Name: _____ Date: 11/26/19

Science 7 Work and Machines (NOTES)

...m: I can identify what activities scientifically constitute as work.

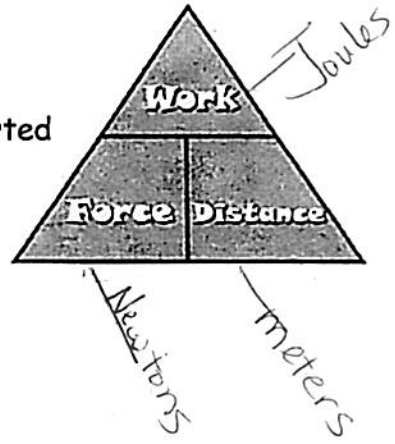
Do Now: Identify if work is being done in each situation.

1. A scientist delivers a speech to an audience of his peers. *(Work / No Work)*
2. A body builder lifts 350 pounds above his head. *(Work / No Work)*
3. A mother carries her baby from room to room. *(Work / No Work)*
4. A father pushes a baby in a carriage. *(Work / No Work)*
5. A woman carries a 20 kg grocery bag to her car. *(Work / No Work)*

Notes:

Work

- The transfer of energy through motion
- Work depends on the amount of force exerted and the distance over which the force is applied.
- Something needs to move and in the direction of the applied force.



Example Questions:

1. On a warm day, a climber does 3,000 J (W) of work to get his backpack up a mountain. On a snowy day, he adds equipment to his pack. If he climbs to the same height, he would do *(more / less / same amount of)* work.

2. If the climber's pack stayed the same weight and the climber only climbed halfway up, he would do **(more / less / the same amount of)** work.

3. A waiter carries a 5 N tray of food while he walks a distance of 10 meters. Is work done on the tray? Why or why not?

The force of him holding up the tray and his direction of motion are not in the same direction

4. A 45N girl sits on a 8N bench. How much work is done on the bench?

No work is being done. There is no motion.

5. How much work does the climber do on his backpack if his pack weighs 90 N and he climbs to a height of 30 m?

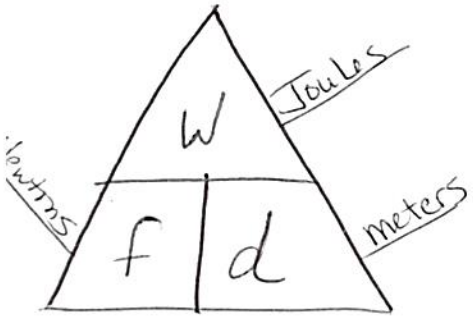
Formula: $W = f \times d$
Substitute: $W = 90N \times 30\ m$
Final Answer with Units: $W = 2,700.0\ J$

6. How much work do you do when you push a shopping cart with a force of 50 N for a distance of 5 m?

Formula: $W = f \times d$
Substitute: $W = 50N \times 5m$
Final Answer with Units: $W = 250.0J$

7. A boy lifts a 30N dragon 2 meters above the ground. How much work did the boy do on the dragon?

Formula: $W = f \times d$
Substitute: $W = 30N \times 2m$
Final Answer with Units: $W = 60.0\ J$



Heigh-ho, heigh-ho. It's off to work we go...