

Warm-Up

8/3/17

Formative Assessment: Number System

You have 10 minutes to complete this assessment by marking an "X" in the appropriate boxes.

Front and Back

The Number System

Identify the sets to which each of the following numbers belongs by marking an "X" in the appropriate boxes.

	Number	Natural Numbers	Whole Numbers	Integers	Rational Numbers	Irrational Numbers	Real Numbers
1.	$-\sqrt{17}$						
2.	-2						
3.	$-\frac{9}{37}$						
4.	0						
5.	-6.06						
6.	$4.\overline{56}$						
7.	3.050050005...						
8.	18						
9.	$\frac{-43}{0}$						
10.	π						
11.	$\sqrt[3]{.634}$						
12.	$\sqrt{225}$						
13.	.634						
14.	$\sqrt{\frac{4}{49}}$						
15.	$-\sqrt{64}$						

	Number	<u>N</u> atural Numbers	<u>W</u> hole Numbers	<u>I</u> ntegers	<u>R</u> ational Numbers	<u>I</u> rrational Numbers	<u>R</u> eal Numbers
16.	$\sqrt{13}$						
17.	-5						
18.	$\frac{2}{3}$						
19.	-0.083						
20.	27						
21.	$2.6\overline{47}$						
22.	$3.0\overline{505}$						
23.	-198						
24.	$-\frac{1}{2}$						
25.	10						

Essential Question 8/3/17

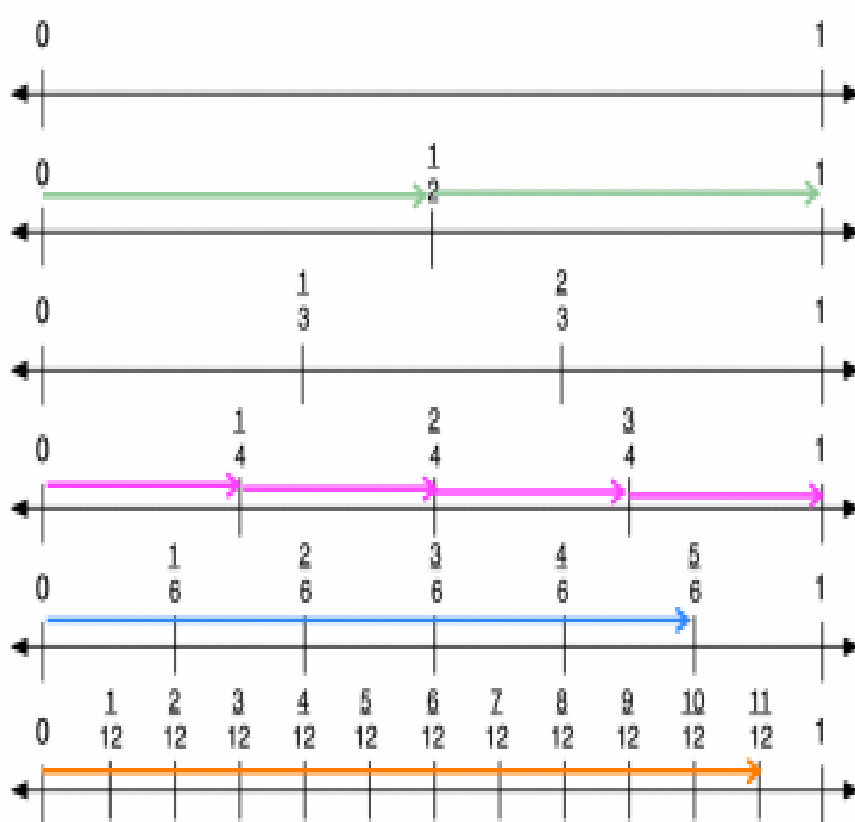
- How can we add and subtract fractions?

Standard:

MFANSQ1. Students will analyze number relationships.

a. Solve multi-step real world problems, analyzing the relationships between all four operations.

Placing fractions on the number line



What do you notice about.....

①

- fractions that are equal to $\frac{1}{2}$?

②

- fractions that are greater than $\frac{1}{2}$?

