

Answer on Question 40319, Physics, Acoustics Question: A monkey in a perch 20 m high in a tree drops a coconut above the head of a zoo keeper as he runs with a speed 1.5 m/s beneath the tree actually intending to hit the toes of the zoo keeper, how early in seconds should the coconut be dropped by the monkey.

Solution. Equation of vertical motion is

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

Time of flight of the coconut is

$$t = \sqrt{\frac{2h}{g}} = \frac{2 \cdot 20}{9.8} \approx 4.1 \text{ s}$$

Hence the coconut should be dropped by the monkey 4.1 seconds before.