

2.2 # 57)

$$3(-0.9n + 0.5) = -3.5n + 1.3$$

$$\begin{array}{r} -2.7n + 1.5 \\ +3.5n \end{array} = \begin{array}{r} -3.5n + 1.3 \\ +3.5n \end{array}$$

$$\begin{array}{r} 0.8n + 1.5 \\ -1.5 \end{array} = \begin{array}{r} 1.3 \\ -1.5 \end{array}$$

$$0.8n = -0.2$$

$$\left\{ \frac{-1}{4} \right\}$$

or

$$\boxed{\{-0.25\}}$$

$$\frac{0.8n}{0.8} = \frac{-0.2}{0.8}$$

$$n = -\frac{0.2}{0.8} \left(\frac{10}{10} \right)$$

$$n = -\frac{2 \div 2}{8 \div 2}$$

$$n = -\frac{1}{4} = -0.25$$

2.2 # 77)

$$0.5b = -23$$

$$\frac{0.5b}{0.5} = \frac{-23}{0.5} \left(\frac{10}{10} \right)$$

$$b = -\frac{230}{5}$$

$$b = -46$$

$$\begin{array}{r} 46 \\ 5 \overline{) 230} \\ \underline{20} \\ 30 \\ \underline{30} \\ 0 \end{array}$$

$$\boxed{\{-46\}}$$

2.3: Clearing Fractions and Decimals

To clear decimals, multiply both sides by a power of 10.

Example: Solve. (same as previous problem 2.2 #57)

$$3(-0.9n + 0.5) = -3.5n + 1.3$$

$$-2.7n + 1.5 = -3.5n + 1.3$$

$$10(-2.7n + 1.5) = 10(-3.5n + 1.3)$$

$$-27n + 15 = -35n + 13$$

$$15 = -35n + 27n + 13$$

$$15 = -8n + 13$$

$$15 - 13 = -8n$$

$$2 = -8n$$

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

$$-\frac{1}{4} = n$$

$$\left\{ -\frac{1}{4} \right\}$$

or $\left\{ -0.25 \right\}$

Ex: Solve.

$$0.75(m-2) + 0.25m = 0.5$$

multiply both sides by 100:

$$100(0.75)(m-2) + 100(0.25m) = 100(0.50)$$

$$75(m-2) + 25m = 50$$

$$75m - 150 + 25m = 50$$

$$100m - 150 = 50$$

$$100m - 150 = 50$$

+150 +150

$$100m = 200$$

$$\frac{100m}{100} = \frac{200}{100}$$

$$m = 2$$

$$\boxed{\{2\}}$$

Section 2.4: Applications of Linear Equations (word Problems :)

Example: Tina is 17 years older than twice Donald's age.

Donald's age: x

Tina's age: $2x + 17$

Tina's age $\xrightarrow[\text{to}]{\text{compare}}$ Donald's age $\times$

Ex: The difference of $\overbrace{\text{twice a number}}^{2x}$ and 8 is twenty.
Find the number.

unknown number: x

$$2x - 8 = 20$$

$+8 \quad +8$

$$2x = 28$$

$$\frac{2x}{2} = \frac{28}{2}$$

$$x = 14$$

The number is 14.

Check:

Twice my number

$$2(14) = 28$$

Diff between 28 and 8 is 20 ✓

Example: if $\overbrace{\text{six less than a number}}^{x-6}$ is tripled,
the result is five more than the number. Find the number.

unknown number: x

$$3(x-6) = x+5$$

$$3x - 18 = x + 5$$

$+18$ $+18$

$$3x = x + 23$$

$-x$ $-x$

$$2x = 23$$

$$\frac{2x}{2} = \frac{23}{2}$$

$$x = 11\frac{1}{2} = 11.5$$

The number is 11.5.

Consecutive Integer Problems

Example: Find four consecutive integers whose sum is 74.

1st integer: x

2nd integer: $x+1$

3rd integer: $x+2$

4th integer: $x+3$

$$x + (x+1) + (x+2) + (x+3) = 74$$

$$x + x + 1 + x + 2 + x + 3 = 74$$

$$4x + 6 = 74$$

-6 -6

$$4x = 68$$

$$\frac{4x}{4} = \frac{68}{4}$$

$$x = 17$$

$$\begin{array}{r} 17 \\ 4 \overline{) 68} \\ \underline{4} \\ 28 \\ \underline{28} \\ 0 \end{array}$$

See next
page

Previous ex. cont'd:

1st integer: $x=17$

2nd integer: $x+1$

$$x=17 \Rightarrow 17+1=18$$

3rd: $x+2$

$$x=17 \Rightarrow 17+2=19$$

4th: $x+3$

$$x=17 \Rightarrow 17+3=20$$

The integers
are 17, 18, 19, 20.

Consecutive even integers:

$$x, x+2, x+4, x+6, \dots$$

Consecutive odd integers:

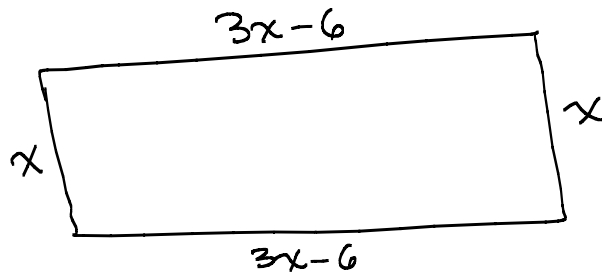
$$x, x+2, x+4, x+6, \dots$$

2.6: More applications of linear equations

Example: The perimeter of a rectangle is 100 feet. The length is 6 feet less than three times the width. Find the length and width.

length: $3x - 6$
width: x

length $\xrightarrow[\text{to}]{\text{compare}}$ width x



$$x + (3x - 6) + x + (3x - 6) = 100 \quad \text{or} \quad 2(\text{length}) + 2(\text{width}) = 100$$

$$8x - 12 = 100$$

$+12$ $+12$

↓

$$8x = 112$$

$$\frac{8x}{8} = \frac{112}{8}$$

$$x = 14$$

$$\begin{aligned} 2(3x - 6) + 2(x) &= 100 \\ 6x - 12 + 2x &= 100 \\ 8x - 12 &= 100 \end{aligned}$$

$$\begin{array}{r} 14 \\ 8 \overline{) 112} \\ \underline{8} \\ 32 \end{array}$$

width: $x = 14$
length: $3x - 6$

$$x = 14 \Rightarrow 3(14) - 6 = 36$$

The width is 14 ft
and the length is 36 ft.