

**Today's Learning Target:** Name \_\_\_\_\_

I can write and evaluate models for direct, inverse, and joint variation.

**Self-Assessment:**

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**Evidence:**

H varies directly with A and inversely with B.

When H = 10, A = 2, and B = -1.

**Write a model.**

**Evaluate the model for when H = 20 and B = 3.**

4.  $20 = \frac{-5A}{3}$

$60 = -5A$

$A = -12$

1.  $H = k \frac{A}{B}$

2.  $10 = \frac{k \cdot (2)}{-1}$

$10 = -2k$

$-5 = k$

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When H = 10, A = 2, and B = -1.

**Write a model.**

**Evaluate the model for when H = 20 and B = 3.**

**Today's Learning Target:**  
I can graph reciprocal functions.

Name \_\_\_\_\_

**Self-Assessment:**

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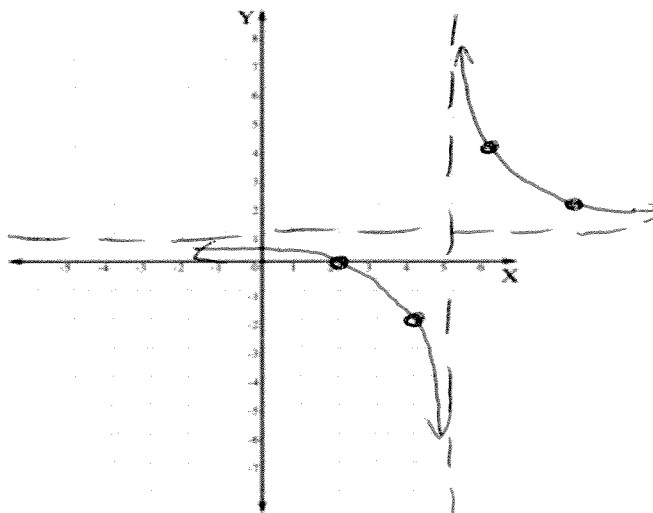
**Evidence:**

Graph the function.

$$f(x) = \frac{3}{x-5} + 1$$

← y + 1

2	0
3	
4	-2
5	err / undefined
6	4
7	
8	2



**Today's Learning Target:**  
I can graph reciprocal functions.

Name \_\_\_\_\_

**Self-Assessment:**

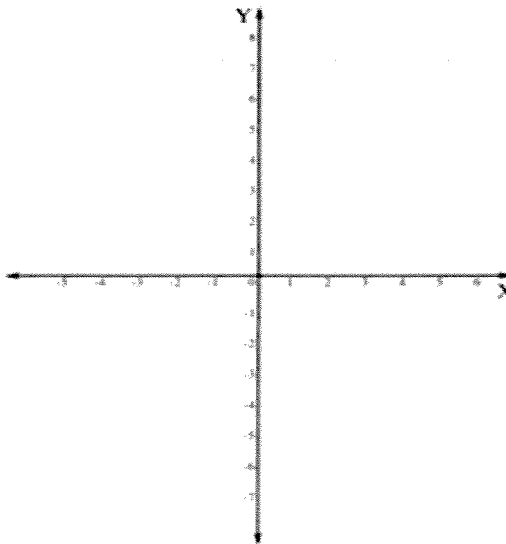
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**Evidence:**

Graph the function.

$$f(x) = \frac{3}{x-5} + 1$$



**Today's Learning Target:**

Name \_\_\_\_\_

I can identify the domain, range, horizontal and vertical asymptotes of a reciprocal function.

**Self-Assessment:**

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**Evidence:**

Identify the Domain, Range, Horizontal Asymptote, and Vertical Asymptote of the given function.

$$f(x) = \frac{-2}{x+9} + 4$$

→ Range:  $y \neq 4$  ... Horiz Asy.  $y = 4$   
↳ Dom:  $x \neq -9$  ... Vert. Asy.  $x = -9$

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**Self-Assessment:**

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**Evidence:**

Identify the Domain, Range, Horizontal Asymptote, and Vertical Asymptote of the given function.

$$f(x) = \frac{-2}{x+9} + 4$$

**Today's Learning Target:**

Name \_\_\_\_\_

I can simplify and identify restrictions of rational expressions.

**Self-Assessment:**

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**Evidence:**

Simplify and State the Restrictions.

$$\frac{x^2 - 3x}{x^2 - x - 6}$$

$$\frac{x(x-3)}{(x-3)(x+2)}$$

$$\frac{\cancel{x}(x-3)}{(\cancel{x-3})(x+2)}$$

$$\frac{x}{x+2}$$

$x \neq 3 \quad x \neq -2$

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**Today's Learning Target:**

Name \_\_\_\_\_

I can simplify and identify restrictions of rational expressions.

**Self-Assessment:**

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**Evidence:**

Simplify and State the Restrictions.

$$\frac{x^2 - 3x}{x^2 - x - 6}$$

Today's Learning Target:

Name \_\_\_\_\_

I can multiply, divide, and identify restrictions of rational expressions.

Self-Assessment:

\_\_\_\_\_

Evidence:

Simplify and State the Restrictions.

