

NAME: \_\_\_\_\_

Key

DATE: \_\_\_\_\_

HOUR: \_\_\_\_\_

Section 8.6 Inequalities Practice

Solve each inequality. Check your solutions.

1)  $\frac{1}{3v} + \frac{1}{4v} < \frac{1}{2}$

LCM:  $3 \cdot 4 \cdot v = 12v$

1.  $v=0$

2.  $\frac{1}{3v} \cdot \frac{12v}{1} + \frac{1}{4v} \cdot \frac{12v}{1} < \frac{1}{2} \cdot \frac{12v}{1}$

$x < 0$  or  $x > 2$

$4 + 3 < 6v$

Check:

$7 < 6v$

$\frac{7}{6} < v$

$1.2 < v$



$x = -1$   $-\frac{1}{3} + -\frac{1}{4} < \frac{1}{2}$

$-\frac{7}{12} < \frac{1}{2}$  (T)

$x = 1$   $\frac{1}{3} + \frac{1}{4} < \frac{1}{2}$

$\frac{7}{12} < \frac{1}{2}$  (F)

$x = 2$   $\frac{1}{6} + \frac{1}{8} < \frac{1}{2}$

$\frac{7}{24} < \frac{1}{2}$  (T)

2)  $\frac{7}{a+1} > 7$  1.  $a = -1$

2.  $(a+1) \cdot \frac{7}{(a+1)} > 7(a+1)$

Check:

$7 > 7a + 7$

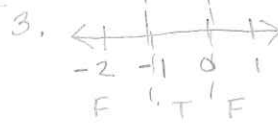
$x = -2$   $\frac{7}{-1} > 7$  false

$0 > 7a$

$x = -0.5$   $\frac{7}{0.5} > 7$  true

$0 > a$

$x = \frac{7}{2} > 7$  false



$-1 < x < 0$

3)  $\frac{10}{m+1} > 5$  1.  $m = -1$

2.  $(m+1) \cdot \frac{10}{m+1} > 5(m+1)$  Check:

$10 > 5m + 5$

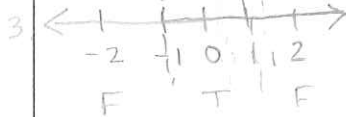
$x = -2$   $\frac{10}{-1} > 5$  False

$5 > 5m$

$x = -0.5$   $\frac{10}{.5} > 5$  True

$1 > m$

$x = 2$   $\frac{10}{3} > 5$  False



$-1 < x < 1$

4)  $5 + \frac{1}{y} > \frac{16}{y}$  LCM:  $y$

1.  $y = 0$

2.  $5 \cdot y + \frac{1}{y} \cdot y > \frac{16}{y} \cdot y$

3. Check

$5y + 1 > 16$

$x = -1$

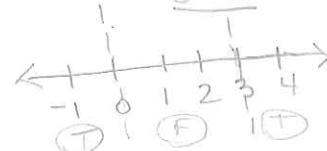
$5y > 15$

$5 - 1 > -16$  True

$y > 3$

$x = 1$

$5 + 1 > 16$  false



$x = 4$   $5 + \frac{1}{4} > \frac{16}{4}$  True

$x < 0$  or  $x > 3$

5)  $7 - \frac{2}{b} < \frac{5}{b}$  LCM:  $b$

1.  $b = 0$

2.  $7 \cdot b - \frac{2}{b} \cdot b < \frac{5}{b} \cdot b$

Check:

$7b - 2 < 5$

$x = -1$

$7 + 2 < -5$  false

$7b < 7$

$x = 0.5$

$7 - 4 < 10$  True

$b < 1$

$x = 2$

$7 - 1 < \frac{5}{2}$  False



$0 < x < 1$

6)  $1 + \frac{5}{x-1} \leq \frac{7}{6}$  LCM  $6(x-1)$

1.  $x = 1$

2.  $1 \cdot 6(x-1) + \frac{5}{x-1} \cdot 6(x-1) \leq \frac{7}{6} \cdot 6(x-1)$

$6x - 6 + 30 \leq 7x - 7$

$6x + 24 \leq 7x - 7$

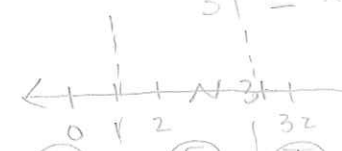
$x = 0$

$1 - 5 \leq \frac{7}{6}$  True

$31 \leq x$

$x = 2$

$1 + 5 \leq \frac{7}{6}$  False



$x = 32$

$1 + \frac{5}{31} \leq \frac{7}{6}$

$\frac{36}{31} \leq \frac{7}{6}$

$1.16 \leq 1.17$  True

$x < 1$  or  $x > 31$

Name : Key

Score : \_\_\_\_\_

Teacher : \_\_\_\_\_

Date : \_\_\_\_\_

### Solving Rational Expressions

Solve each equation.

