Applied and Normal Forces

Engage

Watch the video of the "Biggest Roller Coaster Drop in the World" at https://www.youtube.com/watch?v=5aF7dgWvQ6Y

While you are watching it answer the following questions about force.

1. Is it a push or a pull that took the roller coaster to the top of the track?

2. What force caused the roller coaster to start down the hill?

3. What force caused the roller coaster to slow down and stop about halfway through the ride?

4. Have you ever ridden a roller coaster?

5. How did it make you feel?

Explore

Part 1: Using the Spring Scale

What To Do:

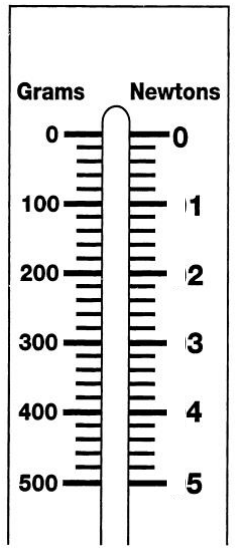
1. Observe the diagram of the spring scale.
2. Notice on one side it measures grams and on the other side it measures Newtons.
3. What relationship do you observe between grams and Newtons?

_____

4. Observe the Newton side of the spring scale. With your teacher determine what each line between the numbers represents.

_____

5. Use a colored pencil and mark the following amounts on the diagram above.



0.6 N	1.4 N	2.8 N	4.6 N

Part 2 Measuring Forces

Materials: spring scale, various objects to measure

What To Do:

1. Observe the spring scale. Make sure you know how to read it on the Newtons side.
2. Hook your spring scale into one of the objects and pick it up.
3. Read the scale. Record your observation below.
4. Repeat with the other objects.
5. Don't forget your units!

Object	Size of Force (N)

Part 3 Applied Forces
Materials: Objects used in last part
What To Do:
1. Place all objects near the center of the table.
2. Use your hands to bring each object toward you.
3. Use your hands to send each object back to the center of the table.

Questions:
1. Did you apply a force to bring the objects toward you? _____

2. Did you apply a force to send the objects back to the center of the table? _____

Part 4 Normal Forces
What To Do: Pick one of the objects from the last Part.

Questions:
1. With the object on the table in front of you think about the forces that might be acting on it. What force is keeping it on the table and not floating in the air? _____

2. What force is keeping it from sliding off the table? _____

3. Do you think the table is pushing on the object? _____

4. What direction is the table pushing on the object? _____

5. Now think about you sitting in your chair. What force is keeping you in your chair and not floating in the air? _____

6. What force is keeping you from sliding off the seat? _____

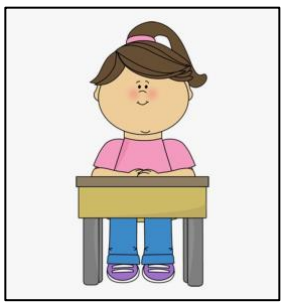
7. Do you think the seat is pushing on you? _____

8. What direction is the chair seat pushing on you _____

Explain

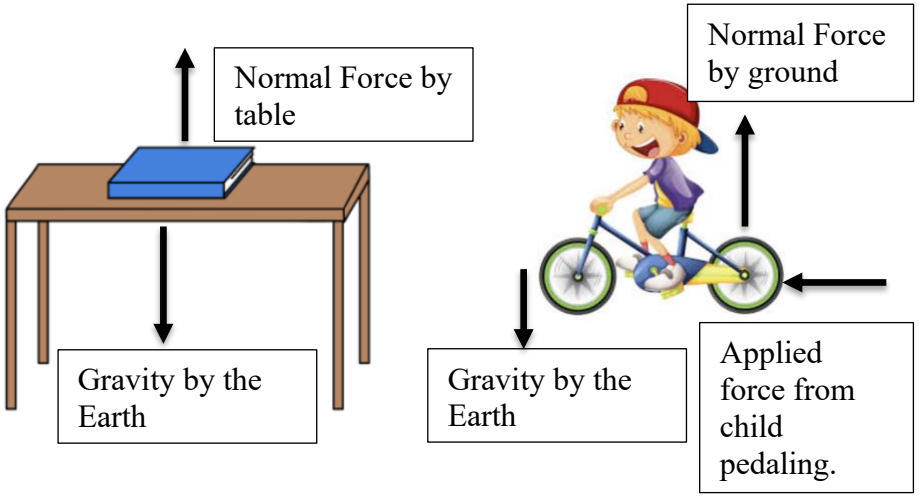
Forces	Applied
	Normal

Make a T-Chart in your notebook with the titles APPLIED FORCES AND NORMAL FORCES. Cut out the following pictures and place the under the correct title.

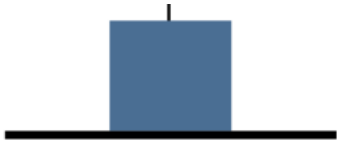


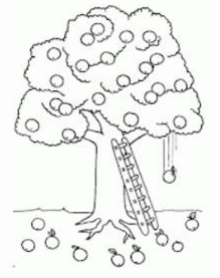
Elaborate

Forces can be shown using arrows to point in the direction of the force. Study the picture below.



Draw and label the arrows for each force being exerted on the following objects.





Evaluate

Name _____ period ____

EXIT TICKET

Applied and Normal Forces

1. In what unit do we measure force?
   a. meters
   b. liters
   c. Newtons

2. What type of equipment is used to measure force?
   a. spring scale
   b. balance
   c. graduated cylinder

3. What does an applied force do to an object?
   a. It can only stop motion.
   b. It can only start motion.
   c. It can start or stop motion.

4. Draw and label the arrows showing any force that is being exerted on the objects below.