

Name: \_\_\_\_\_

## Sec. 6.2: Solve Inequalities Using Multiplication and Division

Multiplication Property of Inequality:

- Multiplying each side of an inequality by a \_\_\_\_\_ number produces an equivalent inequality.
- Multiplying each side of an inequality by a \_\_\_\_\_ number and \_\_\_\_\_ the \_\_\_\_\_ of the inequality symbol produces an equivalent inequality.
  - If  $a < b$  and  $c > 0$ , then  $ac < bc$ .
  - If  $a < b$  and  $c < 0$ , then  $ac > bc$ .

Division Property of Inequality:

- Dividing each side of an inequality by a \_\_\_\_\_ number produces an equivalent inequality.
- Dividing each side of an inequality by a \_\_\_\_\_ number and \_\_\_\_\_ the \_\_\_\_\_ of the inequality symbol produces an equivalent inequality.
  - If  $a < b$  and  $c > 0$ , then  $\frac{a}{c} < \frac{b}{c}$ .
  - If  $a < b$  and  $c < 0$ , then  $\frac{a}{c} > \frac{b}{c}$ .

### Examples

1. Solve  $\frac{x}{3} > 5$ . Graph your solution.



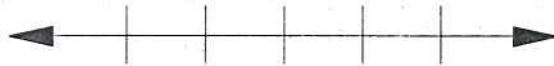
2. Solve  $-\frac{x}{4} \leq 2$ . Graph your solution.



3. Solve  $2k < -14$ . Graph your solution.















4. Solve  $-3y \geq -24$ . Graph your solution.



5. Bob started up his own t-shirt business. His family covered the startup costs for him, and it costs him \$5.50 to make and sell each shirt. He plans on selling the shirts for \$8.00 each. How many shirts will he need to sell to make a profit of \$500? Write and solve an inequality that represents this situation. Then graph your solution.



### Sec. 6.2 Practice Problems

Solve the inequality. Graph your solution.		
1. $2x < 12$  	2. $\frac{y}{-3} < 7$  	3. $-2k > 8$  
4. $12x < -12$  	5. $\frac{r}{4} \leq -7$  	6. $-2q < -9$  
7. $2.4x \geq 12$  	8. $\frac{t}{-5} < 3$  	9. $-20z > 50$  
10. $24 < 12x$  	11. $\frac{2}{3}y \leq 12$  	12. $-\frac{2}{5}k > 8$  

Write the verbal sentence as an inequality. Then solve the inequality and graph your solution.

13. The product of 5 and  $n$  is greater than 20.



14. The quotient of  $n$  and  $-2$  is at most 14.



15. Ted is applying for a job that requires the ability to type at least 40 words per minute. Write and solve an inequality to show the minimum number of words he must type in a 5-minute typing test to qualify for the job. Then graph your solution.



### ANSWERS to Sec. 6.2 Practice Problems

1.  $x < 6$

2.  $y \geq -21$

3.  $k < -4$

4.  $x < -1$

5.  $r \leq -28$

6.  $q > \frac{9}{2}$

7.  $x > 5$

8.  $t > -15$

9.  $z < -\frac{5}{2}$

10.  $x > 2$

11.  $y \leq 18$

12.  $k < -20$

13.  $5n > 20; n > 4$

14.  $\frac{n}{-2} \leq 14; n \geq -28$

15. Sample:  $\frac{w}{5} \geq 40; w \geq 200$