Concept 13: Rational & Irrational Numbers

DUE DATE: Friday, January 31st
(initial score in the gradebook)
DEADLINE: Friday, February 7th
(on THE LIST if note completed)

Pre-Quiz Score = _____/5
Score 5 = Level 4
Score 3,4 = Level 3
Score 0,1,2 = Level 2

(C) Level 2

1. **Watch the video (Level 2: Rational & Irrational #s)**
   Complete the Notes & Basic Practice
   Check the Key and Correct Mistakes

2. **Complete 2 of the following tasks**

IXL Practice	Worksheets	Creating
D1 (8^{th}) All the way to 100 Score = _____	Level 2 Worksheet Rational & Irrational #s	Vocabulary Poster for the term Rational or Irrational #

3. **Take the Schoology Quiz (Level 2: Rational & Irrational #s)**
   Score of 4 or higher move to level 3
   Score of 3 or less, complete 1 of the following tasks

Level 2
Quiz Score:

BrainGenie	Create	Alternate Option
Ask Mr. Sieling for Log in information	Vocabulary Poster for the term Rational or Irrational #	Choose the option for Step 2 that you haven't completed yet

Mr. Sieling's Signature _____

(B) Level 3

1. **Watch the video (Level 3: Irrational & Rational #s)**
   Complete the Notes & Basic Practice, Check the Key and Correct Mistakes
2. **Complete 2 of the following tasks**

IXL Practice	Worksheets	Creating
A8 (8^{th}) All the way to 100 Score = _____	Level 3: Rational & Irrational #s	Vocab Poster for whole #, natural #, integer, rational #, irrational # or real #

3. **Take the Schoology Quiz (Level 3: Irrational & Rational #s)**
   Score of 4 or higher move to level 4
   Score of 3 or less, complete 1 of the following tasks

Level 3 Quiz Score:

BrainGenie	Creating	Alternate Option
Ask Mr. Sieling For login info	Vocab Poster for whole #, natural #, integer, rational #, irrational # or real #	Choose the option for Step 2 that you haven't completed yet

Mr. Sieling's Signature:_____

(A) Level 4

1. **Watch the video (Level 4: Irrational & Rational #s)**
   Complete the Notes & Basic Practice, Check the Key and Correct Mistakes
2. **Complete 2 of the following tasks**

IXL Practice	Worksheets	Creating
H1 (Alg2) All the way to 100 Score = _____	Level 4: Irrational & Rational #s	Vocab Poster for Irrational #, rational #, real #, or imaginary #

3. **Take the Schoology Quiz (Level 4: Irrational & Rational #s)**
   Score of 4 or higher, Congratulations Math Master!
   Score of 3 or less, complete 1 of the following tasks

Level 4 Quiz Score:

BuzzMath	Fix Mistakes	Alternate Option
Complete the following task in BuzzMath	Write up the questions you got wrong and hand it in. All work and steps must be shown.	Choose the option for Step 2 that you haven't completed yet

Mr. Sieling's Signature:_____

Notes Level 2:

Goals:

Identify Rational & Irrational #s

Concept # _____

Notes:

Big Ideas	Examples/Details

Level 2 Practice:

