

Q1. (2017)

22	Alternative method 1		
	$d = kr^2$ or $45 = k \times 3^2$ or $45 \div 9$	M1	oe equation
	$d = 5r^2$ or $(k =) 5$	M1dep	oe equation 245 implies M2
	their 5×10^2 or 500	M1dep	oe M3 $\left(\frac{10}{3}\right)^2 \times 45$ oe
	455	A1	
	Alternative method 2		
	$kd = r^2$ or $k \times 45 = 3^2$ or $9 \div 45$	M1	oe equation
	$0.2d = r^2$ or $(k =) 0.2$	M1dep	oe equation 245 implies M2
	$10^2 \div$ their 0.2 or 500	M1dep	oe M3 $45 \div \left(\frac{3}{10}\right)^2$ oe
	455	A1	
	Additional Guidance		
	$d \propto r^2$ with no further valid working		Zero
	$d = kt$ or $d = kt^3$ or $d = \frac{k}{t^2}$ etc not recovered		Zero
	$45 : 9$ with no further valid working		Zero
	$d = 5r^2$ or $(k =) 5$ scores M2 even if not subsequently used		M2
	$d = kr^2$ or $45 = k \times 3^2$ or $45 \div 9$ scores M1 even if not subsequently used		M1
	$0.2d = r^2$ or $(k =) 0.2$ scores M2 even if not subsequently used		M2
	$kd = r^2$ or $k \times 45 = 3^2$ or $9 \div 45$ scores M1 even if not subsequently used		M1
	Allow use of other letters		