

Divisibility

Divisibility - the ability of one whole # to divide into another whole # with NO remainders.

Prime # - A whole # that has exactly 2 unique factors: 1 and the # itself.
Ex. 2, 7, 13, 17

Composite # - A # greater than 1 with more than 2 factors
Ex. 6, 20, 150, 400

Rules:

Divisible by:

- 1
- 2 "Looker"
- ~~3 "Adder"~~
- 3 "Adder"
- 4 "special"
- 5 "looker"
- 6 "combo"
- 9 "Adder"
- 10 "Looker"

Rule

All #'s are \div by 1

All even #'s are \div by 2

ex: 762

The sum of the digits must be \div by 3. ex: 732 ($7+3+2=12$)

The last 2 digits named together must be \div by 4.

Ex. 7024, 1400

The # ending 0 or 5,

The # \div 2 AND 3

ex: 636

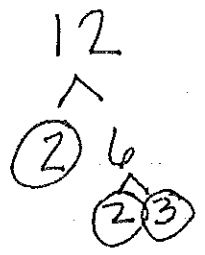
The sum of digits must be \div by 9 Ex 1233

The # ends in 0

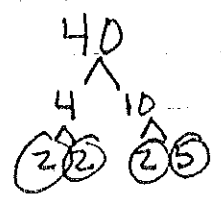
Factor Trees

Factor is a # if it divides into # without a remainder.

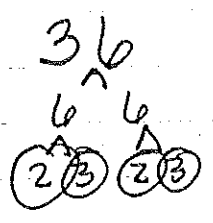
Ex. $5 \overline{)25} \begin{matrix} 5 \\ \end{matrix}$ Factors 5×5



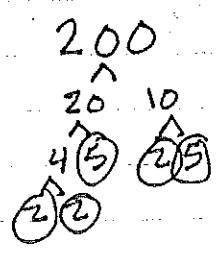
Prime Factorization
 PF = $2 \times 2 \times 3$
 PF w/ exponents = $2^2 \times 3$



PF = $2 \cdot 2 \cdot 2 \cdot 5$
 $2^3 \cdot 5$



PF = $2 \cdot 2 \cdot 3 \cdot 3$
 $2^2 \cdot 3^2$



PF = $2 \cdot 2 \cdot 2 \cdot 5 \cdot 5$
 $2^3 \cdot 5^2$

$1 + 2 + 6 = 9$ 126

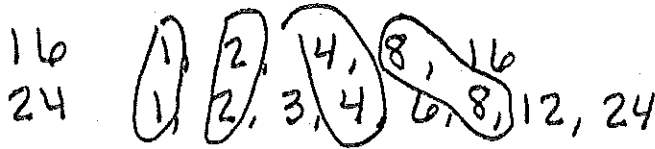
1	2	3	4	5	6	9	10
✓	✓	✓			✓	✓	

4-1 Greatest Common Factor (GCF)

Common factors - factors that are shared by two or more numbers

Greatest Common Factor - The greatest of the common factors of two or more #'s.

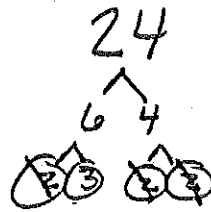
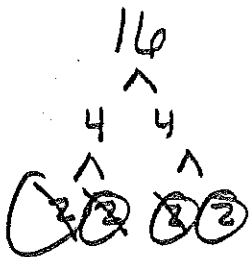
List



Common factors
1, 2, 4, 8

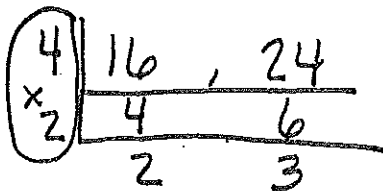
GCF = 8

Factor Tree

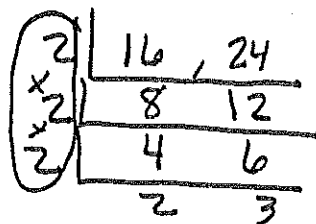


$GCF = 2 \cdot 2 \cdot 2 = 8$

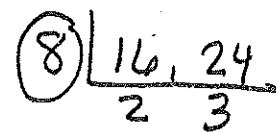
Upside Down Division



$GCF = 4 \cdot 2 = 8$



$GCF = 2 \cdot 2 \cdot 2 = 8$



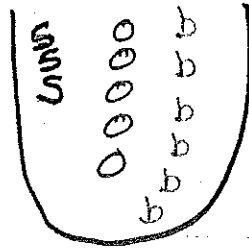
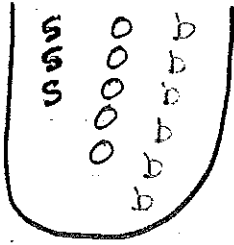
$GCF = 8$

GCF is on the Left!

2 | 6 , 10 , 12
 3 5 6

strawberries
 oranges
 bananas

2 baskets

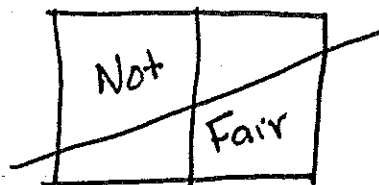
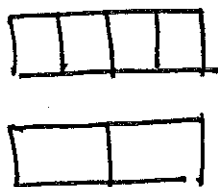


4-2 Simplifying Fractions

TXBK Pg 182

Equivalent fractions are fractions that have the same value.

$$\begin{array}{l} \text{Numerator} \\ \text{Denominator} \end{array} \quad \frac{2 \div 2}{4 \div 2} = \frac{1}{2}$$



Not Proportional
Not Equivalent
Not Equal

* The bars need to be same size.

$$\frac{16 \div 4}{20 \div 4} = \frac{4}{5}$$

$$\frac{4 \div 2}{6 \div 2} = \frac{2}{3}$$



Proportional

$$\boxed{\frac{5}{7}} \times 3 = \boxed{\frac{15}{21}}$$

A fraction is in simplest form when the GCF of the numerator and denominator is 1.