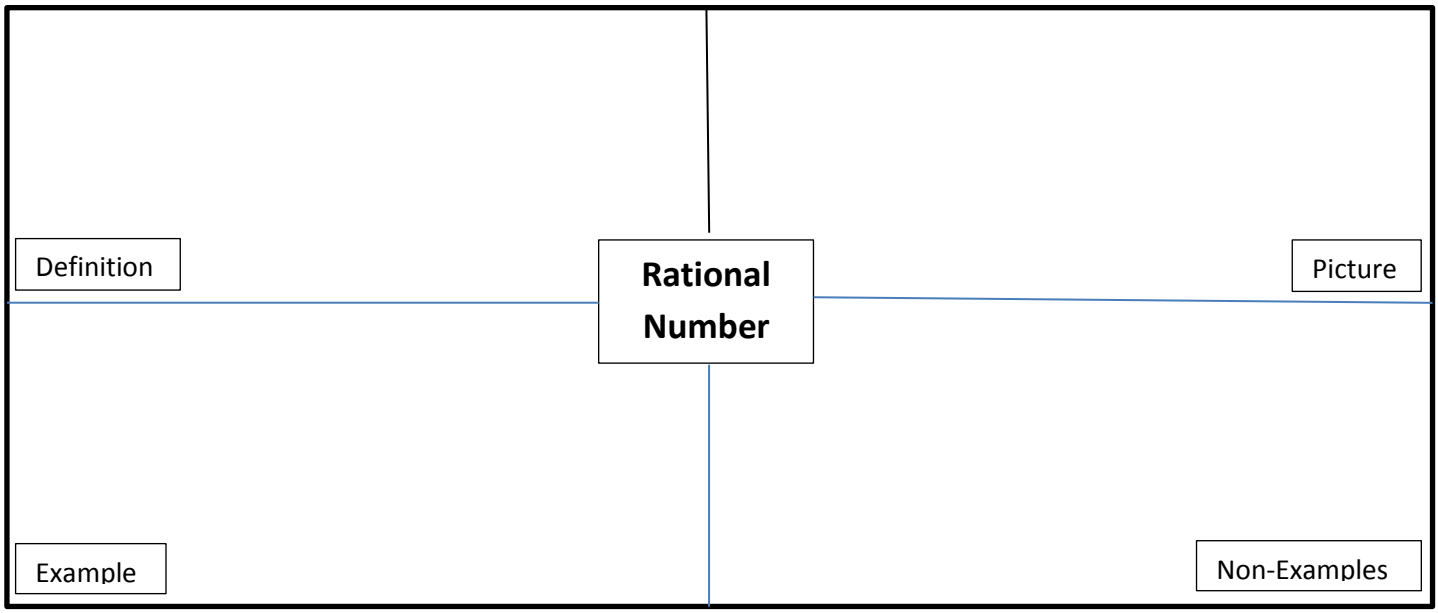
Fill in the charts below. Each word should have:

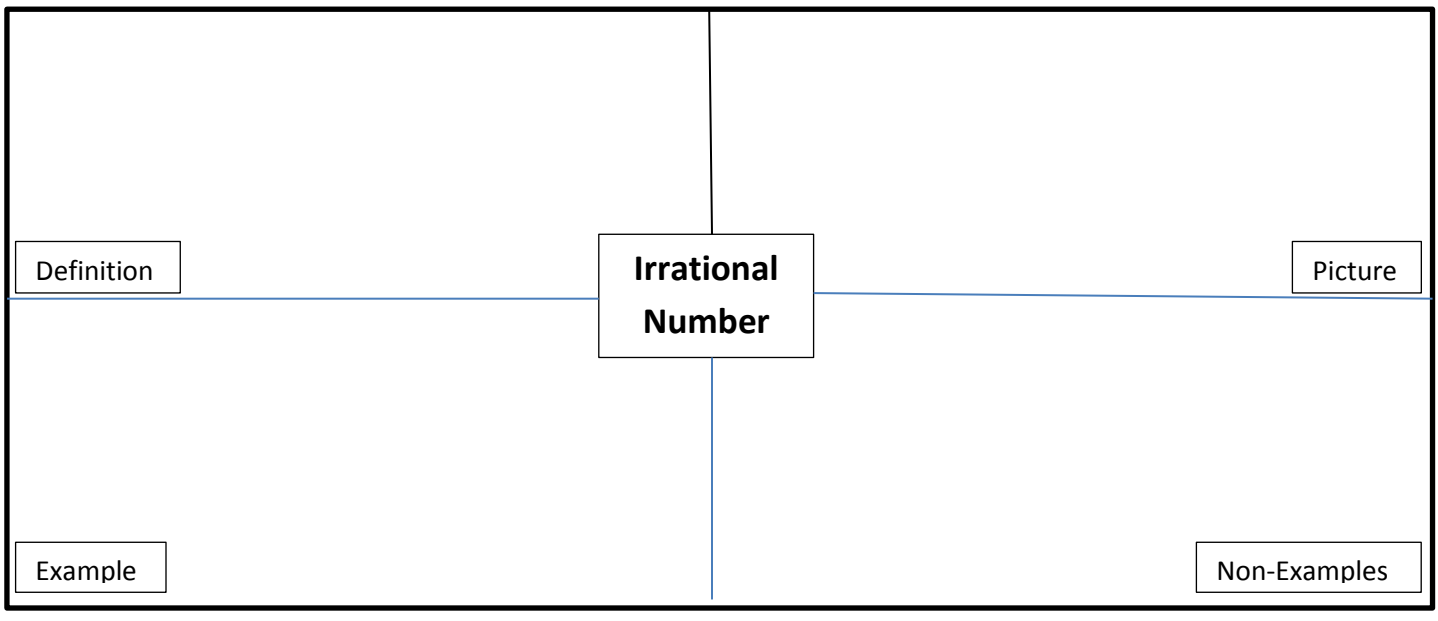
Definition: in your own words describe the term

