



$$h_{\max} = \frac{u^2 \sin^2 \theta}{2g}$$

$$\text{and } R = \frac{u^2 \sin(2\theta)}{g} = \frac{2u^2 \sin\theta \cos\theta}{g}$$

$$\text{Given } h_{\max} = \frac{\sqrt{3}}{4} R$$

$$\text{Hence } \frac{u^2 \sin^2 \theta}{2g} = \frac{\sqrt{3}}{4} \times \frac{2u^2 \sin\theta \cos\theta}{g}$$

$$\text{Hence } \tan \theta = \sqrt{3}$$

$$\text{So } \theta = 60^\circ$$