The Big 1

Ex. $\frac{2}{2} = 1$ | $\frac{3}{3} = 1$ | $\frac{10}{10} = 1$

4-2 Simplifying Fractions continue

Upside Down \div

$$4 \overline{) 16} \quad \frac{20}{5} = \frac{4}{5}$$

$$2 \overline{) 4} \quad \frac{6}{3} = \frac{2}{3}$$

$$5 \overline{) 20} \quad \frac{25}{5} = \frac{4}{5}$$

4-3 Mixed # and Improper Fractions

TXBK Pg 187

Proper - The numerators are less than the denominator.

ex: $\frac{3}{4}$, $\frac{1}{2}$, $\frac{5}{6}$

Improper The numerators are greater than or equal to the denominator.

ex. $\frac{6}{5}$, $\frac{3}{2}$, $\frac{5}{5}$, $\frac{2}{3}$

Mixed # A mixed # indicates the sum of a whole number and a fraction,

ex: $1\frac{1}{2}$; $2\frac{2}{3}$

Ex: $2\frac{1}{2}$ 

M - multiply

A - add

D - take denominator

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

$1\frac{2}{3}$



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

$\frac{7}{5}$

$$5 \overline{) 7} \frac{2}{5}$$

$$\begin{array}{r} 5 \overline{) 7} \\ \underline{-5} \\ 2 \end{array}$$

$\frac{14}{6}$

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

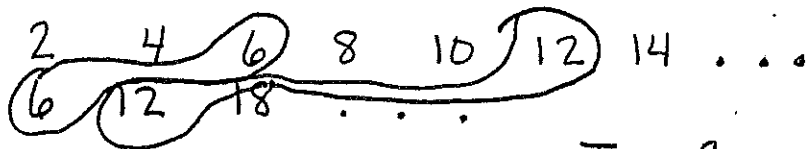
$$6 \overline{) 14}$$

$$\begin{array}{r} 6 \overline{) 14} \\ \underline{-12} \\ 2 \end{array}$$

4-5 Least Common Multiple (LCM)
TXBK Pg. 194

A **multiple** of a number is the product of a number and any whole number.

Multiples that are shared by two or more numbers.

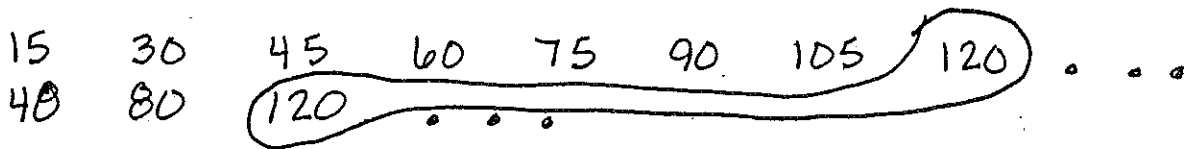


Two Common Multiples: 6, 12

Least Common Multiple (LCM)

The least number that is a multiple of two or more whole numbers.

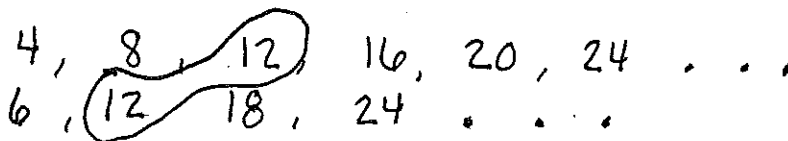
LCM



15, 40, 80, 120

LCM - 120

Starbucks
Ann T. Loft



Every 12 days.

4-6 Comparing and Ordering Fractions

TXBK Pg. 198

$$\frac{1 \times 7}{2 \times 7} = \frac{7}{14} \quad \text{Greater Than} \quad > \quad \frac{3 \times 2}{7 \times 2} = \frac{6}{14}$$

$$\frac{1 \times 3}{6 \times 3} = \frac{3}{18} \quad \text{Less Than} \quad < \quad \frac{2 \times 2}{9 \times 2} = \frac{4}{18}$$

To Compare Fractions

- 1) Find Least Common Denominator that is the LCM.
- 2) Write an equivalent fraction for each fraction.
- 3) Compare

Compare

$$\frac{1 \times 14}{2 \times 14} = \frac{14}{28} \quad \neq \quad \frac{3 \times 7}{4 \times 7} = \frac{21}{28} \quad \frac{5 \times 4}{7 \times 4} = \frac{20}{28} \quad \frac{9 \times 2}{14 \times 2} = \frac{18}{24}$$

Least to Greatest

$$\frac{1}{2} \quad \frac{9}{14} \quad \frac{5}{7} \quad \frac{3}{4}$$

$$\frac{14}{28} \quad \frac{18}{24} \quad \frac{\cancel{30}}{\cancel{28}} \frac{5}{7} \quad \frac{3}{4}$$

* Also look at relationship between numerator and denominator.