Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour: \_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Notes:**Introduction to Work –

* If you are sitting at home pushing buttons on the remote control, how much work are you doing?
* In which instance am I doing more work?
  + I carry 10 books across the room all at once
  + I carry the 10 books across the room one at a time
* Work is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* + In order for you to do work an object must \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ direction as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What is work?
  + A scientist delivers a speech. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + A body builder lifts 350 pounds above his head. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + A mother carries her baby from room to room. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + A father pushes a baby in a carriage. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + A woman carries a 20 kg grocery bag to her car? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Work = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ X \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + W = work done by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + F = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on object along the object’s line of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + D = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ object moves while \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is acting
* Units for Work
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ X \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (J)
* Work is done only while \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Effects of work:
  + C**hange the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an object.**
  + C**hange the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an object.**
* How much work does it take to move a 500 N car a distance of 20 m?

**Practice:**

Directions: Complete the following worksheet using the notes from class.

1. What is the definition of work? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. In order for you to do work on an object, the object must \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Decide if work is done in the following examples, and then explain why.

|  |  |  |
| --- | --- | --- |
| **Example** | **Work Done?** | **Explain** |
| Your neighbor’s car is stuck in the snow. You push as hard as you can for 10 minutes, but it is still stuck. | YES or NO |  |
| You pick up your book off of the floor and place it on your desk. | YES or NO |  |
| You push a shopping cart from the candy aisle to the ice cream aisle. | YES or NO |  |
| You push an elephant in the behind as hard as you can, but the elephant doesn’t move. | YES or NO |  |

1. What is the equation that you use to calculate work?
2. The SI unit of work is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Tasha pulls her little brother on a sled with a force of 20 N. The sled moves 6 m. How much work did Tasha do?
4. A hydraulic lift exerts a force of 12,000 N to lift a car 2 m. How much work is done on the car?
5. You exert a force of 0.2 N to lift a pencil off the floor. How much work do you do if you lift it 1.5 m?
6. Mark pushes an empty box 3.5 m down the hall with a force of 0.8 N. How much work did Mark do?
7. Sheila has two brothers, Jordan and Scotty, and she is being a nice sister by pulling them on a wagon. Jordan is much heavier than Scotty, and they both can’t fit in the wagon at once, so they have to take turns. Sheila pulls Jordan with a force of 10 N, and he goes 2 m. She pulls Scotty with a force of 5 N, and he goes 4 m.
   1. Calculate the work Sheila did when pulling Jordan.
   2. Calculate the work Sheila did when pulling Scotty.
   3. c. Compare the amount of work Sheila did when she pulled Jordan to the amount of work she did when she pulled Scotty.