

Projectile Angles

$$R = \frac{v_0^2 \sin 2\theta_0}{g} \Rightarrow \sin 2\theta_0 = \frac{Rg}{v_0^2}$$

$$\Rightarrow 2\theta_0 = \sin^{-1} \left(\frac{20 \times 9.8}{900} \right) = \sin^{-1} (0.218)$$

$$\sin^{-1} (0.218) = 12.6 \quad \text{"from calculator"}$$

Also

$$\sin^{-1} (0.218) = 180 - 12.6 = 167.4^\circ$$

$$\Rightarrow \theta_0 = 6.3^\circ$$

$$\theta_0 = 83.7^\circ$$