Picture: draw a picture that represents the meaning of the word

Examples: List out examples of the term

Non-Examples: List out non-examples of the term





Worksheet Level 2:

Goals:

Identify Rational & Irrational #s

Concept # _____

Practice #1

Classify each number as RATIONAL (Q) or IRRATIONAL (I)

1) $\sqrt{47}$

2) $\frac{11}{9}$

3) $\frac{19}{4}$

4) $\sqrt{96}$

5) $\frac{19}{14}$

6) $\frac{15}{4}$

7) $\sqrt{84}$

8) -9

9) $\sqrt{72}$

10) 0

11) $\frac{8}{9}$

12) 3

13) 7

14) -7

15) -4

16) 5

17) -11

18) -14

19) $\sqrt{59}$

20) 9

Practice #2

Tell whether each expression is *rational* or *irrational*.

1. $-\sqrt{64}$

2. $\sqrt{1600}$

3. $\pm\sqrt{160}$

4. $\sqrt{144}$

5. $\sqrt{125}$

6. $-\sqrt{340}$

7. $\sqrt{1.96}$

8. $-\sqrt{0.09}$

Practice #3

1. Which set below includes only irrational numbers?

   A. $\left\{-\sqrt{12},\ -3.7\overline{6},\ \sqrt{36},\ 4.3858\ldots\right\}$

   B. $\{-7.2322\ldots,\ \sqrt{5},\ \sqrt{15},\ 8.27451\ldots\}$

   C. $\left\{-5.6,\ \sqrt{14},\ 6.3\overline{245},\ \sqrt{81}\right\}$

   D. $\left\{-\sqrt{8},\ .3\overline{7},\ 3.265165065\ldots,\ \sqrt{90}\right\}$

2. Which set contains only irrational numbers

   A. $\{-8,\ -\sqrt{4},\ \sqrt{3},\ \sqrt{16}\}$

   B. $\{-\sqrt{64},\ \sqrt{0},\ \sqrt{19},\ \sqrt{13}\}$

   C. $\{-\sqrt{26},\ -\sqrt{16},\ \sqrt{2},\ \sqrt{8}\}$

   D. $\{-\sqrt{50},\ -\sqrt{13},\ \sqrt{10},\ \sqrt{54}\}$

3. Which set contains an irrational number?

   A. $\left\{2300,\ 0.48,\ \frac{13}{1}\right\}$

   B. $\left\{18,\ 0.1,\ \frac{12}{5}\right\}$

