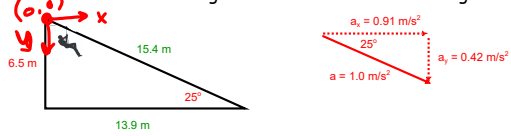


Zipline

Ryan is riding the zipline in Jamaica. He starts at a height of 6.5 m and accelerates down the zipline at 1.0 m/s^2 , at an angle of 25° below horizontal. How long will it take him to reach the ground?



X	Y	MOTION
$x_o = 0$ $x_f = 13.9 \text{ m}$ $v_{ox} = 0$ $a_x = 0.91 \text{ m/s}^2$	$y_o = 0$ $y_f = 6.5 \text{ m}$ $v_{oy} = 0$ $a_y = 0.42 \text{ m/s}^2$	$d_o = 0$ $d_f = 15.4 \text{ m}$ $v_{of} = 0$ $a_f = 1.0 \text{ m/s}^2$
$x = x_o + v_{ox}t + 1/2 a_x t^2$ $\sqrt{(2x / a_x)} = t$ $t = 5.5 \text{ s}$	$y = y_o + v_{oy}t + 1/2 a_y t^2$ $\sqrt{(2y / a_y)} = t$ $t = 5.5 \text{ s}$	$d = d_o + v_{of}t + 1/2 a_f t^2$ $\sqrt{(2d / a_f)} = t$ $t = 5.5 \text{ s}$

5.1 Motion in Two Dimensions: Projectile Motion

LEARNING TARGETS

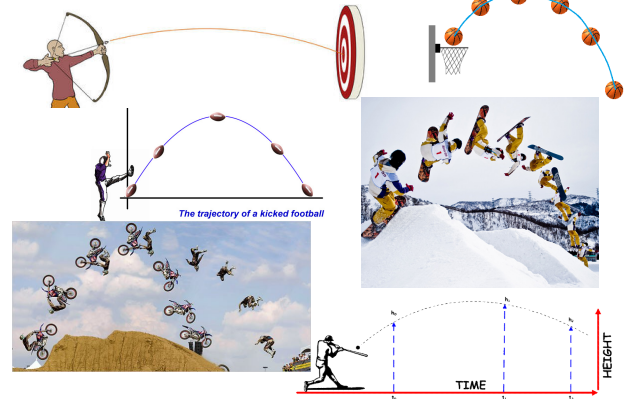
5.1 I can define, interpret, and analyze objects moving in two dimensions.

5.2 I can interpret, analyze, and calculate the motion of a zero launch angle projectile.

Projectile Motion

Projectile Motion is the motion of objects that are initially launched, or “projected,” and which then continue moving under the influence of gravity alone.

Projectile Motion

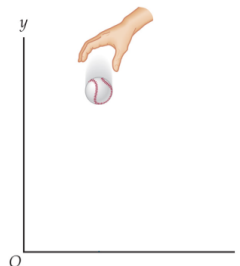


Projectile Motion

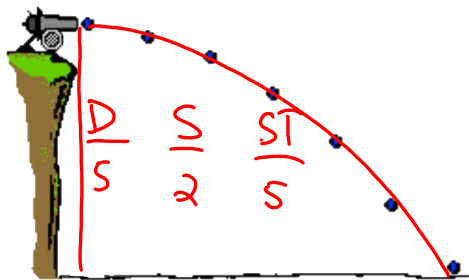
In studying projectile motion we make the following assumptions:

3. The Earth's rotation is ignored

Acceleration In Free Fall



Zero Launch Angle



Drop vs. Fired

