_____Class_____Date____ Quiz #3: Simple Machines and Calculating Work

<u>Part 1-Matching</u>: For questions 1-10, select the word that matches the definition provided. ^{(1 pt} each)

- Choose the word that means: Applying a force to an object causing it to move. The unit for ______ is the Joule. ______ is the Joule. ______ (J)= force (N) x distance (m)
 - A. power
 - B. work
 - C. energy
 - D. exert
- 2. Choose the word that means: A simple machine that consists of a bar that pivots at a fixed point called a fulcrum.
 - A. lever
 - B. inclined plane
 - C. fulcrum
 - D. pulley
- Choose the word that means: a simple machine consisting of two circular objects of different sizes; the ______ is the larger of the two circular objects; bicycle
 - A. pulley and fulcrum
 - B. lever
 - C. wheel and axle
 - D. gear and axle
- Choose the word that means: A push or pull exerted on an object; the Unit for ______ is the Newton (N)
 - A. energy
 - B. work
 - C. screw
 - D. force

- 5. Choose the word that means: effort; expenditure of much physical work; oneself: make a great effort
 - A. exert
 - B. force
 - C. work
 - D. power
- 6. Choose the word that means: A machine with few or no moving parts.
 - A. complex machine
 - B. inclined plane
 - C. simple machine
 - D. lever
- 7. Choose the word that means: A device/ tool that tapers to a thin edge and is used for splitting another object; A piece of wood or metal that is wide at one end and pointed at the other to help cut or SPLIT things.
 - A. screw
 - B. wedge
 - C. inclined plane
 - D. pulley
- 8. Choose the word that means: A simple machine that is an inclined plane wrapped around a cylinder.
 - A. wedge
 - B. wheel and axle
 - C. screw
 - D. fulcrum

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 9. Choose the word that means: The fipoint around which a lever pivots. A. fulcrum B. axle C. pulley D. wheel 	fixed 10.	Choose the word that means: a simple machine consisting of a wheel with a groove in which a rope can run to change the direction or point of application of a force applied to the rope. A. screw B. pulley C. inclined plane D. wedge

Part 2-Applying Vocabulary: For question 11, *circle* either the inclined plane or the lever and fulcrum. On the lines below, describe a real world example of it and explain how that simple machine provides an advantage for its user. (*HINT: make sure to include the words FORCE, DISTANCE, and WORK in your response.*) (2 pts)

11. <u>Circle one</u>: (INCLINED PLANE OR LEVER AND FULCRUM)

Part 3-Multiple Choice-Simple Machines: For questions 12-17, choose the single best answer.

(1 pt each)

12. How can an inclined plane make provide an advantage to its user?

- A. by increasing the amount of friction necessary for the task
- B. by increasing the amount of force required to raise an object
- C. by decreasing the efficiency of the task
- D. by decreasing the amount of force required to raise an object

13. The pictures show two levers being used to lift the same rock to the same height. What is the advantage of using the lever in <u>figure 2</u>?

- A. Less energy is lost due to friction
- B. Less force is required to move the rock
- C. More work is done while lifting the rock
- D. More energy is transferred to the rock



14. In Figures 1 and 2 above, which part of a lever system is represented by the rock? (The object on top of the stick.)

- A. lever
- B. fulcrum
- C. load
- D. force/effort

15. Archimedes was a mathematician and engineer who is credited for the development of the lever and the pulley. Which of the following best describes the lever and the pulley?

- A. Simple machines
- B. First-class machines
- C. Magnetic machines
- D. Compound machines

16. The diagram below represents two people using a board and a log as a simple machine to lift a large rock. Which force are they trying to overcome?

- A. the force of the rock
- B. gravity
- C. the force of the log
- D. magnetic force



- 17. The diagram below represents a person pushing a50-kg box up a ramp. Which two simple machines are being used in the diagram?
- A. inclined plane; pulley
- B. inclined plane; wheel and axle
- C. lever; pulley
- D. lever; wheel and axle



Part 4-Calculating work: For questions 18-19 use the formula Force = Work x distance to solve the problems below. (You will earn 1 point for showing you work, 1 point for using the correct units, and 1 point for showing your work.)

18. If 15N of force are applied to a cart to move it 2 m, how much work is done on the cart?

Your answer

19. If a 6N force is required to move a box through a distance of 10m, how much work is done?

Your answer

BONUS (+1) (NOT required, will not count against you if you don't get it correct.)

A total of 750 J of work was done when a force of 125 N was exerted on a box to move it. How far was the box moved? (Be sure to show your work!)

Your answer _____