

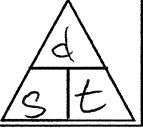

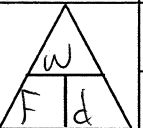








All sections marked with a  are considered essential concepts and must be completed to receive full credit on WS.

| Force | Variable | Unit | Speed | Variable | Unit |
|-----------------------------------------------------------------------------------|----------|---------|-----------------------------------------------------------------------------------|----------|------|
| $F = m \cdot a$ | F | N | $S = d/t$ | S | m/s |
|  | m | kg |  | d | m |
| | a | m/s^2 | | t | s |
| Acceleration | Variable | Unit | Work | Variable | Unit |
| $a = \frac{\Delta v}{t}$ | a | m/s^2 | $W = F \cdot d$ | W | J |
|  | Δv | m/s |  | F | N |
| | t | s | | d | m |

| | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <p>A bike moves 30 meters in 5 seconds. Calculate the speed of the bike. </p> | | <p>A car starts at rest. After 4 seconds it is going 24m/s. What was the car's acceleration? </p> | |
| <p>Given: $s = ?$ $d = 30 \text{ meters}$ $t = 5 \text{ sec}$</p> | <p>Rearrange: _____</p> | <p>Given: $a = ?$ $\Delta v = 24 \text{ m/s} - 0 \text{ m/s}$ $t = 4 \text{ sec}$</p> | <p>Rearrange: _____</p> |
| <p>Equation: $S = d/t$</p> | <p>Calculate $S = \frac{30 \text{ m}}{5 \text{ s}} = 6 \text{ m/s}$</p> | <p>Equation: $a = \frac{\Delta v}{t}$</p> | <p>Calculate $a = \frac{24 \text{ m/s}}{4 \text{ sec}} = 6 \text{ m/s}^2$</p> |
| <p>A 12 N force pushes on a 3 kg object. Find the object's acceleration. </p> | | <p>A 10 N force pushes for 3 m. How much work was done on the object? </p> | |
| <p>Given: $F = 12 \text{ N}$ $m = 3 \text{ kg}$ $a = m/s^2$</p> | <p>Rearrange: $a = \frac{F}{m}$</p> | <p>Given: $W = ?$ $F = 10 \text{ N}$ $d = 3 \text{ m}$</p> | <p>Rearrange: _____</p> |
| <p>Equation: $F = m \cdot a$</p> | <p>Calculate $a = \frac{12 \text{ N}}{3 \text{ kg}} = 4 \text{ m/s}^2$</p> | <p>Equation: $W = F \cdot d$</p> | <p>Calculate $W = 10 \text{ N} \cdot 3 \text{ m}$ $(W = 30 \text{ J})$</p> |
| <p>Using the same format as above, solve the following problems.</p> | | <p>A person walks 240 meters at 3 m/s. How long did it take?</p> | |
| <p>A bike goes 10m/s for 20 seconds. Calculate how far the bike traveled. $S = 10 \text{ m/s}$ $d = ?$ $t = 20 \text{ s}$ $d = 10 \text{ m/s} \cdot 20 \text{ s}$ $d = 200 \text{ m}$ </p> | | <p>Grandma lives 120 miles away. Dinner is at 5 p.m. The speed limit is 60 mph. What time do you need to leave to be on time? (Hint, do not convert the units.) $S = 60 \text{ m/hr}$ $d = 120 \text{ m}$ $t = ?$ $t = \frac{120 \text{ m}}{60 \text{ m/hr}} = 2 \text{ hrs}$ $3 \text{ pm} - 2 \text{ hrs} = 3 \text{ pm}$</p> | |
| <p>A 2kg object is accelerating at 12 m/s^2. How much force was applied to move the object? $F = ?$ $m = 2 \text{ kg}$ $a = 12 \text{ m/s}^2$ $F = m \cdot a$ $F = 2 \text{ kg} \cdot 12 \text{ m/s}^2$ $F = 24 \text{ N}$ </p> | | <p>If a person pushes with 3 N and does 18 J of work, how far did they push the object? $W = 18 \text{ J}$ $F = 3 \text{ N}$ $d = ?$ $W = F \cdot d$ $d = \frac{W}{F} = \frac{18 \text{ J}}{3 \text{ N}} = 6 \text{ m}$</p> | |