Name _____ Period _____ Date _____

Chapter 12 Forces and Motion. Section 12.1 Forces (Pages 356–362)

What is a Force? (Textbook Pages 356–357)

1. A force is defined as a(n) _____ or a(n) _____ that acts on an object.

2. Is the following sentence true or false? A force can act to cause an object at rest to move or it can accelerate an object that is already moving._____

3. How can a force change the motion of an object that is already moving?

_____

_____

4. Circle the letter of the best answer. What force causes a 1-kg mass to accelerate at a rate of 1 meter per second each second? This unit is the SI for force.

a. 1 kg/m • s^2 b. 1 kg/s c. 1 kg • m d. 1 newton

5. According to this website, what are four things force can do to an object? Place one thing on each line.

_____

_____

_____

_____

6. Force is a vector quantity which means it has direction and magnitude.

a. _____ is up, down, east, north, west, sideways, etc.

b. _____ is how big something is compared to something else.

Combining Forces (Textbook Pages 357–358)

7. The overall force acting on an object after all the forces are combined is the _____.

8. How do balanced and unbalanced forces affect the motion of an object?

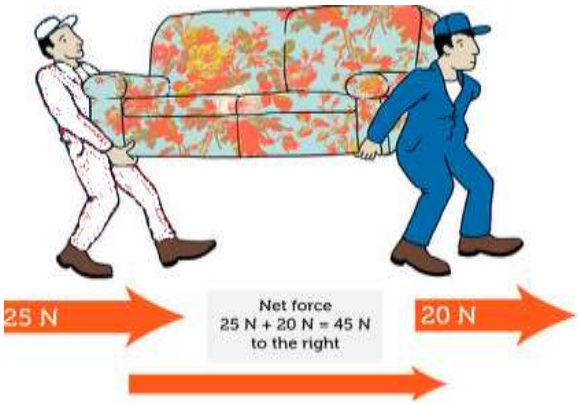
_____

_____

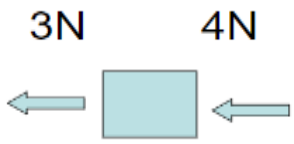
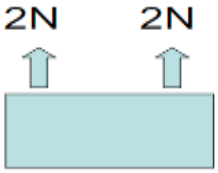
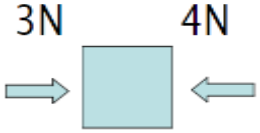
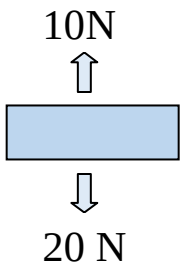
_____

_____

Look at the picture of these two movers carrying the couch. The man in white has a force of 25 Newtons to the right and the man in blue has a force of 20 Newtons to the right. Since these two men are going in the same direction, you can add the forces together. So, in this picture you can say that the men moving the couch have a net force of 45 Newtons to the right.



9. Practice calculating net force. Calculate the net force of the practice problems below. Write your answer in the box directly below the problem. The first one has been done for you.

			
Answer:	Answer:	Answer:	Answer:

Friction (Textbook Pages 359–360)

10. Is the following sentence true or false? Friction is a force that helps objects that are touching move past each other more easily. _____

11. The friction force that acts on objects that are at rest is _____.

13. Why is less force needed to keep an object moving than to start the object in motion? _____

_____

_____

14. Complete the table below about friction forces.

a. Identify which type of friction force applies to each given definition – fluid, rolling, sliding, static.
b. Match the example to the correct friction force and definition - couch potato, fish swimming, ice skating, and rollerblading.

Types of Friction Forces		
Friction Force	**Basic Definition**	**Example**
	Force between objects at rest	
	Solid surfaces slide over each other	
	Object rolling over a surface	
	Object moving through a fluid like water or air	

Gravity (Text page 361)

15. Gravity is a(n) _____ force that pulls objects together.

16. Is the following sentence true or false? Earth's gravity acts downward toward the center of Earth. _____

17. Describe how gravity and air resistance affect the motion of a falling object. _____

_____

_____

18. Is the following sentence true or false? Terminal velocity is the constant velocity of a falling object when the force of air resistance equals the force of gravity._____

Projectile Motion (page 362)

19. The curved path caused by the combination of an initial forward velocity and the downward force of gravity is known as _____ motion.