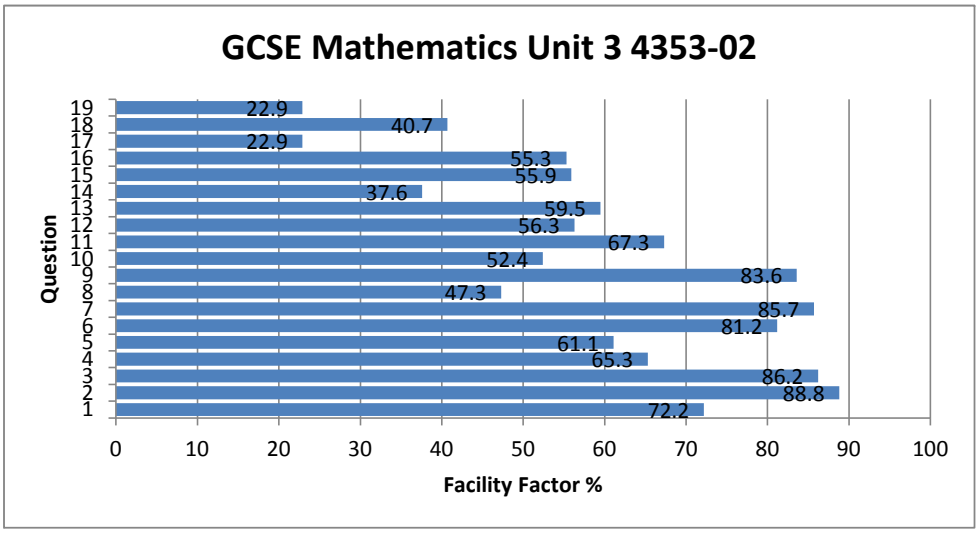
Question Title	N	Mean	S D	Max Mark	F F	Attempt %
1	1222	6.5	2.2	9	72.2	99.9
2	1223	2.7	0.6	3	88.8	100
3	1221	6	1.3	7	86.2	99.8
4	1221	5.2	2.2	8	65.3	99.8
5	1206	2.4	1.8	4	61.1	98.6
6	1197	1.6	0.8	2	81.2	97.9
7	1215	3.4	1.2	4	85.7	99.3
8	1199	1.4	1	3	47.3	98
9	1212	1.7	0.6	2	83.6	99.1
10	1160	2.1	1.4	4	52.4	94.8
11	1209	4	2	6	67.3	98.9
12	1186	2.3	1.8	4	56.3	97
13	1198	2.4	1.6	4	59.5	98
14	1197	2.6	1.5	7	37.6	97.9
15	1131	1.1	1	2	55.9	92.5
16	1145	1.7	1.3	3	55.3	93.6
17	1184	1.6	2.2	7	22.9	96.8
18	1175	2.9	2.8	7	40.7	96.1
19	1118	0.9	1.3	4	22.9	91.4

5

10

13

18



Examiner only

5. Two brothers, Gethin and David, share a sum of money in the ratio 2 : 7.
David gets £30 more than Gethin. Calculate how much money the brothers share. [4]

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Gethin gets $\frac{2}{9}$

David gets $\frac{7}{9}$

Total money = 30 ÷ 5 × 9 = 54

Gethin gets = $54 \times \frac{2}{9}$ = £12

David gets = $54 \times \frac{7}{9}$ = £42

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G : D

2 : 7

7 − 2 = 5

(×6 : ×6) (30↑)

30 ÷ 5 = 6

12 : 42 ← 30 + 12 = 42

(check)

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2+7=9

£30÷9=3.3

2×3.3=6.6

7×3.3=23.1

£6.6 and £23.1

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Examiner only

10.

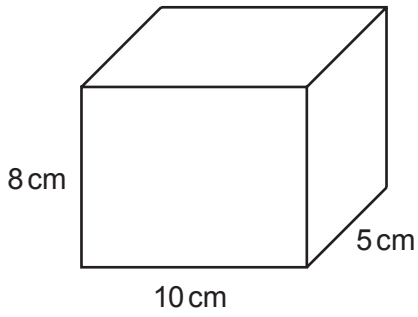

Diagram not drawn to scale

A cuboid made of metal has dimensions 10 cm, 8 cm and 5 cm. The mass of the cuboid is 1·1 kg. Calculate the density of the metal. State the units of your answer. [4]

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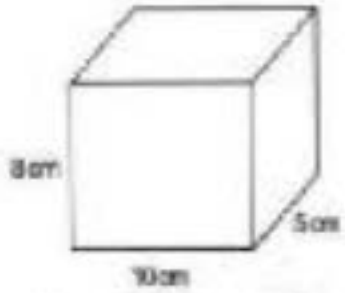
Turn over.