③

- fractions that are less than $\frac{1}{2}$?

- ① The numerator is half of the denominator.
- ② The numerator and denominator get closer to each other.
- ③ The numerator and denominator are farther apart.

Which fraction has a value closest to $\frac{1}{2}$?

a) $\frac{5}{8}$

b) $\frac{1}{6}$

c) $\frac{2}{2}$

d) $\frac{1}{5}$

Arrange the fractions in ascending order.

- A. $\frac{2}{7}, \frac{1}{2}, \frac{5}{9}$
- ~~B. $\frac{1}{2}, \frac{2}{7}, \frac{5}{9}$~~
- ~~C. $\frac{1}{2}, \frac{5}{9}, \frac{2}{7}$~~
- D. $\frac{5}{9}, \frac{1}{2}, \frac{2}{7}$
- ~~E. $\frac{5}{9}, \frac{2}{7}, \frac{1}{2}$~~

Convert Mixed Numbers to Improper Fractions

Mixed Numbers

To convert a mixed number, $5\frac{2}{7}$, to an improper fraction, $\frac{37}{7}$:

$5\frac{2}{7}$	Work in a clockwise direction, beginning with the denominator, (7).
$5 \times 7 = 35$	Multiply the denominator (7) by the whole number, (5)
$35 + 2 = 37$	Add that product, (35), to the numerator (2) of the fraction.
$\frac{(5 \times 7) + 2}{7} = \frac{37}{7}$	The denominator remains the same for the mixed number and the improper fraction.

Convert to Improper Fractions:

- | | | |
|--|---|--|
| <p>1) $4\frac{2}{5} = \frac{22}{5}$
 <i>Handwritten: $20 + 2 = 22$</i></p> | <p>6) $14\frac{3}{4} = \frac{59}{4}$
 <i>Handwritten: $56 + 3$</i></p> | <p>11) $9 = \frac{9}{1}$
 Hint: See #10</p> |
| <p>2) $5\frac{3}{8} = \frac{43}{8}$
 <i>Handwritten: $40 + 3 = 43$</i></p> | <p>7) $6\frac{3}{5} = \frac{33}{5}$
 <i>Handwritten: $6 \times 5 = 30 + 3 = 33$</i></p> | <p>12) $7\frac{3}{4} = \frac{31}{4}$</p> |

Finding Equivalent Fractions with Larger Denominators

Finding Equivalent Fractions with Larger Denominators
 This process is sometimes called "Boosting"

Example: $\frac{5}{8} = \frac{?}{56}$

$56 \div 8 = 7$ Divide the larger denominator by the smaller to find the factor used to multiply the denominator. (Note: The product of the smaller denominator and the factor is the larger denominator)

$\frac{5}{8} \times \frac{7}{7} = \frac{5 \times 7}{8 \times 7}$ Use this factor to multiply the numerator.

$\frac{5}{8} = \frac{35}{56}$ The result is two equivalent fractions.

Note: Equal denominators are required for addition and subtraction of fractions.

Find the equivalent fractions as indicated:

