Force and Motion Test Review

Name:_____

S8P5a. Investigate and explain that electric currents and magnets can exert force on each other.

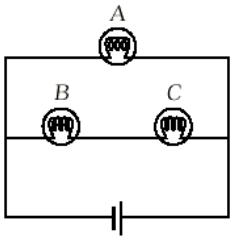
1. How are magnets used to generate electricity?
   a. They are moved through a coil of wire.
   b. They are banged together really hard.
   c. They are rubbed together really fast.
   d. They are spun on a string over your head.

2. Which of the following will create the strongest electromagnet?
   a. 30 coils in the wire.
   b. 60 coils in the wire.
   c. 90 coils in the wire.
   d. 120 coils in the wire.

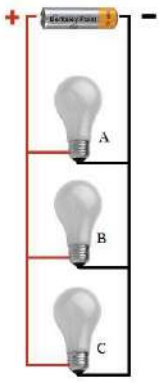
3. Which of the following power sources will create the weakest electromagnet?
   a. A 6 volt battery.
   b. A 9 volt battery.
   c. A 12 volt battery.
   d. A 120 volt wall socket.

S8P5b. Demonstrate the advantages and disadvantages of series and parallel circuits and how they transfer energy.

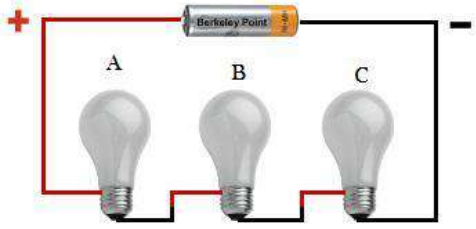
4. Which type of circuit is represented by the picture below?
   a. Series
   b. Parallel
   c. Both Series and Parallel
   d. Neither Series nor Parallel



5. In the circuit pictured to the right, which bulb or bulbs will stay lit if bulb C goes out?
   a. Bulb A
   b. Bulb B
   c. Bulbs A & B
   d. None of the bulbs



6. In the circuit pictured to the right, which bulb or bulbs will stay lit if Bulb A goes out?
   a. Bulb B
   b. Bulb C
   c. Bulbs B & C
   d. None of the bulbs



S8P5a. Recognize that every object exerts gravitational force on every other object and that the force exerted depends on how much mass the object have and how far apart they are.

7. Which of the following objects would exert the most gravitational force?

   a. The Moon

   b. The Earth

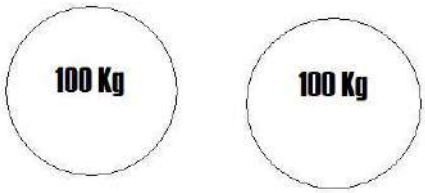
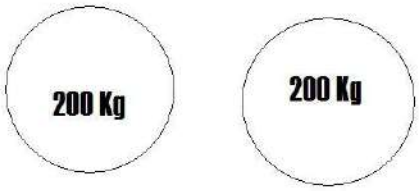
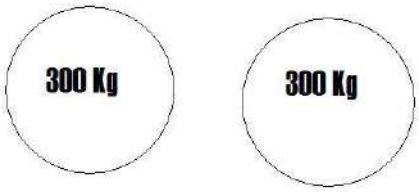
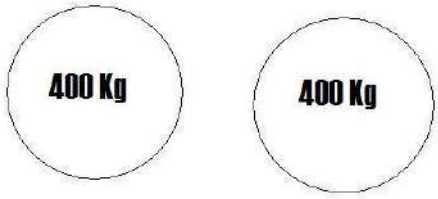
   c. Jupiter

   d. Mars

8. Which of the following would have the strongest gravitational attraction?

A.	
B.	
C.	
D.	

9. Which of the following would have the weakest gravitational attraction?

A.	
B.	
C.	
D.	

S8P3a. Determine the relationship between velocity and acceleration.

10. Which of the following is a velocity?

    a. 30 m/s.

    b. 25 miles per hour due south.

    c. Changed from 25 m/s headed to the right to 30 m/s that way.

    d. A dinosaur.

11. Which of the following is an example of acceleration?

    a. The speed limit is 55 miles per hour.

    b. He ran that way really fast.

    c. She took that sharp turn at 60 miles per hour.

    d. North east.

12. I was walking down the street singing "doowah diddy diddy dum diddy doo" is an example of

    a. Acceleration

    b. Velocity

    c. Speed

    d. Position

S8P3b. Demonstrate the effect of balanced and unbalanced forces on an object in terms of gravity, inertia, and friction.

