6/4/2014 - Sec 1.1 and 1.2

R.5

#84 $N = \dfrac{10(6+3t)}{1+0.05t}$

$N = ?$ $\quad t = 14$

$$\frac{(10(6+3.14))}{(1+0.05 \cdot 14)}$$

$N = 282.35$

282 Elk

R. 5

#77

$$\frac{\left[\frac{a}{(x+h)} - \frac{a}{x}\right] x(x+h)}{\left[\frac{h}{1}\right] x(x+h)}$$

LCD: $(x+h)x$

$$\frac{\frac{a \cdot (x+h)}{(x+h)} x - \frac{a \cdot x (x+h)}{x}}{\frac{h \, x(x+h)}{1}}$$

$$\frac{ax - a(x+h)}{hx(x+h)}$$

$$\frac{ax - ax - ah}{hx(x+h)}$$

$$\frac{-ah}{h x(x+h)} = \boxed{\frac{-a}{x(x+h)}}$$

Sec 1.1 Linear Equations, Formulas, Problem Solving

#12 $2a + 4(a-1) = 3 - (2a+1)$

Solving Linear Equations in one Variable

1. Eliminate all decimals and fractions
2. Simplify Each side of the equal sign
3. Gather all variable terms to one side
4. Isolate the Variable
5. Check

$2a + 4a - 4 = 3 - 2a - 1$

$6a - 4 = 2 - 2a$

$+2a \qquad +2a$

$8a - 4 = 2$

$+4 \quad +4$

$\frac{8a}{8} = \frac{6}{8}$

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

#19 $15\left[\frac{(x+3)}{5} + \frac{x}{3}\right] = [7]\,15$ LCD: 15

$$3\frac{15(x+3)}{5} + \frac{5\,15x}{3} = 105$$

$$3(x+3) + 5x = 105$$

$$3x + 9 + 5x = 105$$

$$8x + 9 = 105$$

$$-9 \quad -9$$

$$8x = 96$$

$$x = 12$$

Conditional Equation: When an equation is true for a specific value of x

Identity: When an equation is true for all values of x

See Ex #32

Contradiction: When an equation is true for No value of x

See Ex #31

Ex: #32 $5x - 9 - 2 = -5(2-x) - 1$

$5x - 11 = -10 + 5x - 1$

$5x - 11 = 5x - 11$

$-5x \quad\quad -5x$

$-11 = -11$ always true

Identity: all Real Numbers ✓

Set Notation answer: $\{x \mid x \in \mathbb{R}\}$

#31 $-3(4z + 5) = -15z - 20 + 3z$

$-12z - 15 = -12z - 20$

$+12z \quad\quad +12z$

$-15 = -20$ False

Contradiction: No solution

$\emptyset$

$\{\}$

#40 $\frac{V}{LH} = \frac{KW\,\cancel{H}}{K\cancel{H}}$ Solve for W

$$\frac{V}{LH} = W$$

$$W = \frac{V}{LH}$$

#41 $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$ Solve for T_2

LCD : $T_1\ T_2$

$$\frac{P_1 V_1 T_2}{P_1 V_1} = \frac{P_2 V_2 T_1}{P_1 V_1}$$

$$T_2 = \frac{P_2 V_2 T_1}{P_1 V_1}$$

Problem Solving Guide

1. Gather and organize information
2. Make the Problem Visual
3. Develop an Equation Model
4. Use the Equation to Solve the Problem

