

Name: _____ Block: _____

Assigning Variables #1

For each of the following word problems:

- Underline all numbers with their units and the quantity you're looking for.
- Write the variable that corresponds with each unit next to the unit in the problem. Write and circle the variable that corresponds with the quantity you're looking for next to its name.
- Find an equation that includes all of the variables you wrote next to the problem.
- Substitute the numbers into the equation and solve it. Be sure to include the correct units with your answer.

This will involve a scavenger hunt through your physics Reference Tables. That's part of the assignment. (The topic after each question tells which section of the reference tables the equation appears in.)

1. What is the velocity of a car that travels 90. m in 4.5 s? (mechanics/kinematics)

$$20 \frac{\text{m}}{\text{s}}$$

2. If a force of 100. N acts on a mass of 5.0 kg, what is its acceleration? (mechanics/forces)

$$20 \frac{\text{m}}{\text{s}^2}$$

3. If the momentum of a block is $18 \text{ N} \cdot \text{s}$ and its velocity is $3 \frac{\text{m}}{\text{s}}$, what is the mass of the block? (mechanics/momentum)

$$6 \text{ kg}$$

4. What is the potential energy due to gravity of a 95 kg anvil that is about to fall off a 150 m cliff onto Wile E. Coyote's head?

139 650 J

5. A $25\ \Omega$ resistor is placed in a electrical circuit with a voltage of 110 V. How much current flows through the resistor? (electricity/circuits)

4.4 A

6. What is the frequency of a wave that is traveling at a velocity of $300\ \frac{\text{m}}{\text{s}}$ and has a wavelength of 10. m? (waves/waves)

30 Hz

7. What is the energy of a photon that has a frequency of 6×10^{15} Hz? (*Hint: you will need information from the list of variables to the right of the formula. If you need to look up the values of a constants, check Table B on page 2 of your Reference Tables.*) (atomic & particle physics/energy)

3.96×10^{-18} J

8. A piston with an area of $2.0\ \text{m}^2$ is compressed by a force of 10 000 N. What is the pressure applied by the piston? (fluid mechanics/pressure)

5 000 Pa