

Thank you!

Delzer's Dynamite Designs

Thank you so much for buying my Calculating Power Worksheet. This is part of my larger collection of Physical Science worksheets in my Unit 3: Energy, Work, and Power. You will find that all my work is always aligned to objectives and those objectives correlate to state standards as best as I can.

Be sure to see my other components in my Physical Science Unit 3: Energy, Work, and Power. I have notes, PowerPoint, worksheets, and warmups/exit tickets.

I hope this listing helps you and your students! ☺

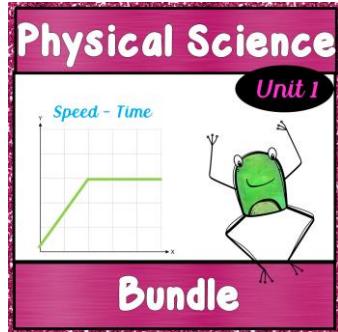
Please check out my other resources at

<https://www.teacherspayteachers.com/Store/Delzers-Dynamite-Designs>

If you have any questions, feel free to email me at:
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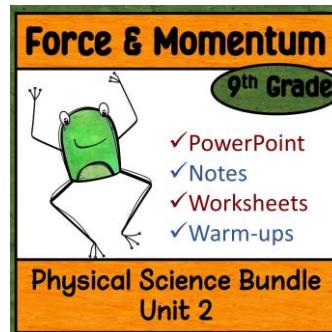
You May Also Like:

Physical Science
Unit 1



Bundle

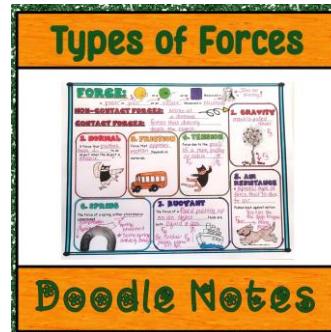
Force & Momentum
9th Grade



✓ PowerPoint
✓ Notes
✓ Worksheets
✓ Warm-ups

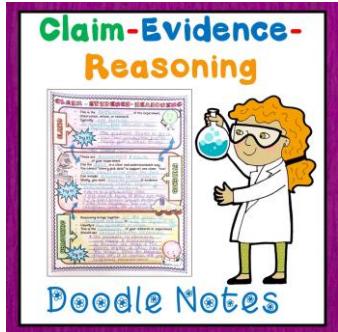
Physical Science Bundle Unit 2

Types of Forces



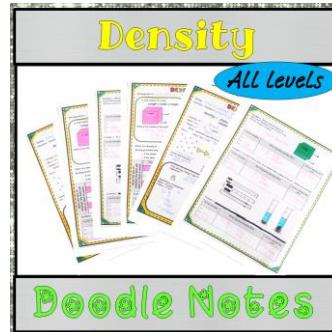
Doodle Notes

Claim-Evidence-Reasoning



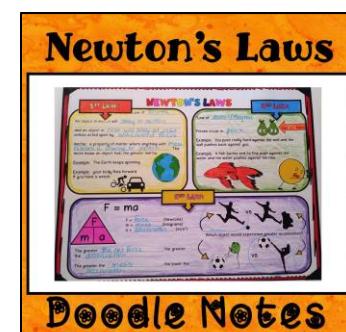
Doodle Notes

Density
All Levels



Doodle Notes

Newton's Laws



Doodle Notes

Thank You for Respecting My Work!

**Delzer's
Dynamite
Designs**

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Just Us Teachers

Work, Energy, and Power Unit

Objectives

Estimated Time: 10 days

- 1) I can identify 9 types of energy.
- 2) I can describe and calculate potential energy.
- 3) I can describe and calculate kinetic energy.
- 4) I can describe the conservation of energy and I can describe energy transfers between any of the 9 energy types.
- 5) I can describe and calculate the transformation of potential and kinetic energy (total mechanical energy) in a frictionless system.
- 6) I can describe and calculate work.
- 7) I can describe and calculate power.



