

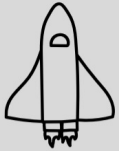
PROJECTILE MOTION

Guided Notes

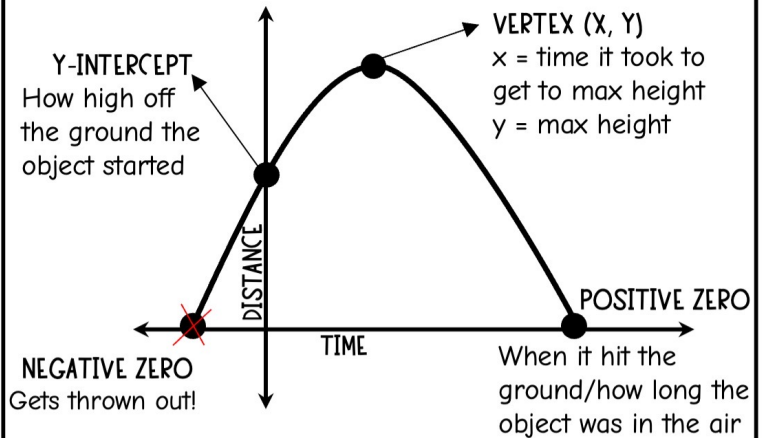
ESSENTIAL QUESTION

How can launching an object in the air be modeled by a quadratic equation?

PROJECTILE MOTION



- When an object is thrown or launched into the air and descends back down to the earth due to gravity, the height of the object can be represented by a quadratic equation/_____.
- To the right, the key features of the parabola & what they mean in the context of projectile motion are identified.



1. An apple is kicked from the ground. The equation $h = -16t^2 + 90t$ shows the height h in feet of the apple after t seconds.

- Find the maximum height of the apple.
- How many seconds will it take for the apple to reach the ground?



2. A pineapple is launched directly upward at 64 feet per second from a balcony. The equation $h = -16t^2 + 64t + 80$ shows the height h of the pineapple after t seconds.

- How long does it take for the pineapple to reach its maximum height?
- What is the height of the pineapple at the time it is launched?



3. A cherry is dropped off the Frost Bank Tower, which is 515 feet tall. If the cherry's pathway can be modeled by the equation $h = -16t^2 + 515$, how long would it take the cherry to strike a 6-foot person?



4. A pear is launched from a platform that is 100 meters high. The height of the pear in feet, $h(x)$, can be represented by $h(x) = -5x^2 + 20x + 100$ where x represents time in seconds. How long would it take for the pear to reach a height of 75 feet?