   C. $\left\{\frac{3}{8},\ 4,\ \sqrt{52}\right\}$

   D. $\{0.333\ldots,\ \sqrt{4},\ 10\}$

4. Which of the following is an irrational number?

   A. $\sqrt{16}$ B. $\sqrt{144}$ C. $\sqrt{4}$ D. $\sqrt{3}$

5. Which of the following is an irrational number?

   A. $\frac{4}{3}$ B. $\sqrt{24}$ C. $\sqrt{81}$ D. -4.07

6. Which list contains only rational numbers?

   A. $-4,\ 0,\ \frac{1}{4},\ \sqrt{\frac{9}{4}}$ B. $0,\ \frac{1}{2},\ 1.5,\ \sqrt{8}$

   C. $-2,\ 1,\ 2.\overline{6},\ \sqrt{\frac{3}{2}}$ D. $0,\ 0.\overline{36},\ 4,\ \sqrt{24}$

7. What type of number is $\sqrt{26}$?

   A. Whole number B. Integer

   C. Rational number D. Irrational number

8. Which number below is an element in the set of irrational numbers?

   $\sqrt{4},\ 3.45,\ -8.7,\ \sqrt{2}$

   A. $\sqrt{4}$ B. 3.45 C. -8.7 D. $\sqrt{2}$

9. Which set of real numbers contains only rational numbers?

   A. $\left\{\sqrt{121},\ \sqrt{196},\ \sqrt{24},\ 12\right\}$

   B. $\left\{\sqrt{144},\ \frac{13}{2},\ \frac{5}{3},\ \sqrt{3}\right\}$

   C. $\left\{\sqrt{169},\ \frac{5}{2},\ \sqrt{121},\ \frac{14}{4}\right\}$

   D. $\left\{\sqrt{169},\ \frac{58}{3},\ \frac{13}{2},\ \sqrt{31}\right\}$

Notes Level 3:

Concept # _____

Goals:

Classify Rational numbers as natural, whole, integers or just rational.

Classify Real numbers as rational or irrational.

Notes:

Big Ideas	Examples/Details

Level 3 Practice:

Fill in the charts below. Each word should have:

Definition: in your own words describe the term

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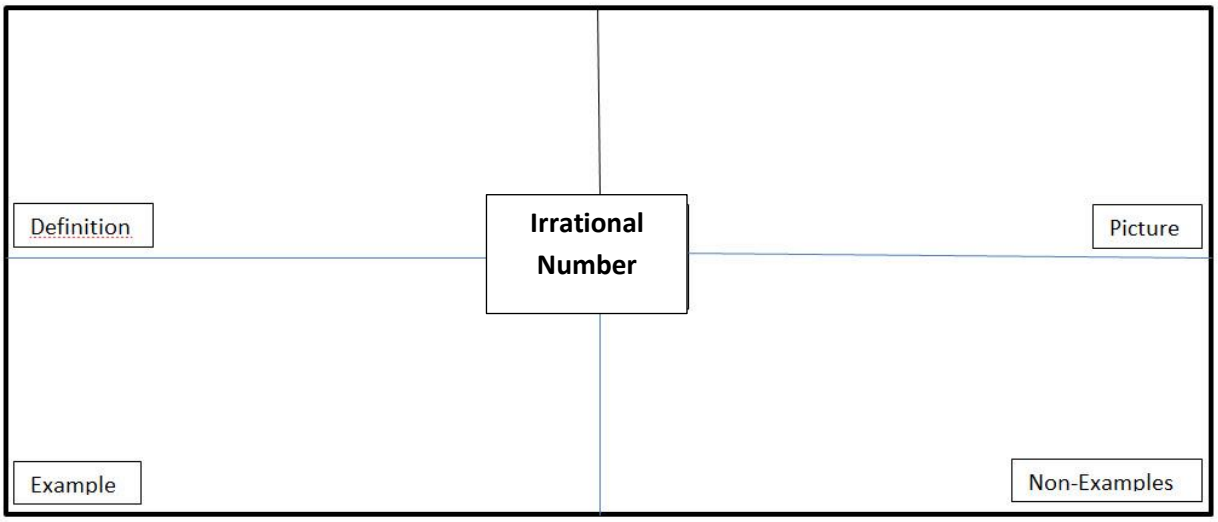