13. When you drag a box of books across the floor an opposing force acts on the box making it more difficult to drag. What is this force called?

a. Pressure

b. Gravity

c. Friction

d. Wimpiness

14. In the picture to the below, which direction will the box move?

a. To the right.

b. To the left.

c. It won't move.

d. Up to a deluxe apartment in the sky.

15. Murray the Sumo wrestler has a match against Yakazuma "the Great". Murray can generate 4500N of force. Yakazuma can generate 4600N of force. Who is most likely to win the match?

a. Murray

b. Yakazuma

c. It will be a tie.

d. Henry Jones, Jr.

16. Which one would take more force to stop?

a. A 60 pound bulldog.

b. A 2 ton truck.

c. A 10 ton Bus.

d. A 160 pound running back.

17. In a car accident a person not wearing a seat belt flies through the windshield when the car hits a tree. Why does that happen?

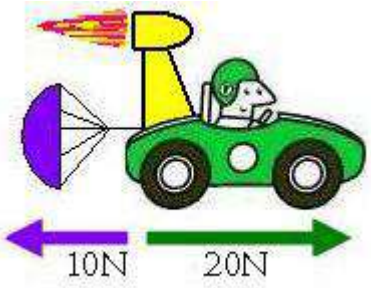
a. Friction

b. Inertia

c. Velocity

d. Magnetism

18. In the picture below what must happen in order to stop the car?



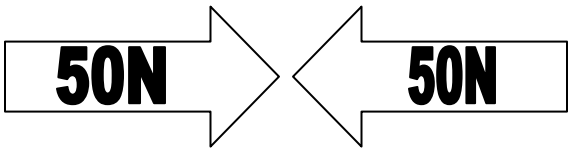
a. Add 10N to the right side.

b. Subtract 10N from the right side.

c. Add 20N to the left side.

d. Subtract 20N from the left side.

19. Based on the drawing below, in which direction will motion occur?



a. Right.

b. Left.

c. Up.

d. No motion.

20. The force that keeps our Moon, Luna, rotating around the Earth is

a. Inertia.

b. Friction.

c. Gravity.

d. Magic.

S8P3C. Demonstrate the effect of simple machines (lever, inclined plane, pulley, wedge, screw and wheel & axle) on work.

21. Which of the following simple machines are related?

a. Wheel & axle, wedge, and pulley.

b. Inclined plane, pulley and screw.

c. Screw, wedge, and inclined plane.

d. Wedge, lever, and wheel & axle.

22. Simple machines

a. Reduce the amount of work required

b. Increase the amount of work required

c. Have no effect on the amount of work required.

d. Don’t work at all.

23. A stapler (pictured below) is essentially a

a. Lever

b. Wedge

c. Wheel & Axle

d. Screw

24. The most common simple machine for pulling an engine out of a truck is the

a. Wedge

b. Inclined plane

c. Pulley

d. Lever

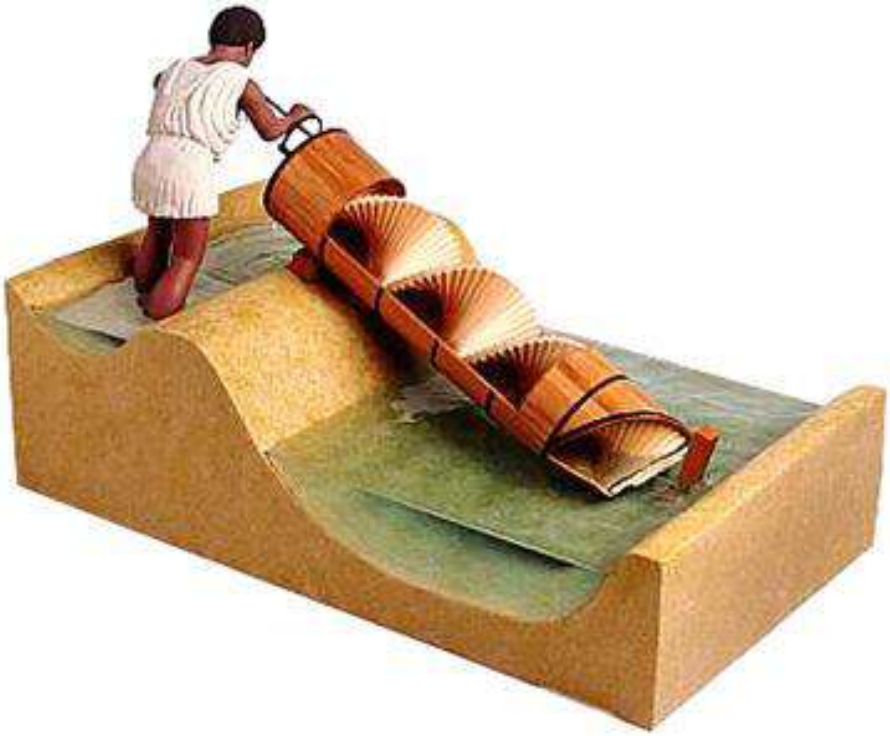
25. Which simple machine is picture below?

a. Pulley

b. Wheel & Axle

c. Lever

d. Screw



Answers & Explanations

1. The correct answer is A. Michael Faraday's discovery was that by moving a magnet in a coil of wire electricity can be generated.