1) $\frac{2}{5} = \frac{6}{15}$

6) $\frac{3}{4} = \frac{33}{44}$

11) $\frac{8}{9} = \frac{72}{81}$

2) $\frac{3}{8} = \frac{12}{32}$

7) $\frac{3}{5} = \frac{27}{45}$

12) $\frac{3}{4} = \frac{75}{100}$

Finding Equivalent Fractions with Smaller Denominators

Equivalent Fractions with Smaller Denominators	
Reducing Fractions	
<p><i>Example:</i> Reduce the following fraction to lowest terms</p> $\frac{90}{105}$	
<p>There are three common methods, DO NOT mix steps of the methods!</p>	
<p>Method 1:</p> $\frac{90 \div 15}{105 \div 15} = \frac{6}{7}$	<p>The Greatest Common Factor for 90 and 105 is 15. Divide the numerator and the denominator by the GCF, 15.</p>
<p>Method 2:</p> $\frac{90 \div 5}{105 \div 5} = \frac{18}{21}$ $\frac{18 \div 3}{21 \div 3} = \frac{6}{7}$	<p>Examine the numerator and denominator for any common factors, divide both numerator and denominator by that common factor. Repeat as needed.</p> <ul style="list-style-type: none"> ➤ Both 90 and 105 are divisible by 5. ➤ Both 18 and 21 are divisible by 3.
<p>Method 3:</p> $\frac{90}{105} = \frac{2 \times 3 \times 3 \times 5}{7 \times 3 \times 5}$ $\frac{90}{105} = \frac{2 \times 3 \times (3 \times 5)}{7 \times (3 \times 5)}$ $= \frac{2 \times 3}{7} = \frac{6}{7}$	<p>Express the numerator and denominator as a product of prime factors.</p> <p>Divide numerator and denominator by common factors, (3x5)</p> <p>Multiply remaining factors.</p>

Reduce these fractions.

1) $\frac{28}{50} \xrightarrow{\div 2} \frac{14}{25}$

2) $\frac{8}{24} \xrightarrow{\div 8} \frac{1}{3}$

5) $\frac{32}{48} \xrightarrow{\div 8} \frac{4}{6} \xrightarrow{\div 2} \frac{2}{3}$

6) $\frac{36}{54} \xrightarrow{\div 9} \frac{4}{6} \xrightarrow{\div 2} \frac{2}{3}$

9) $\frac{36}{216} \xrightarrow{\div 12} \frac{3}{18} \xrightarrow{\div 3} \frac{1}{6}$

10) $\frac{35}{42} \xrightarrow{\div 7} \frac{5}{6}$

Convert Improper Fractions to Mixed Fractions

Improper Fractions

Example: Convert $\frac{14}{3}$ to an Improper Fraction

$14 \div 3 = 4$
Remainder 2

Remember: Dividend \div Divisor = Quotient
Divide the numerator (14) by the denominator (3).

$\frac{14}{3} = 4\frac{2}{3}$

Write the mixed number in the form: $Quotient\frac{remainder}{divisor}$

Note: Check you answer to see if you can reduce the fraction.

Convert these improper fractions to mixed numbers. *Be sure to reduce when it's possible.*

1) $\frac{8}{5} = 5 \overline{) 8}$
 $\underline{- 5}$
 3
 $\frac{3}{5}$
 = $1\frac{3}{5}$

6) $\frac{114}{5} = 5 \overline{) 114}$
 $\underline{- 25}$
 10
 $\underline{- 10}$
 4
 $\frac{4}{5}$
 $22\frac{4}{5}$

#11, 12 Hint: how many wholes will there be?

11) $15\frac{280}{6} =$

2) $\frac{18}{7} = 7 \overline{) 18}$
 $\underline{- 14}$
 4
 $\frac{4}{7}$
 $2\frac{4}{7}$

7) $\frac{128}{3} =$

12) $8\frac{315}{3} =$

$$\textcircled{11} \begin{array}{r} 15 \\ + 46 \\ \hline 61 \end{array} \quad \frac{280}{6}$$

$$\begin{array}{r} 46 \\ \hline 6 \overline{) 280} \\ \underline{240} \\ 40 \\ \underline{36} \\ 4 \end{array}$$

$$61 \begin{array}{l} 4 \div 2 \\ 6 \div 2 \end{array}$$

$$\boxed{61 \overline{) 122}}$$

$$\begin{array}{r} 105 \\ 3 \overline{) 315} \\ \underline{30} \\ 15 \\ \underline{15} \\ 0 \end{array}$$

$$\begin{array}{r} 105 \\ + 8 \\ \hline 113 \end{array}$$

Find the LCM of the given numbers

In each exercise, find the LCM of the given numbers.

1) 4 36 and 18

4: 4, 8, 12, 16, 20, 24, 28, 32, 36, .

18: 18, 36

7) 50 and 75

2) 16 and 40

8) 24 and 30

Adding & Subtracting Fractions:

To add or subtract unlike fractions, first rewrite them with a common denominator.

You can do this using 1 of 2 methods:

1. Find the LCM (or the Lowest Common Denominator) of the 2 denominators (Quickest!)

OR

2. Multiply the denominators

Addition: Example 1 (I do)

Mark made a pizza with $\frac{1}{4}$ pepperoni covering of the pizza and onions covering another $\frac{1}{3}$. What fraction of the pizza is covered by pepperoni and onions?

