Science Virtual Learning

6th Grade Science/Forces

April 9, 2020

Grade/Course
Lesson: April 9, 2020

Objective/Learning Target:
-I can identify types of forces.

You will need paper for this lesson

Warm up #1 - Let's Get Started

View the picture below and answer the following question on your paper. (Both dogs have the same mass and are using the same force.)

What would happen if the rope toy breaks in the middle as a result of the forces the dogs are using?

a. The dogs will be thrown backwards, in opposite directions from each other, the same distance.
b. One dog will be thrown backwards while the other dog will move forwards.
c. Since the two dogs are the same mass, neither dog will be thrown backwards.
d. The breaking of the rope toy will only cause one dog to be thrown backwards.

Warm up #2 - Let's Get Started

A skateboarder, just learning to use a half pipe as shown below, drops off the top of one side. She stands straight as she skates down one side and up the other. She expected to get to the top of the other side but did not make it all the way up.

On your piece of paper, complete this quickwrite.

Answer these questions in your quickwrite:

- Why didn't she make it to the other side?
- Where was energy lost as the skateboard moved across the half pipe?

Warm Up #1 & #2 - Answer Key

Warm Up #1 Answer

What would happen if the rope toy breaks in the middle as a result of the forces the dogs are using?

a. The dogs will be thrown backwards, in opposite directions from each other, the same distance.

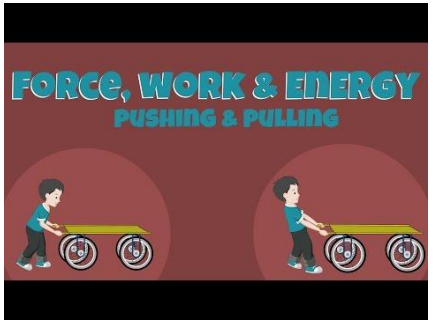
This is true because both dogs are using the SAME force and have the SAME mass.

Warm up #2 Answer

- Why didn't she make it to the other side? She did not use enough force to get her to the other side and friction occured which slowed her down.
- Where was energy lost as the skateboard moved across the half pipe? Moving the skateboard down the ramp causes energy to be lost to heat due to friction.

Practice #1

While watching this video, answer the following questions. You may have to pause or watch the video twice.



Questions:

1. How do you move something?
2. What is force called?
3. What can be done with a force?
4. What are the two types of force they discussed in the video?
5. Recall, what is the definition of energy?

Practice #1 Answer Key

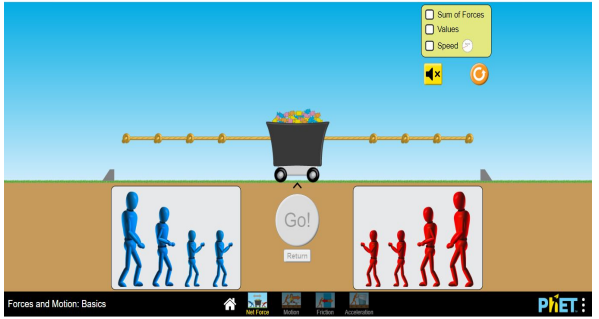
Questions:

1. How do you move something?
   Pushing or pulling
2. What is force called?
   A push or pull
3. What can be done with a force?
   -Stop moving an object
   -Change shape of an object
   -Change direction of a moving object
4. What are the two types of force they discussed in the video?
   Friction and gravity
5. Recall, what is the definition of energy?
   The ability to do work

When force pushes an object some distance, work is done

Practice #2

-Open up Force and Motion PhET Lab.
-Click on Net Force so that your screen matches the picture to the right.



Task 1
-Place two people that are the same size the same distance away from the cart.
-Write down a prediction about the movement of the cart. Which way will it move? Click go and see what happens. Compare your prediction to the actual outcome.

Task 2
-Place two people that are different sizes the same distance away from the cart.
-Write down a prediction about the movement of the cart. Which way will it move? Click go and see what happens. Compare your prediction to the actual outcome.

After exploring the interactive answer the following questions on a piece of notebook paper:

1. **What is force?**
2. **What is friction?**
3. **How does friction affect the motion of an object?**

Practice #2 - Answer Key

Task 1

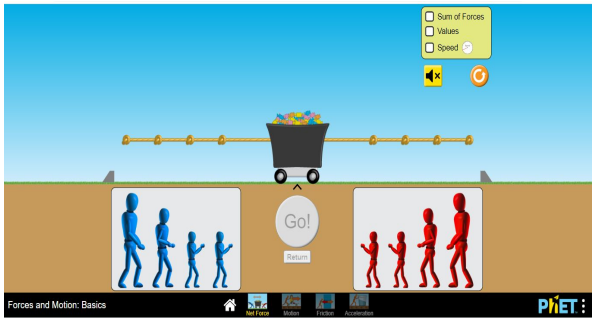
Prediction: I predict that the cart will not move at all.

Outcome: When I pressed go, I found out my prediction was correct because the cart did not move.

Task 2

Prediction: I put a big guy on the left side, 2nd knot in the rope and a small guy on the right, 2nd knot in the rope. I predict that the cart will move very fast to the left.

Outcome: When I pressed go, the cart started to move slowly to the left until the blue guy pulled the cart all the way to him. My prediction was right but it moved a lot slower than I thought it would.



After exploring the interactive answer the following questions on a piece of notebook paper:

1. What is force? A force is a push or pull.
2. What is friction? The resistance of an object when moving over another.
3. How does friction affect the motion of an object? Friction slows down a moving object because it causes an object to lose energy as heat.

Additional Practice

- Take this 14 question practice quiz and check your results by clicking “Submit” at the bottom when you finish.

- After you check your answers, click “Play Games With Questions Above” at the bottom to play review games