2. The two things that will strengthen an electromagnet are increasing the current & increasing the number of coils of wire. In the question, the strongest magnetic field will be generated by the highest number of coils. The answer is D.

3. As mentioned in question 2, the strength of an electromagnet depends on the amount of current & the number of coils in the wire. For the weakest electromagnet, the smallest current is choice A.

4. The correct choice is C. Bulbs B & C are in series while Bulb A is parallel to bulbs B & C.

5. The circuit is a parallel circuit because electrons have multiple paths to follow around the circuit. One advantage of parallel circuits is that because there are multiple paths for the electrons, if one bulb goes out, the others continue working. That means if Bulb C quits, A & B continue working. The correct answer is C.

6. This is a series circuit as there is only one path for the electrons to follow around the circuit. One disadvantage to only having the one path for the electrons to follow would be that if one bulb goes out, it creates a gap in the circuit and kills all the bulbs. The correct answer is D.

7. Gravity is affected by 2 things, mass & distance. The more mass there is, the more gravity there is. For this

question Jupiter is the object with the most mass so it has the most gravity. Choice C is the answer.

8. The closer two objects are, the higher the force of gravity between them. In this question, all the masses are the same so we must examine the distance between the two objects. Choice D has the objects that are closest together so they have the greatest gravity.

9. As with question 7, gravity is strongest with the highest mass. The distances are all the same so we're definitely going to look at the mass of the objects. Choice D has the highest masses so it is the correct choice.

10. Velocity is distance divided by time with direction. Choice B has both a speed (distance divided by time) and a direction.

11. Acceleration is the rate of change in velocity. If either the speed part of velocity changes or the direction part changes, it is acceleration. Choice A is only a speed. Choice B is a velocity (speed is vague and so is direction but both are present). Choice D is only direction. The correct answer is choice C as the direction changes (the turn) even though the speed remains the same.

12. Velocity is speed in a given direction. "Walking" is a reference to speed and "down the street" is a definite direction even if we don't know the exact street. Choice B is the correct answer.

13. The force opposing motion is Friction. This is a definition given in class. The correct answer is C.

14. Motion happens in the direction of the greatest force. In the diagram, the highest force is 20N and the arrow

below it indicates that the 20N is acting to the right. Choice A is the correct answer.

15. Motion happens in the direction of the greatest force. In this case, Yakazuma can generate the most force so he can push Murray any direction he wants which means he has the greatest chance of winning. Choice B is the correct answer.

16. Force is mass times acceleration. If no acceleration is mentioned, the greatest mass has the potential to generate the most force. The 10 ton bus has the most mass in this question so choice C is the correct answer.

17. Newton's First Law of Motion known as the Law of Inertia says an object in motion tends to stay in motion unless acted on by an outside force and an object at rest tends to stay at rest unless acted on by an outside force. If unrestrained by a seatbelt a person in a car will keep moving even if the car stops because there is no force acting on the person. That is why the person will go through the windshield. The correct answer is B.

18. As long as forces are unbalanced there is motion. Should forces become balanced, motion ends. There are two ways to balance the forces pictured. The first way is to add 10N to the left side. The second is to subtract 10N from the right side. The only one of these listed as a choice is Choice B so it is the correct answer.

19. The diagram shows that the two forces are equal. If forces are equal then there is no motion. Choice D is the correct answer.

20. Gravity is the force of attraction between any two objects with mass. Both the Earth and the Moon have

mass. They have enough gravity between them to keep the Moon rotating around the Earth. Choice C is the correct answer.

21. The Answer is C. All are based on the inclined plane. A wedge is two inclined planes back to back. A screw is an inclined plane wrapped around a central pole.

22. The answer is C. Simple machines make work easier by using a smaller force over a longer distance but do not change the amount of work that is done.

23. The answer is A. A stapler is a lever. Staples are wedges but the stapler itself is a lever.

24. The answer is C. A pulley would be most effective to get an engine from out of a truck.

25. The answer is D. This is a picture of an Archimedes Screw. It was often used to help get water from one place to another. As the worker turns the handle, the water is moved up the screw.