FORCE AND FREE BODY DIAGRAMS QUIZ REVIEW **Quiz Date: _____**

This quiz will cover some of the information that we talked about from our Force & Motion unit so far. It will consist of some multiple choice, fill-in-the-blank, and short answer questions (including drawing free body diagrams). To prepare you should review **DQs**, **handouts**, your **Mind Map**, and concepts from **labs we've done**. Make sure you can successfully hit these learning targets:

- I can define force, give examples of specific forces, and interpret how forces impact motion.
- I can draw free body diagrams.
- I can interpret free body diagrams.

1. Drag will _____ the distance a paper rocket can fly.

A. have no effect on C. decrease

B. increase D. none of the above, depends on the situation

2. If one person pulls a heavy couch to the left and another person pushes it in the same direction, then:

A. the couch will not move C. the net force will be greater than the force of one person

B. the couch will split in two pieces D. the net force will be less than the force of one person

3. When you throw a baseball, the baseball begins moving because of:

A. normal force C. static friction

B. lift D. applied force

4. Friction will _____ the amount of movement between two objects.

A. increase C. have no effect on

B. decrease D. speed up

5. If the net force acting on an object is **60 N up**, then the object will move:

A. right C. up

B. left D. down

6. A race car driving experiences _____ friction with the road.

A. rolling C. fluid

B. static D. sliding

7. The support force of a table holding up a book is called _____.

A. applied force C. normal force

B. gravitational force D. friction

8. A force is a _____ or a _____. The unit used to measure force is _____.

9. Air resistance is a type of _____. How is air resistance helpful to a person parachuting?

10. An object's motion will change if the forces acting on it are _____.

11. In physics, an object that is not moving is said to "be at _____".

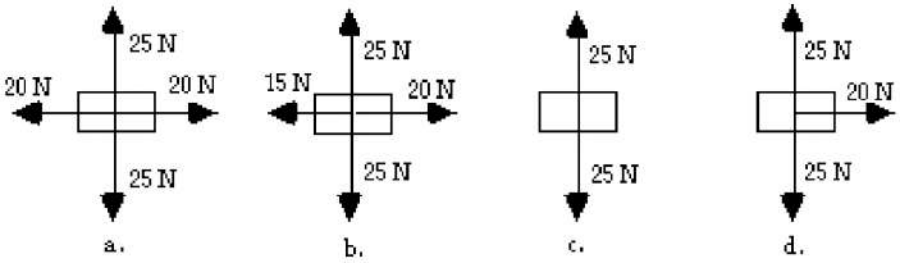
12. Describe a specific force (and the object it impacts) that:

- Starts an object moving:

- Stops an object's motion:

- Causes an object to change direction:

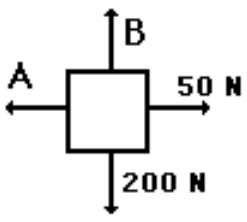
13. Which one(s) of the following free body diagrams depict an object accelerating to the right? Circle all that apply.



14. In the diagram above, which of the objects would be at rest? What must be true about the forces if an object is at rest?

15. In the diagram above, which of the objects would be accelerating the fastest? Why?

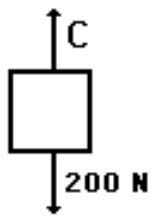
16. Each diagram below shows the forces acting on an object and states the **net force (F_{net})**. List what the forces must be in order to create the net force listed.



F_{net} = 0 N

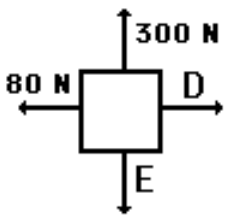
Force A: _____

Force B: _____



F_{net} = 900 N, up

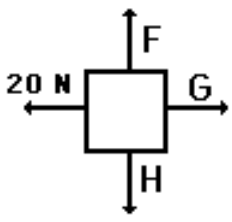
Force C: _____



F_{net} = 60 N, left

Force D: _____

Force E: _____



F_{net} = 30 N, right

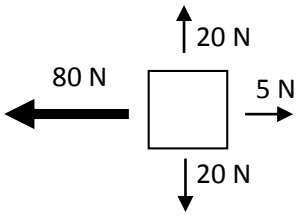
Force F: _____ Force H: _____

Force G: _____

17. Draw a free body diagram showing the forces acting on a paper rocket sitting on the launch pipe (label the names and direction of the forces, but not the magnitude). Assume no wind is present.

18. Look at the following free body diagram and **write a brief scenario** of what could be represented by this diagram. **Label the forces** and determine the **net force** acting on the object.

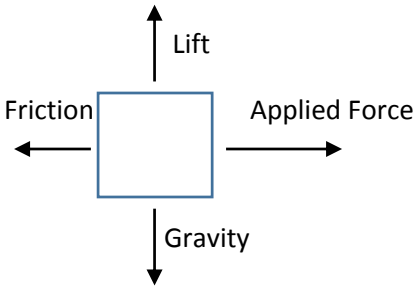
Net force = _____

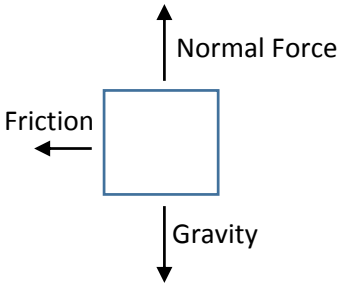


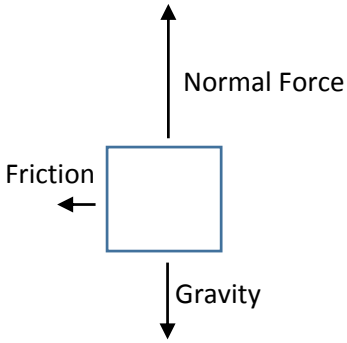
19. A circus monkey is about to be shot from a cannon at a 45 ° to the right as part of his thrilling circus act. Draw a free body diagram labeling the forces (name them but don't worry about the strength) acting on him at the **moment he is launched from the cannon**.

