

Name: key

Expert Name: _____

Inequalities: Writing/setting up inequalities from a real-world problem, solving inequalities, and graphing inequalities on a number line

Problem	STEPS/PLAN	Example
<p>Claudia spends <u>more than \$950</u> on paper for her business every year. The company Claudia orders her paper from charges <u>\$32 per box</u> plus an <u>\$86 shipping fee</u>. Write, solve, and graph an inequality to best represent the number of boxes of paper, P, Claudia buys each year.</p> $32P + 86 > 950$ $-86 \quad -86$ $\frac{32P}{32} > \frac{864}{32}$ $P > 27$	<ol style="list-style-type: none"> 1. Highlight or underline important information. 2. Write an inequality to match the situation. 3. Solve the inequality to find what values will work for the problem. <ul style="list-style-type: none"> - Get the variable by itself on one side of the inequality - Flip inequality if multiplying or dividing both sides by negative # 4. Graph the solution on a number line. <ul style="list-style-type: none"> - Start with plotting the constant with either open circle or closed circle - Shade to the left or right depending on the inequality 	<p>Celia has <u>at most \$30</u> to spend at a carnival. Admission costs <u>\$5.00</u>, lunch will cost <u>\$6</u>, and <u>each ride ticket costs \$1.25</u>. Write, solve, and graph the inequality that represents the number of ride tickets x that Celia can buy.</p> $5 + 6 + 1.25x \leq 30$ $11 + 1.25x \leq 30$ $-11 \quad -11$ $\frac{1.25x}{1.25} \leq \frac{19}{1.25}$ $x \leq 15.2$

Problem	STEPS/PLAN	Example
<p>The length of a rectangular garden is <u>20 feet longer than the width, w</u>. Find the length of the garden.</p> $L = 20 + w$ $P = 2L + 2w$ $100 = 2(20 + w) + 2w$ $100 = 40 + 2w + 2w$ $60 = 4w$ $15 = w$ $L = 20 + 15$ $L = 35 \text{ ft}$	<p>Steps to Simplify:</p> <ol style="list-style-type: none"> 1. Distribute the number AND sign in front of the parenthesis. 2. Identify any <u>like terms</u> 3. Combine the <u>like terms</u> using the sign in front. <p>Steps to Solve:</p> <ol style="list-style-type: none"> 1. Underline/circle important parts of the word problem. 2. Draw a picture if possible. Label ALL parts of the picture. 3. Write an equation that matches your picture. 4. Solve your equation. 5. Check to make sure you are answering the QUESTION. 	<p>Sample:</p> $3(-2x + 2) - (x - 5)$ $-6x + 6 - x + 5$ $-7x + 11$ <p>Sample:</p> <p>The measure of an angle is <u>15° less than its supplement</u>. Find the <u>measure of each angle</u>.</p> $x - 15 + x = 180$ $2x - 15 = 180$ $+15 \quad +15$ $\frac{2x}{2} = \frac{195}{2}$ $x = 97.5$ $97.5 - 15 = 82.5$

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Simplifying vs. Solving Equations: Distribution, combining like terms, writing equation from real-world problems, solving equation

$<$	$>$	\leq	\geq
<ul style="list-style-type: none"> • Is fewer than • Is less than 	<ul style="list-style-type: none"> • Is more than • Is greater than 	<ul style="list-style-type: none"> • Is less than or equal to • No more than • Is at most 	<ul style="list-style-type: none"> • Is greater than or equal to • No less than • Is at least

OPEN CIRCLE	CLOSED CIRCLE
$<$ $>$	\leq \geq

expression - no equal sign

simplify \rightarrow don't solve, just combine like terms

\uparrow same variable & exponent

equation - has equal sign

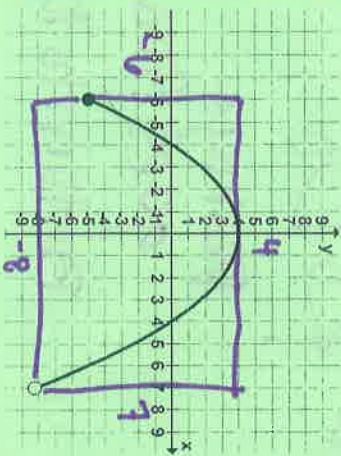
solve \rightarrow use inverse operations

