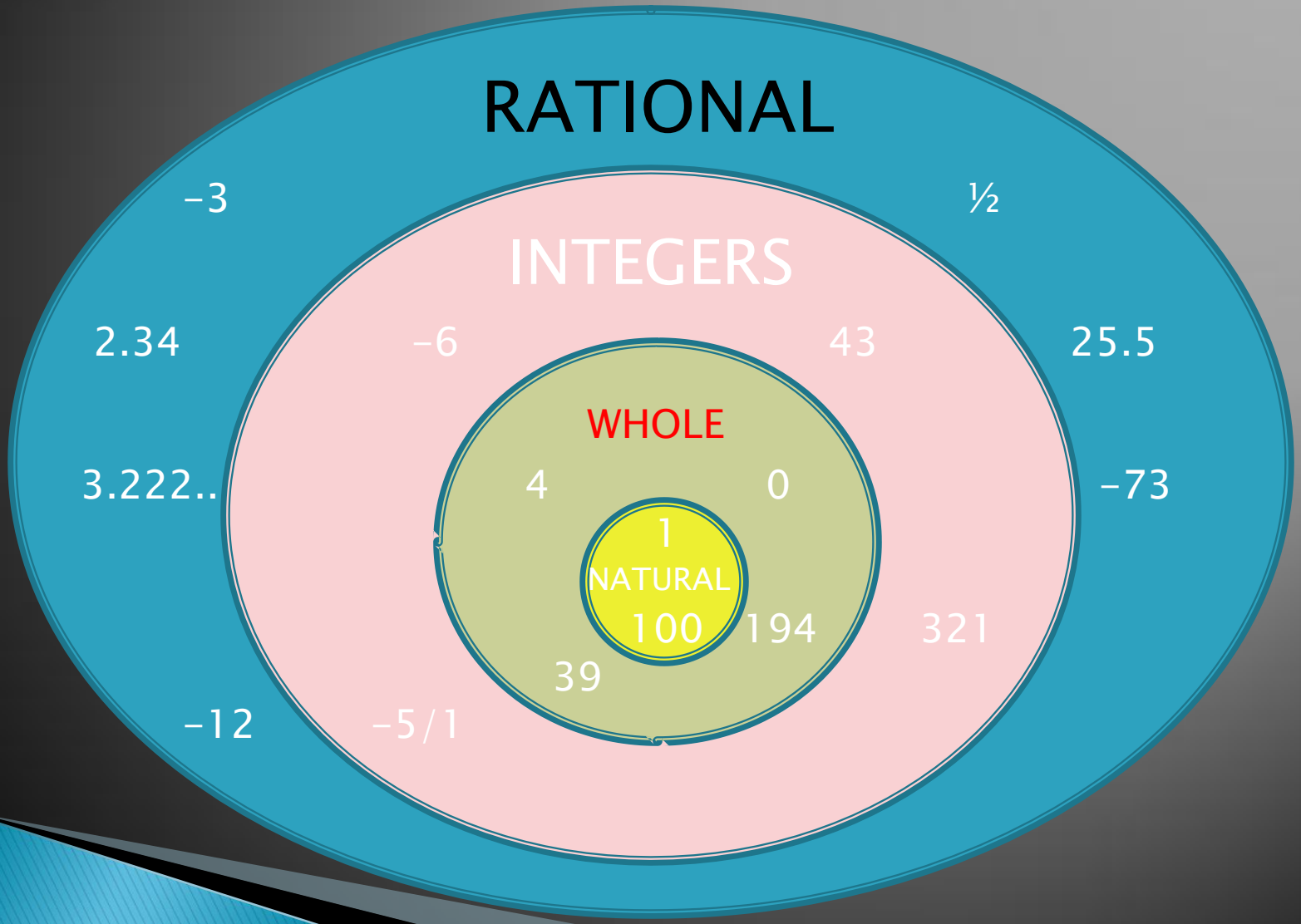
Numbers


RATIONAL
-3
½
INTEGERS
2.34
-6
43
25.5
WHOLE
3.222..
4
0
-73
1
NATURAL
100
194
321
39
-12
-5/1

Rational Numbers

- Rational numbers can be written as a fraction
- Example: ½

- Decimals that terminate or repeat
- Example: 0.23, 0.22222…

- Irrational numbers cannot be written as a fraction; decimals do not terminate or repeat

Your Turn

- State if these are rational or irrational:
- 1) 4/5 2) 1.43960275….
- 3) 0.1 4) 0.121221222…
- 5) 0.3475393…. 6) 0.9797…

Answers

- 1) rational
- 2) irrational
- 3) rational
- 4) irrational
- 5) irrational
- 6) rational

Simplifying Fractions

- Divide the numerator and denominator by the greatest common factor (GCF)

Example: $\frac{24}{30} \begin{matrix} \div 6 \\ \div 6 \end{matrix} = \frac{4}{5}$

Comparing Fractions

- Fractions are easy to compare if the denominators are already the same:
- $3/5 < 4/5$
- If the denominators are different you can:
- 1) find a common denominator
- 2) convert the fractions to decimals
- 3) cross multiply

- BE SURE TO KEEP THE INTEGER RULES IN MIND!!

Converting fractions

- To convert from a fraction to a decimal divide the numerator by the denominator.
- $3/5 = 3 \div 5 = 0.8$
- If the denominator is a 9 or multiple nines, use the numerator for the decimal digits.
- Example: $4/9 = 0.444\ldots$ $23/99 = 0.2323\ldots$

Converting decimals to fractions

- Say the number correctly just like you have been taught:
- 0.37 is thirty-seven hundredths $= \frac{37}{100}$
- 2.984 = two **and** nine hundred eighty four
- thousandths $= 2\frac{984}{1000}$

Adding and Subtracting Fractions

- 1) get a common denominator
- 2) add or subtract only the numerators
- 3) integer rules apply:

Example: $\frac{12}{15} - \frac{13}{15} = -\frac{1}{15}$

- Keep in mind that you might have to rearrange the fractions or borrow. When subtracting, use LCO then, if the signs are the same, add. If they are different, subtract

Your turn

1) $\frac{5}{6}+\frac{2}{3}=$

2) $\frac{2}{5}-\frac{1}{2}=$

3) $-\frac{2}{7}-\frac{3}{4}=$

4) $1\frac{7}{8}-2\frac{3}{4}=$

5) $5\frac{3}{4}-2\frac{1}{8}=$

6) $1\frac{5}{9}-1\frac{2}{9}=$

Answers

- 1) $1\frac{1}{2}$
- 2) $-\frac{1}{10}$
- 3) $1\frac{1}{28}$
- 4) $-\frac{7}{8}$
- 5) $3\frac{5}{8}$
- 6) $\frac{1}{3}$

Multiplying Fractions

- Common denominators are not needed
- Try to simplify, if possible
- Change any mixed numbers to improper fractions
- Integer rules apply
- Example:

$$1\frac{1}{6} \bullet 1\frac{5}{10} = \frac{7}{\cancel{6}_{2}} \bullet \frac{\cancel{15}^{5}}{10} = \frac{7}{2} \bullet \frac{5}{10} = \frac{35}{20} = 1\frac{15}{20} = 1\frac{3}{4}$$

Dividing Fractions

- This is similar to multiplying fractions with only two changes:
- Use the reciprocal of the second fraction;
- Multiply
-

$$1\frac{1}{6} \div 1\frac{5}{10} = \frac{7}{6} \div \frac{15}{10} = \frac{7}{\cancel{6}_{3}} \bullet \frac{\cancel{10}^{5}}{15} = \frac{35}{45} = \frac{7}{9}$$