

HW: NEWTON'S 3RD LAW QUESTIONS

Answer the following questions in complete sentences in your notebook. Remember to restate the question in your answer. Tape this page in your notebook, also.

1. You and a friend are pulling on opposite ends of a rope. Both of you are exerting a force of 200 N. What is the force of tension being exerted in the middle of the rope? Explain your answer.
2. Which exerts more force, the Earth pulling on the moon or the moon pulling on the Earth? Explain.
3. When a heavy football player and a light one run into each other, which player hits the other with more force? Explain. Which one is hurt more by the collision? Explain.
4. For each of the following interactions, identify action and reaction forces (action-reaction pairs):
 - a. A hammer hits a nail
 - b. Earth's gravity pulls down on you
 - c. A helicopter blade pushes air downward
 - d. You step off a curb
 - e. You pat your friend on the back
 - f. A wave hits a rocky shore
5. A stone is shown at rest on the ground.
 - a. The vector shows the weight of the stone. Complete the vector diagram showing another vector that results in zero net force on the stone.
 - b. What is the conventional name of the vector you have drawn?
6. Here a stone is suspended at rest by a string.
 - a. Draw force vectors for all the forces that act on the stone.
 - b. Should your vectors have a zero resultant?
 - c. Why or why not?
7. Here the same stone is being accelerated vertically upward.
 - a. Draw force vectors to some suitable scale showing reliable forces acting on the stone.
 - b. Which is the longer vector? Why?
8. You push a heavy cart by hand. The cart, in turn, pushes back with an opposite but equal force on you. Doesn't this mean the forces cancel one another, making forward motion impossible? If this were true, you would never be able to push anything anywhere! How are you able to push the cart in this example? (Think about all the forces involved. It might be helpful to draw an example.)

More questions on the back!!! Yay!!!