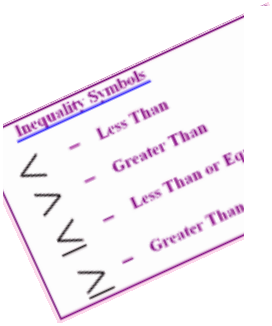
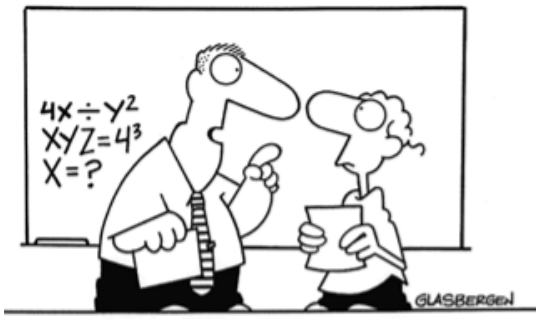


Section 6.5
Solving Linear Inequalities by Using Multiplication & Division



"Algebra class will be important to you later in life because there's going to be a test few days from now."

Let's Have Look ....

Place a > or < sign that makes the statement true.

$10(-3) \boxed{<} 7(-3)$

$10(-2) \boxed{<} 7(-2)$

$10(-1) \boxed{<} 7(-1)$

$10 \div (-3) \boxed{<} 7 \div (-3)$

$10 \div (-2) \boxed{<} 7 \div (-2)$

$10 \div (-1) \boxed{<} 7 \div (-1)$

$10(1) \boxed{>} 7(1)$

$10(2) \boxed{>} 7(2)$

$10(3) \boxed{>} 7(3)$

$10 \div (1) \boxed{>} 7 \div (1)$

$10 \div (2) \boxed{>} 7 \div (2)$

$10 \div (3) \boxed{>} 7 \div (3)$

Properties of Inequalities

1) When you multiply or divide a inequality by a positive number the inequality remains the same.

Example) $5 > -1$

$5(3) > (-1)(3)$

$15 > -3$

2) When you multiply or divide a inequality by a "negative number" the inequality must be reversed(switched) in order to remain true.

$12 > -10$

$12 \div (-2) \quad -10 \div (-2)$

$12 \div (-2) < -10 \div (-2)$

$-24 < 20$

Switch inequality since divided by a negative

NOTE:

When solving an inequality, we use the same strategy as for solving an equation.

BUT

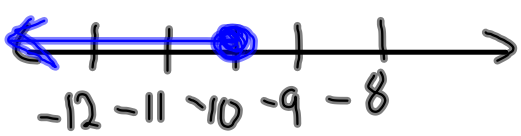
Remember when we divide or multiply by a negative number, we reverse the inequality sign.

Solving a One-Step Inequality

Solve each inequality. Graph the solution.

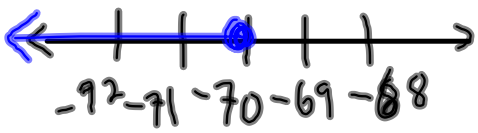
1) $\frac{x}{5} \leq -2$ ×5 ×5

$x \leq -10$



2) $\frac{k}{-7} \geq 10$ ×-7 ×-7

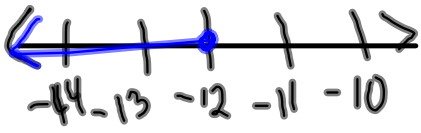
$k \leq -70$



3) $-6r \geq 72$

$\frac{-6r}{-6} \leq \frac{72}{-6}$

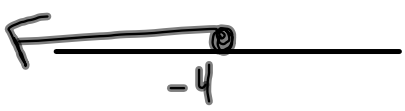
$r \leq -12$



4) $13t \leq -52$

$\frac{13t}{13} \leq \frac{-52}{13}$

$t \leq -4$



Solving a Multi-Step Inequality

l) $-1.6n - 5 > 4.1n + 10.96$

Step 1) Bring all letters to one side and number to the other.

$-1.6n - 5 + 5 > 4.1n + 10.96 + 5$

Add 5 to each side

$-1.6n > 4.1n + 15.96$

$-1.6n - 4.1n > 4.1n - 4.1n + 15.96$

Subtract 4.1n from each side.

$-5.7n > 15.96$

Step 2)Divide each side by the number in front of the letter.

$\frac{-5.7n}{-5.7} < \frac{15.96}{-5.7}$

Divide each side by "-5.7" and since negative reverse the sign.

$n < -2.8$

The solution is all numbers smaller than -2.8

ck you work

number less than -2.8.....-3

Substitute n = -3 into the original inequality

See if left hand side is greater than right hand side

$-1.6n - 5 > 4.1n + 10.96$

Left hand side

$-1.6n - 5$

$-1.6(-3) - 5$

$4.8 - 5$

0.2

Right hand side

$4.1n + 10.96$

$4.1(-3) + 10.96$

$-12.3 + 10.96$

-1.34

$0.2 > -1.34$

IT WORKS

You Try

Solve each inequality, check your solution and graph

2) $-15 - 4x \leq 3x + 6$

$-15 - 4x - 3x \leq 3x + 6 - 3x$

$-15 - 7x \leq 6$

$-15 - 7x \leq 6 + 15$

$-7x \leq 21$

$\frac{-7x}{-7} \geq \frac{21}{-7}$ *

$x \geq -3$

3) $8m - 2 \geq 13 + 5m$

Pg 305

#7, 9, 10

Using a Inequality to Model and Solve a Problem

The 120 Culinary Class decided to raise money by organizing a supper for the seniors home. The cost of preparing the food is $675 and the students are charging $9.00 a plate. How many seniors must buy suppers in order to make a profit more than $765.

Class/Homework

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7, 9, 10, 12