

PROBLEM SET – Solving Inequalities

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Class 622 and 623

Important Problems

1. Find the **final solution** to each of the inequalities below:

- $\frac{x}{2} \geq -1$
- $100 + 3x \geq -50$
- $100 - 3x \geq -50$  (and reflect on how this solution is different from the previous problem)
- $-4x + 5 \geq 25$
- $-5(x - 1) > -40$

2. Select **all** the values that are solutions to  $-x \geq -4$ :

A) 3	B) -3	C) 4	D) -4
E) 4.001	F) -4.001		

Then state the solution to the inequality:

3. Select **all** values of  $x$  that make the inequality  $-x + 6 \geq 10$  true.

A) -3.9	B) 4	C) -4.01	D) -4
E) 4.01	F) 3.9	G) 0	H) -7

Then state the solution to the inequality:

**The following two questions are tricky but can be done with everything you know. Take your time.**

4. Find the solution to the inequality:  $\frac{4}{3}x + 3 < \frac{23}{3}$

5. Write at least three different inequalities whose solution is  $x > -10$ .

Challenge Questions

1. A right triangle has perimeter 32 and area 20. What is the length of its hypotenuse?

2. Trapezoid  $ABCD$  has bases  $\overline{AB}$  and  $\overline{CD}$  and diagonals intersecting at  $K$ . Suppose that  $AB = 9$ ,  $DC = 12$ , and the area of  $\triangle AKD$  is 24. What is the area of trapezoid  $ABCD$ ?

3. The equations  $2x + 7 = 3$  and  $bx - 10 = -2$  have the same solution  $x$ . What is the value of  $b$ ?

Challenge Questions

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3. The equations  $2x + 7 = 3$  and  $bx - 10 = -2$  have the same solution  $x$ . What is the value of  $b$ ? -4