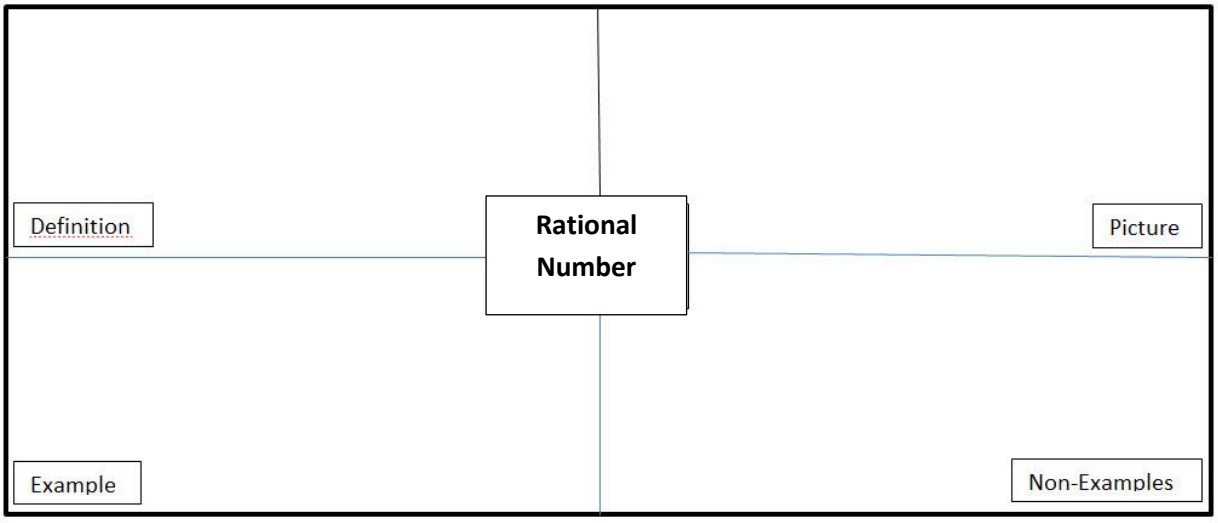

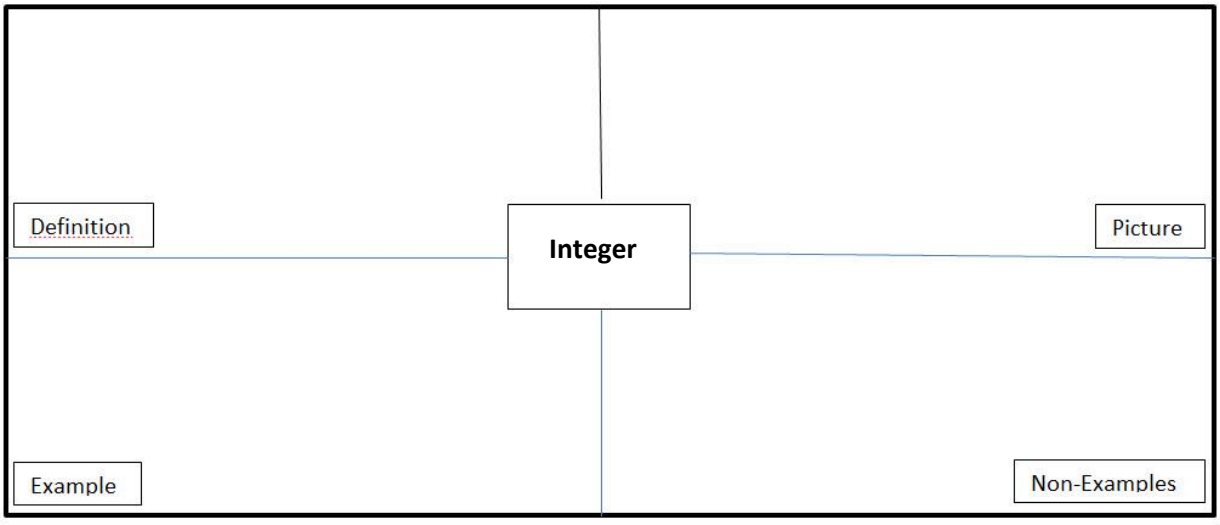

Worksheet Level 3:

Concept # _____

Goals:

Classify Rational numbers as natural, whole, integers or just rational.