12.



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$M = D \times V$

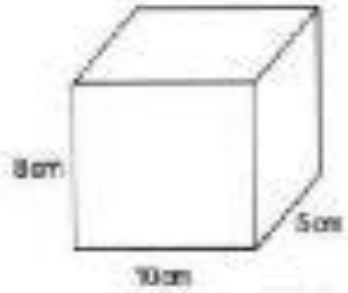
$D = \frac{M}{V}$

$= \frac{1100}{8 \times 10 \times 5}$

$= \frac{1100}{400}$

$= 2.75 g/cm^3$

*12.



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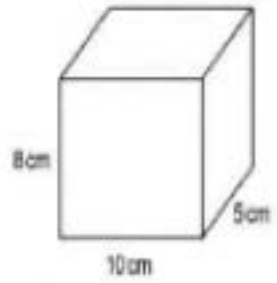

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L x W x H = 8 x 10 x 5 = 400 cm

= 4 m^3

$\frac{1.1}{4}$ = 0.275 kg/m^3

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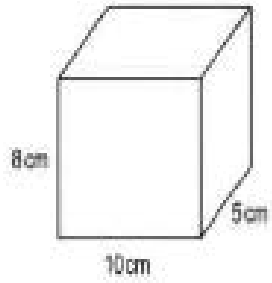

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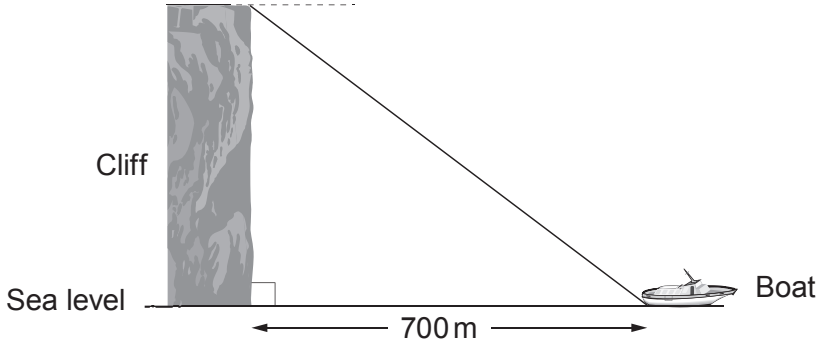
= 4m³

1.1 ÷ 4 = 0.275g/m³

Examiner only

13. From the top of a vertical cliff, the angle of depression of a sailing boat is 15°.
If the sailing boat is 700 m from the base of the cliff, calculate the height of the cliff above sea level. [4]



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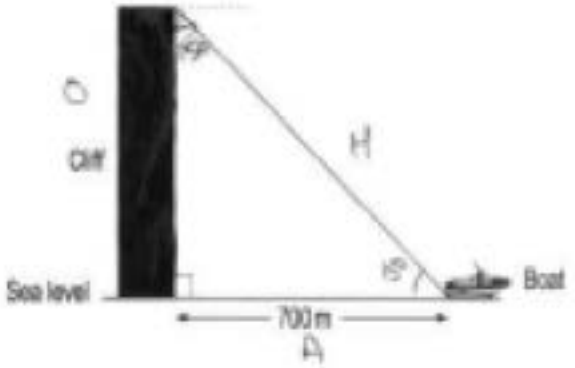

SOHCAHTOA

Tan x = O/A

Tan 15° = x/700

x = Tan 15° × 700

= 187.56

Cliff = 188m above sea level

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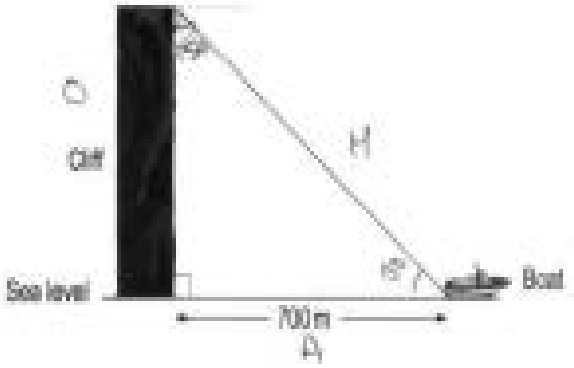

