

Warm-Up:

Determine if a valid conclusion follows from the statement below.

If Joel does not finish his dinner, then he will not eat dessert.

1) Joel left broccoli on his dinner plate.

Joel will not eat dessert

Find a counterexample.

2) *If a person is watching a musical, then that person must be in New York City.*

at MHS
on TV
in California

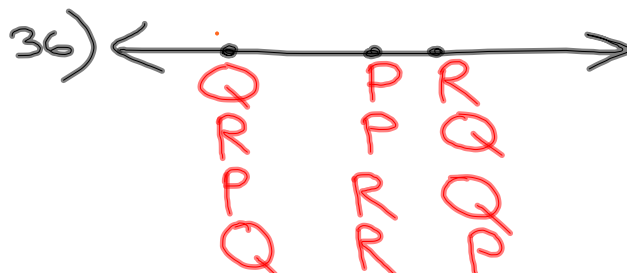
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24, 36, 33

24) The sum of the digits of a number is a multiple of 9 when the number is divisible by 9.

If the sum of the digits of a number is a multiple of 9, then the number is divisible by 9.

33) If $4n - 8 \geq 52$, then $n > 15$
 $n = 15$



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Section 1-8: Number Systems

Positive numbers are listed to the right of zero on the number line. Positive numbers are greater than zero.

Negative numbers are listed to the left of zero on the number line. Negative numbers are less than zero.

Zero is neither positive nor negative.

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Square roots are one of two equal factors of a number.

A square root with no sign is the positive square root.

A square root with a negative sign is the negative square root.

Example: $\sqrt{49} = 7$

$$-\sqrt{0.81} = -0.9$$

$$\pm\sqrt{9} = \pm 3$$

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Name	Definition	Examples
Real Numbers	Any number on the number line.	$1.5, \frac{1}{3}, 19$
Rational Numbers	Any number that can be written as a fraction using integers or as a terminating or repeating decimal.	$1.\bar{3}, 0.25, \frac{1}{8}$
Integers	A positive or negative number that can be written in non-fraction form or without a decimal.	$\dots -3, -2, -1, 0, 1, 2, 3, \dots$
Whole Numbers	Any non-negative integer.	$0, 1, 2, 3, 4, \dots$
Natural Numbers	Any positive integer.	$1, 2, 3, 4, 5, \dots$
Irrational Numbers	Any real number that is not rational.	$\pi, \sqrt{2}$

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Name the sets of numbers to which each number belongs.

- 1) $\sqrt{17}$ Real, Irrational
- 2) $\frac{1}{6}$ Real, Rational
- 3) $\sqrt{169} = 13$ Real, Rational, Integer, Whole, Natural

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The Closure Property:

A set of numbers is closed under a certain operation if every number from that set creates another number from that set using the given operation.

ie. Real Numbers are closed under addition because any real number plus any real number equals a real number.

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Examples:

Determine whether each number is closed under the indicated operation.

4) natural numbers, division

$$7 \div 5 = 1.4$$

Not Closed

5) real numbers, subtraction

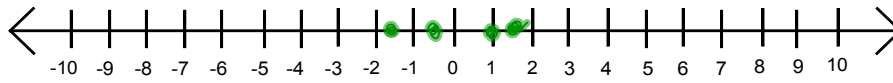
Closed

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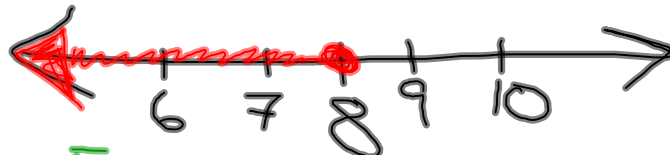
Examples:

Graph each set of numbers.

6) $\{-3/2, -1/2, 1, 3/2\}$

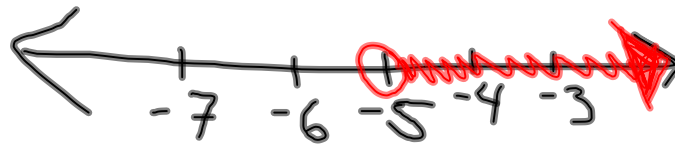


7) $y \leq 8$



8) $z > -5$

$$-5 < z$$



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Homework: Worksheet 1-8

Section 1-8 Vocab

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