Classify Real numbers as rational or irrational.

Practice #1

Answer each multiple choice question and explain your answer.

Which number represents a rational number?

a. $\sqrt{2}$ b. $\sqrt{5}$ c. $\sqrt{10}$ d. $\sqrt{25}$ e. $\sqrt{50}$

Which number represents an integer?

a. $\sqrt{2}$ b. $\frac{10}{21}$ c. $\sqrt{21}$ d. 10 e. $\sqrt{10}$

Which number represents an irrational number?

a. 40 b. $\sqrt{40}$ c. 0 d. $\sqrt{9}$ e. 9

Which number represents a rational number?

a. $\sqrt{2}$ b. $\frac{2}{3}$ c. $\sqrt{3}$ d. $\sqrt{\frac{2}{3}}$ e. $\sqrt{15}$

Practice #2

Use the following list of numbers to answer each question below.

$\sqrt{30}$, $\frac{7}{8}$, $\sqrt{16}$, $\sqrt{\frac{1}{4}}$, $8i$, $-\sqrt{42}$, $3.692\overline{692}$, 4π, $\sqrt{-20}$

1. Identify an integer from the list of numbers.

2. Identify two rational numbers from the list of numbers.

3. Identify three irrational numbers form the list of numbers.

1. Cross out the one number which does not belong in the set.

Whole Numbers	{ 0, 1, 3, 7, 8.5, 9, 14, ...}
Integers:	{ -8, 0, 5, 3/4, 24, -9, -57, ...}
Rational numbers	{ 14, 3/5, -2.4, $\sqrt{81}$, $0.33\overline{3}$, $\sqrt{40}$, 100, ..}
Irrational numbers	{ $\sqrt{3}$, π, $\sqrt{49}$, $\sqrt{8}$, 5π, $\sqrt{91}$, $5\sqrt{33}$, ...}

2. List all 9 integers between -3.5 and 5.5.

_____

3. List all 6 whole numbers between -3.5 and 5.5.

_____

4. List 3 rational numbers between 3 and 3.9.

_____

5. Use a calculator to write the decimal expansion. *If the number is irrational,* then estimate to the thousandths place.

a. 5/12

b. $\sqrt{12}$

c. 1/3

d. 7/11

e. $\sqrt{\frac{4}{9}}$

f. $\sqrt{78}$

g. 3/8

h. 11/20

i. 11/18

True or False:

6. $\sqrt{40}$ has an infinite non-repeating decimal expansion.

7. The number $0.5\overline{6}$ is a rational number

8. -200 and 500 are integers.

9. All numbers with infinite decimal expansions are irrational.

10. the numbers -8, -3, 5, 17 are all whole numbers.

Notes Level 4:

Concept # _____

Goals:

Classify Real numbers as rational or irrational numbers

Classify numbers as Real or Imaginary numbers

Notes:

Big Ideas	Examples/Details

Level 4 Practice:

Fill in the charts below. Each word should have:

