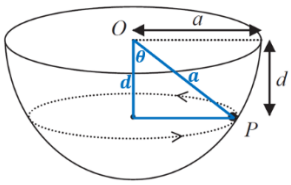
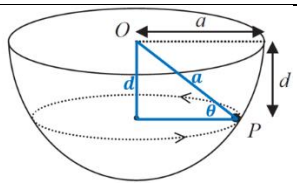
Question Number	Scheme		Marks
	 $\sin\theta = \frac{\sqrt{a^2-d^2}}{a} = \sqrt{\frac{a^2-d^2}{a^2}} = \sqrt{1-\frac{d^2}{a^2}}$	 $\cos\theta = \frac{\sqrt{a^2-d^2}}{a} = \sqrt{\frac{a^2-d^2}{a^2}} = \sqrt{1-\frac{d^2}{a^2}}$	
2(a)	$R\cos\theta = mg$	$R\sin\theta = mg$	M1A1
	$R = \frac{mga}{d}$		A1 (3)
2(b)	$R\sin\theta = \frac{mv^2}{r}$	$R\cos\theta = \frac{mv^2}{r}$	M1A1A1
	$\frac{mga}{d} \times \frac{\sqrt{a^2-d^2}}{a} = \frac{mv^2}{\sqrt{a^2-d^2}}$		DM1
	$v = \sqrt{\frac{g(a^2-d^2)}{d}}$		A1 (5)
			(8)
	Notes for question 2		
2(a)			
M1	Resolve vertically to form an equation with the correct number of terms and the correct structure. Dimensionally correct, condone sign errors and sin/cos confusion		
A1	Correct equation		
A1	Correct answer.		
2(b)			
M1	Form a horizontal equation of motion with the correct number of terms, condone sign errors and sin/cos confusion. Dimensionally correct. Accept $\frac{v^2}{r}$ or $r\omega^2$ for of acceleration. Condone use of a for radius at this point but M0 if a is used for acceleration.		
A1	Equation with at most one error. An error in the acceleration term is one error (incorrect form of acceleration or radius).		
A1	Correct equation (must use the correct form of acceleration and correct radius).		
DM1	Dependent on previous M. Eliminate R and trig to form an equation in v, g, a and d		
A1	Correct answer ISW		