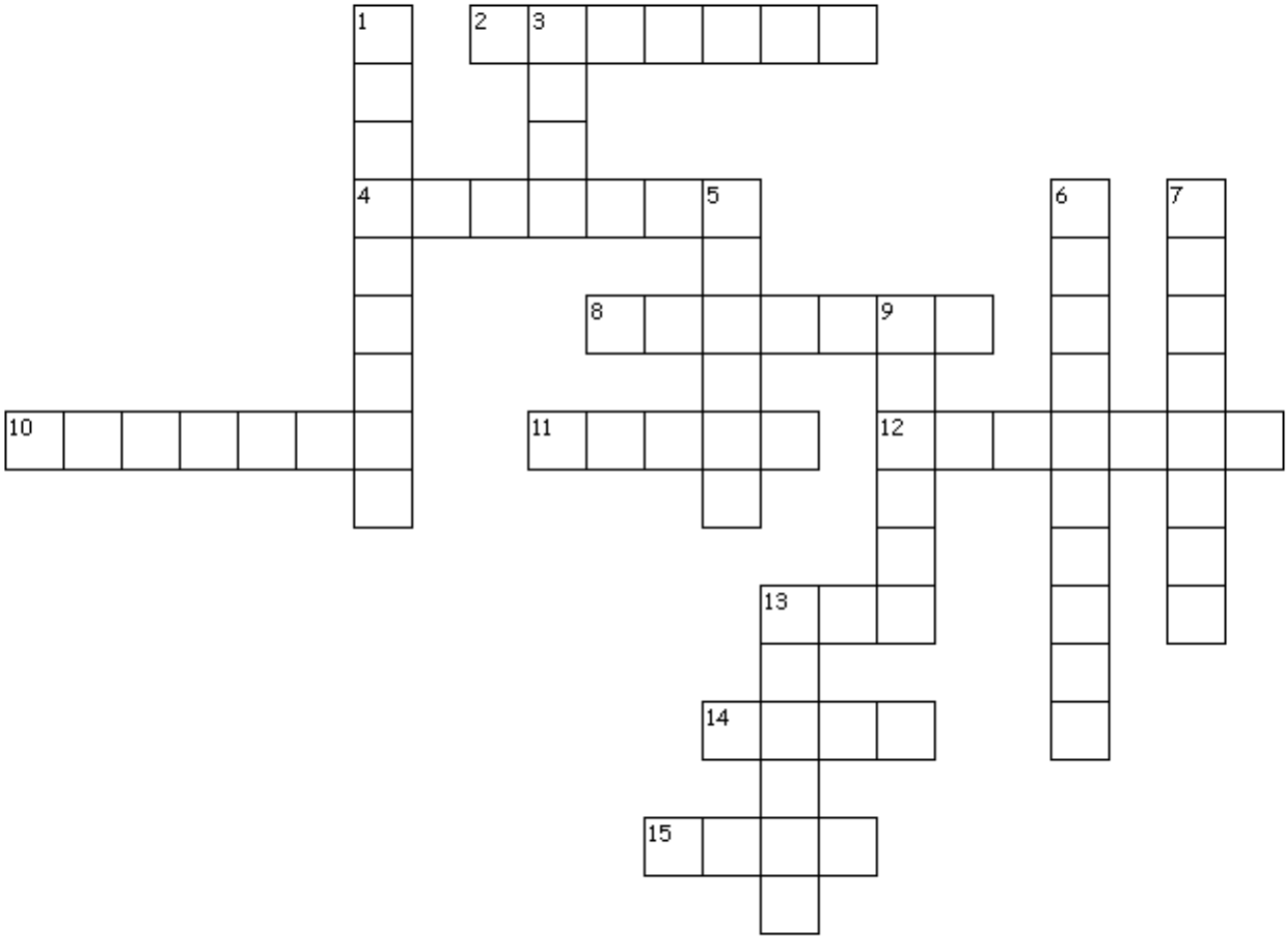
20. What does the size of an arrow in a free body diagram represent? _____

21. Which option below would best represent the free body diagram of a skateboarder **coasting to the right** along a flat, level sidewalk? Identify what is inaccurate in the other two diagrams.









Across

2. the friction that occurs when your foot moves across the ground
4. the units used to measure force
8. the force of attraction that results because of the masses of objects
10. the force a person or object puts on another object
11. the type of friction encountered while moving through water or air
12. the type of friction that occurs between wheels and the ground
13. the overall force acting on an object
14. a _____ body diagram is used to show all the forces acting on an object
15. the force that slows down the forward motion of a rocket

Down

1. the scientific word for the strength of a force
3. the force that opposes gravity in a flying object
5. the friction that must be overcome in order to get something moving
6. a change in motion will occur if the forces are _____
7. no change in motion will occur if the forces are _____
9. the force that pushes a rocket forward
13. the support force that opposes gravity (one solid supporting another solid)

WORD BANK

Lift	Sliding	Rolling	Static	Net	Balanced	Fluid	Thrust
Normal	Magnitude	Newtons	Gravity	Unbalanced	Applied	Free	Drag