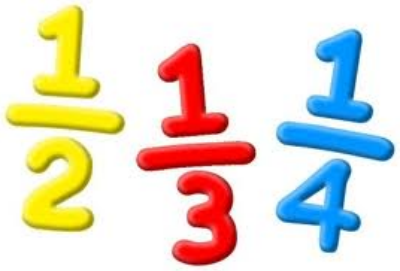


Unit 8: Adding and Subtracting Fractions

SOL: 4.5a, b, d

Vocabulary:

Fractions: a number representing a part of a whole shape or a part of a whole group

Numerator: the top number of a fraction. It tells how many pieces are shaded chosen, or being talked about.

Denominator: the bottom number of a fraction. It tells how many pieces are in the whole shape or group.

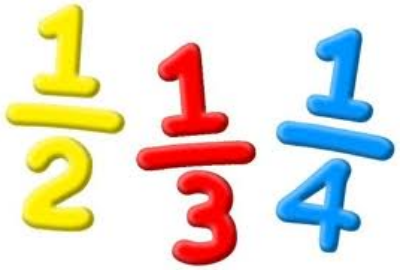
Common Denominators: like denominators

Factors: an integer that divides evenly into that number with a remainder of zero

Greatest Common Factor: the largest of the common factors that all of the numbers share.

Multiple: a sequence of products using the same base number

Least Common Multiple: the smallest common multiple of the given numbers



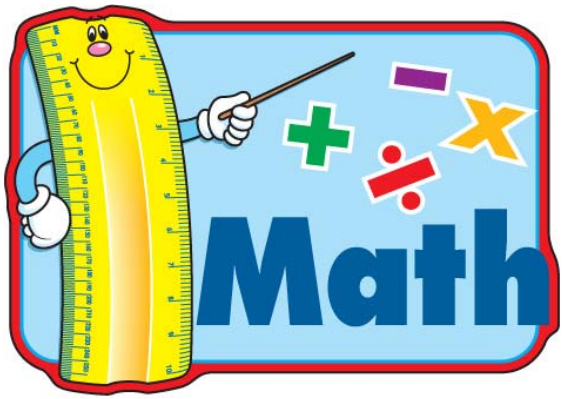
Unit 8: Adding and Subtracting Fractions

SOL: 4.5a, b, d

Vocabulary Continued:

Sum: the result of adding two or more numbers

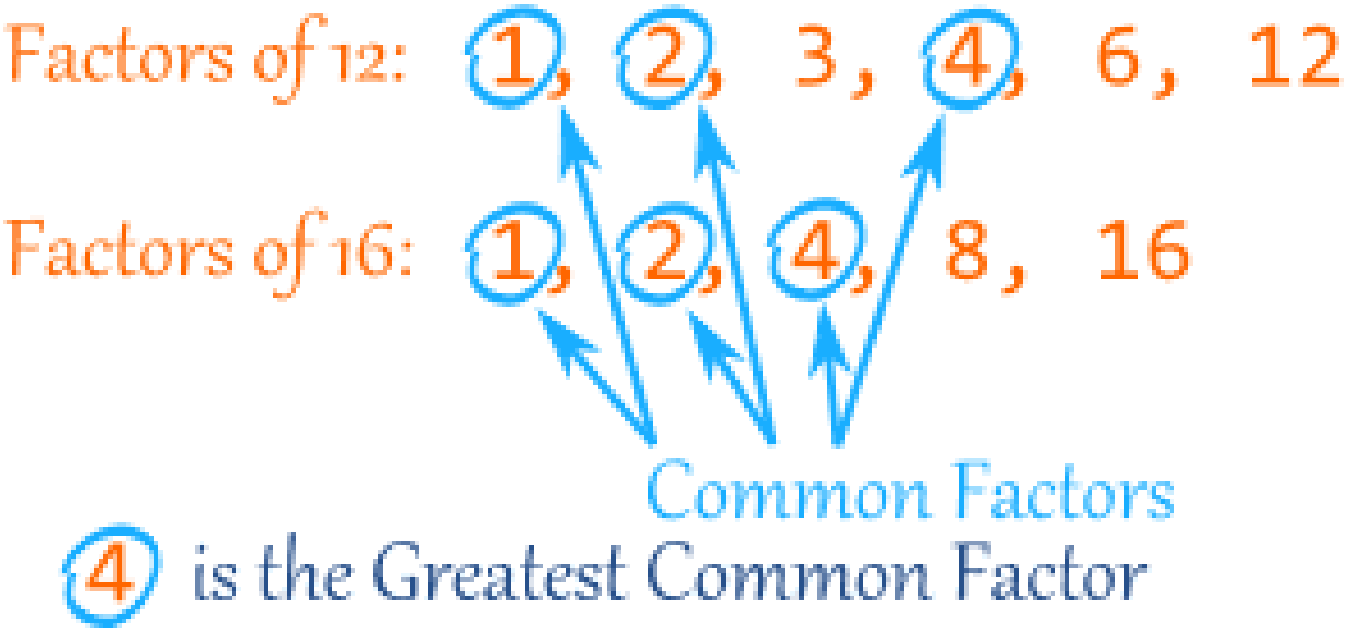
Difference: the amount that remains after one quantity is subtracted from another