SOH CAH TOA

$\tan x = \frac{O}{A}$

$\tan 15^\circ = \frac{x}{700}$

$x = \tan 15^\circ \times 700$

$= 187.56$

Cliff $= 188$m above sea level

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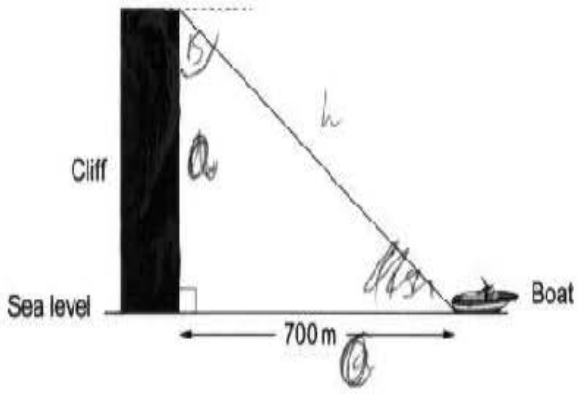

$$\text{Height} = \frac{700}{\tan 15}$$

$$= 2612\text{ m}$$

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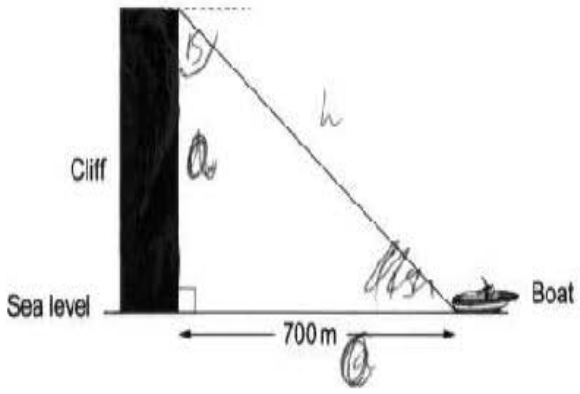

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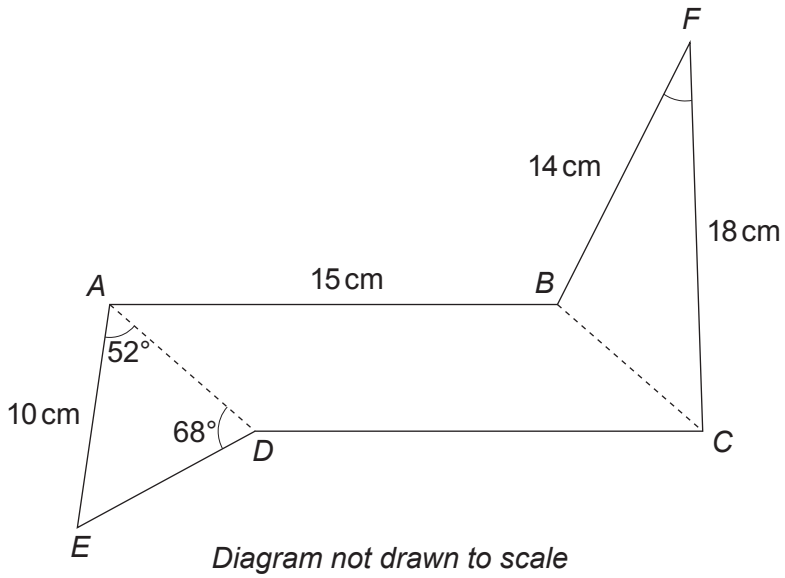
Examiner only

18. A gardening tool made of steel has been manufactured by attaching two triangular pieces onto a piece in the shape of a parallelogram.
Using the information given in the diagram, calculate the size of $B\hat{F}C$. [7]



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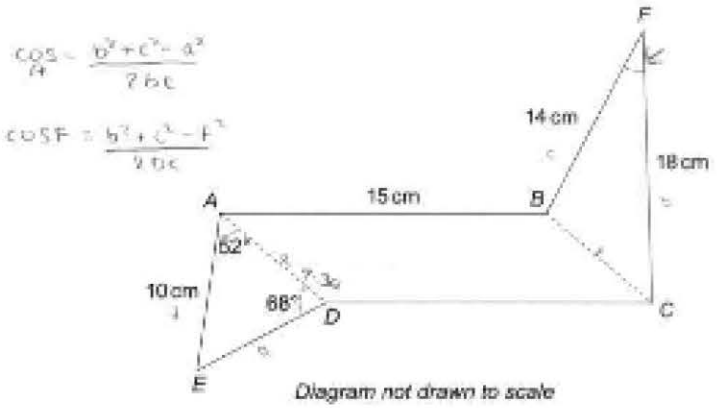