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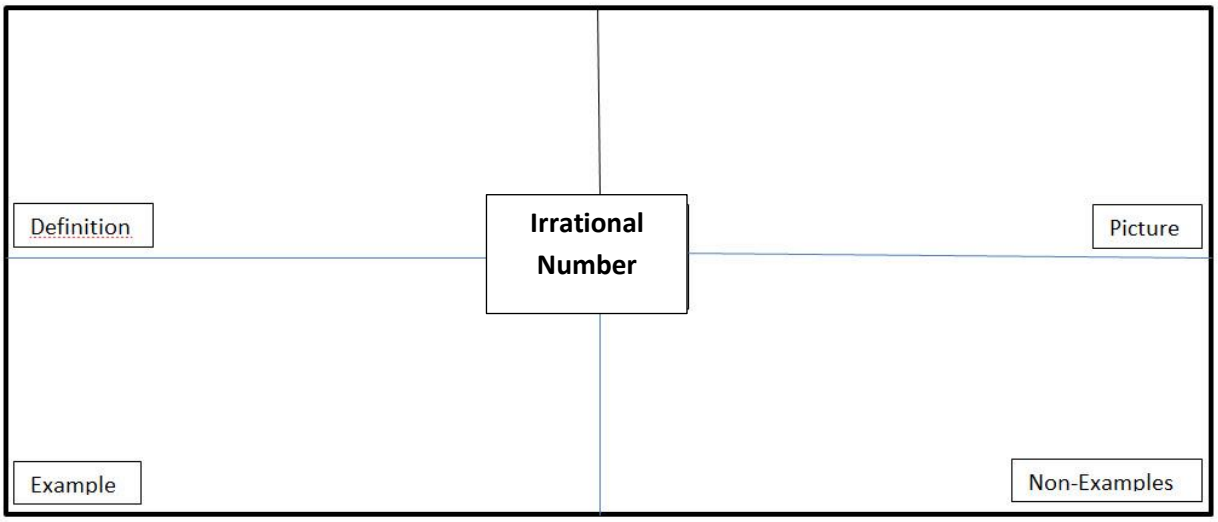

