



GCSE Foundation/Higher 20

Shape, space and measure



Mark scheme



79 minutes



69 marks

Mensuration

M1. $224 \div 4 (= 56)$

M1

their 56×3

M2 224×0.75 (oe)

M1 dep

168

A1

[3]

M2. $h - 3$

$h + 20 + h + 20$ oe

B1

$2h + 40 = 72$

M1

$(h =) 16$

A1

Alt 1

$72 - 43 = 29$

B1

$2h - 3 = 29$ or $2h = 32$

M1

$(h =) 16$

M1

Alt 2

$72 - 43 = 29$

B1

$(29 - 3) \div 2$ or 13

M1

$(h =) 16$

A1

[3]

- M3.** (a) $7 \times 8 - x \times x$
oe x^2 must be shown as $x \times x$
B1
- (b) Diagram with a vertical and/or horizontal line drawn from bottom right corner of shaded square
M1
- Two (or three) separate rectangles with dimensions correctly shown
A1
- Horizontal line, correct areas shown
SC1 For expanding brackets and showing that it is $56 - x^2$
A1
- [4]**

- M4.** (a) $\pi \times 3^2$
 $3.1(4...) \times 3^2$
M1
- 9π
Accept 9 (x) π or π (x) 9
Do not accept fw
A1
- (b) $\pi \times 3^2 \times 0.5$
 or $9\pi \times 0.5$
 or their (a) $\times 0.5$
 $3.1(4...) \times 3^2 \times 0.5$
 π not needed for M1 ft
M1
- 4.5π
Accept 4.5 (x) π or π (x) 4.5
Answer must be in terms of π
A1ft
- [4]**

- M5.** (a) $5 \times 4 \times 3$
oe
eg, A "layer" of 15×4
A "layer" of 20×3
A "layer" of 12×5
B1

(b) $60 \div 8$

or 7.5

or $7 \times 8 = 56$ and $8 \times 8 = 64$

M1

7

A1

[3]

M6. (a) $50 \leq \text{plan area} \leq 55$

B1 $43 \leq \text{plan area} < 50$ or

$55 < \text{plan area} \leq 62$ or

Attempt to find plan area

B2

(b) (their) plan area $\times 4$
(= area of turf)

Allow restart with new (their) plan area

M1

(their) area of turf $\times \text{cost} / \text{m}^2$

Cost / $\text{m}^2 \leftrightarrow$ (their) area of turf

M1

(£) 406 to (£) 446.60 inclusive

cao

A1

[5]

M7. (a) $32 \times 36 \div 2$

oe

M1

576

A1

(b) 35.5

B1

[3]

M8. (a) $2x - 1 + 2x - 1 + x + 2 + x + 2$

oe

B1

(b) $(6x + 2 =) 2x + 8$

Allow $(6x + 2 =) x - 1 + x - 1 + 5 + 5$ oe

B1

$6x - 2x = 8 - 2$

oe Allow one error in signs

M1

$4x = 6$

*ft **Only** from **Their** $(2x + 8)$*

A1 ft

$1\frac{1}{2}$

*ft **Their** $(2x + 8)$ or **Their** $(4x = 6)$ oe*

B1 ft

(c) $(\text{Their } 3.5) \times (\text{Their } 2)$

$2x^2 + 3x - 2$

M1

7

*From **Their** x*

A1 ft

[7]

M9. $20 \times 20 \times 15$ (6000)

$\frac{1000}{20 \times 20}$ or $\frac{15}{6}$

M1

Their $6000 + 1000$

2.5

A1 ft

Their $7000 \div (20 \times 20)$

$15 + \text{Their } 2.5$

M1 dep

17.5

T & I can get all 4 marks

A1

[4]

M10. $20 \times 10 \times 20 (= 4000)$

Must be volume calculation not surface area

M1

$5 \times 5 \times 2 (= 50)$

Must be volume calculation not surface area

M1

$\frac{\text{their } 4000}{\text{their } 50}$ or

80 or

$\frac{(20 \times 10 \times 20) - (70 \times 5 \times 5 \times 2)}{5 \times 5 \times 2}$

M3 for $4 \times 2 \times 10$

M2 for two of 2, 4 or 10 multiplied together and by another number

M1

10

A1

[4]

M11. 5×5 or 3×3

M1

$5 \times 5 - 3 \times 3$

or $9 \div 25 \times 100$ or 9×4 oe

M1

$(\text{their } 16) \div (\text{their } 25) \times 100$ oe

or 16×4 or $100 - 36$

M1 dep

64

SC3 36

A1

[4]

M12. (a) $30 \times 12 \times 4$

M1

1440

A1

(b) 10×30

or $279 \div 30 (\times 5)$

M1

$279 \div (\text{their } 300) \times 100$

*or (their 9.3) $\div 10 \times 100$ or
(their 46.5) $\div 50 \times 100$*

M1

93

SC2 for 7

A1

[5]

M13. (a) (i) $30 \times 12 \times 4$

M1

1440

A1

(ii) 4×30 or 4×12

M1

$2 \times (\text{their } 120) + 2 \times (\text{their } 48)$ only
oe

M1 dep

336

A1

(b) 10×30

or $279 \div 30 (\times 5)$

M1

$(279 \div (\text{their } 300)) \times 100$

or (their 9.3) $\div 10 \times 100$ or (their 46.5) $\div 50 \times 100$

M1

93

SC2 for 7

A1

[8]

M14. Sight of 4000

B1 may be awarded later for dividing their cm³ answer by 1000

B1

$$\text{Vol of cup} = \pi \times 3^2 \times 10$$

M1

$$= 282.7 \text{ (433388)}$$

Accept $280 \leq \text{vol} \leq 283$

A1

$$(\text{their } 4000) \div (\text{their } 282.7(\dots))$$

DM1

$$= 14(.14710\dots)$$

$$= 14$$

A1

[5]

M15. $10.8 \times 9.5 (= 102.6)$

or 17.5×9.5

M1

$$\frac{1}{2} (17.5 - 10.8) \times 9.5 (= 31.825)$$

$$\text{or } \frac{1}{2} (6.7) \times 9.5$$

M1

$$\frac{1}{2} (10.8 + 17.5) 9.5 \text{ gets}$$

M2

M1

$$134(.425)$$

A1

[3]

M16. (a) $6x + 10y$

oe

B1 for $6x$ or $10y$ oe seen

No penalty for eg $x6$

B2

(b) 2×20 or 6×5

or 2×25 or 4×5

or 6×25 or 4×20

M1

$$70$$

A1

[4]

