Rate

“quantity, amount, or degree of something measured per unit of something”

Rates in Physics

- Speed = m/s (distance/time)
- Velocity = m/s with direction (Displacement/time)
- Acceleration = m/s/s with direction (Change in Velocity/time)
- Current = I = Q/s (Charge/time)
- Power = P = W/s (Work/time)
- Power = P = E/s (Work/time

Solve a rate problem

- Set up a proportion with the rate equal to the unknown-containing fraction.
- Cross-multiply the proportion.
- Solve for x, the unknown quantity.

Example

- The average speed of a plane was 600 km/h. How long did it take the plane to travel 120 km?

- 600 km/1 h = 120 km/x h
- 600 x = 1 x 120
- X = 120/600 = 0.20 h

Example

- What is the total distance traveled by an object that moves with an average speed of 6 m/s for 8 s?

- 6 m/1 s = x m/8 s
- 48 = 1 x
- 48 m is the total distance.

Example

- An object travels for 8 s with an average speed of 160 m/s. What is the distance traveled?

- 160 m/1 s = x /8 s
- 160 x 8 = 1 x x
- 1280 m = x