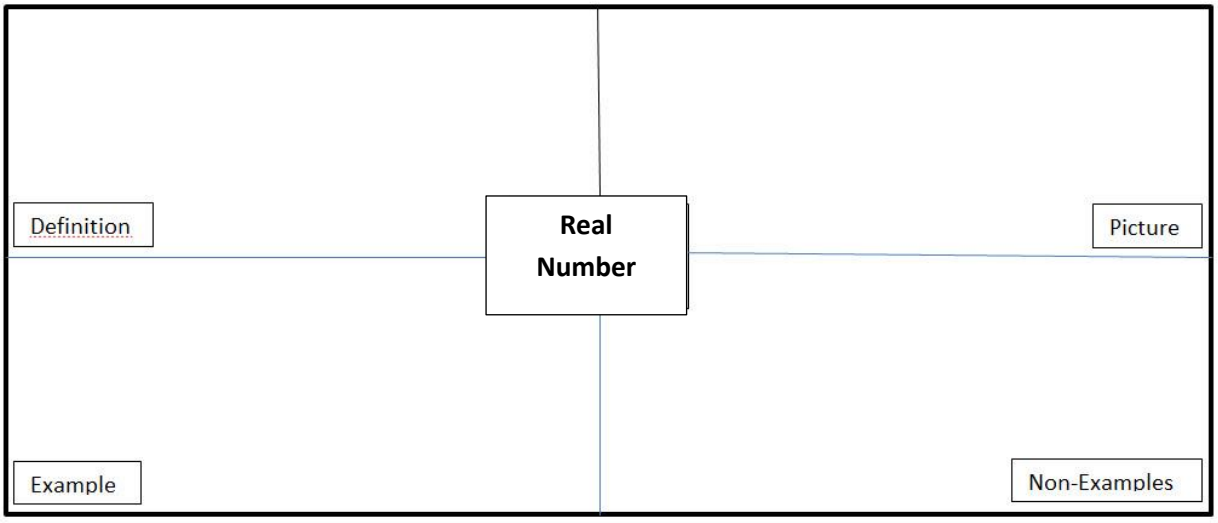

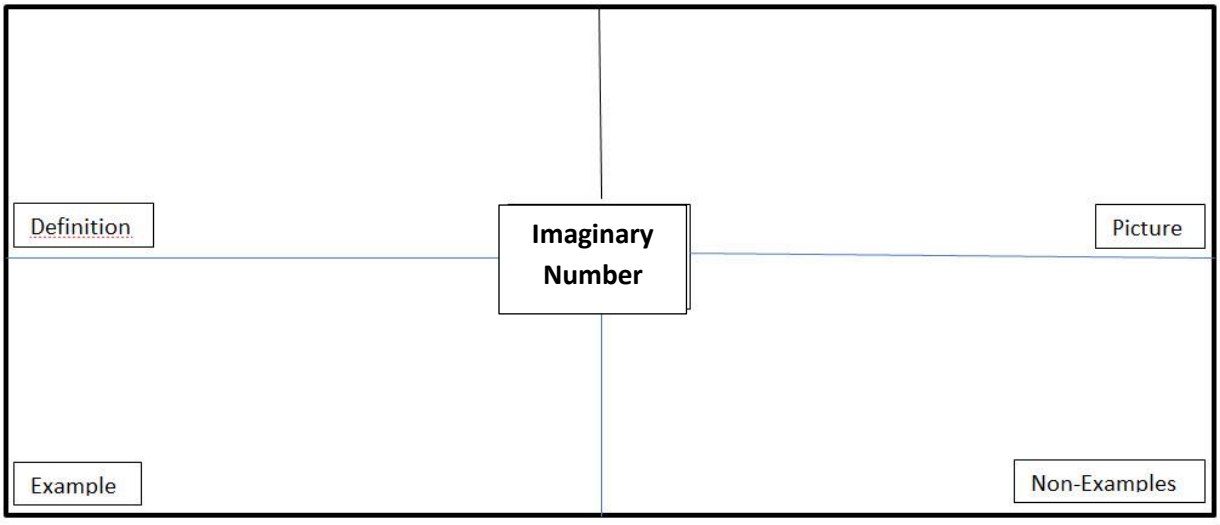

Worksheet Level 4:

Concept # _____

Goals:

Classify Real numbers as rational or irrational numbers

Classify numbers as Real or Imaginary numbers

Practice #1

1. *Multiple choice:* Which irrational number is between 4 and 5.

a. $\sqrt{12}$ **b.** $\sqrt{20}$ **c.** $\sqrt{34}$ **d.** $\sqrt{80}$

2. *Multiple choice:* Which number is an integer?

a. -11/5 **b.** -7 **c.** $\sqrt{15}$ **d.** 1/2

3. *Multiple choice:* Which number is a whole number?

a. 5/6 **b.** -4 **c.** $\sqrt{36}$ **d.** $\sqrt{500}$

4. *Multiple choice:* Which number is irrational?

a. $9.27\overline{27}$ **b.** $\sqrt{2}$ **c.** $5\sqrt{9}$ **d.** -37/71

5. *Multiple choice:* Any number with a finite decimal exapansion must be....

a. rational **b.** irrational

6. *Multiple choice:* The number 3 is....

a. whole **b.** rational **c.** integer **d.** all of the above

7. *Multiple choice:* All integers are ....

a. whole **b.** rational numbers **c.** irrational

Practice #2

Identify each as Real (R) or Imaginary (C). Then simplify.

$\sqrt{49}$ $\sqrt{-49}$ $\sqrt{16}$ $\sqrt{-25}$ $\sqrt{-81}$

Practice #3

Simplify.

1) $(-3 + 4i) + (-4 + 7i)$

2) $(3 - 6i) + (7 + 3i)$

3) $(3 + 8i) + (1 - i)$

4) $(4 - 4i) + (-4 + 6i)$

5) $(-6i) + (3i) - (-7 - 8i)$

6) $(-5 - 3i) - (8 + i)$

7) $(8 - 5i) - (-4 - 3i)$

8) $-4 + (7i) - (1 - 5i)$

9) $(-6 - 6i) - (2 - 2i)$

10) $(-3i) - (-5 + 7i) + (i)$

11) $(8i)(-6i)(-3i)$

12) $(2i)(3i)(-6i)$

13) $(-6i)(8i)$

14) $(-4i)(-5 + 6i)$

15) $2(4 + 6i)$

16) $(-7i)(i)$