

Inequalities

Introduction to Inequalities

Solving Inequalities by Multiplying or Dividing

Example 1

Solve each inequality and graph the solutions.

1. $3b > 27$

2. $-40 \geq 8b$

3. $\frac{d}{3} > 6$

4. $24d \leq 6$

5. $1.1m \leq 1.21$

6. $\frac{-k}{3} < 6$

7. $9s > -18$

8. $\frac{4}{5} \geq \frac{r}{2}$

Example 2

Solve each inequality and graph the solutions.

9. $-2x < -10$

10. $\frac{b}{-2} \geq 8$

11. $-3.5n < 1.4$

12. $2 > \frac{1}{3}g$

13. $\frac{d}{-6} < \frac{1}{2}$

14. $-10h \geq -6$

15. $12 > \frac{t}{-6}$

16. $-\frac{1}{2}m \geq -7$

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Example 3

17. **Travel** Tom saved \$550 to go on a school trip. The cost for a hotel room, including tax, is \$80 per night. Write an inequality to show the number of nights Tom can stay at the hotel.

Sample Worksheet

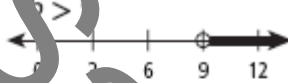
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1. $3b > 27$

$$\frac{3b}{3} > \frac{27}{3}$$

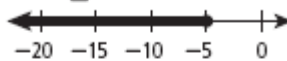


2. $-40 \geq 8b$

$$\frac{-40}{8} \geq \frac{8b}{8}$$

$$-5 \geq b$$

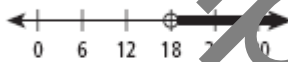
$$b \leq -5$$



3. $\frac{a}{3} > 6$

$$3\left(\frac{a}{3}\right) > 3(6)$$

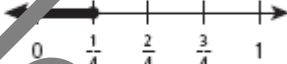
$$a > 18$$



4. $24d \leq 6$

$$\frac{24d}{24} \leq \frac{6}{24}$$

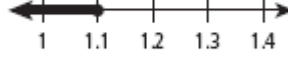
$$d \leq \frac{1}{4}$$



5. $1.1m \leq 1.21$

$$\frac{1.1m}{1.1} \leq \frac{1.21}{1.1}$$

$$m \leq 1.1$$



6. $\frac{2}{3}k > 6$

$$\frac{3}{2}\left(\frac{2}{3}k\right) > \frac{3}{2}(6)$$

$$k > 9$$



7. $9s > -18$

$$\frac{9s}{9} > \frac{-18}{9}$$

$$s > -2$$

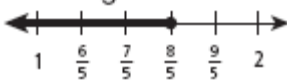


8. $\frac{4}{5} \geq \frac{r}{2}$

$$2\left(\frac{4}{5}\right) \geq 2\left(\frac{r}{2}\right)$$

$$\frac{8}{5} \geq r$$

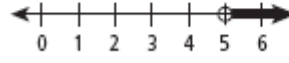
$$r \leq \frac{8}{5}$$



9. $-2x < -10$

$$\frac{-2x}{-2} > \frac{-10}{-2}$$

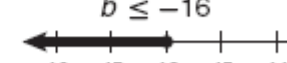
$$x > 5$$



10. $\frac{b}{-2} \geq 8$

$$-2\left(\frac{b}{-2}\right) \leq -2(8)$$

$$b \leq -16$$



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11. $-3.5n < 1.4$
 $\frac{-3.5n}{-3.5} > \frac{1.4}{-3.5}$
 $n > -0.4$

12. $4 > -8g$
 $\frac{4}{-8} < \frac{-8g}{-8}$
 $-\frac{1}{2} < g$
 $g > -\frac{1}{2}$

13. $\frac{d}{-6} < \frac{1}{2}$
 $(-6)\frac{d}{-6} > (-6)\frac{1}{2}$
 $d > -3$

14. $-10h \geq -6$
 $\frac{-10h}{-10} \leq \frac{-6}{-10}$
 $h \leq 0.6$

15. $12 > \frac{t}{-6}$
 $-6(12) < -6\left(\frac{t}{-6}\right)$
 $-72 < t$
 $t > -72$

16. $-\frac{1}{2}m \geq -7$
 $-2\left(-\frac{1}{2}m\right) \leq -(-7)$
 $m \leq 7$

17. Let n represent the number of nights he can stay.

$$80n \leq 550$$

$$\frac{80n}{80} \leq \frac{550}{80}$$

$$n \leq 6.875$$

Tom can stay only a whole number of nights. So Tom can stay 0, 1, 2, 3, 4, 5, or 6 nights.