

Solve Inequalities with Fractions

The variable is multiplied by one fraction →  
Multiply by the reciprocal to cancel out the fraction

Ex. 1  $\left(\frac{4}{3}\right)\left(-\frac{3}{4}w\right) > \frac{12}{1}\left(\frac{4}{3}\right)$   
 $\frac{12}{12}w < -\frac{48}{3}$   
 $w < -16$

You Try  $3\left(\frac{9}{3}\right)\left(\frac{8}{9}k\right) \leq \frac{16}{1}\left(\frac{9}{8}\right)$   
 $\frac{72}{72}k \leq \frac{144}{8}$   
 $k \leq 18$

A whole algebraic expression is being divided →  
Multiply by the denominator to cancel out the denominator

Ex. 2  $\frac{3x-4}{2} \leq -5(2)$   
 $3x-4 \leq -10$   
 $+4 \quad +4$   
 $\frac{3k}{3} \leq -\frac{6}{3}$   
 $x \leq -2$

You Try  $4\left(\frac{7}{7}\right)\frac{5x-7}{7} \leq 6(3)$   
 $5x-7 \leq 18$   
 $+7 \quad +7$   
 $\frac{5x}{5} \leq \frac{25}{5}$   
 $x \leq 5$

Choose Solutions to Inequalities

Solve the inequality →  
Choose a solution that makes the statement TRUE

Ex. 5  $(m) - 8 - 4m < -23$   
 a. -5  
 $-3m - 8 < -23$   
 $+8 \quad +8$   
 $-3m < -15$   
 $\frac{-3m}{-3} < \frac{-15}{-3}$   
 $m > 5$   
 b. 5  
 c. 6  
 d. 4

You Try 6  $4(1-3k) > -92$   
 a. 8.5  
 $4 - 12k > -92$   
 $-4 \quad -4$   
 $-12k > -96$   
 $\frac{-12k}{-12} > \frac{-96}{-12}$   
 $k < 8$   
 b. 8  
 c. -8  
 d. 9

Write & Solve 2-Step Inequalities

- 1) Find the inequality key words/phrases and the math operation key words/phrases.
- 2) Write and solve the inequality.
- 3) Answer the question by rounding based off the inequality symbol.

Ex. 7 Sammy wants to keep no less than \$65 at the end of the day. Sammy owes Matt \$3, but he makes \$5 for every souvenir item he sells. How many souvenirs must Sammy sell? Write and solve an inequality to answer the question.

$5s - 3 \geq 65$   
 $+3 \quad +3$   
 $5s \geq 68$   
 $\frac{5s}{5} \geq \frac{68}{5}$   
 $s \geq 13.6$   
 \* no less than 14 souvenirs

You Try 8 Joanne is making holiday ornaments. She has already made 45. She gives away 2 ornaments per family member. If she wants to keep at least 10 ornaments for her own decorations, how many family members can she give ornaments to? Write and solve an inequality to answer the question.

$-2x + 45 \geq 10$   
 $-45 \quad -45$   
 $-2x \geq -35$   
 $\frac{-2x}{-2} \geq \frac{-35}{-2}$   
 $x \leq 17.5$   
 round down  
 @ most 17 family members.