**pp. 16-18, #1-27 odd, #31, #32, #37, #38, #49**

① $3w + 7 = 19$

$-7 \quad -7$

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

$\boxed{w = 4}$

③ $11 = 12 - q$

$-12 \quad -12$

$\frac{-1}{-1} = \frac{-q}{-1}$

$\boxed{q = 1}$

⑤ $5 = \frac{z}{-4} - 3$

$+3 \quad +3$

$8 = \frac{z}{-4} \quad (\cdot -4)$

$\boxed{z = -32}$

⑦ $\frac{h+6}{5} = 2 \quad (\cdot 5)$

$h + 6 = 10$

$-6 \quad -6$

$\boxed{h = 4}$

⑨ $12v + 10v + 14 = 80$

$22v + 14 = 80$

$-14 \quad -14$

$\frac{22v}{22} = \frac{66}{22}$

$\boxed{v = 3}$

⑪ $3.8y + 5.6y - 2 = 2.7$

$9.4y - 2 = 2.7$

$+2 \quad +2$

$\frac{9.4y}{9.4} = \frac{4.7}{9.4}$

$\boxed{y = 0.5}$

⑬ The altitude $a$ (in feet) of a plane $t$ minutes after liftoff is given by $a = 3400t + 600$. How many minutes after liftoff is the plane at an altitude of 21,000 feet?

$a = 3400t + 600$

$21000 = 3400t + 600$

$-600 \quad -600$

$\frac{20400}{3400} = \frac{3400t}{3400}$

$t = 6$

The plane will reach an altitude of 21,000 ft after 6 minutes.

(15) $4(z+5) = 32$

$4z + 20 = 32$

$-20 \quad -20$

$\frac{4z}{4} = \frac{12}{4}$

$\boxed{z = 3}$

(17) $6 + 5(m+1) = 26$

$6 + 5m + 5 = 26$

$5m + 11 = 26$

$-11 \quad -11$

$\frac{5m}{5} = \frac{15}{5}$

$\boxed{m = 3}$

(19) $-15 = -6(3+x) + 4(x-6)$

$-15 = -18 - 6x + 4x - 24$

$-15 = -42 - 2x$

$+42 \quad +42$

$\frac{27}{-2} = \frac{-2x}{-2}$

$\boxed{x = -13.5}$

(21) $83.8 = 8.6c - 7.3(6-2c)$

$83.8 = 8.6c - 43.8 + 14.6c$

$83.8 = 23.2c - 43.8$

$+43.8 \qquad +43.8$

$\frac{127.6}{23.2} = \frac{23.2c}{23.2}$

$\boxed{c = 5.5}$

(23) The sum of twice a number and 13 is 75.

let $n$ = the number

$2n + 13 = 75$

$-13 \quad -13$

$\frac{2n}{2} = \frac{62}{2}$

$n = 31$

The number is 31.

(25) Eight plus the quotient of a number and 3 is $-2$.

let $n$ = the number

$8 + \frac{n}{3} = -2$

$-8 \qquad -8$

$\frac{n}{3} \cdot 3 = -10 \cdot 3$

$n = -30$

The number is $-30$.

(27) Six times the sum of a number and 15 is -42.

let n = the number

$6(n+15) = -42$

$6n + 90 = -42$

$-90 \quad -90$

$\frac{6n}{6} = \frac{-132}{6}$

$\boxed{n = -22}$

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(31)

$-2(7-y)+4=-4$

$-14-2y+4=-4$

$-10-2y=-4$

$-2y=6$

$y=-3$

$-2(7-y)+4=-4$

$-14+2y+4=-4$

$-10+2y=-4$

$+10 \quad +10$

$\frac{2y}{2} = \frac{6}{2}$

$\boxed{y = 3}$

When distributing, $-2 \cdot (-y) = +2y$.

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(32)

$\frac{1}{4}(x-2)+4=12$

$\frac{1}{4}(x-2)=8$

$x-2=2$

$x=4$

$\frac{1}{4}(x-2)+4=12$

$\frac{1}{4}x - \frac{1}{2} + 4 = 12$

$\frac{1}{4}x + \frac{7}{2} = 12$

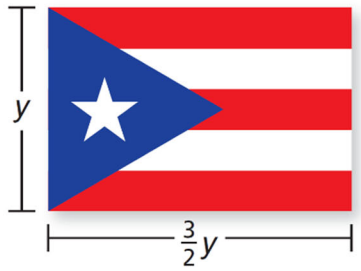
$-\frac{7}{2} \quad -\frac{7}{2}$

$\frac{1}{4}x \cdot 4 = \frac{17}{2} \cdot 4$

$\boxed{x = 34}$

Distribute BEFORE combining like terms.
Follow PEMDAS!

(37) The perimeter of the Puerto Rican flag is 150 inches. What are the dimensions of the flag?




$$y + y + \frac{3}{2}y + \frac{3}{2}y = 150$$

$$\frac{5y}{5} = \frac{150}{5}$$

$$y = 30 \qquad \frac{3}{2}(30) = 45$$

The dimensions are 30 inches by 45 inches.

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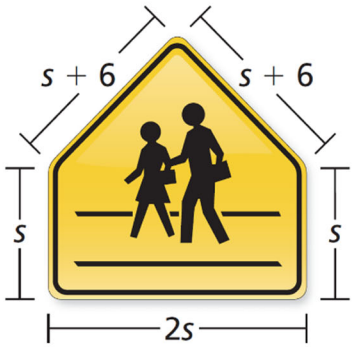
(38) The perimeter of the school crossing sign is 102 inches. What is the length of each side?




$$2(s+6) + 2s + 2s = 102$$

$$2s + 12 + 2s + 2s = 102$$

$$6s + 12 = 102$$

$$-12 \quad -12$$

$$\frac{6s}{6} = \frac{90}{6}$$

$$s = 15$$

$s = 15$

$2s = 30$

$s+6 = 21$

The side lengths are 21, 21, 15, 15, & 30 inches.

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(49) Find three consecutive even integers that have a sum of 54.

Each even number is two more than the previous even number.

let $n$ = first even number

then $n+2$ = second even number

and $n+4$ = third even number

$$n + (n+2) + (n+4) = 54$$

$$n + n + 2 + n + 4 = 54$$

$$3n + 6 = 54$$

$$-6 \quad -6$$

$$\frac{3n}{3} = \frac{48}{3}$$

$$n = 16$$

$n = 16$

$n+2 = 18$

$n+4 = 20$

The numbers are 16, 18, 20.