**Notes**

Chapter 11

Forces

**Bellringer**

What is motion?

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**Let’s think!**

* Close your eyes…think of a marble at the top of a long-slanted tube. As the marble rolls down the tube, it changes location.
* What’s happening to the marble?

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* How do we know?

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**What is motion?**

* An object is in **\_\_\_\_\_\_\_\_\_**if its location is changing.
* Position is the location of an object. You know something has moved when its position has changed.
* We use words such as left, right, above, and below to describe **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.
* We can also describe an objects position by its distance. Distances tells you how far apart two objects are.

What is speed?

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**Speed and Velocity**

* **\_\_\_\_\_\_\_** is how fast an object is moving.
* **\_\_\_\_\_\_\_\_\_\_\_**is the speed and direction of a moving object.
* For example: A ball is thrown 9 miles per hour is the speed, but the velocity of the ball is 9 miles per hour to the east.

**Force**

* A **\_\_\_\_\_\_\_\_\_\_** is a push or a pull. Forces can make objects start or stop moving. A force can change the speed or direction of a moving object.
* Example: When the wind pushes a sailboat through the water, it is exerting a force.

**Acceleration**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is any change in the speed or direction of a moving object.
* How fast an object or person speeds up.
* Example: As ice-skaters race around the track, they go faster or slower. They turn left or right. Each time they change speed or direction, they accelerate.

**Friction**

* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is a force that works against motion. Friction acts between surfaces that touch. The surfaces rub against each other. Friction slows down or stops an object.
* Example: The surface of the wheels sticks to the road when car wheels roll along the ground. The force of friction acts between the surface of the wheels and the surface of the road and slows the car down.

**Gravity**

* \_\_\_\_\_\_\_\_\_\_\_\_ is a force that acts over a distance. It pulls all objects together.
* When I jump in the air what is pulling me back down?
* What I jump what is gravity pulling me towards?

**Quick Check**

Fill in the blanks with the correct word.

1. A change in distance over time is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. The location of an object is its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Velocity describes an object’s speed and \_\_\_\_\_\_\_\_\_\_\_\_\_.

**Word Bank**

speed direction position