

Problem Solving

In each problem, circle the **knowns** and a box around the **unknown** then use the STAAR Physics formula chart to help you find the appropriate equation then solve the following problems:

1. A force of 75 Newtons is applied to the end of a lever arm that is 0.25 m long. How much torque is applied to the head of the bolt?

Knowns	Unknown	Equation	Substitution	Solution with units

2. A popcorn popper with a power rating of 1200 Watts uses 2.16×10^6 Joules of energy to make popcorn. How long did it take to the corn?

Knowns	Unknown	Equation	Substitution	Solution with units

3. A book which has a mass of 2 kg is sitting on a shelf that is 3 meters off the ground, how much gravitational potential energy does it have?

Knowns	Unknown	Equation	Substitution	Solution with units

4. A young man is babysitting his little brother who likes to be pulled in a wagon. The young man is exerting a horizontal force of 500 N for a distance of 500 m, how much work did he do?

Knowns	Unknown	Equation	Substitution	Solution with units

5. A car initially has a velocity of 10 m/s, the driver then presses on the gas pedal for some period of time after which the car has a final velocity of 35 m/s. If the car's acceleration during that time period is 1.5 m/s^2 , how long was the driver pressing the gas pedal?

Knowns	Unknown	Equation	Substitution	Solution with units

6. Three boys are each pushing on a stalled car with a force of 1500 Newtons. If the car has a mass of $3 \times 10^3 \text{ kg}$, what will be the acceleration of the car?

Knowns	Unknown	Equation	Substitution	Solution with units