

Unit 2

Multiples, Factors, & Prime

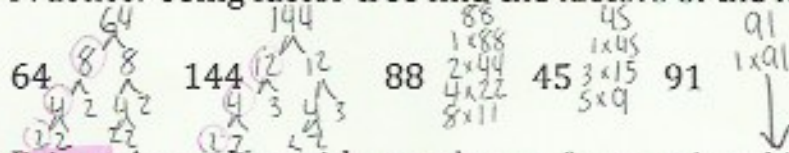
Multiple: the result of multiplying a number by a positive integer; Ex: the first few multiples of 3 are 3, 6, 9, 12

Practice: Find the first five multiples of the following numbers:

7, 14, 21, 28, 35 8, 16, 24, 32, 40 9, 18, 27, 36, 45 11, 22, 33, 44, 55
7x1 7x2 7x3 7x4 7x5

Factors: a whole number that will divide into another whole number without a remainder, Ex: 6 and 8 are factors of 24

Practice: Using factor tree find the factors of the following numbers:



Prime: A number with exactly two factors, 1 and itself; Ex. 7, 13, and 41

Practice: List all the prime numbers from 1-50

Fractions

Order Fractions

Method 1-Using Equivalent Fractions

*If they have the same denominator look at the numerator

$\frac{2}{4}, \frac{1}{4}, \frac{5}{4}$ From Least to Greatest $\frac{1}{4}, \frac{2}{4}, \frac{5}{4}$

*If they have different denominators find the least common multiple

$\frac{2}{3}, \frac{3}{9}, \frac{1}{27}$ From Least to Greatest $\frac{1}{27}, \frac{3}{27}, \frac{2}{27}$
LCM=27

$\frac{2}{3} \times \frac{9}{9} = \frac{18}{27}$
 $\frac{3}{9} \times \frac{3}{3} = \frac{9}{27}$
 $\frac{1}{27} \times \frac{1}{1} = \frac{1}{27}$

Practice: Order the following fractions from Least to Greatest:

$$\frac{2}{4}$$

$$\frac{4}{5}$$

$$\frac{1}{2}$$

$$\frac{7}{10}$$

Method #2- Converting fractions into decimals

$\frac{2}{9}$ Is the same as $2 \div 9$, which looks like $9 \overline{)2}$

*Fractions are just division problems

Use division to write these fractions in order of size, largest first: $\frac{8}{11}, \frac{7}{8}, \frac{4}{5}$

$11 \overline{)8.00}$ $8 \overline{)70.00}$ $5 \overline{)40}$ \rightarrow look at place value $\rightarrow .875, .8, .72$

$\frac{7}{8}, \frac{4}{5}, \frac{8}{11}$

(Repeating)

Practice: Use division and equivalent fractions to write these fractions in order of size, smallest first. Stop at hundredths.

1) $\frac{1}{3}, \frac{3}{10}, \frac{4}{11}$

2) $\frac{4}{7}, \frac{1}{2}, \frac{9}{14}$

3) $\frac{19}{25}, \frac{17}{20}, \frac{1}{5}$

CHEAT SHEET!!!

Conversions

<p>Fraction to Decimal</p>	<p>1.) Write the fraction as an equivalent fraction with a denominator of 10 or 100 or 1,000 or...</p> <p>Ex: $\frac{2}{25} \times \frac{4}{4} = \frac{8}{100} \rightarrow \frac{2}{25} \times \frac{4}{4} = \frac{8}{100}$</p> <p>2.) Write this equivalent fraction as a decimal. Use a decimal place-value table</p> <p>Ex: $\frac{8}{100} \rightarrow$ eight hundredths $\rightarrow .08$ <small>↑ hundredths place</small></p>
<p>Decimal To Percentage</p>	<p>Multiply the decimal by 100 or turn it into a percentage</p> <p>Ex. $0.6 \times 100 = \frac{600}{100} = 60\%$ <i>Trick: move decimal twice to the right</i></p>
<p>Fraction To Percentage</p>	<p>Follow the "Fractions to Decimal" Steps, then the "Decimal to percentage" step OR if you can write the fraction with a denominator of <u>100</u>, then the numerator is the same as the percentage</p> <p>Ex. $\frac{2}{50} = \frac{2}{50} \times \frac{2}{2} = \frac{4}{100} \rightarrow \frac{2}{50} \times \frac{2}{2} = \frac{4}{100} = 4\%$</p>
<p>Decimal To Fraction</p>	<p>1) Write the decimal as a fraction. Use a decimal place-value table</p> <p>Ex. $0.22 = \frac{22}{100}$ <small>↑ hundredths place</small></p> <p>2) Simplify (Cancel this fraction to its lowest terms)</p> <p>Ex. $\frac{22}{100} = \frac{22 \div 2}{100 \div 2} \rightarrow \frac{11}{50}$</p>
<p>Percentage To Decimal</p>	<p>Divide the percentage by 100 to turn it into a decimal</p> <p>$5\% \div 100 = .05$ <i>Trick: move decimal two left</i></p>
<p>Percentage To Fraction</p>	<p>1) Write the percentage as a fraction with a denominator of <u>100</u>.</p> <p>$64\% \rightarrow \frac{64}{100}$</p> <p>2) Simplify (Cancel this fraction to its lowest terms)</p> <p>$\frac{64}{100} = \frac{64 \div 4}{100 \div 4} \rightarrow \frac{16}{25}$</p>

$\rightarrow 100 \overline{) 5.00} \begin{matrix} 0.05 \\ \underline{5.00} \\ 0.00 \end{matrix}$

