

**M1.****Alternative method 1**

$$2 = k\sqrt{36} \text{ or } \sqrt{36} = 6$$

**M1**

$$(k =) 2 \div \text{their } 6 \text{ or } \frac{1}{3}$$

**M1dep**

$$5 \div \text{their } \frac{1}{3} \text{ or } 15 (\sqrt{a} =)$$

oe

**M1**

225

**A1****Alternative method 2**

$$2k = \sqrt{36} \text{ or } \sqrt{36} = 6$$

**M1**

$$(k =) \text{their } 6 \div 2 \text{ or } 3$$

**M1dep**

$$5 \times \text{their } 3 \text{ or } 15 (\sqrt{a} =)$$

oe

**M1**

225

**A1**

**Alternative method 3**

$$2k = \sqrt{36} \text{ or } \sqrt{36} = 6$$

M1

$$5 \div 2 \text{ or } 2.5$$

M1

their 6  $\times$  their 2.5 or 15 ( $\sqrt{a} =$ )  
*dep on M1 M1*

M1dep

$$225$$

A1

**[4 marks]****M2.**

(a) C

B1

(b)  $y \propto \sqrt{x}$  or  $y = k\sqrt{x}$   
 oe  
 or  $cy = \sqrt{x}$

B1

$$36 = k \sqrt{100}$$

$$\text{or } k = 3.6$$

$$\text{or } y = 3.6 \sqrt{x}$$

$$\text{oe}$$

$$36c = \sqrt{100}$$

$$\text{or } c = \frac{5}{18} \text{ or } 0.277\dots$$

$$\text{or } \frac{5}{18} y = \sqrt{x}$$

M1

$$3.6 \times \sqrt{250}$$

$$\text{or } 56.9(\dots)$$

oe

$$\sqrt{250} \div \frac{5}{18}$$

M1

57

A1

[5]

$$\mathbf{M3.(a)} \quad R = \frac{k}{A} \text{ or } R \propto \frac{1}{A}$$

oe

$$R = \frac{1}{kA} \text{ or } R \propto \frac{1}{kA}$$

M1

$$12.1 = \frac{k}{1.5}$$

$$\text{or } (k =) 12.1 \times 1.5$$

$$\text{or } (k =) 18.15 \text{ or } 18.2 \text{ or } 18$$

$$12.1 = \frac{1}{1.5k}$$

$$\text{or } (k =) \frac{1}{1.5 \times 12.1}$$

$$\text{or } (k =) 0.055(\dots)$$

M1dep

$$R = \frac{18.15}{A} \text{ or } R = \frac{1}{0.055A}$$

oe

*Note: reciprocal of 18.15 is 0.055(...)*

A1

(b)  $\frac{\text{their } 18.15}{4} \text{ or } \frac{1}{4 \times \text{their } 0.055}$

oe

M1

$$4.5(375)$$

A1ft

[5]

**M4.(a)**  $y \propto x$  or  $y = kx$  or  $cy = x$  oe  
 $28 \div 7$  or  $4$  seen  
 $7 \div 28$  or  $0.25$  seen

M1

$$28 = k \times 7 \text{ or } k = 4 \text{ oe}$$

$$c \times 28 = 7 \text{ or } c = 0.25$$

M1

$$y = 4x \text{ oe}$$

*Accept  $y = kx$  and  $k = 4$*

A1

(b)  $4 \times 12$  or their  $4 \times 12$

*Must be direct proportion*

M1

48

A1ft

[5]

M5.(a)  $y \propto \frac{1}{x}$  or  $y = \frac{k}{x}$  oe  
 $5 \times 9$  or 45 seen

M1

$$5 = \frac{k}{9} \text{ oe}$$

$$\text{or } k = 45$$

M1dep

$$y = \frac{45}{x} \text{ oe}$$

A1

(b) their  $45 \div 15$

M1

3

*ft on inverse proportion*

A1ft

[5]

M6. (a)  $M \propto r^3$  or  $M \div r^3 = k$  or  $M = r^3 \times k$

Accept any letter for k

M1

$$200 = k \times 5^3 \text{ or } (k =) \frac{200}{5^3} \text{ or } k = 1.6$$

oe

M1 dep

$$8^3 \times \frac{200}{5^3}$$

oe

$8^3 \times \text{their } 1.6$  or  $8^3 \times \text{their } k$

M1

819.2 or 819

A1

(b)  $3125 = r^3 \times \text{their } \frac{200}{5^3}$

Accept  $3125 = r^3 \times \text{their } 1.6$

M1

$$\sqrt[3]{\frac{5^3 \times 3125}{200}} (= r)$$

Accept  $\sqrt[3]{\frac{3125}{\text{their } 1.6}}$  or  $\sqrt[3]{1953.125}$

M1 dep

12.5

A1

[7]

M7.(a)  $y = \frac{k}{x^2}$  or  $y \propto \frac{1}{x^2}$

oe

M1

$$8 = \frac{k}{3^2} \text{ or } k = 72$$

*This mark is for substituting 8 and 3 into their proportionality equation*

A1

$$y = \frac{72}{x^2} \text{ or } yx^2 = 72$$

$$\text{oe eg } \frac{y}{72} = \frac{1}{x^2}$$

A1

(b)  $y = \frac{72}{12^2}$

*ft their equation from (a)*

M1

$$\frac{1}{2} \text{ or } 0.5$$

A1ft

[5]

**M8.**  $W \propto \frac{1}{x}$  or  $W \propto \frac{k}{x}$  or  $Wx = k$

*Accept any letter for k*

$$6 = \frac{k}{20}$$

$$\text{or } \frac{24}{20} = \frac{6}{W} \text{ oe}$$

M1

$$k = 120 \text{ or } Wx = 120 \text{ oe}$$
$$24W = 120$$

M1

$$120 \div 24 \text{ oe}$$
$$6 \div 1.2$$

M1

5

A1

**[4]**