This worksheet addresses this objective

NGSS

HS-PS3-2 Energy

Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).

Texas TEKS

(5) Science concepts. The student recognizes multiple forms of energy and knows the impact of energy transfer and energy conservation in everyday life. The student is expected to:

A) recognize and demonstrate that objects and substances in motion have kinetic energy such as vibration of atoms, water flowing down a stream moving pebbles, and bowling balls knocking down pins;

(B) recognize and demonstrate common forms of potential energy, including gravitational, elastic, and chemical, such as a ball on an inclined plane, springs, and batteries;

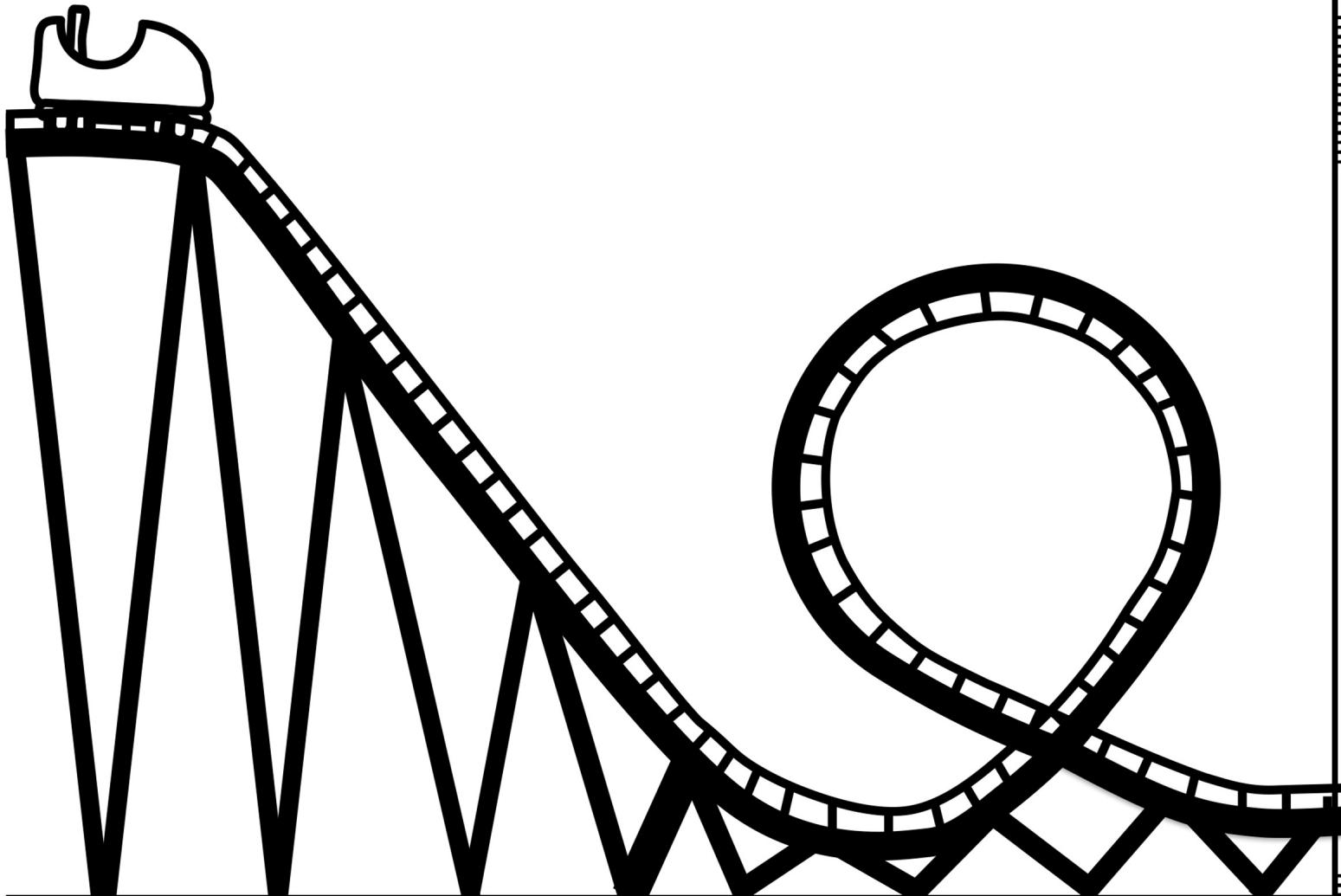
(D) investigate the law of conservation of energy;