GREATEST COMMON FACTOR

Examples

Greatest Common Factor



GCF AND LCM

Examples

Least Common Multiple

Multiples of 3:

0, 3, 6, 9, 12, 15, 18, 21, 24, ...

Multiples of 4:

0, 4, 8, 12, 16, 20, 24, 28 ...

The LCM of 3 and 4 is 12.

Examples

Adding Fractions with Like Denominators

To add...

$$\frac{1}{5} + \frac{2}{5}$$

Always check to make sure the denominators are the same!

Just add up the numerators

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

Examples

Adding Fractions with Unlike Denominators

Step 1: Check the denominators.

$$\frac{2}{15} + \frac{3}{5} = ?$$

Step 2: Find the least common denominator.
(5 x 5 x 5 = 15)

$$\frac{2}{15} + \frac{3 \times 3}{5 \times 3}$$

Step 3: Make equivalent fractions with the common denominator.

$$\frac{2}{15} + \frac{9}{15} = \frac{2+9}{15} = \frac{11}{15}$$

Step 4: Add the numerators.

Same

Examples

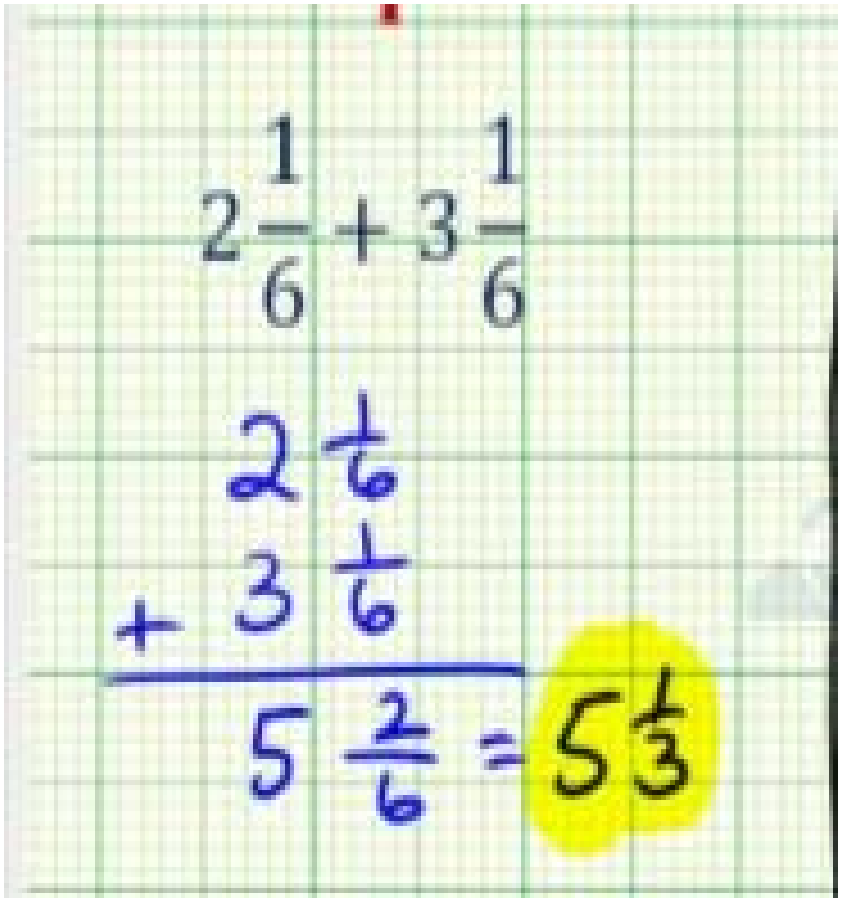
Adding Mixed Numbers with Like Denominators

