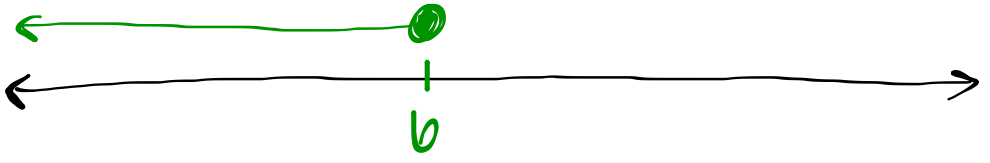
# Warm Up

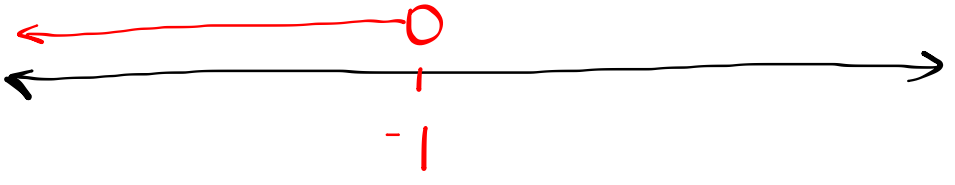
Graph the following on a number line:

$6 \geq x$

If you want to switch positions: $x \leq 6$




$x < -1$



End of Term 3 is now Wednesday April 8.

All late IXL assignments are due by 3pm Thursday, April 2.

The grade for this week's IXL will be entered on April 8, 9am.

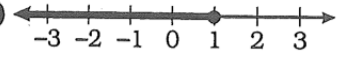
# Homework Questions?

## 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. $1 \leq x$

A 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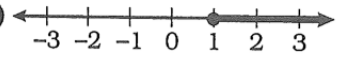
O 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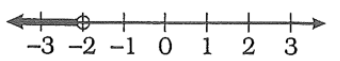
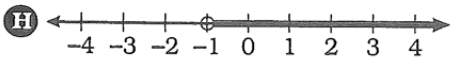
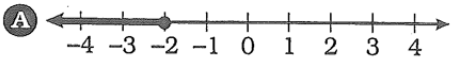
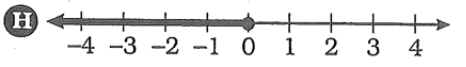
T 

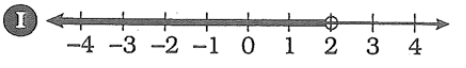

**In Exercises 7-18, solve the inequality. Then graph the solution.**

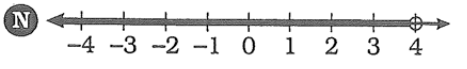
7. $4n + 1 < 9$
8. $7a - 2 \geq 5$
9. $3y + 10 \leq 4$
10. $8k - 3 > -27$
11. $\frac{x}{2} + 9 < 11$
12. $\frac{d}{6} - 4 \geq -5$
13. $\frac{u}{15} - 2 \leq -2$
14. $5p - 14 < 26$
15. $18 \leq 7b + 4$
16. $-9 < 12y + 3$
17. $-14 \geq \frac{x}{3} - 16$
18. $5 < \frac{m}{8} + 5$

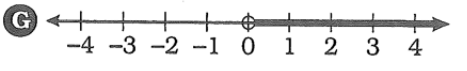
H 

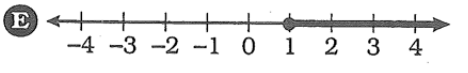

A 

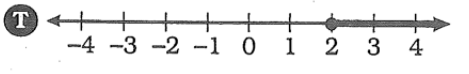

H 

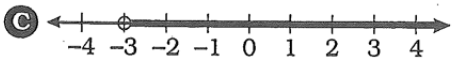

I 

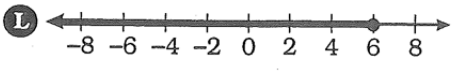

N 

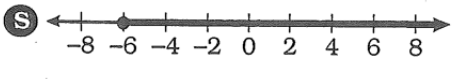

G 

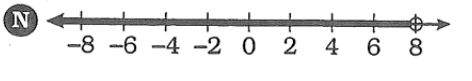

E 


T 


C 


L 


S 


N 


| 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?

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

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

$5 > 2$

$+3 \quad +3$

$8 > 5$ ✓ +3 ✓

$-10 \quad -10$

$(10)\ -2 > -5\ (10)$ ✓ -10 ✓ x10 ✓

$\frac{-20}{2} > \frac{-50}{2}$ ✓ /2 ✓

$(-3)\ -10 > -25\ (-3)$ ✓ *(-3) ✗

**False** $30 > 75$ ✗ /(-5) ✗

True Statement $\frac{30}{-5} < \frac{75}{-5}$

**False** $-6 < -15$ ✗

True Statement $-6 > -15$

We need to flip the sign when multiplying or dinding by a negative #.

pretend this is =

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

$6x + 10 > x - 20$

$-10 \quad -10$

$6x > x - 30$

$-x \quad -x$

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

$x > -6$

**OR**

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

$6x + 10 > x - 20$

$+20 \quad +20$

$6x + 30 > x$

$-6x \quad -6x$

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

divided by a negative

$-6 < x$

flipped the sign

Format for solving, graphing, and checking:

## Solve

$2x + 12 > 32$

solve pretending this is an = sign

$-12 \quad -12$

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

$x > 10$

## Check

Is your boundary # correct?

$2x + 12 > 32$

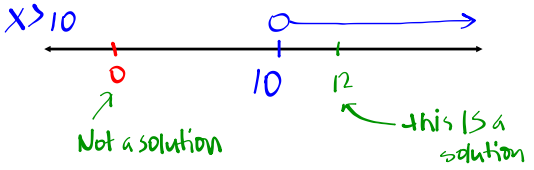
$2(10) + 12 \stackrel{?}{=} 32$

$20 + 12 \stackrel{?}{=} 32$

$32 = 32$ ✓

Yes, Boundary # is 10

## Graph




## Check (of graph)

Is your arrow going the right way?

Let's pick a test point and see if it is a solution

$2x + 12 > 32$

Is 12 a solution?

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

$24 + 12 \stackrel{?}{>} 32$

$36 > 32$

TRUE

Since 12 is a solution it should be on the number line under the line with the arrow.

Check if 0 is a solution

$2(0) + 12 \stackrel{?}{>} 32$

$12 > 32$

FALSE

Since 0 is **NOT** a solution it should **NOT** be on the number line under the line with the arrow.

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.

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

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