

Q1. (2017)

14	y is directly proportional to $\frac{1}{x}$	B1	
	Additional Guidance		

Q2. (2018)

21(a)	$m \propto h^3$ or $m = k \times h^3$ or $1600 = k \times 8^3$ or $c \times m = h^3$ or $c \times 1600 = 8^3$	M1	oe eg $h = km^{1/3}$
	$(k =) 1600 \div 8^3$ or 3.125 or $(c =) 8^3 \div 1600$ or 0.32	M1dep	oe eg $\frac{1600}{512}$ or $\frac{25}{8}$ $\frac{512}{1600}$ or $\frac{8}{25}$
	$m = 3.125 \times h^3$ or $0.32 \times m = h^3$	A1	oe equation
	Additional Guidance		
	$m \propto 3.125 \times h^3$ or $0.32m \propto h^3$		M1M1A0
	$(k =) 3.125$ or $(c =) 0.32$		M1M1
	$3.125h^3$ or $0.32h^3$		M1M1

Q3. (2019)

20(a)	$d \propto v^2$ or $d = k \times v^2$ or $6 = k \times 20^2$ or $c \times d = v^2$ or $c \times 6 = 20^2$	M1	oe eg $v = kd^{1/2}$
	$(k =) 6 \div 20^2$ or 0.015 or $(c =) 20^2 \div 6$ or 66.66... or 66.67	M1dep	oe eg $\frac{6}{400}$ or $\frac{3}{200}$ $\frac{400}{6}$ or $\frac{200}{3}$
	$d = 0.015 \times v^2$ or $\frac{200}{3} \times d = v^2$	A1	oe equation
	Additional Guidance		
	Working for second M mark must follow from their initial equation		
	$d \propto 0.015 \times v^2$		M1M1A0
	$(k =) 0.015$ or $(c =) \frac{200}{3}$ with no incorrect working		M1M1A0
	$0.015v^2$ or $\frac{200}{3}d$		M1M1A0

Q4. (2019)

20(b)	their 0.015×30^2 their 0.015×900 or $6 \times \left(\frac{30}{20}\right)^2$ or $30^2 \div \text{their } \frac{200}{3}$ or $900 \div \frac{200}{3}$ or $6 \times \left(\frac{20}{30}\right)^2$	M1	oe
	13.5	A1ft	oe ft their 0.015 provided using $d = \text{their } 0.015 \times v^2$
	Additional Guidance		
	Must use $\times 30^2$ or $\times 900$ or $\times \left(\frac{30}{20}\right)^2$ for M1		
	$d \propto 13.5$		M1A0
	If in part (a) $d = k \times v \quad 6 = k \times 20 \quad d = \frac{6}{20} v$ and in part (b) $d = \frac{6}{20} \times 30, \quad m = 9$		M0 part (a) M0 part (b)
	If in part (a) $d = k \times v \quad 6 = k \times 20 \quad d = \frac{6}{20} v$ and in part (b) $d = \frac{6}{20} \times 30^2, \quad d = 270$		M0 part (a) M1A1ft part (b)