Step 1: Check the denominators.

Step 2: Add the whole numbers

Step 3: Add the numerators

Step 4: Simplify if possible.



Examples

Adding Mixed Numbers with Unlike Denominators

Step 1: Check the denominators.

Step 2: Find the Least Common Denominator.

Step 3: Add the whole numbers.

Step 4: Add the numerators

Step 4: Change the improper fraction if necessary

With the LCD, 12

$$2\frac{5}{6} = 2\frac{10}{12}$$

$$+\ 1\frac{3}{4} = 1\frac{9}{12}$$

$$3\frac{19}{12} = 4\frac{7}{12}$$

Don't forget to change the improper fraction!

$$12\overline{)19} = 1\frac{7}{12} \quad \begin{array}{r} 1 \\ -12 \\ \hline 7 \end{array}$$

$$3 = 4\frac{7}{12}$$

Examples

Subtracting Fractions with Like Denominators

$$\frac{5}{6} - \frac{4}{6} = \frac{1}{6}$$

Always check to make sure the denominators are the same!

Just subtract the numerators!

Examples

Subtracting Fractions with Unlike Denominators

Step 1: Check the denominators.

$$\frac{3}{4} - \frac{1}{5}$$

Step 2: Find the least common denominator.
(4 x 5 = 20)
(5 x 4 = 20)

Step 3: Make equivalent fractions with the common denominator. (Whatever you do to the top, you must do to the bottom!)

$$\frac{3}{4} \times 5 = \frac{15}{20}$$

$$\frac{1}{5} \times 4 = \frac{4}{20}$$

Step 4: Subtract the numerators.

$$\frac{11}{20}$$

Step 5: Simplify if possible.

$$\frac{11}{20}$$

Examples

Subtracting Mixed Numbers with Like Denominators

$$3\frac{3}{4} - 1\frac{2}{4} = 2\frac{1}{4}$$

Always check to make sure the denominators are the same!

Subtract Whole Numbers as normal then just subtract the numerators!

Examples

Subtracting Mixed Numbers with Unlike Denominators

Step 1: Check the denominators.

Step 2: Find the least common denominator.
(2 + 2 + 2 = 6)
(3 + 3 = 6)

Step 3: Make equivalent fractions with the common denominator. (Whatever you do to the bottom, you must do to the top!)

Step 4: Subtract the whole numbers and subtract the numerators.

Step 5: Simplify if possible.

$$2\frac{1}{2} \times 3 = 2\frac{3}{6}$$

$$2 \times 3 = 6$$

$$-1\frac{1}{3} \times 2 = 1\frac{2}{6}$$

$$3 \times 2 = 6$$

$$1\frac{1}{6}$$

Key Words for Word Problems
In Addition

In All

Total

and

The sum of

Add

What other
key words
can you think

altogether

Key Words for Word Problems

In Subtraction

Difference

Fewer

How many more

Remains

How much more

Left

What other key words can you think

Less (Than)

Minus

Decreased by