Mark schemes

Q1.

Alternative method 1

$\frac{1}{3}$ (×) π (×) 5^2 (×) 15 or 125π or [392.5, 392.8]

oe

M1

$\frac{r}{5} = \frac{15-9}{15}$ or $r = 2$

oe

r is radius of small cone

M1

$\frac{1}{3} \times \pi \times \text{their } 2^2 \times (15-9)$ or 8π or [25.12, 25.14]

Dep on 2nd M1

M1dep

117π

Accept $\pi117$ or $\frac{351\pi}{3}$

A1

Alternative method 2

$\frac{1}{3}$ (×) π (×) 5^2 (×) 15 or 125π or [392.5, 392.8]

oe

M1

volume sf $= \left(\frac{15-9}{15}\right)^3$ or $\frac{8}{25}$ or $\left(\frac{15}{15-9}\right)^3$ or $\frac{125}{8}$

oe

M1

Accept $1 - \frac{8}{25}$ or $\frac{117}{125}$ or 8π or [25.12, 25.14]

Dep on 2nd M1

Accept $1 - \frac{8}{25}$ or $\frac{117}{125}$

M1dep

117π

Accept $\pi117$ or $\frac{351\pi}{3}$

A1

Additional Guidance

Allow [3.14, 3.142] for π for M marks only

AQA GCSE Maths - Congruence and Similiarity (H)

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Answer of 367.(…)

<div align="right">M1M1M1A0

[4]</div>

Q2.

$\frac{12}{10}$ (= 1.2) or $\frac{10}{12}$

      oe
      May be implied from answer of 600

<div align="right">M1</div>

500 × their 1.2³

      oe

<div align="right">M1dep</div>

864

      Accept [863, 864]

<div align="right">A1

[3]</div>

Q3.

(a)   (height of cylinder =) 14

      May be seen in method or on diagram

<div align="right">B1</div>

$\frac{1}{3}$ × π × 6² × their 14 (= 168π)

      oe eg [527.5, 528]

<div align="right">M1</div>

$\frac{2}{3}$ × π × 6³ (= 144π)

      oe eg [452, 452.16]

<div align="right">M1</div>

168π + 144π

      oe eg 312π − 168π = 144π

<div align="right">A1</div>

(b)   1500 (g)

<div align="right">B1</div>

(312π ×) 2³ (= 2496π)

      oe

      eg $\frac{1}{3} \times \pi \times 12^2 \times$ *their* $28 + \frac{2}{3} \times \pi \times 12^3$

      ***or** [7837.4, 7842.432]*

<div align="right">M1</div>

Their 1500 ÷ their 2496π

<div align="right">M1Dep</div>

[0.19, 0.1914]

> *ft their 1500 and their 28*
> *Accept 0.2 if correct method seen*

A1ft

[8]

Q4.

(Linear sf =) 1.5

> *681 or 1021.5 implies B1*

B1

454 × 1.5³

M1

1532 (…)

> *Accept 1530 or 1500 with working*

A1

Alternative

Radius of larger cylinder
= [5.7, 5.71]

B1

π × radius² × 15

M1

[1531.5, 1532.5]

A1

[3]

Q5.

75 ÷ 50 or $\frac{3}{2}$ or 1.5 seen or implied

or 50 ÷ 75 or $\frac{2}{3}$ seen or implied

> *oe*

M1

$(75 \div 50)^2$ or $\left(\frac{3}{2}\right)^2$ or 1.5^2 or 2.25 or $\frac{9}{4}$

or $(50 \div 75)^2$ or $\left(\frac{2}{3}\right)^2$ or $\frac{4}{9}$

> *oe*

M1dep

6000 × 2.25 or 13 500
or 80 × 6000

> *oe*

M1

their 13 500 ÷ 10 000

or 80 ÷ 10 000
or *their* 13 500 ÷ 10 000 × 80
or 80 × 6000 ÷ 10 000
or 6000 ÷ 10 000 × 2.25

oe

Dependent on previous M1

M1dep

108

Digits 108 seen M1M1M1M1A0

A1

Additional Guidance

$6000 \times \dfrac{3}{2} \times 80$

M1M0M1

$720\ 000$ implies $\dfrac{3}{2}$ and 6000×80 from $\left(6000 \times \dfrac{3}{2} \times 80\right)$

M1M0M1

9000 implies $\dfrac{3}{2}$

Ignore assumptions about the shape

M1

[5]

Q6.

15 ÷ 12 or 1.25
or 12 ÷ 15 or 0.8

oe

M1

(their 1.25)³

or $\dfrac{125}{64}$

or 1.95(3125)

or (their 0.8)³

or $\dfrac{64}{125}$

or 0.512

oe

M1dep

2734.375 or 2734.(...) or 2730

SC1 for 1750 or 2187.5 or 2188 with no working

A1

Additional Guidance

Treats as a particular shape eg cylinder

$r^2 \times \pi \times 12 = 1400 \rightarrow r = 6.0939...$

$r \times 1.25$

(1.25 seen)

M1

$= 6.0939... \times 1.25$

$= 7.617$

$12 \times 1.25 = 15$

$7.617^2 \times \pi \times 15$

(1.25³ implied)

M1dep

2734.375 or 2734.(...) or 2730

A1

[3]