

18. Solve the equation $2x + 5 = 15$.

Subtract 5 from both sides:

$$2x + 5 - 5 = 15 - 5$$

$$2x = 10$$

Divide both sides by 2

$$\frac{2x}{2} = \frac{10}{2}$$

$$\boxed{x = 5}$$

19. Solve the equation $5x + 3 = 2x + 15$.

Subtract 3 from both sides

$$5x + 3 - 3 = 2x + 15 - 3$$

$$5x = 2x + 12$$

Subtract $2x$ from both sides

$$5x - 2x = 2x + 12 - 2x$$

$$3x = 12$$

Divide both sides by 3

$$\frac{3x}{3} = \frac{12}{3}$$

$$\boxed{x = 4}$$

20. Solve the equation $-6x + 6 = 2 - 2x$.

Subtract 6 from both sides

$$-6x + 6 - 6 = 2 - 2x - 6$$

$$-6x = -4 - 2x$$

Add $2x$ to both sides

$$-6x + 2x = -4 - 2x + 2x$$

$$-4x = -4$$

Divide both sides by -4

$$\frac{-4x}{-4} = \frac{-4}{-4} \Rightarrow \boxed{x = 1}$$

21. Solve the equation $\frac{5x}{3} = 20$.

Multiply both sides by 3

$$3 \cdot \frac{5x}{3} = 3 \cdot 20$$

$$5x = 60$$

Divide both sides by 5

$$\frac{5x}{5} = \frac{60}{5}$$

$$\boxed{x = 12}$$

22. The formula $P = D(1+r)^t$ gives the amount of money in an investment after t years when the initial invested amount is D dollars and the interest rate is r (r written as a decimal). Find P after 2 years when the initial investment was \$1000, at an interest rate of 10%.

$$D = 1000, r = 0.1, t = 2.$$

$$P = 1000(1 + 0.1)^2 = 1000(1.1)^2$$

$$= 1000 \cdot 1.21$$

$$= 1,210.$$

$$\boxed{\$1,210}$$

$$\begin{array}{r} 111 \\ \times 11 \\ \hline 111 \\ 111 \\ \hline 121 \end{array}$$

12. Evaluate $3x + 5$ when $x = 5$

$$3 \cdot 5 + 5 = 15 + 5 \\ = \boxed{20}$$

13. Evaluate $\frac{x + 3y}{2xy}$ when $x = -2$ and $y = 3$.

$$\frac{(-2) + 3 \cdot 3}{2 \cdot (-2) \cdot 3} = \frac{-2 + 9}{-12} \\ = \frac{7}{-12} \\ = \boxed{-\frac{7}{12}}$$

14. Given the formula $P = nRT$,
find P when $n = 10$, $R = 2$, $T = 3$.

$$P = 10 \cdot 2 \cdot 3 \\ P = \boxed{60}$$

15. Given the formula $F = \frac{9}{5}C + 32$,
find F when $C = 35$.

$$F = \frac{9}{5} \cdot 35 + 32 \\ = \frac{9 \cdot 35}{5} + 32 \\ = 63 + 32 \\ = \boxed{95}$$

16. Suppose that $f(x) = 2x + 4$. Find $f(2)$.

$$f(2) = 2 \cdot 2 + 4 \\ = \boxed{8}$$

17. Suppose that $f(x) = x^2 + 5$. Find $f(-2)$.

$$f(-2) = (-2)^2 + 5 \\ = 4 + 5 \\ = \boxed{9}$$

9. An ice cream factory makes 68 quarts of ice cream in 2 hours. How many quarts could be made in 15 hours?

$$\begin{array}{l} 68 \text{ quarts} - 2 \text{ hours} \\ 1 \text{ quarts} - 15 \text{ hours} \end{array}$$

$$\begin{array}{r} \times 68 \\ 15 \\ \hline 340 \\ 68 \\ \hline 1020 \end{array}$$

$$2x = 68 \cdot 15$$

$$x = \frac{1020}{2}$$

$$\Rightarrow \boxed{x = 510}$$

$$\boxed{510 \text{ quarts}}$$

10. The dosage of a certain medication is 5 ounces for every 60 pounds of body weight. How many ounces of the medication are required for a person who weighs 168 pounds?

