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$$V = \frac{M}{D}$$

The formula above relates volume V , mass M , and density D . What is density in terms of volume and mass?

A) $D = \frac{1}{MV}$ C) $D = \frac{V}{M}$
 B) $D = \frac{M}{V}$ D) $D = MV$

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The line $y = kx + 4$, where k is a constant, is graphed in the xy -plane. If the line contains the point (c, d) , where $c \neq 0$ and $d \neq 0$, what is the slope of the line in terms of c and d ?

A) $\frac{d-4}{c}$ C) $\frac{4-d}{c}$
 B) $\frac{c-4}{d}$ D) $\frac{4-c}{d}$

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$$c = \frac{x}{y}$$

The given equation relates the variables c , x , and y , where $c > 0$, $x > 0$, and $y > 0$. Which equation correctly expresses y in terms of c and x ?

A) $y = cx$
 B) $y = \frac{1}{cx}$
 C) $y = \frac{c}{x}$
 D) $y = \frac{x}{c}$

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$$Q = \sqrt{\frac{2dK}{h}}$$

The formula above is used to estimate the ideal quantity, Q , of items a store manager needs to order given the demand quantity, d ; the setup cost per order, K ; and the storage cost per item, h . Which of the following correctly expresses the storage cost per item in terms of the other variables?

A) $h = \sqrt{\frac{2dK}{Q}}$ C) $h = \frac{2dK}{Q^2}$
 B) $h = \frac{\sqrt{2dK}}{Q}$ D) $h = \frac{Q^2}{2dK}$

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Questions 9 and 10 refer to the following information.

$$a = 1,052 + 1.08t$$

The speed of a sound wave in air depends on the air temperature. The formula above shows the relationship between a , the speed of a sound wave, in feet per second, and t , the air temperature, in degrees Fahrenheit ($^{\circ}\text{F}$).

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Which of the following expresses the air temperature in terms of the speed of a sound wave?

A) $t = \frac{a - 1,052}{1.08}$
 B) $t = \frac{a + 1,052}{1.08}$
 C) $t = \frac{1,052 - a}{1.08}$
 D) $t = \frac{1.08}{a + 1,052}$

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The density d of an object is found by dividing the mass m of the object by its volume V . Which of the following equations gives the mass m in terms of d and V ?

A) $m = dV$ C) $m = \frac{V}{d}$
 B) $m = \frac{d}{V}$ D) $m = V + d$

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$$\frac{1}{2}mv^2 = mgh$$

Torricelli's law is given by the equation above, where m represents the mass, h represents the height, v represents the velocity, and g is a constant. According to the equation from Torricelli's law, which of the following is equivalent to the velocity, v ?

A) $2gh$ C) $\sqrt{2gh}$
 B) $\frac{1}{2}ghm^2$ D) $\sqrt{\frac{1}{2}mgh}$

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If $u - 3 = \frac{6}{t - 2}$, what is t in terms of u ?

A. $t = \frac{6}{t - u}$
 B. $t = \frac{2u - 9}{u}$
 C. $t = \frac{1}{u - 3}$
 D. $t = \frac{2u}{u - 3}$

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$$R = \frac{F}{N + F}$$

A website uses the formula above to calculate a seller's rating, R , based on the number of favorable reviews, F , and unfavorable reviews, N . Which of the following expresses the number of favorable reviews in terms of the other variables?

A) $F = \frac{RN}{R - 1}$
 B) $F = \frac{RN}{1 - R}$
 C) $F = \frac{N}{1 - R}$
 D) $F = \frac{N}{R - 1}$

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$$h = -16t^2 + vt + k$$

The equation above gives the height h , in feet, of a ball t seconds after it is thrown straight up with an initial speed of v feet per second from a height of k feet. Which of the following gives v in terms of h , t , and k ?

A) $v = h + k - 16t$ C) $v = \frac{h + k}{t} - 16t$
 B) $v = \frac{h - k + 16}{t}$ D) $v = \frac{h - k}{t} + 16t$

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Which formula can Rocco use to determine the number of miles he can expect to drive using a certain number of gallons of gas?

A) $m = \frac{y}{g}$ Rocco is saving money to buy his first car. He works 15 hours each week and saves \$10 for each hour he works. Rocco has already saved \$3,500 and plans to save at least \$5,300. He knows there will be an 8.5% sales tax on the purchase price of the car and a title transfer fee of \$15. He will use the formula below to determine his gas mileage, y , in miles per gallon, from the number of miles, m , the car can be driven using g gallons of gas.
 B) $m = \frac{g}{y}$
 C) $m = g + y$
 D) $m = gy$

$$y = \frac{m}{g}$$

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For gym class, Shayla completed a 4-mile walking and running exercise. She ran for $7t$ miles and she walked $3\left(\frac{13}{15} - t\right)$ miles, where t is the total amount of time, in hours, Shayla spent running. The equation $7t + 3\left(\frac{13}{15} - t\right) = 4$ models this situation.

What is the value of t in the equation that models this situation?

A) $\frac{7}{50}$
 B) $\frac{7}{20}$
 C) $\frac{31}{60}$
 D) $\frac{13}{15}$

13 B 16 C 19 C 22 D
 14 A 17 A 20 D 23 D
 15 D 18 A 21 B 24 B