Virginia SOL

PS.6 The student will investigate and understand forms of energy and how energy is transferred and transformed. Key concepts include potential and kinetic energy; and mechanical, chemical, electrical, thermal, radiant, and nuclear energy.

PS.5 The student will investigate and understand changes in matter and the relationship of these changes to the Law of Conservation of Matter and Energy. Key concepts include physical changes; chemical changes; and nuclear reactions.

Student Worksheet



Name: _____
Period: _____

Date: _____

Power

Directions: Fill out everything for each problem. Write neatly!

$$W = Fd$$

+

$$P = \frac{W}{t}$$

=

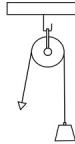
$$P = \frac{Fd}{t}$$



- 1) You did 7,500 Joules of work by running up some stairs in 2.3 seconds. What power did you exert?

Define Variables	Write equation and show work	Answer w/ units
P = W = t =		

- 2) A machine performs with 756 watts of power over the course of 25 seconds. What work did this machine do?



Define Variables	Write equation and show work	Answer w/ units
P = W = t =		

- 3) How much time does it take to do 9,560 Joules of work with 860 watts of power?



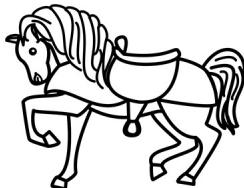
Define Variables	Write equation and show work	Answer w/ units
P = W = t =		

- 4) A 35,500 Newton car runs up a hill that is 45.5 meters high in 1.6 seconds. What power did the car exert?



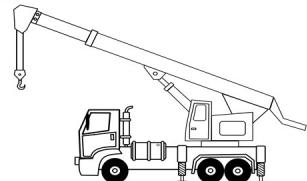
Define Variables	Write equation and show work	Answer w/ units
P = W = F = d = t =		

- 5) A horse pulls a wagon with a force of 1450 Newtons. How many meters did the wagon travel if the horse exerted 798 watts of power over 3.5 minutes? (convert min to seconds)



Define Variables	Write equation and show work	Answer w/ units
P = W = F = d = t =		

- 6) A crane exerts 56,000 Newtons of force over a distance of 4.5 meters. How much power was generated if it took 4.2 seconds to accomplish this?



Define Variables	Write equation and show work	Answer w/ units
P = W = F = d = t =		

- 7) The power rating of an electric law mower is 2200 watts. If the lawn mower is used for 30 minutes (convert to seconds!), and 650 Newtons of force was used, how much distance was covered?



Define Variables	Write equation and show work	Answer w/ units
P =		
W =		
F =		
d =		
t =		

- 8) A hairdryer is used for 600 seconds to dry hair. It has a 750 watt rating. How much work did the hairdryer do?



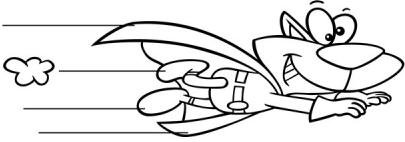
Define Variables	Write equation and show work	Answer w/ units
P =		
W =		
F =		
d =		
t =		

- 9) Zombie Al sweeps braaaains down a 45 meter hallway with a force of 75 Newtons. How long does it take Zombie Al to do this if he exerts 550 watts of power?



