Pre-Algebra B Name/Date Solutions

ALL PROBLEMS CAN BE COMPLETED ON THIS WORKSHEET

WS 15.1 – Word Problems Involving Linear Equations

Solve each problem. Remember to answer in complete sentences.

1. Alex has some quarters and $5.15 in nickels. If he has $7.90 total, how many quarters does he have?

let q = number of quarters Alex has

$\$ \text{ in quarters} + \$ \text{ in nickels} = \$ \text{ total}$

$0.25q + 5.15 = 7.90$

$-5.15 \quad -5.15$

$\frac{0.25q}{0.25} = \frac{2.75}{0.25}$

$q = 11$

25¢ times number of quarters

Alex has 11 quarters.

2. Twelve decreased by the quotient of a number and -2 is 15. Find the number.

let n = the number

$12 - \frac{n}{-2} = 15 \Rightarrow 12 + \frac{n}{2} = 15$

$-12 \quad -12$

$\frac{n}{2} \cdot 2 = 3 \cdot 2$

$n = 6$

The number is 6.

3. An Internet service provider offers internet access for $15.75 per month with a $29.95 initial charge for the hookup. If Glenda spent a total of $187.45 on her Internet access, how many months did she pay for?

let m = number of months Glenda paid for

$15.75m + 29.95 = 187.45$

$-29.95 \quad -29.95$

$\frac{15.75m}{15.75} = \frac{157.50}{15.75}$

$m = 10$

Glenda paid for 10 months.

4. If 11.2 less than the average of 5 numbers is 27.75, what is the sum of the 5 numbers?

let s = sum of the 5 numbers

$\frac{\text{sum of the 5 numbers}}{5} - 11.2 = 27.75$

average of 5 numbers

$\frac{s}{5} - 11.2 = 27.75$

$+11.2 \quad +11.2$

$\frac{s}{5} \cdot 5 = 38.95 \cdot 5$

$s = 194.75$

The sum of the 5 numbers is 194.75.

5. Five times a number subtracted from 3 times the number is 20. Find the number.

let n = the number

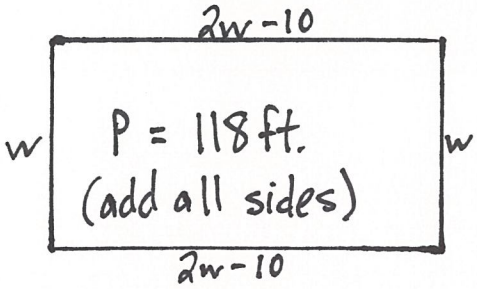
$3n - 5n = 20$

$\frac{-2n}{-2} = \frac{20}{-2}$

$n = -10$

The number is -10.

6. The length of a rectangular sign is 10 ft. less than twice its width. Find the length and width of the sign if its perimeter is 118 ft.



let w = width

then $2w - 10$ = length

$P = w + w + 2w - 10 + 2w - 10$

$118 = 6w - 20$

$+20 \quad +20$

$\frac{138}{6} = \frac{6w}{6} \Rightarrow w = 23$

The width is 23 ft.

$2w - 10 = 2(23) - 10 = 36$

The length is 36 ft.

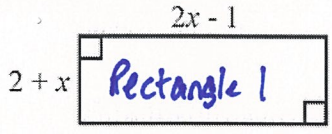
7. The perimeters of the two rectangles shown are equal. Find the value of x and the perimeter of the rectangles.

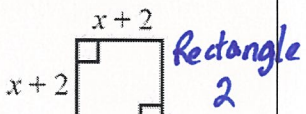
$P_{\text{rectangle 1}} = 2x - 1 + 2x - 1 + 2 + x + 2 + x$

$= 6x + 2$

$P_{\text{rectangle 2}} = x + 2 + x + 2 + x + 2 + x + 2$

$= 4x + 8$





Rectangle Perimeters are equal →

$6x + 2 = 4x + 8$

$-4x \quad -4x$

$2x + 2 = 8$

$-2 \quad -2$

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

$x = 3$

Rect 1 $= 6(3) + 2 = 20$ ft

Rect 2 $= 4(3) + 8 = 20$ ft

8. The product of 3 and the sum of a number and 5, then added to 6 is the same as the product of -2 and 3 decreased by the number, then minus 5. Find the number.

let n = the number

$3(n+5) + 6 = -2(3 - n) - 5$

$3n + 15 + 6 = -6 + 2n - 5$

$3n + 21 = 2n - 11$

$-2n \quad -2n$

$n + 21 = -11 \longrightarrow n = -31$

$-21 \quad -21$

The number is -31.