1.3 SOLVING LINEAR EQUATIONS

Equation - MUST have an equal sign

Linear Equation - MUST have one variable and an equal sign (the graph will be a line)

EXAMPLES: Solve for the variable.

1. $x + 9 = 15$

$-9 \quad -9$

$x = 6$

2. $-3y = 36$

$\frac{-3y}{-3} = \frac{36}{-3}$

$y = -12$

3. $12n - 3 = 4n + 21$

$-4n \quad -4n$

$8n - 3 = 21$

$+3 \quad +3$

$\frac{8n}{8} = \frac{24}{8}$

$n = 3$

4. $5(m - 2) = -4(2m + 7) + m$

$5m - 10 = -8m - 28 + 1m$

$5m - 10 = -7m - 28$

$+7m \quad +7m$

$12m - 10 = -28$

$+10 \quad +10$

$\frac{12m}{12} = \frac{-18}{12}$

$m = -\frac{3}{2}$ or -1.5

5. $6(3 - d) = -5(2d + 9) + 18$

$18 - 6d = -10d - 45 + 18$

$18 - 6d = -10d - 27$

$+10d \quad +10d$

$18 + 4d = -27$

$-18 \quad -18$

$\frac{4d}{4} = \frac{-45}{4}$

$d = -\frac{45}{4}$ or -11.25

6. $-1(g + 2) - 2g = -2(g + 1)$

$-g - 2 - 2g = -2g - 2$

$-3g - 2 = -2g - 2$

$+3g \quad +3g$

$-2 = g - 2$

$+2 \quad +2$

$0 = g$

$-3g - 2 = -2g - 2$

$+2g \quad +2g$

$-g - 2 = -2$

$+2 \quad +2$

$-g = 0$

$-1 \quad -1$

$g = 0$

7. $\frac{7}{2}p - 1 = 2p + 5$

$-2p \quad -2p$

$\frac{3}{2}p - 1 = 5$

$+1 \quad +1$

$\frac{2}{3} \cdot \frac{3}{2}p = 6 \cdot \frac{2}{3}$

$p = 4$

8. $\frac{2}{3}w + \frac{1}{5} = 2w - \frac{3}{10}$

$-\frac{2}{3}w \quad -\frac{2}{3}w$

$\frac{1}{5} = \frac{4}{3}w - \frac{3}{10}$

$+\frac{3}{10} \quad +\frac{3}{10}$

$\frac{3}{4} \cdot \frac{1}{2} = \frac{4}{3}w \cdot \frac{3}{4}$

$\frac{3}{8} = w$

9. $\frac{3}{4}\left(\frac{4}{5}f - 2\right) = \frac{11}{4}$

$\frac{3}{4}\cdot\frac{4}{5}f - \frac{3}{4}\cdot 2 = \frac{11}{4}$

$\frac{3}{5}f - \frac{3}{2} = \frac{11}{4}$

$+\frac{3}{2} \quad +\frac{3}{2}$

$\frac{5}{3}\cdot\frac{3}{5}f = \frac{17}{4}\cdot\frac{5}{3}$

$f = \frac{85}{12}$

10. $3.1(k + 2) - 1.5k = 5.2(k - 4)$

$3.1k + 6.2 - 1.5k = 5.2k - 20.8$

$1.6k + 6.2 = 5.2k - 20.8$

$-1.6k \quad -1.6k$

$6.2 = 3.6k - 20.8$

$+20.8 \quad +20.8$

$\frac{27}{3.6} = \frac{3.6k}{3.6}$

$7.5 = k$

Find length & width.

11. Find the dimensions of the figure.

Area = 504

Area = Length x width

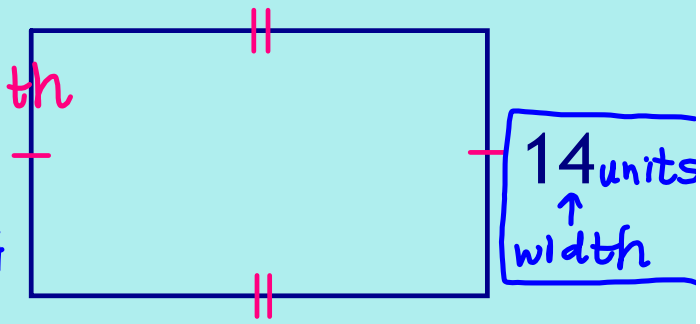
$14(10x - 24) = 504$

$140x - 336 = 504$

$+336 \quad +336$

$\frac{140x}{140} = \frac{840}{140}$

$x = 6$



$10(6) - 24$

$60 - 24$

36 ← length units

12. Sally has two summer jobs. In the first job, she works 16 hours per week and earns $7.50 per hour. In the second job, she works 20 hours per week. If she earns $280 (before taxes), how much does she earn per hour at her second job?

Job 1 + Job 2 = $280

(16)(7.50) + 20·x = 280

120 + 20x = 280

−120 −120

20x = 160

20x/20 = 160/20

x = $8/hr

13. Jerome earns a base yearly salary of $20,000 as a car salesman. He also earns 4% of the total value of his yearly sales. If he earned $40,920 in 2015, what was the total value of his yearly sales?

$20,000 + .04x = 40,920

−20,000 −20,000

.04x = 20,920

.04x/.04 = 20,920/.04

x = $523,000