Define Variables	Write equation and show work	Answer w/ units
P =		
W =		
F =		
d =		
t =		

10) Super Cat! flies 8,500 meters to save someone. It takes Super Cat! 15 minutes to fly that far (convert to seconds!). What is the force exerted if Super Cat! exerts 425 watts of power?



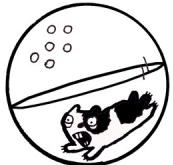
Define Variables	Write equation and show work	Answer w/ units
P =		
W =		
F =		
d =		
t =		

II) A 750 Newton passenger rides in an elevator (that is 22,000 Newtons). If the elevator ride is 95 seconds long and uses 7,700 watts of power, how far did the elevator move?



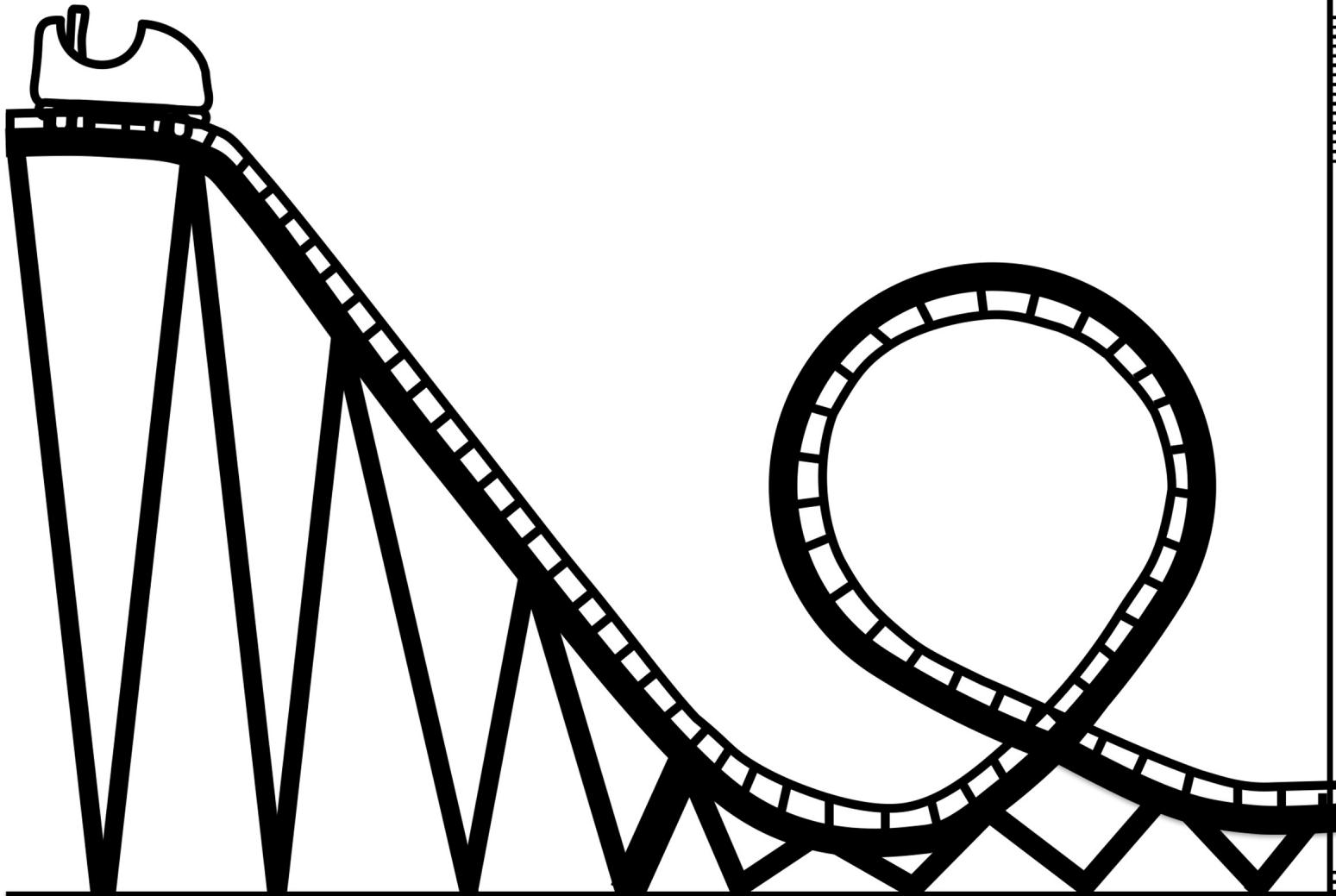
Define Variables	Write equation and show work	Answer w/ units
P =		
W =		
F =		
d =		
t =		

