2.2

① $x - 3 = 8$

$+3 \quad +3$

$x = 11$

⑤ $4\left(a + \frac{1}{2}\right) = -\frac{1}{4}(4)$

LCD = 4

$4a + 2 = -1$

$-2 \quad -2$

$\frac{4a}{4} = \frac{-3}{4}$

$a = -\frac{3}{4}$

$4a + 2 - 1 = 0$

$+1 \quad +1$

NO!!

$$-3(2m-9)+7(m-4)=12-9$$

$$-6m+27+7m-28=3$$

$$m-1=3$$

$$+1 \quad +1$$

$$m=4$$

$\frac{1}{2}-\frac{3}{4}$

$$2(x+3)-x=4$$

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

$$x+6=4$$

$$-6 \quad -6$$

$$x=-2$$

2.5 (15) If $y = \frac{K}{x}$ find K if

a) $x = 5$ and $y = 4$

$5(4) = \frac{K}{(5)}(5)$

$20 = K$

b) $x = 5, y = 15$

$(5)15 = \frac{K}{5}(5)$

$75 = K$

$xy = \frac{K}{x}(x)$

$xy = K$

2.5 (41) $\frac{3}{21}\left(\frac{x}{7}\right)-\left(\frac{y}{3}\right)=\frac{21}{7}\cdot(21)$

$1 \qquad 1$

Solve for y ✓

$\frac{2}{5}$

$3x - 7y = 21$

$-3x \qquad -3x$

$\frac{-7y}{-7} = \frac{-3x+21}{-7}$

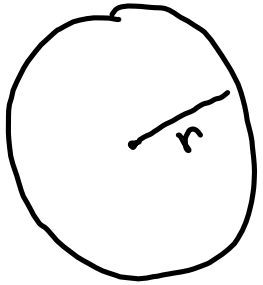
$y = \frac{3}{7}x - 3$

x must look like it is in the numerator

$\frac{3}{7}x$

$\frac{3}{7}x = (3/7)x$

(23)



$\frac{C}{2\pi} = \frac{2\pi r}{2\pi}$

$\frac{C}{2\pi} = r$

$\frac{44}{2\left(\frac{22}{7}\right)} = r$

$\frac{\frac{22}{1}}{\frac{22}{7}} = r$

$\frac{22}{1}\left(\frac{7}{22}\right) = r$

$7 = r$

$r = 7$ meters

$C = 44$

let $\pi = \frac{22}{7}$

3.14159 ~~

$C = 2\pi r$

$44 = 2\left(\frac{22}{7}\right) r$

$\frac{44}{\frac{44}{7}} = \frac{44r}{\frac{44}{7}}$

$44\left(\frac{7}{44}\right) = r$

$7 = r$

The radius is 7 meters

2.5 (17) $A = lw$ for l ←

$\frac{A}{w} = \frac{lw}{w}$

$\frac{A}{w} = l$

(1, 1)

$m = \frac{3}{4}$

(37) $4(y-1) = \frac{3}{4}(x-1)$ (4) point-slope form

$4y - 4 = 3x - 3$

$+4 \qquad +4$

$4y = 3x + 1$

$\frac{4y}{4} = \frac{3x+1}{4}$

$y = \frac{3}{4}x + \frac{1}{4}$

Slope-intercept

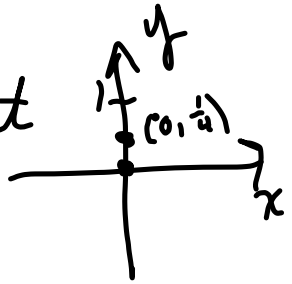
$y = mx + b$

where m = slope

$(0, b)$ y-intercept

$m = \frac{3}{4}$ slope

$(0, \frac{1}{4})$ y-intercept



Number problem

6. let x = the number

$5(2x-6) = -20$

$10x - 30 = -20$

$+30 \quad +30$

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

$x = 1$

The number is 1.

Age Problem

20. let x = Amy's age

$x+23$ = Diane's age

	Now	In 6 yrs	
Diane	$x+23$	$x+23+6$	$x+29$
Amy	x	$x+6$	

$x+29 = 2(x+6)$

$x+29 = 2x+12$

$-12 \quad -12$

$x+17 = 2x$

$-x \quad -x$

$17 = x$

$17+23 = 40$

Diane is now 40 years old and Amy is 17.

Check

46

23

(13) let x = Evan's age

$2x$ = Cody's age

	Now	3 yrs ago
Evan	x	$x-3$
Cody	$2x$	$2x-3$
		27

$$x-3+2x-3=27$$

$$3x-6=27$$

$$+6 \quad +6$$

$$\frac{3x}{3}=\frac{33}{3}$$

$$x=11$$

$$2x=22$$

So Evan is 11 years old and Cody is 22.

