

Directions: Answer the following questions and complete the problems by showing all of your work. Be sure to label with the correct units to receive full credit.

1. You probably do some “work” around your home. What things do you consider work? You might think washing dishes, taking out the garbage, washing the car, and raking leaves are examples of work. In everyday language, we use the word work as another word for labor. To scientists, however, work is what happens when a force makes something move in the direction of the force. What is the formula for calculating work?

2. List two examples of forces. _____

3. Suppose you struggled for an hour to lift a very heavy box, but could not budge it. According to the scientific definition, is work done? Explain.



7. A 900N mountain climber scales a 100m cliff. How much work is done by the mountain climber?

4. The night custodian, Tim, uses 20N of force to push his cart 100 meters. How much work does he do?

8. Officer Joe pushes on a parked car with a force of 200 N. The car does not move. How much work does Officer Joe do on the car?

5. Mr. Mork uses 0.5 N of force to balance a stationary coin on the tip of his finger 20cm from the top of the table. How much work is Mr. Mork doing?

9. A watermelon weighing 35 N is dropped from the top of a building and falls a distance of 28 m to the ground. How much work does gravity do on the object from the time it is dropped to the time it hits the ground.

6. How much work does an elephant do while moving a circus wagon 20 meters with a pulling force of 200 N?



10. You are using 50 N of force to push an empty custodial cart down the school hall. Your friend, who weighs 800 N, jumps on the cart and wants to be taken for a ride. You push your friend down the hall for 20 meters before being caught by Principal Jensen. How much work did you do pushing your friend on the cart (*calculate work done on friend and cart*)?

11. How much work is done in lifting a 60 kg crate a vertical distance of 10 meters?



12. A painter lifts a can of paint that weighs 40 N a distance of 2 m. How much work does she do?

13. As you push a lawn mower, the horizontal force is 300 N. If you push the mower a distance of 500 m, how much work do you do?

14. The librarian, Mrs. K, lifts a box of books that weighs 93 N a distance of 1.5 m. How much work does she do?

15. How much work is done to lift a bag of groceries with a mass of 65 kg a distance of 1.5 meters?

16. The bag of groceries in question 15 was carried into the house which was a distance of 46 m. How much work was done carrying the groceries?

17. Mrs. Perry does 375 J of work moving a piano a distance of 2.5 meters. How much force did she have to use?



18. Mr. Von Fischer, mass of 66 500 grams, was lifted to the top of the bleachers by his adoring students. The bleachers are 3400 centimeters high. How much work was done lifting Mr. Von Fischer?