12) How much force did the Zombie Hamster use when she generated 38 watts of power running down the hallway? The hallway was 12 meters long and it took her 35 seconds to travel the length of the hallway.



Define Variables	Write equation and show work	Answer w/ units
P =		
W =		
F =		
d =		
t =		

Answer Key



Name: _____
Period: _____

Date: _____

Power

Directions: Fill out everything for each problem. Write neatly!

$$W = Fd$$

+

$$P = \frac{W}{t}$$

=

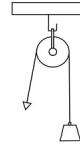
$$P = \frac{Fd}{t}$$

- I) You did 7,500 Joules of work by running up some stairs in 2.3 seconds. What power did you exert?



Define Variables	Write equation and show work	Answer w/ units
P = ? W = 7500 J t = 2.3 s	$P = \frac{w}{t} = \frac{7500}{2.3}$ $P = 3260.87$	P = 3300 W

- 2) A machine performs with 756 watts of power over the course of 25 seconds. What work did this machine do?



Define Variables	Write equation and show work	Answer w/ units
P = 756 w W = ? t = 25 s	$P = \frac{w}{t}$ $756 = \frac{w}{25}$ $w = 756 \times 25$ $w = 18,900$	P = 19,000 J

- 3) How much time does it take to do 9,560 Joules of work with 860 watts of power?



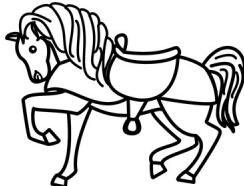
Define Variables	Write equation and show work	Answer w/ units
P = 860 w W = 9560 J t = ?	$P = \frac{w}{t}$ $860 = \frac{9560}{t}$ $t = \frac{9560}{860}$ $t = 11.163$	P = 11 s

- 4) A 35,500 Newton car runs up a hill that is 45.5 meters high in 1.6 seconds. What power did the car exert?



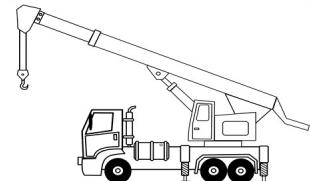
Define Variables	Write equation and show work	Answer w/ units
$P = ?$ $W =$ $F = 35,500 \text{ N}$ $d = 45.5 \text{ m}$ $t = 1.6 \text{ s}$	$P = \frac{F d}{t} \quad P = \frac{(35,500)(45.5)}{1.6}$ $P = 1,009,531 \text{ W}$	$P = 1,000,000 \text{ W}$

- 5) A horse pulls a wagon with a force of 1450 Newtons. How many meters did the wagon travel if the horse exerted 798 watts of power over 3.5 minutes? (convert min to seconds)



Define Variables	Write equation and show work	Answer w/ units
$P = 798 \text{ W}$ $W =$ $F = 1450 \text{ N}$ $d = ?$ $t = 210 \text{ s}$	$P = \frac{F d}{t} \quad 798 = \frac{(1450)(d)}{210}$ $d = 115.57 \text{ m}$	$d = 120 \text{ m}$

- 6) A crane exerts 56,000 Newtons of force over a distance of 4.5 meters. How much power was generated if it took 4.2 seconds to accomplish this?