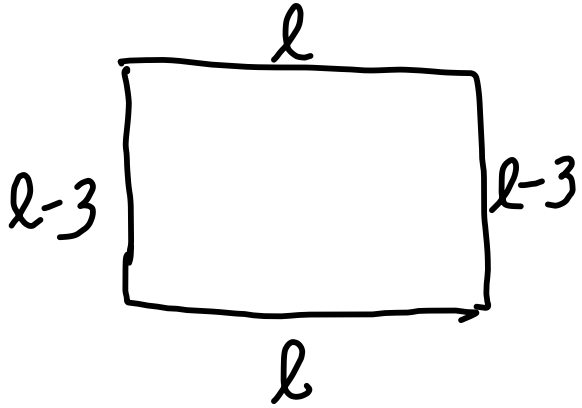
$11-3=8$

$22-3=19$

27

(30.) let l = the length of the rectangle

$l-3$ = the width of " "



$P = 2l + 2w$

$10 = 2l + 2(l-3)$

$10 = 2l + 2l - 6$

$10 = 4l - 6$

$+6 \quad +6$

$16 = 4l$

$\frac{16}{4} = \frac{4l}{4}$

$4 = l$

$l = 4$ feet

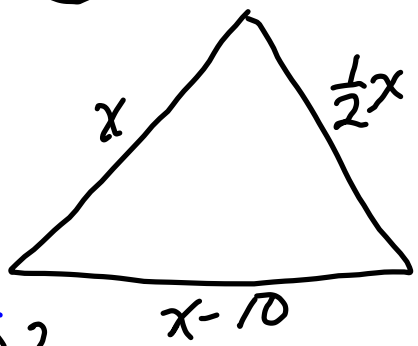
$l - 3 = 1$ ft

The length is 4 feet and the width is 1 foot.

(26) Let x = The length of the longest side

$\frac{1}{2}x$ = " length of side #2

$x-10$ = " of side #3



$P = 45$ meters

$P = S_1 + S_2 + S_3$

$2(45) = (x + \frac{1}{2}x + x - 10)2$

$90 = 2x + x + 2x - 20$

$90 = 5x - 20$

$+20 \quad +20$

$\frac{110}{5} = \frac{5x}{5}$

$22 = x$

$\frac{1}{2}x = 11$

$x - 10 = 12$

The sides are 11 meters, 12 meters and 22 meters.

Coin Problems

38. $9.00 in dimes & quarters

let x = The number of dimes

$2x$ = The number of quarters

	#	value	total worth
dimes	x	.10	$.10x$
quarters	$2x$	.25	$.25(2x)$
total			9.00

$$[.10x + .25(2x) = 9.00]\,100$$

$$10x + 25(2x) = 900$$

$$10x + 50x = 900$$

$$\frac{60x}{60} = \frac{900}{60}$$

$$x = 15$$

$$2x = 30$$

He has 15 dimes and 30 quarters

2.7 More word problems

Consecutive integer problems

(#) The sum of two consecutive integers is 15. Find the numbers

let x = The 1st consecutive integer

$x+1$ = The 2nd " "

$$x + x + 1 = 15$$

$$2x + 1 = 13$$

$$-1 \quad -1$$

$$\frac{2x}{2} = \frac{14}{2}$$

$$x = 7$$

1st $x = 7$

2nd $x + 1 = 8$

The two integers are 7 and 8.

1 2 3 4 5 6 7

x $x+2$

consecutive integers
5

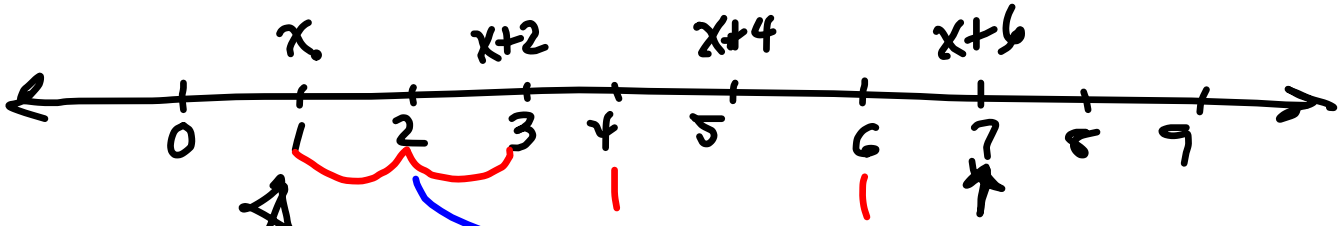
consecutive odd integers
5

⑤ let x = The 1st odd integer

2nd $x+2$ = The 2nd odd integer

$$x + x + 2 = 28$$
$$2x + 2 = 28$$
$$-2 \quad -2$$
$$\frac{2x}{2} = \frac{26}{2}$$
$$x = 13$$
$$x + 2 = 15$$

The two consecutive odd integers are 13 and 15.



1st odd integer

let $x =$

x
$x+2$
$x+4$
$x+6$

$x+2 = 2^{nd}$ odd int

$x+4 = 3^{rd}$ odd int

$x+6 = 4^{th}$ odd int.

sequence

3, 5, 7, 9, 11, 13