Addition

The pizza is covered by $\frac{7}{12}$ pepperoni and onions.

$$3 \times \frac{1}{4} + \frac{1}{3} \times 4 = \frac{3}{12} + \frac{4}{12}$$

4: ¹4, ²8, ³12, ⁴16

3: ¹3, ²6, ³9, ⁴12, ⁵15

$$= \boxed{\frac{7}{12}}$$

Example 2 (We do)

$$\frac{3 \times 2}{8 \times 2} + \frac{5 \times 1}{16 \times 1}$$

$$\frac{6}{16} + \frac{5}{16} = \boxed{\frac{11}{16}}$$

Addition – *You Try It!*

①

$$\frac{1}{4} + \frac{1}{2} = \underline{\quad}$$

②

$$\frac{4}{16} + \frac{2}{8} = \underline{\quad}$$

③

$$\frac{6}{8} + \frac{2}{3} = \underline{\quad}$$

④

$$\frac{13}{16} + \frac{3}{4} = \underline{\quad}$$

$$\textcircled{1} \frac{1}{4} + \frac{1 \times 2}{2 \times 2} = \frac{1}{4} + \frac{2}{4}$$

$$= \boxed{\frac{3}{4}}$$

$$\textcircled{2} \frac{4}{16} + \frac{2 \times 2}{8 \times 2} = \frac{4}{16} + \frac{4}{16}$$

$$16: 16, 32 \quad 8: 8, 16 \quad = \frac{8 \div 8}{16 \div 8} = \boxed{\frac{1}{2}}$$

$$\textcircled{3} \frac{6 \times 3}{8 \times 3} + \frac{2 \times 8}{3 \times 8} = \frac{18}{24} + \frac{16}{24}$$

$$8: 8, 16, 24$$

$$3: 3, 6, 9, 12, 15, 18, 21, 24$$

$$= \frac{34}{24} = \frac{10 \div 2}{24 \div 2}$$

$$= \boxed{\frac{5}{12}}$$

$$\textcircled{4} \frac{13}{16} + \frac{3 \times 4}{4 \times 4}$$

$$= \frac{13}{16} + \frac{12}{16} = \frac{25}{16}$$

$$= \boxed{\frac{9}{16}}$$

Class Work 8/3/17

1. Work with your table partner to complete the addition and subtraction problems in the packet.
2. When done, you can # 1 & 2 on the word problems.

Home Work Complete the packet
due on Friday, 8/4/17

Add or Subtract as indicated.

1. $\frac{4}{8} + \frac{3}{8}$

4. $\frac{40}{37} - \frac{3}{37}$

7. $\frac{2}{3} + \frac{4}{3} - \frac{6}{3}$

2. $\frac{7}{10} - \frac{1}{10}$

5. $\frac{10}{13} + \frac{4}{13}$

8. $\frac{7}{6} - \frac{5}{6} + \frac{1}{6}$

3. $\frac{7}{48} + \frac{9}{48} + \frac{4}{48}$

6. $\frac{9}{17} + \frac{11}{17} + \frac{17}{17}$

9. $\frac{7}{13} + \frac{9}{13}$

Add or Subtract:

1) $\frac{7}{8} + \frac{3}{4}$

5) $\frac{15}{24} - \frac{10}{27}$

9) $\frac{11}{4} + \frac{23}{18}$

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

6) $\frac{7}{12} + \frac{5}{16}$

10) $\frac{29}{8} + \frac{9}{7}$

Preview

Multiplication

- Multiply the numerators and put in the numerator of the result
- Multiply the denominators and put in the denominator of the result

$$\frac{7}{8} \times \frac{4}{9} =$$

Closing - Review 8/3/17

- A fraction has a numerator and a denominator
- The denominator can never be 0
- You can multiply, divide, add and subtract fractions
- A common factor is a number that both denominators are evenly divisible by
- A common denominator is a number that both denominators share a factor with

Attachments

Math Oldie Video.mp4