Define Variables	Write equation and show work	Answer w/ units
$P = ?$ $W =$ $F = 56,000 \text{ N}$ $d = 4.5 \text{ m}$ $t = 4.2 \text{ s}$	$P = \frac{F d}{t} \quad 756 = \frac{(56,000)(4.5)}{4.2}$ $P = 60,000 \text{ W}$	$P = 60,000 \text{ W}$

- 7) The power rating of an electric law mower is 2200 watts. If the lawn mower is used for 30 minutes (convert to seconds!), and 650 Newtons of force was used, how much distance was covered?



Define Variables	Write equation and show work	Answer w/ units
$P = 2200 \text{ W}$ $W =$ $F = 650 \text{ N}$ $d = ?$ $t = 1800 \text{ s}$	$P = \frac{F d}{t}$ $2200 = \frac{(650)(d)}{1800}$ $d = 6092 \text{ m}$	$d = 6100 \text{ m}$

- 8) A hairdryer is used for 600 seconds to dry hair. It has a 750 watt rating. How much work did the hairdryer do?



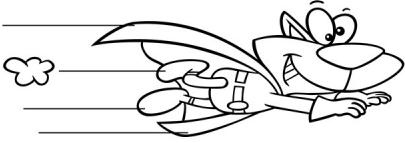
Define Variables	Write equation and show work	Answer w/ units
$P = 750 \text{ W}$ $W = ?$ $F =$ $d =$ $t = 600 \text{ s}$	$P = \frac{W}{t}$ $750 = \frac{W}{600}$ $W = 450,000 \text{ J}$	$W = 450,000 \text{ J}$

- 9) Zombie Al sweeps braaaains down a 45 meter hallway with a force of 75 Newtons. How long does it take Zombie Al to do this if he exerts 550 watts of power?



Define Variables	Write equation and show work	Answer w/ units
$P = 550 \text{ W}$ $W =$ $F = 75 \text{ N}$ $d = 45 \text{ m}$ $t = ?$	$P = \frac{F d}{t}$ $550 = \frac{(75)(45)}{t}$ $t = 6.136 \text{ s}$	$t = 6.1 \text{ s}$

10) Super Cat! flies 8,500 meters to save someone. It takes Super Cat! 15 minutes to fly that far (convert to seconds!). What is the force exerted if Super Cat! exerts 425 watts of power?



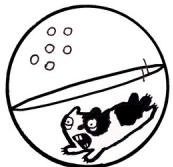
Define Variables	Write equation and show work	Answer w/ units
$P = 425 \text{ W}$ $W =$ $F = ?$ $d = 8500 \text{ m}$ $t = 900 \text{ s}$	$P = \frac{F d}{t} \quad 425 = \frac{(F)(8500)}{900}$ $F = 45 \text{ N}$	$F = 45 \text{ N}$

II) A 750 Newton passenger rides in an elevator (that is 22,000 Newtons). If the elevator ride is 95 seconds long and uses 7,700 watts of power, how far did the elevator move?



Define Variables	Write equation and show work	Answer w/ units
$P = 7,700 \text{ W}$ $W =$ $F = 22,750 \text{ N}$ $d = ?$ $t = 95 \text{ s}$	$P = \frac{F d}{t} \quad 7700 = \frac{(22,750)(d)}{95}$ $d = 32.15$	$d = 32 \text{ m}$

12) How much force did the Zombie Hamster use when she generated 38 watts of power running down the hallway? The hallway was 12 meters long and it took her 35 seconds to travel the length of the hallway.



Define Variables	Write equation and show work	Answer w/ units
$P = 38 \text{ W}$ $W =$ $F = ?$ $d = 12 \text{ m}$ $t = 35 \text{ s}$	$P = \frac{F d}{t} \quad 38 = \frac{(F)(12)}{35}$ $F = 110.8 \text{ N}$	$F = 110 \text{ N}$