

Q1. (2018)

	$\frac{14\sqrt{5}}{3}$	B3	oe eg $\frac{28\sqrt{5}}{6}$ B2 $(\sqrt{\frac{2}{9}} =) \frac{2\sqrt{5}}{3}$ or $(\sqrt{80} =) 4\sqrt{5}$ and $(\sqrt{\frac{2}{9}} =) \frac{\sqrt{20}}{3}$ or $(\sqrt{\frac{2}{9}} =) \frac{2\sqrt{5}}{\sqrt{9}}$ B1 $(\sqrt{80} =) 4\sqrt{5}$ or $(\sqrt{\frac{2}{9}} =) \frac{\sqrt{20}}{3}$ or $(\sqrt{\frac{2}{9}} =) \frac{2\sqrt{5}}{\sqrt{9}}$
Additional Guidance			
28	For B1 or B2, allow $\frac{6\sqrt{5}}{9}$ for $\frac{2\sqrt{5}}{3}$ and $\frac{\sqrt{180}}{9}$ for $\frac{\sqrt{20}}{3}$		
	$\frac{14}{3}\sqrt{5}$		B3
	$16\sqrt{5} + \frac{2\sqrt{5}}{3} = \frac{50\sqrt{5}}{3}$		B2
	$4\sqrt{5} + \frac{2\sqrt{5}}{3} = 4\frac{2}{3}\sqrt{5}$		B2
	$4\sqrt{5} + \frac{2\sqrt{5}}{9} = \frac{38\sqrt{5}}{9}$		B1
	$2\sqrt{20} + \frac{\sqrt{20}}{3} = \frac{7\sqrt{20}}{3}$		B1

Q2. (2021)

Question	Answer	Mark	Comments
25	Alternative method 1		
	$(\sqrt{150} =) \sqrt{25} \sqrt{6}$ or $5\sqrt{6}$ or $(\sqrt{2} \times \sqrt{3} =) \sqrt{6}$	M1	numerator allow $\sqrt{2}\sqrt{3}$ for $\sqrt{6}$ denominator
	$\frac{\sqrt{25}\sqrt{6} - \sqrt{6}}{\sqrt{6}}$ or $\frac{5\sqrt{6} - \sqrt{6}}{\sqrt{6}}$ or $\frac{4\sqrt{6}}{\sqrt{6}}$	M1dep	allow consistent use of $\sqrt{2}\sqrt{3}$ for $\sqrt{6}$
	4 with M1M1 awarded	A1	
	Alternative method 2		
	$\sqrt{6}(\sqrt{25} - 1)$ or $\sqrt{6}(5 - 1)$ or $4\sqrt{6}$ or $(\sqrt{2} \times \sqrt{3} =) \sqrt{6}$	M1	numerator allow $\sqrt{2}\sqrt{3}$ for $\sqrt{6}$ denominator
	$\frac{\sqrt{6}(\sqrt{25} - 1)}{\sqrt{6}}$ or $\frac{\sqrt{6}(5 - 1)}{\sqrt{6}}$	M1dep	allow consistent use of $\sqrt{2}\sqrt{3}$ for $\sqrt{6}$
	4 with M1M1 awarded	A1	
	Alternative method 3		
	$\frac{\sqrt{150} - \sqrt{6}}{\sqrt{2} \times \sqrt{3}} \times \frac{\sqrt{6}}{\sqrt{6}}$	M1	allow $\frac{\sqrt{2}\sqrt{3}}{\sqrt{2}\sqrt{3}}$ for $\frac{\sqrt{6}}{\sqrt{6}}$
	$\frac{\sqrt{900} - 6}{6}$	M1dep	oe rationalised
	4 with M1M1 awarded	A1	
	Additional Guidance		
	Condone answer 4 and -6 from use of $\sqrt{25} = \pm 5$		M1M1A1

Q3. (2023)

Q	Answer	Mark	Comments
25	$\sin 30 = \frac{1}{2}$ or $\tan 45 = 1$ or $\cos 30 = \frac{\sqrt{3}}{2}$	M1	oe eg $\tan 45 = \frac{\sqrt{2}}{\sqrt{2}}$ or $4 \sin 30 = 2$ or $2 \cos 30 = \sqrt{3}$ implied by position in the expression may be seen in a table
	substitution of all three correct values	M1dep	eg $\frac{4 \times \frac{1}{2} - 1}{2 \times \frac{\sqrt{3}}{2}}$ or $\frac{2 - 1}{2 \times \frac{\sqrt{3}}{2}}$ or $\frac{2 - 1}{\sqrt{3}}$
	$\frac{1}{\sqrt{3}}$ or $\frac{\sqrt{3}}{3}$	M1dep	
	$(\frac{1}{\sqrt{3}} \text{ or } \frac{\sqrt{3}}{3}) \tan 30$ or $x = 30$ with full working seen for M3	A1	
Additional Guidance			
Allow $\sqrt{1}$ for 1 throughout			
Reference to 30° being an acute angle is not required			