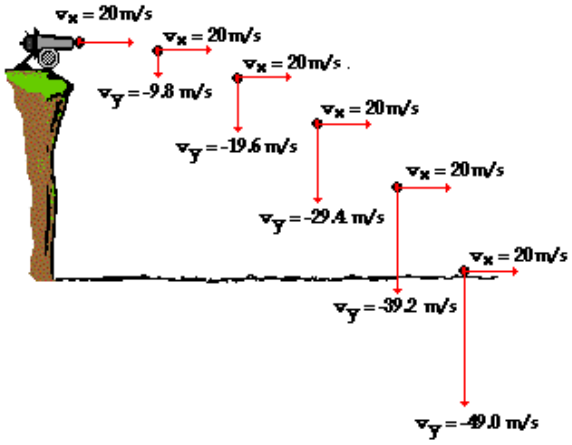
Task:

What is the vertical acceleration in projectile motion?

Solution:



The horizontal velocity remains constant during the course of the trajectory and the vertical velocity changes by 9.8 m/s every second. These same two concepts could be depicted by a table illustrating how the x- and y-component of the velocity vary with time.

Time	Horizontal Velocity	Vertical Velocity
0 s	20 m/s, right	0
1 s	20 m/s, right	9.8 m/s, down
2 s	20 m/s, right	19.6 m/s, down
3 s	20 m/s, right	29.4 m/s, down
4 s	20 m/s, right	39.2 m/s, down
5 s	20 m/s, right	49.0 m/s, down

The numerical information in both the diagram and the table above illustrate identical points - a projectile has a vertical acceleration of 9.8 m/s/s, downward and no horizontal acceleration. This is to say that the vertical velocity changes by 9.8 m/s each second and the horizontal velocity never changes. This is indeed consistent with the fact that there is a vertical force acting upon a projectile but no horizontal force. A vertical force causes a vertical acceleration - in this case, gravitational acceleration of 9.8 m/s/s.

Answer:

The vertical acceleration in projectile motion is **gravitational acceleration** of 9.8 m/s/s