Answer on Question #62194-Physics – Mechanics | Relativity

A zookeeper is trying to tranquillize a gorilla that has escaped they fire a dart horizontally with a velocity of 15m/s from a height of 2 m the monkey is 20m away by what distance will the dart fall short

Solution

$$x = vt.$$

$$h = \frac{gt^2}{2}.$$

The time of flight is

$$t = \sqrt{\frac{2h}{g}}.$$

The horizontal distance is

$$x = v\sqrt{\frac{2h}{g}} = 15\sqrt{\frac{2(2)}{10}} = 9.5\ m.$$

The difference will be:

$$d = 20 - 9.5 = 10.5\ m.$$

Answer: $10.5\ m$ from gorilla.