Warm Up

Notebook Check

Google Classroom

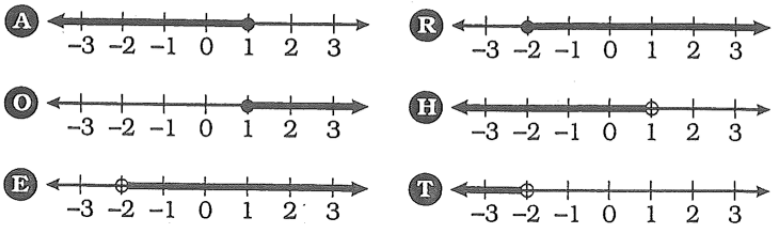
Homework Questions?

Where Do Airline Pilots Keep Their Uniforms?

For each exercise, write the letter of the answer in the box containing the exercise number.

In Exercises 1-6, match the inequality with its graph.

1. $x < 1$
2. $x \leq 1$
3. $x > -2$
4. $x \geq -2$
5. $-2 > x$
6. $1 \leq x$



In Exercises 7-18, solve the inequality. Then graph the solution.

7. $4n + 1 < 9$

$-1 \quad -1$

$\frac{4n}{4} < \frac{8}{4}$ $\quad n < 2$

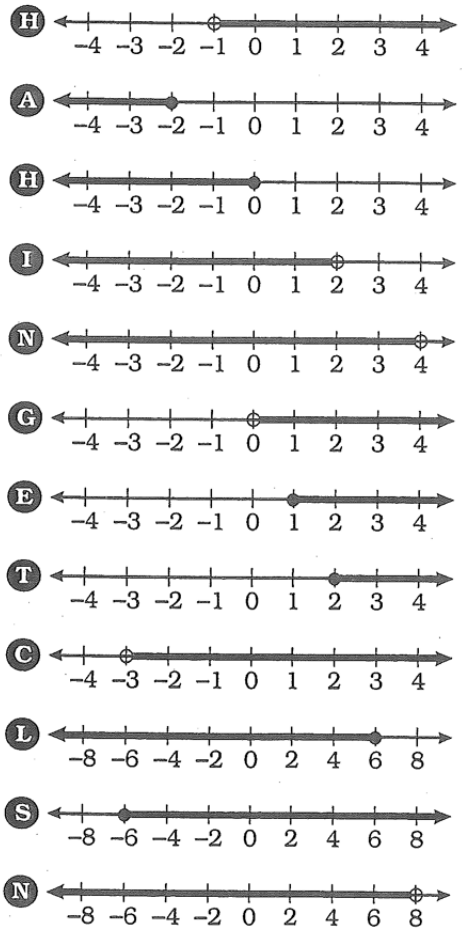
8. $7a - 2 \geq 5$
9. $3y + 10 \leq 4$
10. $8k - 3 > -27$
11. $\frac{x}{2} + 9 < 11$

$-9 \quad -9$

$2 \cdot \frac{1x}{2} < 2(2)$

$x < 4$

12. $\frac{d}{6} - 4 \geq -5$
13. $\frac{u}{15} - 2 \leq -2$
14. $5p - 14 < 26$
15. $18 \leq 7b + 4$
16. $-9 < 12y + 3$
17. $-14 \geq \frac{x}{3} - 16$
18. $5 < \frac{m}{8} + 5$



7	11	5	13	3	10	17	6	15	1	8	12	16	2	14	18	9	4

Inequalities:
Graphing the Solution Set of an Inequality

Do you think we can solve a more complicated inequality for x the same way we solve a regular equation for x?

$$2(3x + 5) > x - 20$$

Properties of equality must work!

Let's check out if some of our **properties of equality** can still be used:

$5 > 2$

$+3 \quad +3$ — +3

$8 > 5$ ✓

$-10 \quad -10$ — -10

$-2 > -5$ ✓

$(10)-2 > -5(10)$ — x10

$-20 > -50$ ✓

$\frac{-20}{2} > \frac{-50}{2}$ — /2

$-10 > -25$ ✓

$(-3)-10 > -25(-3)$ — *(-3)

$30 > 75$ ✗ — /(-5)

turn sign around

$30 < 75$

$-5 \quad -5$

$-6 < -15$ ✗

$-6 > -15$ True

Properties of Equality hold EXCEPT when multiplying or dividing by negative numbers.

When multiplying or dividing by a negative number we MUST

FLIP the sign

$$2(3x+5) > x - 20$$

$6x+10 > x-20$

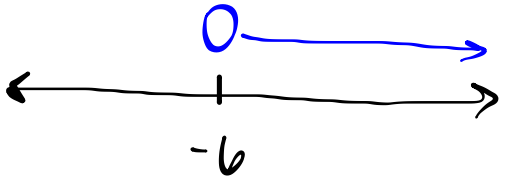
$+20 \quad +20$

$6x+30 > x$

$-6x \quad -6x$

$\frac{30}{-5} > \frac{-5x}{-5}$

$-6 < x$



$6x+10 > x-20$

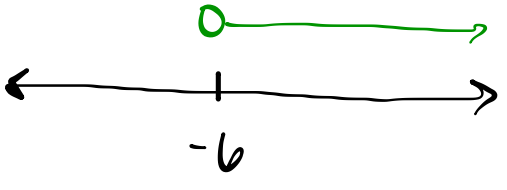
$-x \quad -x$

$5x+10 > -20$

$-10 \quad -10$

$\frac{5x}{5} > \frac{-30}{5}$

$x > -6$



$x > -6$

Format for solving, graphing, and checking:

Solve

$2x + 12 > 32$

$-12 \quad -12$

$\frac{2x}{2} > \frac{20}{2}$

$x > 10$ — Boundary Number

Check

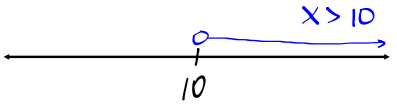
$2x + 12 \geq 32$

$2(10) + 12 \stackrel{?}{=} 32$

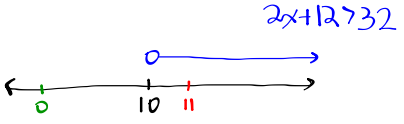
$20 + 12 = 32$

$32 = 32$ ✓

Graph



Check (of graph)



Let's try 11

because we think it should be a solution

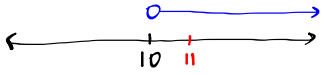
$2(11) + 12 > 32$

$22 + 12 > 32$

$34 > 32$

True statement which means 11 is a possible solution

Check the graph and see it is correct because 11 falls under the line of all possible solutions



Another way!

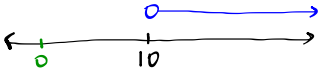
I like to make the math I need to do as easy as possible. Because of that, I always check if 0 is a solution whether I think it is or not.

Is 0 a solution $2(0) + 12 > 32$

$12 > 32$

False

0 is NOT a solution



My line is going the correct way because 0 is not a solution, and when you look on the graph it is not under the line.

Name _____ Period ____ Date _____

Solving Inequalities

1. $7m + 9 \leq 6(m + 3)$

Check:

2. $3(2x + 4) \geq 7x + 8$

Check:

3. $2(k + 4) \leq 3(2k - 4)$

Check:

4. $5x + (^{-}3) > 2(3 + x)$

Check:

5. $5c + 2 < 2c + (-7)$

Check:

6. $5x - 20 > 2x + 1$

Check:

7. $3(s - 4) \geq 4s - 12$

Check:

8. $-9 - e > 3e + 11$

Check:

Homework

Finish classwork