Solving for an Indicated Variable Extra Practice

Name Key Class Period

Rewrite each equation to isolate the indicated variable.

1. $7ab = c$ solve for a $a = \frac{c}{7b}$
2. $y=4x + 6$ solve for x $x = \frac{y-6}{4}$
3. $df=g+32$ solve for d $d = \frac{g+32}{f}$
4. $1.5s - 4=t$ solve for s $s = \frac{t+4}{1.5}$

Choose the best answer.

5. Which of the following is equivalent to the equation $4x + 7y= z$?

   A. $X=4z - 28y$ (B.) $X= \frac{(z - 7y)}{4}$

   C. $Y= 7z + 28x$ D. $Y= \frac{(z + 4x)}{7}$

6. Which of the following is not equivalent to the equation $a + 3b=5c - 9$?

   A. $A=5c - 9 - 3b$ (B.) $B= -\frac{1}{3}(5c - 9 - a)$

   B. $5 = \frac{(a+3b+9)}{c}$ C. $3= \frac{(5c - 9 - a)}{b}$

7. Ohm's law of electricity states that $V =IR$, where V is voltage, I the current, and R represents the resistance.

   a. Rewrite the equation to isolate I. $I = \frac{V}{R}$ $\frac{V}{R} = \frac{IR}{R}$

   b. If V=220 volts and R= 4 ohms, what is the value for I? 55 amperes.

   $I = \frac{220}{4}$

   c. Rewrite the equation to isolate R. $R = \frac{V}{I}$ $\frac{V}{1} = \frac{IR}{1}$

   d. If V=550 volts and I=1.5 amperes, what is the value of R? $366.\overline{6}$ ohms

   $R = \frac{550}{1.5}$

8. In order to aerate and laser-grade a baseball field, a contractor charges $350, plus $25 per hour for a job. The equation $C = 25h + 350$ describes the cost, c for a job that takes h hours.

   a. Rewrite the equation to isolate h. $h = \frac{C-350}{25}$ $C = 25h + 350$, $-350 \quad -350$, $C-350 = 25h$, $\frac{C-350}{25} = \frac{25h}{25}$

   b. If a job cost $950, how many hours did it take? 24

   $h = \frac{950-350}{25} = 24$

9. At Turner Field, hot dogs cost $2.25 and drinks cost $1.75. The total cost, t, for h hot dogs and s sodas can be described by the equation t= 2.25h + 1.75d.

a. Rewrite the equation to isolate h. $h = \frac{t - 1.75d}{2.25}$

$t = 2.25h + 1.75d$
$-1.75d \quad -1.75d$
$t - 1.75d = 2.25h$

b. If Cooper spent $18.25 and bought 5 hot dogs, how many sodas did he buy? 4

10. The weight, in newtons, of an object in a particular location is equal to it's mass, in kilograms, time the gravitational acceleration in that location. As a formula, this is written w=mg, where w=weight, m=mass, and g=gravitational acceleration.

a. Neil Armstrong had a mass of 80kg on Earth. On Earth's surface, the gravitational acceleration is g=10 newtons per kilogram. What was Niel's weight on Earth?

$w = (80)(10) = 800$ newtons

b. Rewrite the equation to isolate g. $g = \frac{w}{m}$

c. On the surface of the moon, Neil Armstrong's weight is 128 newtons. What is the gravitational acceleration on the moon? 1.6 newtons per kilogram.

$g = \frac{128}{80} = 1.6$

11. The distance formula is d=rt, where d is the distance, r is the rate, and t is the time.

a. Rewrite the equation to isolate r. $r = \frac{d}{t}$

b. Aaron Murray drove from Athens to Atlanta in 1.5 hrs, 70 miles away, before he flew out for Kansas City. What was his rate of speed in miles per hour? $46.\overline{6}$

$r = \frac{70}{1.5} = 46.\overline{6}$

12. Baseball Express charges $25 for a pair of batting gloves, $35 for a dozen baseballs, and $15 for armbands. The total cost spent, t, can be described by t=25g +35b+15a. In April, Coach Kelly got a bill from Baseball Express for $385. He bought 8 dozen baseballs, and 2 armbands. If he wants to figure out how many pairs of batting gloves he bought, which variable should he solve for? Solve the equation to see how many batting gloves Coach Kelly bought.

Solve for g

3 batting gloves

① $\frac{7ab}{7b} = \frac{c}{7b}$

$$\boxed{a = \frac{c}{7b}}$$

② $y = 4x + 6$

$-6 \qquad -6$

$\frac{y-6}{4} = \frac{4x}{4}$

$$\boxed{x = \frac{y-6}{4}}$$

③ $\frac{df}{f} = \frac{g+32}{f}$

$$\boxed{d = \frac{g+32}{f}}$$

④ $1.5s - 4 = t$

$+4 \qquad +4$

$\frac{1.5s}{1.5} = \frac{t+4}{1.5}$

$$\boxed{s = \frac{t+4}{1.5}}$$

⑤ $4x + 7y = z$

$-7y \qquad -7y$

$\frac{4x}{4} = \frac{z-7y}{4}$

$$x = \frac{z-7y}{4}$$

(6) $a + 3b = 5c - 9$

$-a \qquad\qquad -a$

$$\frac{3b}{3} = \frac{5c - 9 - a}{3}$$

$$b = \frac{5c - 9 - a}{3}$$

(9) b) $$h = \frac{t - 1.75d}{2.25}$$

$$2.25 \cdot 5 = \frac{18.25 - 1.75d}{2.25} \cdot 2.25$$

$$2.25$$

$$11.25 = 18.25 - 1.75d$$

$$-18.25 \quad -18.25$$

$$\frac{-7}{-1.75} = \frac{-1.75d}{-1.75}$$

$$4 = d$$

(12) $t = 25g + 35b + 15a$

$-35b \qquad -35b$

$t - 35b = 25g + 15a$

$-15a \qquad -15a$

$$\frac{t - 35b - 15a}{25} = \frac{25g}{25}$$

$$\boxed{g = \frac{t - 35b - 15a}{25}}$$

$$g = \frac{385 - 35(8) - 15(2)}{25}$$

$$g = 3$$