1.3 - Exploring Real Numbers

Vocabulary:

any #'s that can be written as a fraction

- Rational Number
- Irrational Number π
- Whole Number $0, 1, 2, 3 \ldots$ (only positive)
- Integers $-2, -1, 0, 1, 2 \ldots$ (+ or −)
- Inequality
- Absolute Value

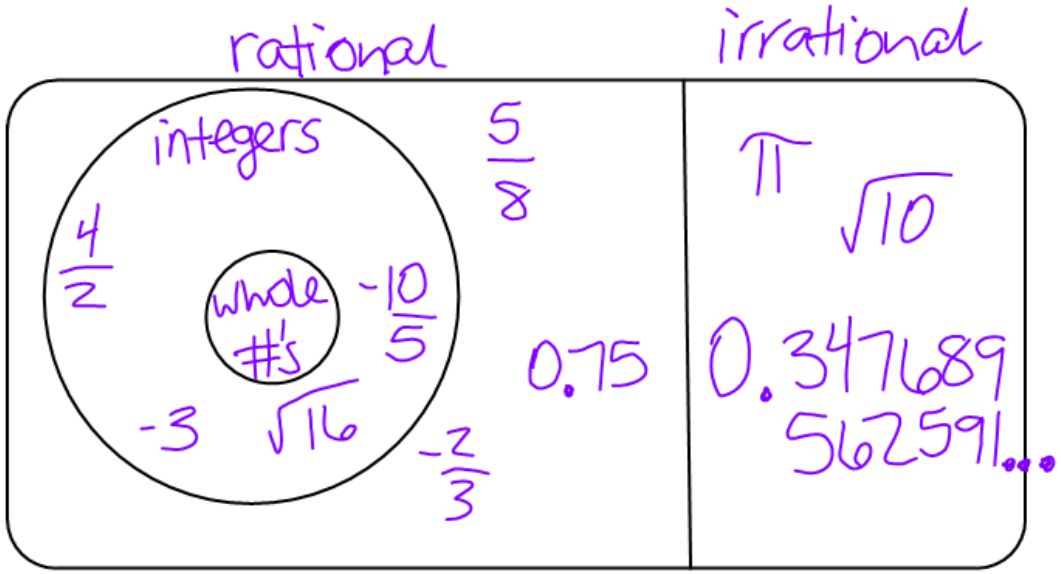
$> \quad <$

$\geq \quad \leq$

the distance a # is from zero (always +)

$|-2| = 2$

$|7| = 7$



1 EXAMPLE Name the set(s) of numbers to which each number belongs.

whole #, integer, rational, irrational

a. –13 rational, integer

b. 3.28 rational,

c. $\frac{13}{25}$ rational

d. 42 rational, integer, whole #

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Give an example of each kind of number.

#11. negative integer

-12 $\quad -\frac{26}{2} = -13$

#12. whole number

2

#13. positive real number

4

2 EXAMPLE Which set of numbers is most reasonable for each situation?

a. outdoor temperatures

whole #, integers, rational

b. the number of beans in a bag

whole #

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Are whole numbers, integers, or rational numbers the most reasonable for each situation?

#14. Your shoe size. rational #

#15. The number of siblings you have. whole #

#16. Temperature in a news report.

integers

3 EXAMPLE Determine whether the statement is true or false. If it is false, give a counterexample.

All negative numbers are integers.

false ex: -0.5

$-\frac{1}{4}$

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Is the statement true or false? If the statement is false, give a counterexample.

#21. Every multiple of 3 is odd.

False ex: 6, 12, 18, 24

#22. No positive number is less than its absolute value.

True

$|4| = 4$

4 EXAMPLE Write $-\frac{3}{4}$, $-\frac{7}{12}$, and $-\frac{5}{8}$, in order from least to greatest.

→ $-0.75, -0.58\overline{3}, -0.625$.

$-\frac{3}{4}, -\frac{5}{8}, -\frac{7}{12}$

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Use $<$, $=$, or $>$ to compare.

25. $\frac{-2}{3}$ ⊜ $\frac{-1}{6}$

$-0.\overline{6} < -0.1\overline{6}$

27. $\frac{3}{5}$ ⊜ 0.6

0.6

5 EXAMPLE Find each absolute value.

a. $|-2.5|$

2.5

b. $|7|$

7

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Find each absolute value.

35. $|-9|$ 9

39. $|0|$ 0

41. $\left|-\frac{4}{5}\right|$ $\frac{4}{5}$

Homework Problems:

pg. 21 #54, 61, 67, 71, 87, 89

① $(2^3+3)^2-10$

$(8+3)^2-10$

11^2-10

$121-10$

$\boxed{111}$

② $17-5^2\div(4+3^2)$

$17-25\div(16+9)$

$17-25\div25$

$17-1$

$\boxed{16}$

③ $m=3 \quad p=7 \quad q=4$

$(qp)^2+(pq)^2$

qp^2+pq^2

$(4)\cdot(7)^2+(7)\cdot(4)^2$

$4\cdot49+7\cdot16$

$196+112$

$\boxed{308}$

④ $25[5^2\div(4^2+3^2)+2]$

$16+9$

$25\left[25\div25+2\right]$

$1+2$

$25\cdot3=\boxed{75}$