Diagram not drawn to scale

$\cos A = \frac{b^2+c^2-a^2}{2bc}$

$\cos F = \frac{b^2+c^2-f^2}{2bc}$

$A\hat{E}D = 180 - 68 - 52$

$= 60°$

$\frac{(AD)}{\sin E} = \frac{e}{\sin D} = \frac{d}{\sin A}$ $\quad AD = BC$

$\frac{AD}{\sin 60} = \frac{10}{\sin 68}$

$AD = \left(\frac{10}{\sin 68}\right) \times \sin 60$

$= 9.34$ cm (2dp)

$\cos F = \frac{b^2+c^2-f^2}{2bc}$

$\cos F = \frac{18^2+14^2-9.34^2}{2\times 18\times 14}$

$= 0.858659523\ldots$

$F = \cos^{-1}(0.858\ldots)$

$B\hat{F}C = 30.8°$ (1dp)

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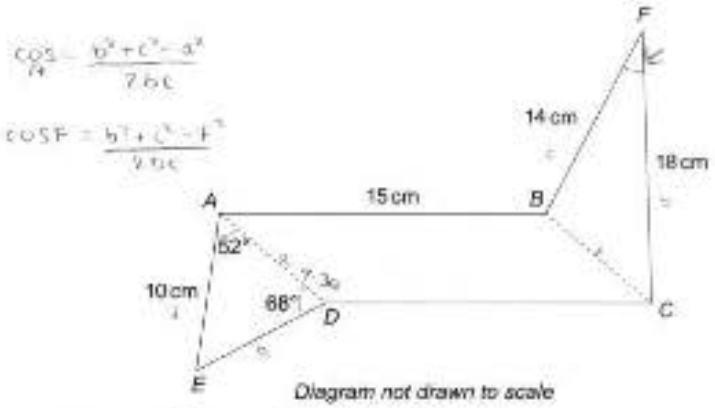

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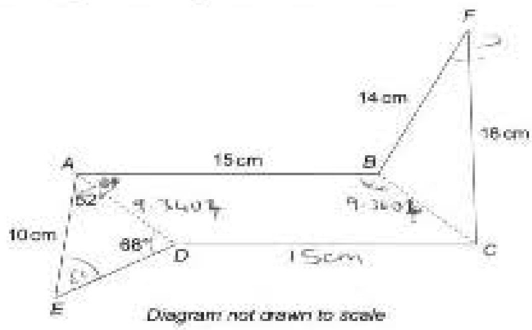

Diagram not drawn to scale

$B\hat{F}C = 22.91°$

$A\hat{E}D = 180 - 52 - 68 = 60°$

$B\hat{F}C = 22.90849$

$BD = a^2 = b^2 + c^2 - 2bc \cos A$ $= 22.91°$ (2dp)

$AD = 10 \div \sin 68 \times \sin 60 = 9.3404$ cm

~~Area of triangle~~

$a^2 = b^2 + c^2 - 2bc \cos A$

$9.3404^2 = 18^2 + 14^2 - 2 \times 18 \times 14 \times \cos ?$

$9.3404^2 - 16 = \cos ?$ $71.24507216 = \cos \times ?$

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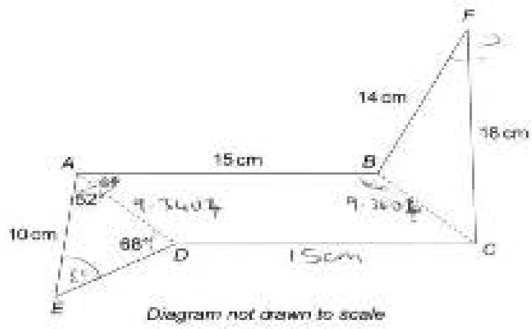

Diagram not drawn to scale

$B\hat{F}C = 22.91°$

$A\hat{E}D = 180 - 52 - 68 = 60°$

$B\hat{F}C = 22.90849$

$BC = a^2 = b^2 + c^2 - 2bc \cos A$ $= 22.91°$ (cap)

$AD = 10 \div \sin 65 \times \sin 60 = 9.3404$ cm

Area of triangle

$a^2 = b^2 + c^2 - 2bc \cos A$

$9.3404^2 = 18^2 + 14^2 - 2 \times 18 \times 14 \times \cos ?$

$9.3404^2 - 16 = \cos ?$ $\quad 71.24307216 = \cos ?$