Adding & Subtracting Fractions with Mixed Numbers

***You can only add or subtract when the denominators are the same

Improper Fraction: The numerator is bigger than the denominator. $\frac{14}{2}$ bigger

Mixed Number: Contains a whole-number part and a fractional part. $6\frac{1}{2}$

Adding Mixed Numbers

<p>1. Add the <u>whole-number</u> parts.</p>	<p>1) $6\frac{3}{6} + 2\frac{1}{12} \rightarrow 6+2=8$</p>
<p>2. Add the <u>fractional parts</u> and simplify. If the answer is an <u>improper fraction</u>, write it as a <u>mixed number</u>.</p>	<p>2) $\frac{3}{6} + \frac{1}{12} \rightarrow \frac{3 \times 2}{6 \times 2} + \frac{1}{12} \rightarrow \frac{6}{12} + \frac{1}{12} = \frac{7}{12}$ (LCD=12)</p>
<p>3. Add your answers to steps 1 & 2</p>	<p>3) $8\frac{7}{12}$</p>

Examples:

1) $2\frac{1}{4} + 3\frac{5}{6} \rightarrow$ Step 1: $2+3=5$ Step 2: $\frac{1 \times 3}{4 \times 3} + \frac{5 \times 2}{6 \times 2} \rightarrow \frac{3}{12} + \frac{10}{12} = \frac{13}{12} \rightarrow 1\frac{1}{12}$ Step 3: $5 + 1\frac{1}{12} = 6\frac{1}{12}$

2) $3\frac{1}{2} + 1\frac{3}{5} \rightarrow$

3) $7 + \frac{2}{3} \rightarrow$

Method Two Converting to Improper Fractions

Adding with Mixed Numbers

<p>1. Change both <u>mixed numbers</u> into <u>improper fractions</u>, find common denominator M.A.D. Method</p>	<p>1) $6\frac{3}{6} + 2\frac{1}{12} \rightarrow \frac{39}{6} + \frac{25}{12}$</p>
<p>2. Add the <u>improper fractions</u> and simplify</p>	<p>2) $\frac{39 \times 2}{6 \times 2} + \frac{25}{12} \rightarrow \frac{78}{12} + \frac{25}{12} = \frac{103}{12}$ (LCD 12)</p>
<p>3. If the answer is an <u>improper fraction</u>, change it back to a <u>mixed number</u></p>	<p>3) $\frac{103}{12} \rightarrow 12 \overline{) 103} = 8\frac{7}{12}$</p>

M.A.D. Method

Example #3:

$$\frac{2}{3} \times 15 \rightarrow \frac{2}{3} \times \frac{15}{1} \rightarrow \frac{2}{\cancel{3}} \times \frac{\cancel{15}}{1} \div 3 = \frac{2}{1} \times \frac{5}{1} = \frac{20}{1} = 20$$

simplify

Practice: Work these out. Show your work!

1) $\frac{3}{4}$ of \$12 \rightarrow

2) $\frac{2}{5}$ of 10m \rightarrow

3) $\frac{4}{7} \times 21 \rightarrow$

4) $\frac{5}{12} \times 60 \rightarrow$

Dividing an integer by a fraction

Steps	Example
Step One: Write a "1" as a denominator for the integer	$12 \div \frac{3}{8} = \frac{12}{1} \div \frac{3}{8}$
Step Two: KCR (KFC) 1) <u>Keep</u> the first fraction. 2) <u>Change</u> the equation form division to multiplication. 3) Find the <u>reciprocal</u> (flip) of the second fraction	$\frac{12}{1} \times \frac{8}{3} = \frac{96}{3}$ simplify $\frac{96 \div 3}{3 \div 3} \rightarrow \frac{32}{1} = 32$

Extra Credit: Work Out the following problem. (Stop at Hundredths)

$$(42.7 - 6.93) \div (2 \times 0.45)$$

Converting Fractions to Decimals

Terminating Decimal: A decimal that comes to an end

$$\frac{6}{25} \rightarrow 25 \overline{) 6.00} = .24$$

Handwritten work for $\frac{6}{25}$ showing long division: $25 \overline{) 6.00}$. $25 \times 2 = 50$, remainder 10. Bring down 0 to get 100. $25 \times 4 = 100$, remainder 0. Result is $.24$.

Recurring Decimal: A decimal that repeats forever

$$\frac{71}{99} \rightarrow 99 \overline{) 71.00} = .\overline{71}$$

Handwritten work for $\frac{71}{99}$ showing long division: $99 \overline{) 71.00}$. $99 \times 7 = 693$, remainder 170. Bring down 0 to get 1700. $99 \times 17 = 1683$, remainder 17. This cycle repeats. Result is $.\overline{71}$.

Example:

a) $\frac{3}{8}$

b) $\frac{5}{11}$

c) $\frac{3}{7}$

Mixed Number to a Decimal

a) $9\frac{2}{3} \rightarrow 9.\overline{6}$

Handwritten work for $9\frac{2}{3}$ showing long division: $3 \overline{) 2.0}$. $3 \times 6 = 18$, remainder 2. Bring down 0 to get 20. $3 \times 6 = 18$, remainder 2. This cycle repeats. Result is $9.\overline{6}$.

b) $4\frac{1}{5} \rightarrow 4.2$

Handwritten work for $4\frac{1}{5}$ showing long division: $5 \overline{) 1.0}$. $5 \times 2 = 10$, remainder 0. Result is 4.2 .

c) $5\frac{1}{4} \rightarrow 5.25$

Handwritten work for $5\frac{1}{4}$ showing long division: $4 \overline{) 1.00}$. $4 \times 2 = 8$, remainder 20. Bring down 0 to get 200. $4 \times 50 = 200$, remainder 0. Result is 5.25 .