$$\begin{array}{l} 5 \text{ ounces} - 60 \text{ pounds} \\ 1 \text{ ounces} - 168 \text{ pounds} \end{array}$$

$$\begin{array}{r} \times 68 \\ 5 \\ \hline 840 \end{array}$$

$$60x = 5 \cdot 168$$

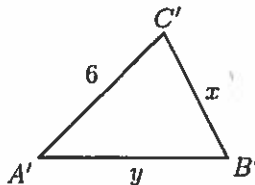
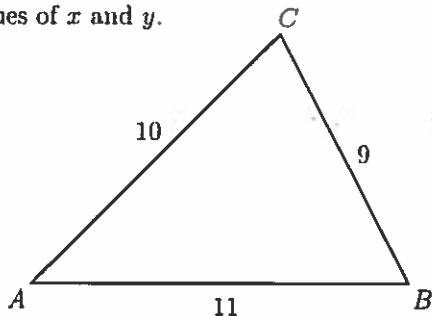
$$60x = 840$$

$$x = \frac{840}{60} = \underline{\underline{14}}$$

$$\begin{array}{r} 14 \\ 6 \overline{)84} \\ \underline{6} \\ 24 \\ \underline{24} \\ 0 \end{array}$$

$$\boxed{14 \text{ ounces}}$$

11. In the following triangles, $\angle A = \angle A'$, $\angle B = \angle B'$, and $\angle C = \angle C'$. Given the lengths in the picture, find the values of x and y .



$$\frac{6}{10} = \frac{x}{9} = \frac{y}{11} \Rightarrow$$

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$$10x = 54$$

$$\boxed{x = 5.4}$$

$$\frac{6}{10} = \frac{y}{11} \Rightarrow$$

$$10y = 66$$

$$\boxed{y = 6.6}$$

MATH 01 - Arithmetic, Sec. A

Third test. Time allowed: one hour. Professor Luis Fernández

NAME: SOLUTION

INSTRUCTIONS: Solve the following 22 exercises. Each is worth 5 points. You must show all your work in order to receive any credit. This includes all sums, long divisions, etc.

1. How much is 13% of 45?

$$\frac{A}{45} = \frac{13}{100}$$

$$100A = 13 \cdot 45$$

$$100A = 585$$

$$A = \boxed{5.85}$$

$$\begin{array}{r} \times 45 \\ 13 \\ \hline 135 \\ 45 \\ \hline 585 \end{array}$$

2. How much is 121% of 30?

$$\frac{121 \cdot 30}{100}$$

$$= \frac{3630}{100} = \boxed{36.3}$$

$$\begin{array}{r} \times 121 \\ 30 \\ \hline 3630 \end{array}$$

3. What percent of 20 is 5?

$$\frac{5}{20} = \frac{P}{100} \rightarrow 20P = 500$$

$$P = \frac{500}{20}$$

$$P = \boxed{25\%}$$

4. What percent of 25 is 32?

$$\frac{32}{25} = \frac{P}{100}$$

$$\Rightarrow 25P = 3200$$

$$P = \frac{3200}{25}$$

$$P = \boxed{128\%}$$

$$\begin{array}{r} 128 \\ 25 \overline{) 3200} \\ \underline{25} \\ 70 \\ \underline{50} \\ 200 \\ \underline{200} \\ 0 \end{array}$$

5. 20% of what number is 10?

$$\frac{10}{B} = \frac{20}{100}$$

$$\Rightarrow 20B = 1000$$

$$B = \frac{1000}{20} = \boxed{50}$$

6. 12% of what number is 15?

$$\frac{15}{B} = \frac{12}{100}$$

$$12B = 1500$$

$$B = \frac{1500}{12}$$

$$B = \boxed{125}$$

$$\begin{array}{r} 125 \\ 12 \overline{) 1500} \\ \underline{12} \\ 30 \\ \underline{24} \\ 60 \\ \underline{60} \\ 0 \end{array}$$

7. How much is $\frac{3}{4}$ of 28?

$$\frac{3}{4} \cdot 28 = \frac{3 \cdot 28}{4} = \boxed{21}$$

8. Peter bought 6 toy cars for \$33. How much do 11 cars cost?

$$6 \text{ cars} - \$33$$

$$11 \text{ cars} - x$$

$$6x = 11 \cdot 33$$

$$x = \frac{11 \cdot 33}{6} = \frac{121}{2} = 60.5$$

They cost \$60.50.