Name_____
SHOW YOUR WORK FOR CREDIT NO WORK = NO CREDIT ******

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve and check the equation. Begin your work by rewriting the equation without fractions.

1) $\dfrac{x}{4} + \dfrac{x}{5} = \dfrac{27}{10}$ 1) _____

     A) $\{\dfrac{54}{11}\}$ B) $\{6\}$ C) $\{\dfrac{20}{9}\}$ D) $\{5\}$

2) $\dfrac{2x}{7} - x = \dfrac{x}{63} - \dfrac{8}{9}$ 2) _____

     A) $\{\dfrac{14}{11}\}$ B) $\{-\dfrac{14}{11}\}$ C) $\{\dfrac{28}{23}\}$ D) $\{-\dfrac{28}{23}\}$

Use a proportion to solve the problem about direct variation.

3) The distance that an object falls when it is dropped is directly proportional to the square of the amount of time since it was dropped. An object falls 39.2 meters in 2 seconds. Find the distance the object falls in 4 seconds.

3) _____

    A) 39.2 meters   B) 78.4 meters   C) 8 meters   D) 156.8 meters

4) The amount of gas that a helicopter uses is directly proportional to the number of hours spent flying. The helicopter flies for 2 hours and uses 14 gallons of fuel. Find the number of gallons of fuel that the helicopter uses to fly for 4 hours.

4) _____

    A) 35 gallons   B) 28 gallons   C) 8 gallons   D) 32 gallons

Solve the equation. Be sure to check your proposed solution by substituting it for the variable in the given equation.

5) $4(3x - 3) + 3(2x + 2) = 2x + 50$ 5) _____

    A) {7}   B) {-4}   C) {2}   D) {4}

6) $-9y - 5 = 8 + 6y$ 6) _____

    A) {- 1}   B) $\left\{-\dfrac{15}{13}\right\}$ C) $\left\{-\dfrac{13}{15}\right\}$ D) $\left\{\dfrac{15}{13}\right\}$

Use a proportion to solve the problem about inverse variation.

7) The current in a circuit varies inversely as the resistance. If the current is 120 milliamperes when   7) _____
the resistance is 4 ohms, find the current when the resistance is 12 ohms.

    A) 360 milliamperes   B) 40 milliamperes

    C) 160 milliamperes   D) 357 milliamperes

8) The amount of time it takes a swimmer to swim a race is inversely proportional to the average speed of the swimmer. A swimmer finishes a race in 200 seconds with an average speed of 3 feet per second. Find the average speed of the swimmer if it takes 150 seconds to finish the race.

        8) _____

    A) 3 feet per second   B) 5 feet per second

    C) 6 feet per second   D) 4 feet per second

Find the ratio. First express the ratio as a fraction reduced to lowest terms. Then rewrite the ratio using the reduced fraction and a colon.

9) According to an organization's membership list, it has 1200 members who own a computer and 1350 members who don't own a computer. What is the ratio of members who don't own a computer to the total number of members?

        9) _____

    A) $\frac{8}{9}$; 8:9   B) $\frac{9}{8}$; 9:8   C) $\frac{9}{17}$; 9:17   D) $\frac{8}{17}$; 8:17

Solve the proportion.

10) $\dfrac{y + 6}{3} = \dfrac{y + 8}{6}$

        10) _____

    A) {-4}   B) {4}   C) {-12}   D) {3}

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

11) At a faculty basketball game, John Horton scored 23 more points than the rest of his teammates. His team combined for 99 points. How many points did John score for his team?

11) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

12) The formula $P = 0.65x - 95$ models the profit, P, in dollars, for a shoe shiner when he shines x pairs of shoes. Use the formula to find this shoe shiner's profit when he shines 900 pairs of shoes.

12) _____

   A) $490   B) $585   C) -$88.50   D) $805

13) The formula $W = 0.54g^2 - 0.08g + 10.5$ models the average weight, W, in ounces, for a mouse who is fed g grams per day of a special food. According to the formula, how much will a mouse weigh when it is fed 17 grams of the special food per day? If necessary, round answers to the nearest hundredth.

13) _____

   A) 333.2 oz.   B) 165.2 oz.   C) 166.48 oz.   D) 18.32 oz.

Use the distributive property to write the expression without parentheses. Then simplify, if necessary.

14) $\frac{1}{3}(9x - 6)$

14) _____

    A) 27x - 18   B) 3x - 6   C) x   D) 3x - 2

Let x represent the number. Use the given conditions to write an equation. Solve the equation and find the number.

15) Three times the difference of 5 and a number gives 60. Find the number.

15) _____

    A) 15   B) -45   C) 45   D) -15

Evaluate the algebraic expression for the given value or values of the variable.

16) $4x^2 + 6x - 3$; $x = -1$

16) _____

    A) -1   B) -13   C) 7   D) -5

17) $x^3 - 5x^2 + 6$; $x = -4$ 17) _____

    A) 150   B) 22   C) -10   D) -138

Indicate whether the equation has no solution or is true for all real numbers. If neither is the case, solve for the variable.

18) $3(4x + 6) - 2 = 18x + 16 - 6x$ 18) _____

    A) all real numbers   B) ∅

    C) $\left\{\dfrac{8}{3}\right\}$ D) $\left\{\dfrac{4}{3}\right\}$

Simplify the algebraic expression.

19) $-8x^4 + 11x^4$ 19) _____

   A) $3x^{16}$ B) $3x^8$ C) $2x^4$ D) $3x^4$

Solve the formula for the specified variable.

20) $S = 2\pi rh + 2\pi r^2$ for h 20) _____

   A) $h = S - r$ B) $h = \dfrac{S}{2\pi r} - 1$ C) $h = \dfrac{S - 2\pi r^2}{2\pi r}$ D) $h = 2\pi(S - r)$

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