

FORCE AND MOTION REVIEW

1. Acceleration EF
2. Velocity EF
3. Inertia GH
4. Net Force AC
5. Force AC
6. Displacement CD
7. Motion CD
8. Speed CD

- A. push or pull that acts on an object, causing it to move, change speed or direction, or stop moving.
- B. change in position or place.
- C. how far an object moved from its original position and in what direction the object moved.
- D. rate at which the position of an object changes.
- E. rate at which an object's velocity changes.
- F. rate at which an object moves in a certain direction.
- G. tendency of a still or moving object to resist a change in its motion.
- H. force that results from the combination of all forces that act on an object

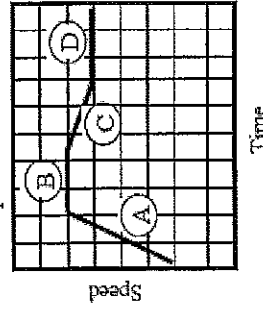
Which of Newton's Three Laws Applies?
Law 1, 2, or 3?

- 1 When you put a book on a table the table pushes on the book. 3
- 1 A person is pushed forward into their seatbelt when a car stops. 1
- 2 A larger car takes more force to move. 2
- 3 A person leans on a wall and the wall pushes back. 3
- 1 A brick sits on a table until you push on it. 1

Speed (S) or Velocity (V)

- S A person walks 3.5 mph.
- S A bird flies 20 m/s.
- V A bike goes 30 m/s toward town.

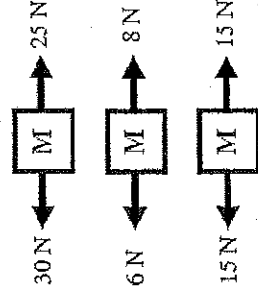
Speed vs. Time



Which graph segments fit the following:

- Constant speed: B, D
Deceleration: C
Accelerating: A

Understanding Net Force



Which way will it accelerate?

- Left
Right
Will not move

The unit of force is the Newton (N)
 Force = MASS x acceleration

Average speed = $\frac{\text{total distance}}{\text{total time}}$

If a person pulls on a cart to the right with a force of 10 N and a second person pulls to the left with a force of 3 N, what is the net force (and direction) on the cart?



If a person is pushing a cart with a force of 40 N and it accelerates at 0.5 m/s^2 , what is the mass of the cart?

$m = \frac{F}{a}$ $m = \frac{40\text{N}}{0.5 \text{ m/s}^2}$

$m = 80 \text{ kg}$

What is the acceleration of a 3 kg rock that is thrown with a force of 18 N?

$a = \frac{F}{m}$ $a = \frac{18\text{N}}{3\text{kg}}$

$a = 6 \text{ m/s}^2$

A 50 kg object is accelerating at a rate of 5 m/s^2 . Calculate the force needed to produce this acceleration.

$F = ma$ $F = (50\text{kg})(5 \text{ m/s}^2)$

$F = 250 \text{ N}$

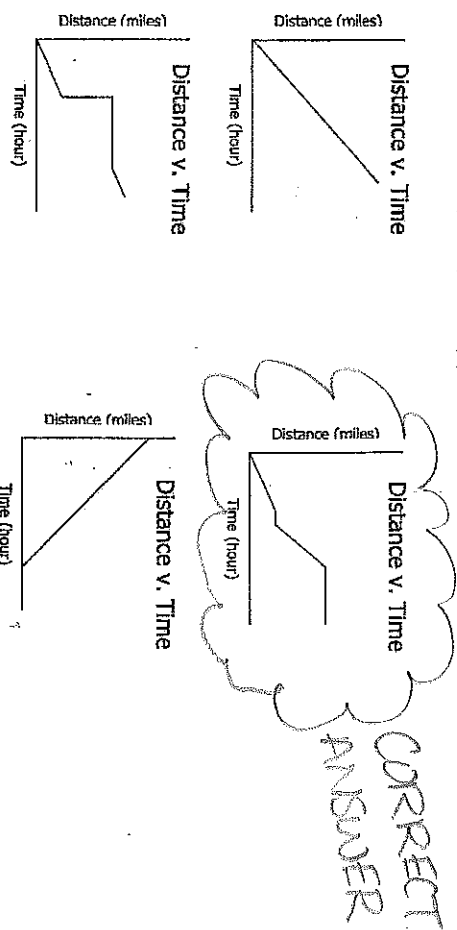
A car travels 2.5 hours in a northerly direction for 300 km. Determine the car's speed and velocity.

time = 2.5 hrs
 distance = 300 km
 direction = North

$S = \frac{d}{t}$ $S = \frac{300 \text{ km}}{2.5 \text{ hrs}}$

$S = 120 \text{ km/hr}$
 $V = \text{North}$

A woman drives to the grocery store. During the trip, the woman drives a constant speed of 35 mph for 5 minutes, and then stops at a stop sign. After waiting for traffic, the woman drives an additional 20 minutes at 60 mph before parking in the grocery store parking lot. Circle the distance/time graph that best matches the woman's journey. Justify your answer.



Examples of Motion: Are the following examples representing SPEED, VELOCITY OR ACCELERATION?

1. A greyhound dog can run about 40 mi/hr. SPEED
2. Monarch butterflies fly 12 mi/hr south as they migrate. VELOCITY
3. A car slows from 60 mi/hr to 25 mi/hr. ACCELERATION
4. A car turns left while maintaining the same speed. ACCELERATION
5. A trip from Austin to Dallas takes about 3 hours going 65 mi/hr north. VELOCITY
6. Canadian geese can fly approximately 75 miles in 3 hours. SPEED
7. A car increases speed from 30 mi/hr to 65 mi/hr. ACCELERATION

PLEASE USE THIS REVIEW AND YOUR NOTES FROM CLASS TO PREPARE FOR YOUR TEST! 😊