Name: Kelly

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Domain and Range: Describing where a graph is located on a plane

Example 1



Domain:

$$\{x | -4 \leq x < 10\}$$

Range:

$$\{y | -8 \leq y \leq 4\}$$

Steps to find Domain:

1. Determine if the graph is continuous or discrete.

a. If the graph is discrete – list out each x & y value.

b. If the graph is continuous – frame (draw a box around) the graph

2. Find the LEFT X-Value.

3. Find the RIGHT X-Value.

4. Write an inequality $LEFT < x < RIGHT$. If there is a CLOSED circle or a SOLID line, put a line under the inequality (\leq)

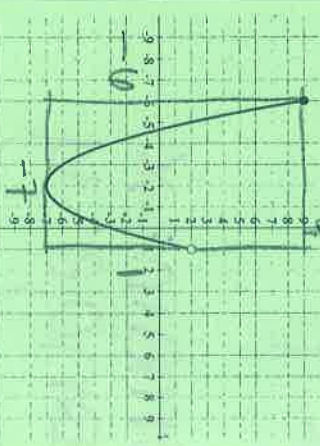
Steps to find Range:

1. Using your frame, find the BOTTOM Y-Value.

2. Find the TOP Y-Value.

3. Write an inequality $BOTTOM < y < TOP$. If there is a CLOSED circle or a SOLID line, put a line under the inequality (\leq)

Sample
continuous



Domain:

$$\{x | -4 \leq x < 10\}$$

↑
open circle
left x-value right x-value

Range:

$$\{y | -7 \leq y \leq 9\}$$

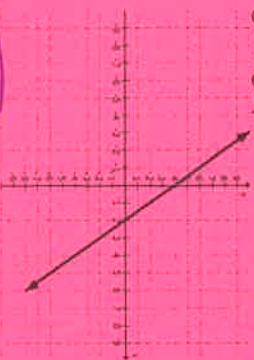
bottom y-value top y-value

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Parent Functions: Identifying the parent function equation for a graph or a set of data

1. What is the parent function of the given graph?



- A. $y = x$
B. $y = -2x + 4$
C. $y = -x$
D. $y = x^2$

2. What is the parent function of the following data set?
 $\{(-6, 7), (-2, -1), (2, -1), (8, 14)\}$

- A. $y = x$
B. $y = x^2$
C. $y = |x|$
D. $y = 2^x$
- don't know
- Not a line!

From a Graph

1. Determine which parent functions you know: Linear Quadratic

2. Eliminate the equations that are NOT parent functions you know.

3. Decide which parent function your graph looks like

- a line - choose: linear or $y = x$
- a U - choose: quadratic or $y = x^2$

From a Set of Points

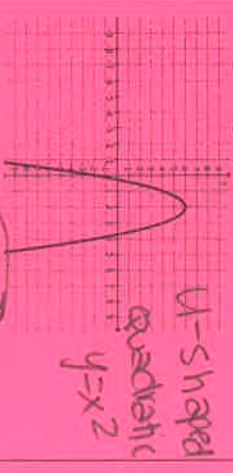
1. Plot the points on a coordinate plane.

2. Eliminate the equations that are NOT parent functions you know.

3. Decide which parent function your graph looks like

- a line - choose: linear or $y = x$
- a U - choose: quadratic or $y = x^2$

Sample. What is the parent function of the given graph?



- A. $y = x$
B. $y = x^2$
C. $y = -x^2 + 6$
D. $y = -x^2 + 6$
- no negative numbers

Sample. What is the parent function of the following data set?
 $\{(-6, -1), (-4, 0), (2, 3), (8, 6)\}$

- A. $y = x$
B. $y = x^2$
C. $y = |x|$
D. $y = 2^x$
- not linear or quadratic
- LOOKS like a line!

DR
 $x < y$

Domain: x
Range: y

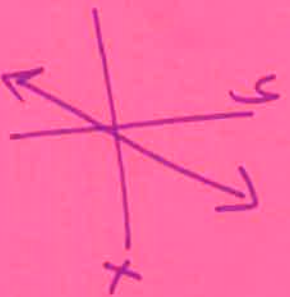
D, L, R the P, B, B, T

domain
goes from
left to right

range
goes from
bottom to top

Linear

$$y = x$$



Quadratic

$$y = x^2$$

