FEBRUARY 22, 2019

UNIT 5: LINEAR EQUATIONS AND INEQUALITIES

SECTION 6.5: SOLVING LINEAR INEQUALITIES BY USING MULTIPLICATION & DIVISION

K.SEARS
MATH 9

WHAT'S THE POINT OF TODAY'S LESSON?

We will continue working on the Math 9 Specific Curriculum Outcome (SCO) "Patterns and Relations 4" OR "PR4" which states:

"Explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context."

What does THAT mean???

SCO PR4 means <u>MORE</u> ALGEBRA, but without the equals sign!!!

WARM-UP:

(Leave your answer in f

Solve and graph:

$$\frac{1}{2}x + 3 \leq \frac{2}{3}x - 4$$

$-3 \quad -3$

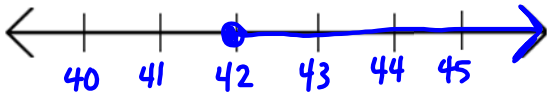
(6) $\frac{1}{2}x \leq \frac{2}{3}x - 7$ (6) (6)

$-4x \quad -4x$

$3x \leq 4x - 42$

$\frac{-x}{-1} \leq \frac{-42}{-1}$

$x \geq 42$

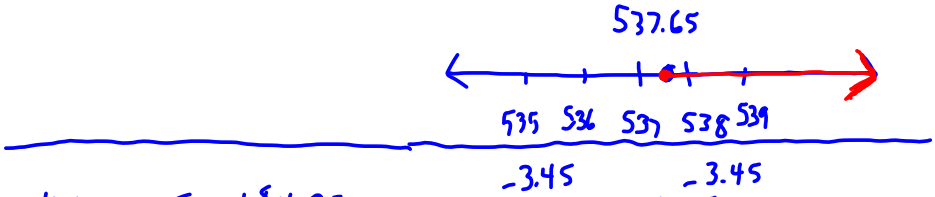


Homework Questions?

Page 298: #4, #5 and #7, 8 a,c,d 9 a,c
Page 299: #12 and #14
Page 309: #15

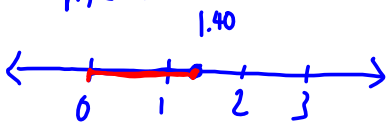
#12. $212.35 ≥ 750

$212.35 + d ≥ 750
-212.35 -212.35
$d ≥ 537.65$



#14. Total $4.85
Cake $3.45
Muffin?

$3.45 + m ≤ 4.85
-3.45 -3.45
$m ≤ 1.40$



d) No

Jake plans to board his dog while he is away on vacation.

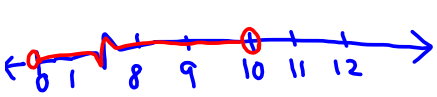
* Boarding house A charges $90 plus $5 per day.
* Boarding house B charges $100 plus $4 per day.

For how many days must Jake board his dog for boarding house A to be less expensive than boarding house B?

a) Write an inequality that can be used to solve this problem.
b) Solve the problem.
c) Graph the solution.
d) Check your solution on page 297 of the textbook.

$90 + 5d < 100 + 4d$
$-90 \quad -90$
$-4d \quad -4d$
$5d < 10 + 4d$

$d < 10$



- no arrow on left end. Cannot have negative days.

Here's an inequality:

$$2 > -8$$

(Multiply both sides by -1.)

$$2(-1) > -8(-1)$$

$$-2 < 8$$

Is the new inequality still true?

NO!!!

(-2 is LESS than 8.)

Here's another inequality:

$$7 > -4$$

(Divide both sides by -1.)

$$\frac{7}{-1} > \frac{-4}{-1}$$

$$-7 < 4$$

Is the new inequality still true?

NO!!!

(-7 is LESS than 4.)

When each side of an inequality is multiplied or divided by the same negative number, the inequality sign must be reversed for the inequality to remain true.

TO SOLVE AN INEQUALITY, we use the same strategy as for solving an equation; however, when we multiply or divide by a negative number, we REVERSE the inequality sign.

Solve the EQUATION:

$$\frac{-4x}{-4} = \frac{24}{-4}$$

$$x = -6$$

The equation only has ONE solution ($x = -6$).

Solve the INEQUALITY:

$$\frac{-4x}{-4} < \frac{24}{-4}$$

$$x > -6$$

The inequality has an INFINITE number of solutions ($x > -6$).

i) **Solve** the inequality: $-5x - 4 \leq 6$

ii) **Verify** the solution.

iii) **Graph** the solution.

$-5x - 4 \leq 6$

$+4 \quad +4$

$-\frac{5x}{-5} \leq \frac{10}{-5}$

$x \geq -2$

Verify

① $x = 0$

LS $-5(0) - 4$

$-4 \leq 6$ ✓ RS

② $x = 1$

LS $-5(1) - 4$

$-5 - 4$

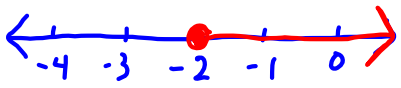
$-9 \leq 6$ ✓

③ $x = -2$ LS RS

$-5(-2) - 4$ 6

$10 - 4$

$6 \leq 6$ ✓



Solve and graph:

$$8 \leq \frac{2}{-3}x - 4$$

$(-3) \quad (-3) \quad (-3)$

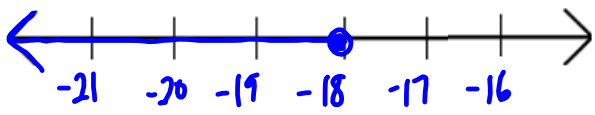
$-12 \quad -12$

$-24 \geq 2x + 12$

$-\frac{36}{2} \geq \frac{2x}{2}$

$-18 \geq x$

$x \leq -18$



CONCEPT REINFORCEMENT:

MMS9:

Page 305: #3, #6 to 8, 9a,c,e 10 -12
Page 306: #16 to #18
Page 309: #16

Be sure to check your answers in the back of the book as part of your homework. The answers for this section begin on page 516.

TEST PREPARATION (Friday, Feb. 28):

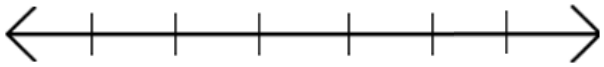
MMS9:

Page 307:	**Study Guide**
Pages 308/9:	**Review Questions (I especially "like" #4, #7, #8, #11, #12, #15 and #16)**
Page 310:	**Practice Test (I especially "like" #2 to #5)**
Worksheets:	**Pages 179, 181 and 182**

WARM-UP:

(Leave your answer in f

Solve and graph: $\frac{1}{2}x + 3 \leq \frac{2}{3}x - 4$



Finish 6 to 10 for homework from last night's sheet

If you lost the sheet here they are...

6) $\frac{1}{3}(4x-2) = \frac{5}{6}(x-3) + 2$ $\frac{1}{3}$

7) $\frac{1}{4} + 2x = \frac{2}{3} - 4x + \frac{1}{2}$ $\frac{11}{12}$

8) $3(x-4) = \frac{3}{4}(5x-3) + 2$ $-47/3$

9) $\frac{4}{5}(-2x-3) = \frac{3}{10}x + 1$ $-34/19$

10) $\frac{1}{3} + 5x = 3x + 7$ $\frac{10}{3}$