1)  $\left[ \frac{1}{24n^2} = \frac{1}{12n^2} + \frac{1}{n} \right] 24n^2$   
 Check:  
 $1 = 2 + 24n$   
 $-1 = 24n$   
 $-\frac{1}{24} = n$   
 $\frac{1}{24(\frac{1}{24})^2} = \frac{1}{12(\frac{1}{24})^2} + \frac{1}{(-\frac{1}{24})}$   
 $24 = 48 - 24$   
 $24 = 24 \checkmark$

6)  $\left[ \frac{3}{x-6} - \frac{1}{x^2-10x+24} = \frac{1}{x-6} \right] (x-6)(x-4)$   
 LCM =  $(x-6)(x-4)$   
 Check:  
 $3(x-4) - 1 = x-4$   
 $3x-12-1 = x-4$   
 $3x-13 = x-4$   
 $2x = 9$   
 $x = 4.5$   
 $-\frac{3}{-1.5} - \frac{1}{-0.75} = \frac{1}{-1.5}$   
 $-2 + 1.3 = -0.7$   
 $-0.7 = -0.7 \checkmark$

2)  $\left[ \frac{1}{s} = \frac{4}{9s} + 8 \right] 9s$   
 $9 = 4 + 72s$   
 $s = 72s$   
 $\frac{5}{72} = s$   
 Check:  
 $14.4 = 6.4 + 8$   
 $14.4 = 14.4 \checkmark$

7)  $\left[ \frac{1}{x+9} + \frac{1}{x^2+x-72} = \frac{2}{x+9} \right] (x+9)(x-8)$   
 $x-8 + 1 = 2(x-8)$   
 $x-7 = 2x-16$   
 $9 = x$   
 Check:  
 $\frac{1}{18} + \frac{1}{18} = \frac{2}{18}$   
 $\frac{2}{18} = \frac{2}{18} \checkmark$

3)  $\left[ \frac{y-2}{22y^2} + \frac{10}{11y^2} = \frac{y+8}{11y^2} \right] 22y^2$   
 Check:  
 $y-2 + 10(2) = (y+8)(2)$   
 $y-2+20 = 2y+16$   
 $y+18 = 2y+16$   
 $2 = y$   
 $\frac{5}{22} = \frac{5}{22} \checkmark$

8)  $\left[ 8 + \frac{x^2-9x}{2x} = \frac{x-9}{2x} \right] 2x$   
 $16x + x^2 - 9x = x - 9$   
 $x^2 + 6x + 9 = 0$   
 $(x+3)(x+3) = 0$   
 $x = -3$   
 Check:  
 $8 + \frac{36}{-6} = \frac{-12}{-6}$   
 $8 - 6 = 2$   
 $2 = 2 \checkmark$

4)  $\left[ \frac{1}{p} + \frac{3p-5}{p^2-8p} = \frac{6p+12}{p^2-8p} \right] p(p-8)$   
 $p-8 + 3p-5 = 6p+12$   
 $4p-13 = 6p+12$   
 $-25 = 2p$   
 $-12.5 = p$   
 $\frac{1}{-12.5} + \frac{-42.5}{256.25} = \frac{-63}{256.25}$   
 $\frac{-252}{1025} = \frac{-252}{1025} \checkmark$

9)  $\left[ \frac{1}{12d^2} = \frac{1}{6d^2} - \frac{1}{d} \right] 12d^2$   
 $1 = 2 - 12d$   
 $-1 = -12d$   
 $\frac{1}{12} = d$   
 Check:  
 $12 = 24 - 12$   
 $12 = 12 \checkmark$

5)  $\left[ \frac{1}{b^2} = \frac{1}{25} \right] 25b^2$   
 $25 = b^2$   
 $\pm 5 = b$   
 Check:  
 $\frac{1}{25} = \frac{1}{25} \checkmark$

10)  $\left[ \frac{1}{r} = \frac{3}{11r} + 8 \right] 11r$   
 $11 = 3 + 88r$   
 $8 = 88r$   
 $\frac{1}{11} = r$   
 Check:  
 $11 = 3 + 8$   
 $11 = 11 \checkmark$