Name: _____ Hr. _____ Date: _____

Conceptual Physics – 5b Friction Worksheet

1. Friction is defined as

_____

_____

2. Friction occurs when the _____ and _____ of two surfaces grind against each other.

3. The amount of friction depends on two factors…_____

_____

4. Rougher surfaces typically have MORE LESS friction. (circle one)

5. There is typically MORE LESS friction between a heavy object and another surface than there is between a light object and another surface.

6. The two basic types of friction include

_____ friction, which is the friction that exists between two surfaces that are not moving

And _____ friction, which is the friction that exists between surfaces that are moving.

7. Generally, _____ friction is greater than sliding friction.

8. Rank these types of friction, greatest amount first, least amount last

Kinetic (sliding) Static

a. _____ b. _____

9. Oil and grease are substances that are used to reduce friction. Liquids that reduce friction are called _____.

10. Explain how ball bearings reduce friction _____

_____

_____

11. Explain how friction is useful in brakes and tires. _____

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_____

12. In each of the following situations, what effect will the change have on the amount of friction? Use the following choices: a) increase b) decrease c)no change

_____) The normal force (force pushing surfaces together) increases

_____) The roughness of only one surface is increased

_____) The surface area in contact increases

_____) A lubricant is added between the surfaces

_____) Static friction changes to kinetic friction

Questions – Fill In

13. Name a variable that has no effect on friction.

_____

14. Which direction does the frictional force always act? _____

_____

15. Name two ways that friction is harmful…._____

_____

Name two ways that friction is helpful….._____

_____

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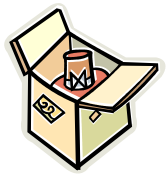
16. Arnold Schwarzenegger is moving out of his California mansion. He pushes a box of books on the floor with a force of 50 N to the right. The frictional force of the floor opposes his push with a force of 30 N.

a. Draw in the forces. Use the scale **1 cm = 10 N of force**
b. Are the forces balanced or unbalanced? _____
c. Will the box accelerate? _____ If so, in which direction? _____



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2. Are there any balanced forces acting on the freezer? If so, what are they?

3. Is there a net force acting on the freezer? If so, label it on the diagram. Then, describe which forces interact and how they interact to produce the net force.