Name _____ MYP Level 4: Algebra I

Warm Up: Lesson 11: Solution Sets for Equations and Inequalities

1.) Can you create an equation that is never true? _____

2.) Can you create an equation that is true when x = 0? _____

Lesson

1.) Consider the equation: $x^2 = 3x + 4$

Let's HUNT for an answer:

x- value	the equation	truth value

We can describe our solution set in any of the following ways:

IN WORDS:

IN SET NOTATION:

GRAPHICALLY ON A NUMBER LINE:

2.) Depict the solution set of $7 + p = 12$ in words, in set notation, and graphically.
(Is a table necessary?)

3.) Depict the solution set of $a^2 = 25$ in words, set notation, and graphically.

4.) Depict the solution set of $a^2 = -25$ in words, set notation, and graphically.

Symbol	Meaning	Graphic Representation
$<$		
$>$		
$\leq$		
$\geq$		

Set Notation:

- If possible list the elements in a set. Examples:

- If it is not possible to list all the elements then use the following notation:

  { variable number type | a description }

  - The vertical bar "|" is read as "that" or "such that"
  - Examples: $\{x$ real $|x > 0\}$ reads as _____

    $\{y$ real $| y \neq 0\}$ reads as _____

    $\{p$ integer $| -3 \leq p < 100\}$ reads as _____

5.) Depict the solution set of $\frac{x}{x} = 1$ for x, over the set of positive, real numbers. Depict your answer in words, in set notation, and graphically. (Maybe a table would help here!!)

Words:

Set Notation:

Graphically:

6.) What is the solution set for x: $x(3 + x) = x \cdot 3 + x^2$

Words:

Set Notation:

Graphically:

7.) Can you come up with another equation, similar to #6 that would always be true?

Word	Definition	Examples
Identity		

8.) Identify the properties below that explain why each of the following equations is an identity:

a.) $2x^2 + 4x = 2(x^2 + 2x)$

b.) $2x^2 + 4x = 4x + 2x^2$

c.) $2x^2 + 4x = 2x(2 + x)$

9.) Create an identity for each of the following. There is more than one correct answer… see if you can write more than one!

a.) 2x – 5 =

b.) $x^2 + x =$

c.) $4 \cdot x \cdot y \cdot z =$

d.) $(x + 2)^2$ =

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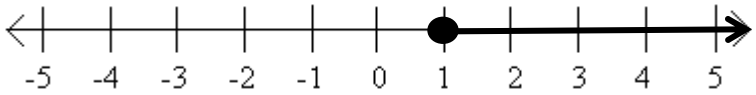
Classwork/Homework: Lesson 11: Solution Sets for Equations and Inequalities

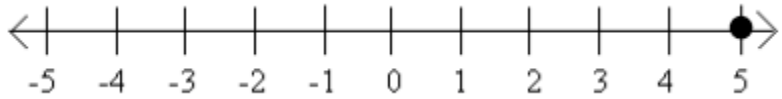
1.) Here is the graphical representation of a set of real numbers:



a.) Describe this set of real numbers in words.

b.) Describe this set of real numbers in set notation.

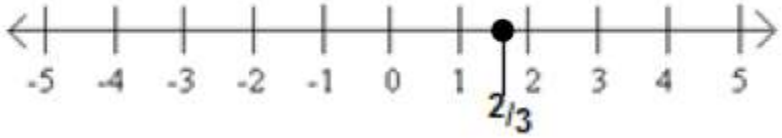
2.)



a.) words:

b.) set notation:

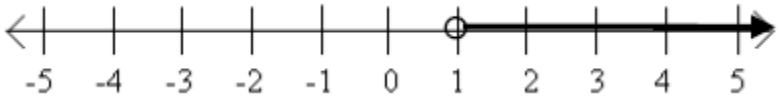
3.)



a.) words:

b.) set notation:

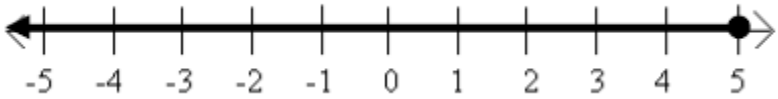
4.)



a.) words:

b.) set notation:

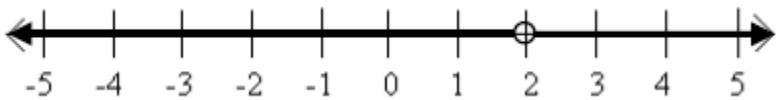
5.)



a.) words:

b.) set notation:

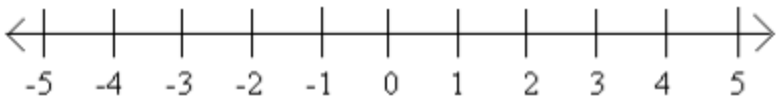
6.)



a.) words:

b.) set notation:

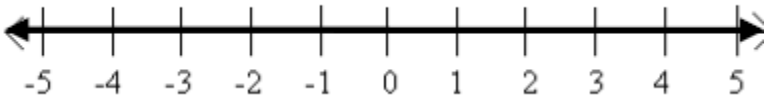
7.)



a.) words:

b.) set notation:

8.)



a.) words:

b.) set notation:

9.) Depict the solution set of the following in words, in set notation and graphically.

a.) $z^2 = 4$

words:
set notation:
graphically:

b.) $z - 3 = 2$

c.) $z^2 + 1 = 2$

d.) $z = 2z$

10.) Indicate whether each of the following equations is an identity? Explain your answer.

a. $3(x + 1) = 3x + 1$

b. $x + 2 = 2 + x$

c. $4x(x + 1) = 4x + 4x^2$

d. $3x(4x)(2x) = 72x^3$