Ans:  $\frac{x+4}{x}$

$$\frac{6x^2 + 5x + 1}{2x^2 + x} \div \frac{3x^2 - 11x - 4}{x^2 - 16}$$

$$\frac{(3x+1)(2x+1)}{x(2x+1)} \div \frac{(3x+1)(x-4)}{(x+4)(x-4)} \Rightarrow \frac{(3x+1)(2x+1)}{x(2x+1)} \cdot \frac{(x+4)(x-4)}{(3x+1)(x-4)}$$

$x \neq 0 \rightarrow x \neq -\frac{1}{2} \rightarrow x \neq \pm 4 \rightarrow x \neq -\frac{1}{3}$

Today's Learning Target:

Name \_\_\_\_\_

I can multiply, divide, and identify restrictions of rational expressions.

Self-Assessment:

\_\_\_\_\_

Evidence:

Simplify and State the Restrictions.

$$\frac{6x^2 + 5x + 1}{2x^2 + x} \div \frac{3x^2 - 11x - 4}{x^2 - 16}$$

**Today's Learning Target:**

Name \_\_\_\_\_

I can add and subtract rational expressions.

**Self-Assessment:**

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**Evidence:**

Simplify the expression.

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

$$\frac{4x+1}{(x+2)(x-2)} - \frac{3}{(x-2)}$$

↑  
needs  
(x+2)

$$\frac{4x+1}{(x+2)(x-2)} - \frac{3(x+2)}{(x-2)(x+2)}$$

Num:  $4x+1 - 3(x+2)$   
 $4x+1 - 3x - 6$   
 $x - 5$

$$\frac{x-5}{(x+2)(x-2)}$$

$$x \neq \pm 2$$

**Today's Learning Target:**

Name \_\_\_\_\_

I can add and subtract rational expressions.

**Self-Assessment:**

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**Evidence:**

Simplify the expression.

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

Today's Learning Target:

Name \_\_\_\_\_


I can simplify complex fractions.

Self-Assessment:

Evidence:

Simplify the expression.

$$\frac{1}{\frac{x-2}{2+\frac{1}{x}}}$$

Long way 

$$\frac{1}{(x-2)} \div \left(2 + \frac{1}{x}\right) \rightarrow \frac{1}{(x-2)} \div \left(\frac{2x}{x} + \frac{1}{x}\right)$$

$$\frac{1}{x-2} \div \frac{2x+1}{x} \rightarrow \frac{1}{x-2} \cdot \frac{x}{2x+1}$$

Restr.  $x \neq 2$   
 $x \neq 0$   
 $x \neq -1/2$

Ans:  $\frac{x}{(x-2)(2x+1)}$  or  $\frac{x}{2x^2-3x-2}$

Today's Learning Target:

Name \_\_\_\_\_

I can simplify complex fractions.

Self-Assessment:

Evidence:

Simplify the expression.

$$\frac{1}{\frac{x-2}{2+\frac{1}{x}}}$$

Short way  
mult by  
LCD

$$(x-2)(x)$$

$$\frac{\cancel{(x-2)}(x) \cdot \frac{1}{\cancel{x-2}}}{(x-2)(x) \cdot 2 + \cancel{(x-2)}(x) \cdot \frac{1}{x}}$$

$$\frac{x}{2x^2-4x+x-2}$$

$\frac{x}{2x^2-4x+x-2}$  or  $\frac{x}{2x^2-3x-2}$  or  $\frac{x}{(x-2)(2x+1)}$

**Today's Learning Target:**

Name \_\_\_\_\_

I can solve rational equations while identifying extraneous solutions.

**Self-Assessment:**

\_\_\_\_\_

\_\_\_\_\_

**Evidence:**

Solve the rational equation.

$$\frac{7}{x^2-5x} + \frac{2}{x} = \frac{3}{2x-10}$$

$$\frac{7}{x(x-5)} + \frac{2}{\cancel{x}} = \frac{3}{2(x-5)}$$

↑ needs 2      ↑ needs 2 needs (x-5)      ↑ needs x

$$\frac{7 \cdot 2}{2x(x-5)} + \frac{2 \cdot 2 \cdot (x-5)}{2x(x-5)} = \frac{3x}{2x(x-5)}$$

Solve numerator

$$14 + 4x - 20 = 3x$$

$$4x - 6 = 3x$$

$$x - 6 = 0$$

$$x = 6$$

not a restriction on 6

**Today's Learning Target:**

Name \_\_\_\_\_

I can solve rational equations while identifying extraneous solutions.

**Self-Assessment:**

\_\_\_\_\_

\_\_\_\_\_

**Evidence:**

Solve the rational equation.

$$\frac{7}{x^2-5x} + \frac{2}{x} = \frac{3}{2x-10}$$

$x(x-5)$     $x$     $2(x-5)$

LCD way →  $2x(x-5)$

$$\cancel{2x(x-5)} \frac{7}{\cancel{x(x-5)}} + \cancel{2x(x-5)} \cdot \frac{2}{\cancel{x}} = \cancel{2x(x-5)} \frac{3}{\cancel{2(x-5)}}$$

$$14 + 4(x-5) = 3x$$

$$x = 6$$