

3. The rock is moving in a circle at constant speed, so it experiences a centripetal acceleration given by

$$a_c = v^2 / r$$

We want to determine the value of the radius of the circle, so we multiply both sides of the equation by r

$$r a_c = (v^2 / r) r$$

Next we divide both sides of the equation by a_c to obtain an expression with r alone on one side of the equation.

$$r = v^2 / a_c$$

$$r = (2.5 \text{ m / s}^2)^2 / 4.0 \text{ m / s}^2$$

$$r = 1.56 \text{ m}$$