Physics 1 Math Review Quiz

Rearrange the following expressions, solving for the variable asked for.

1)
$$K = \frac{1}{2} mv^2$$
 Solve for $v \quad v = \sqrt{\frac{2K}{m}}$
multiply both sides by 2 divide both sides by m square root both sides

2) $v = \sqrt{v_i^2 + 2ad}$ Solve for $d \quad d = \frac{v^2 - v_i^2}{2a}$
square both sides subtract v_i^2 from both sides divide both sides by 2a

3) $x = \log y$ Solve for $y = y = 10^x$ a logarithm is the number of powers of ten needed to equal that number

4)
$$a = \frac{1}{1+x}$$
 Solve for $x = \frac{1}{a} - 1 = \frac{1-a}{a}$ multiply divide be subtract

5)
$$ax - 5 = bx + 2$$
 Solve for $x = \frac{7}{a - b}$

multiply both sides by (1 + x) divide both sides by a subtract 1 from both sides

add 5 to both sides
subtract bx from both sides
factor out x on the left side
divide both sides by $(a - b)$

Simplify the following:



Using the triangle shown, of sides *a*, *b*, and *c*, and angles *A*, *B*, and *C*, complete the following expressions in terms of the sides of the triangle (assume angle $C = 90^{\circ}$):



Answer the following questions about graphs of functions:

12) Without drawing the graph, state three things about the graph of the function y = 2x + 3.



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- 13) What type of *x*-*y* graph will result from a function of the general form: xy = k where *k* is some constant (a number)? a hyperbola
- 14) What type of *x*-*y* graph will result from a function of the general form: $y = ax^2 + bx + c$ where *a*, *b*, and *c* are real numbers?
- 15) How many significant figures are in the following measurements?
 - a) 4050 g 3
 - b) 3.0210 m 5
 - c) 200.0 L 4
 - d) 0.00032 s 2
 - e) 4,200,000 kg 2
- 16) Convert the following measurements to the new prefix, expressing your answer in scientific notation
 - a) 12 cm to km $1.2 \times 10^{-4} km$
 - b) 2.5 mg to g $2.5 \times 10^{-3} g$
 - c) 16 km to mm $1.6 \times 10^7 mm$
- 17) If a car is traveling at a speed of 12 m/s, how fast is this in km/h?

$$12\frac{m}{s} \left(\frac{1km}{1000m}\right) \left(\frac{3600s}{1h}\right) = 43.2\frac{km}{h}$$

18) How long will it take the car in #17 to travel 120 km?

The car travels 12 m in each second. 120 km = 120,000 m. (120,000m)/(12m/s) = 10,000 s Or, using the answer to #17, (120 km)/(43.2 km/h) = 2.8 h

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How many significant figures are in the following numbers?

- a) 4050
- b) 3.0210
- c) 200.0
- d) 0.00032
- e) 4,200,000

18) Convert the following measurements using the new prefix. Use scientific notation where appropriate:

- a) 12 cm to km
- b) 2.5 mg to g
- c) 16Ms to ms

19) If a car is traveling at a speed of 12 meters per second, how fast is this in km per hour?