Ex: #73 $d = rt$

	Rate	× time	= distance
Linda	60	x	$60x$
Bruce	75	$x - .5$	$75(x - .5)$

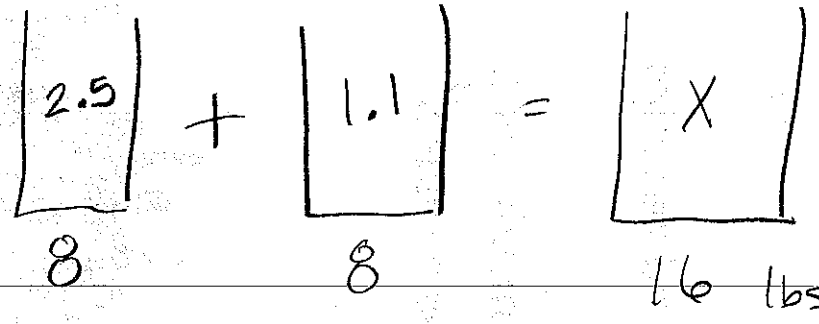
↘ same

$$60x = 75(x - .5) \qquad x = 2.5$$

$$x = 2.5$$

11:30 am

79



$$2.5(8) + 1.1(8) = X(16)$$

$$\frac{28.8}{16} = \frac{16X}{16}$$

$$1.8 = X$$

16 lbs $1.80

Sec 1.2 Linear Inequalities in one Variable

Difference between Solving Linear Equations and Linear Inequalities is when Multiply/Divide by Negative Switch the inequality Symbol

#25 $2(n+3) - 4 \leq 5n - 1$

$2n + 6 - 4 \leq 5n - 1$

$2n + 2 \leq 5n - 1$

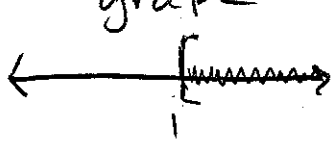
$-5n \qquad -5n$

$-3n + 2 \leq -1$

$-2 \qquad -2$

$\frac{-3n}{-3} \leq \frac{-3}{-3}$ divide by Negative!

Set Notation $\{n \mid n \geq 1\}$

graph 

Interval Notation $[1, \infty)$

Compound Inequality

Intersection: 1. both must be true
2. "and" Statement
3. Symbol is $\cap$

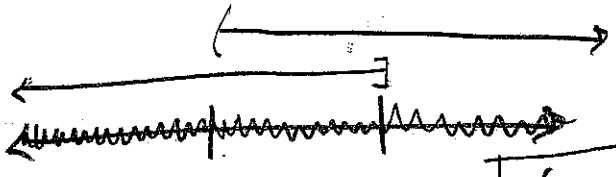
Union: 1. either is true
2. "or" Statement
3. Symbol is $\cup$

When solving compound inequalities, solve each inequality seperately then apply the and/or statement to find the answer.

#47 $4(x-1) \leq 20$ or $x+6 > 9$

$4x - 4 \leq 20$
$+4 \quad +4$
$\frac{4x}{4} \leq \frac{24}{4}$
$x \leq 6$

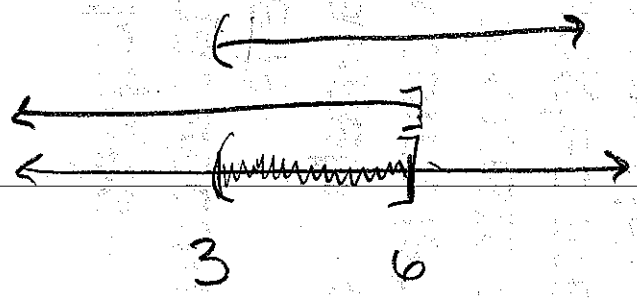
$-6 \quad -6$
$x > 3$



$(-\infty, \infty)$

What if

$X \leq 6$ and $X > 3$



Ans: $(3, 6]$

Domain of an expression

Defn: the Domain is the set of values for which the expression is defined.

We assume the Domain is $\mathbb{R}$ and look for possible problems

Possible problems:

1. Zeroes in denominator
2. Negatives under even Roots

Find the Domain of

$$\frac{3}{x+5}$$

Domain: $x \neq -5$

$(-\infty, -5) \cup (-5, \infty)$

Looking for the x-value for denominater $= 0$

$$x + 5 = 0$$
$$-5 \quad -5$$
$$x = -5$$

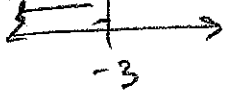
Find the Domain of

$$\sqrt{-3x-9}$$

$$-3x - 9 \geq 0$$
$$+9 \quad +9$$

$$\frac{-3x}{-3} \geq \frac{9}{-3}$$

$$\boxed{x \leq -3}$$



$(-\infty, -3]$