Unit 4: Forces

Do Nows

What does the word “force” mean in everyday terms. Create a sentence with the word force.

When you hear the word “force” in science, what do you think of?

Tuesday, October 22
Physics Essentials Do Now

What is one force that you have encountered in the last 24 hours?

Today's Activities: Force notes, Force Body Diagrams Examples
Homework: none

Wednesday, October 23
Physics Essentials Do Now

Using the Big 7 forces and your notes from yesterday, list all the forces acting on the object in the different scenarios.

- An egg is dropped from the top of a building. There is no air resistance.
- A book is sitting on a desk
- A cart is being pushed by two students to the right. There is friction.
- A ball is thrown up straight in the air. There is air resistance.

Today's Activities: Force Body Diagrams Challenges

Thursday, October 23
Physics Essentials Do Now

Using your notes

Create a free body diagram for the situation.

1. A car is stuck in the mud and is being moved by three people.
2. A ball is thrown up straight in the air. There is air resistance.
3. A cart is being pushed up a ramp.

Thursday, October 24
Physics Essentials Do Now

1) Find your seat, sit quietly, and wait for instructions.
2) Classwork due at the end of the hour. Yes, it will be graded.

Physics Essentials Do Now

Using your notes

Create a free body diagram for the situation.

1. A car is stuck in the mud and is being moved by three people.
2. A ball is thrown up straight in the air. There is air resistance.
3. A cart is being pushed up a ramp.

Physics Essentials Do Now

Create a Free Body Diagram for each of the situations and answer the questions.

1) A box is pushed to the left with a force of 10 N and to the right with a force of 5 N. What is the net force? Is the force balanced or unbalanced?

1) A car is pushed to the right with a force of 100N but friction has a force of 400 N. What is the net force on the car? Will it move?

Thursday, October 24
Physics Essentials Do Now

1) Find your seat, sit quietly, and wait for instructions.
2) Classwork due at the end of the hour. Yes, it will be graded.

Physics Essentials Do Now

A box is pushed with 10 N to the left and 50 N to the left. Create a FBD to represent the situation and find the net force on the box.

Create a FBD with forces that shows a balanced force.

Create a FBD that shows unbalanced forces.

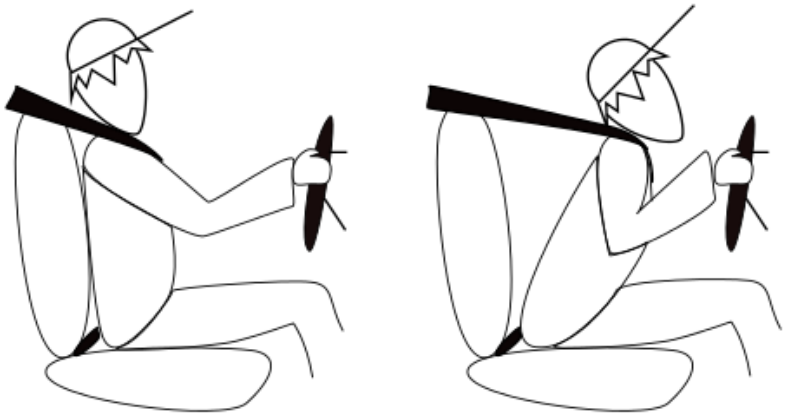
Which one will move, a balanced or unbalanced force? Why?

Physics Essentials Do Now

What is Newton's First Law?

What is Newton's Second Law?

Think about how seatbelts work… what does Newton's Laws have to do with why seatbelts are important.



http://bit.ly/AHSHalloween2019

Essentials of Physics Do Now

Choose 1 Newton's 1st Law Station

- How does it show that an object at rest will stay at rest?

Choose 1 Newton's 2nd Law Station

- How does it show that acceleration will increase with force?

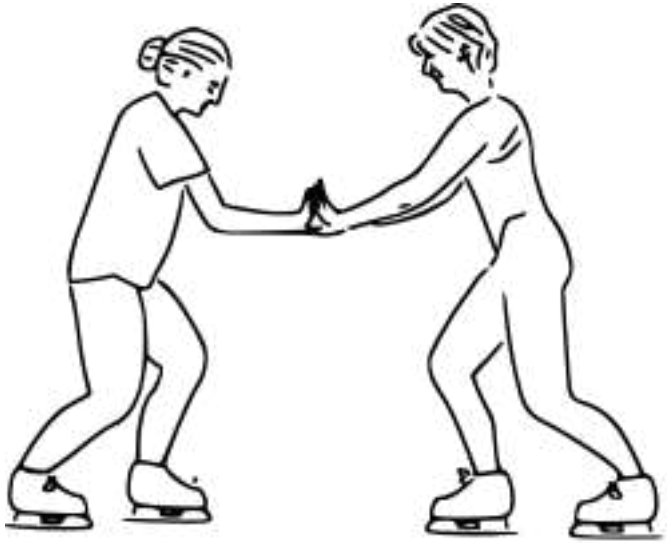
Physics Essentials Do Now

A 40 kg box is pushed with an acceleration of 3 m/s^2. What is the force on the box?

If I push the box with a greater acceleration, what will happen to the force on the box? Why?

Physics Essentials Do Now

Draw the forces acting on the object(s) in the situation.



Physics Essentials Do Now

For each situation, determine which of Newton's Laws relates to the situation and WHY:

1. A magician pulls a tablecloth out from under dishes and glasses on a table without disturbing them.
2. Rockets are launched into space using jet propulsion where exhaust accelerates out from the rocket and the rocket accelerates in an opposite direction.
3. A picture is hanging on a wall and does not move.
4. Pushing a child on a swing is easier than pushing an adult on the same swing, because the adult has more inertia.

Physics Essentials Do Now

- Get a sticky note from up front
- If you need to organize your binder write “Organize Binder” first
- Write down ALL work you need to complete (Including Content Notes)
- Then write, Review Sheet

Today in Class

- Organize Binder
- Finish any unfinished activities
- Work on your review
- Get your binder checked (optional)
- Work on something for another class

Physics Essentials Do Now

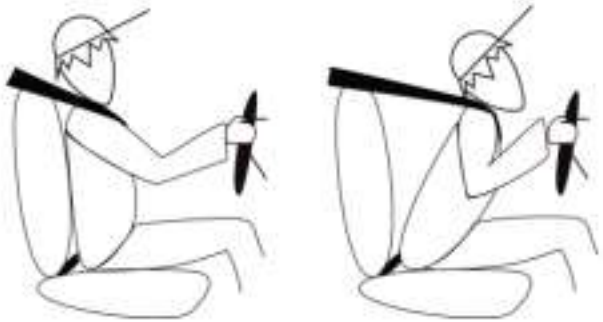
1) What is the equation for momentum?
2) What is the abbreviation for momentum (what letter stands for momentum)?
3) What is the unit for momentum?

Extra credit

A force of 250 N is applied to an object that accelerates at a rate of 5 m/sec 2 . What is the mass of the object?

How much force is needed to accelerate a 66 kg skier at 2 m/sec 2?

A 5 kg block is pulled across a table by a horizontal force of 40 N with a frictional force of 8 N opposing the motion. Calculate the acceleration of the object.



1st law 2nd law 3rd law

Explanation: