Chapter 1 Homework

1.1 #1-137 odd

1.2 #97-113 odd

1.3 #30-57 odd; 97-105 odd; and study properties!

1.4 #1-31 odd

Chapter 2 Homework

2.1 #39-77 odd

2.2 #7-27 odd

2.3 #7-25 odd

2.4 #5,7,11,17,19,23,27

2.5 #35-71 odd

~~2.6 #33-60 odd~~

6th period:

2.1-2.5 & Quiz 2 due Monday

Test #1 Tuesday

8th period:

2.1-2.4 & Quiz 2 due Monday

2.5 due Tuesday

Test #1 Wednesday

$\mathbb{R}, \mathbb{Q}, \mathbb{Z}, \mathbb{N}, \varnothing$

$A = \{x \mid x = 0\}$

$B = [-5, 4)$

$C = \{1, 2, 3, 4, 5\}$

$D = \{-4, -3, \frac{1}{2}, \frac{2}{3}\}$

$E = \{-\sqrt{2}, \pi\}$

$\mathbb{Z} \cap A = \{0\} \cup \mathbb{N}$

$C / B = C - B$
$\quad \{4, 5\}$

$D \cup \mathbb{Q} = \mathbb{Q}$

$E \cap A = \{\pi\}$

$B \cap \mathbb{N} = \{1, 2, 3\}$

$D / A = \{-4, -3\}$

$B \cup E = B$

$A \cup C = A$

$E / \mathbb{Q} = E$

$C \cap \mathbb{Z} = C$

$B \cap A = [0, 4)$
$\{x \mid 0 \leq x < 4\}$

<u>**2.5 Inequalities in One Variable**</u>

10. $5x + 2 \geq 4x - 1$

$5x - 4x \geq -1 - 2$

$\{x \mid x \geq -3\}$

$[-3, \infty)$

26. $2 - 5(x + 1) \geq 3(x - 1) - 8$

$2 - 5x - 5 \geq 3x - 3 - 8$

$-5x - 3 \geq 3x - 11$

$-3 + 11 \geq 3x + 5x$

$8 \geq 8x$

$1 \geq x$

$\{x \mid x \leq 1\}$

$[1, \infty)$

$(-\infty, 1]$

Compound Inequalities

| and | ∩ | intersection | A ∩ B |
| | | | x is in both A *and* B |

| or | ∪ | union | A ∪ B |
| | | | x is in either A *or* B |

36. $x - 3 \leq 1 \;\; and \;\; 2x \geq -4$

$x \leq 4 \quad \cap \quad x \geq -2$

$-2 \qquad 4$
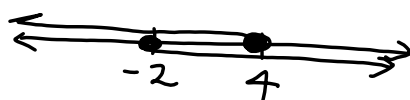
$[-2, 4]$
$\{x \mid -2 \leq x \leq 4\}$

What if the problem had been…

$x - 3 \leq 1 \;\; or \;\; 2x \geq -4$

$$3x - 1 \leq 11 \ \ or \ \ 2x + 5 > -11$$

$3x \leq 12 \qquad \cup \qquad 2x > -16$

$x \leq 4 \qquad\qquad\qquad x > -8$

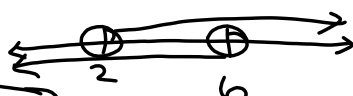$\mathbb{R} = (-\infty, \infty) = \{x \mid x \in \mathbb{R}\}$

52. $5 < 4x - 3 < 21$

$5 < 4x - 3 \qquad and \qquad 4x - 3 < 21$

$8 < 4x \qquad \cap \qquad\qquad 4x < 24$

$2 < x \qquad\qquad\qquad\qquad x < 6$

$x > 2$

$(2, 6) = \{x \mid 2 < x < 6\}$

$$4 < 3x - 5 \leq 2x - 10$$

$4 < 3x - 5$ and $3x - 5 \leq 2x - 10$

$9 < 3x$ $x \leq -5$

$3 < x$

$x > 3$

$\cap$

$\varnothing$
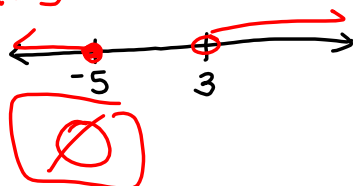
$$3(4x - 2) > -1 \ or \ 2x + 6 \leq 5 - x$$

$12x - 6 > -1$ $\cup$ $3x \leq -1$

$12x > 5$ $x \leq -\frac{1}{3}$

$x > \frac{5}{12}$
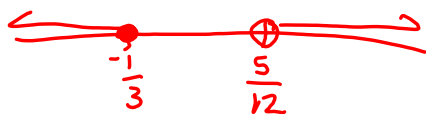
$\left(-\infty, -\frac{1}{3}\right] \cup \left(\frac{5}{12}, \infty\right)$

$\{x \mid x > \frac{5}{12} \ or \ x \leq -\frac{1}{3}\}$

$$3 \cdot \left(\frac{1}{3}(x-7) + 5 \right) = \left(6x + 4 \right) \cdot 3$$

$$x - 7 + 15 = 18x + 12$$

$$x + 8 = 18x + 12$$

$$-4 = 17x$$

$$\boxed{\frac{-4}{17} = x}$$

$$4x - 2\left[x - 4\left(y - 2\left[5y + 3\right]\right)\right]$$

$$4x - 2\left[x - 4\left(y - 10y - 6\right)\right]$$

Test on Chapters 1 & 2

- set notation
- number sets
- properties of numbers
- distributive property
- order of operations
- combining like terms
- evaluating expressions
- writing numerical expressions from verbal expressions
- solving linear equations
- solving linear inequalities and compound inequalities
- setting up and solving word problems in one variable

21. Find three consecutive even integers such that twice the sum of the first and third integers is twenty more than the second integer.

$$x, \ x+2, \ x+4$$

$$2(x + x+4) = x+2 +20$$

$$2(2x+4) = x+22$$

$$4x+8 = x+22$$

$$3x = 14$$

$$x = \frac{14}{3}$$

$\emptyset$ no solution!

22. Fifty liters of pure maple syrup that costs $10 per liter are mixed with imitation maple syrup that costs $4 per liter. How much imitation maple syrup is needed to make a mixture that costs $5 per liter?

type	price per liter ($/L)	# of liters L	total cost = $
pure	10	50	10(50)
imitation	4	X	4x
mix	5	50+x	5(50+x)

$$10(50) + 4x = 5(50+x)$$
$$\vdots$$

23. Two airplanes start from the same point and fly in opposite directions. The first plane is flying 50 mph slower than the second plane. In 4 h, the planes are 1800 mi apart. Find the rate of each plane.

2nd plane   first plane

4x   1800 mi   4(x-50)

type	rate	time	distance
1st plane	x-50	4	4(x-50)
2nd plane	x	4	4x

$$4(x-50) + 4x = 1800$$

24. How many quarts of water must be added to 5 qt of an 80% antifreeze solution to make a 50% antifreeze solution?

type	volume of solution	% concentration	amount of substance
80%	5 qt	.8	5(0.8)
water	X	0	0
50%	5+x	.5	.5(5+x)

$$5(0.8) = 0.5(5+x)$$