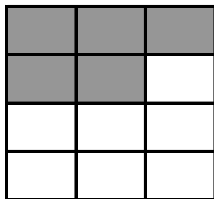# 5th Grade Math Notes

Basic Fraction

<u>numerator</u>   - (the # of pieces shaded or unshaded)

<u>denominator</u> - (the total number of pieces)

Example:

$$\frac{5}{12}$$

Hint: Zero can NEVER be a denominator.

Mixed Numbers and Improper Fractions

When converting a mixed number into an improper fraction you multiply the denominator by the whole number, then add the numerator.

Example:

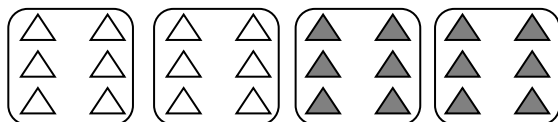$$3 \frac{5}{12} \longrightarrow 12 \times 3 + 5 = 41 \longrightarrow$$

Hint: The denominator does NOT change.

When converting an improper fraction into a mixed number you divide the numerator by the denominator.

$$\frac{41}{12} \longrightarrow 12 \overline{)41} \begin{array}{r} 3 \ R5 \\ - \ 36 \\ \hline 5 \end{array} \longrightarrow 3 \frac{5}{12}$$

Hint: The dividend becomes the whole number and the remainder becomes the numerator and your denominator does NOT change.

Equivalent Fraction

$$\frac{12}{24} = \frac{2}{4}$$

The rule when converting fractions is that what ever you do to the top you must also do to the bottom.
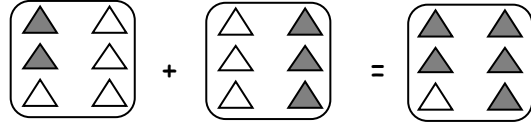
$$\frac{12}{24} = \frac{}{4}$$

~ If your denominator is 24 and it changes to 4 you have to determine which operation was used.

~ You divided 24 by 6 which equals 4.

~ Since you divided 24 by 6, you also have to divide 12 by 6.

~ 12 divided by 6 equals 2

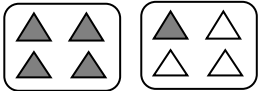$$\frac{12}{24} = \frac{2}{4}$$

Adding Fractions

~ For the numerators add straight across.

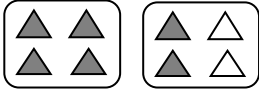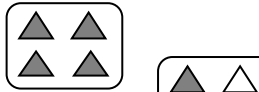~ The denominator does not change.

Ex.

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

Ex.

$$1 \frac{1}{4}$$

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

$$\overline{}$$

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

* Hint: Make sure you have a common denominator before you add.

5th Grade Math Notes

Adding & Subtracting with UNLIKE Denominators

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

1. Find the least common multiple (LCM) by listing the multiples of each denominator in the problem. Circle the least common multiple and use it as your common denominator. (Ex: the LCM of 2 and 3 is 6. Use 6 as your common denominator.)

    2: 2, 4, 6,

    3: 3, 6

2. Rename the fractions using the new common denominator.

$$\frac{1}{2} = \frac{3}{6} \qquad \frac{2}{3} = \frac{4}{6}$$

3. Perform the operation & keep the new denominator.

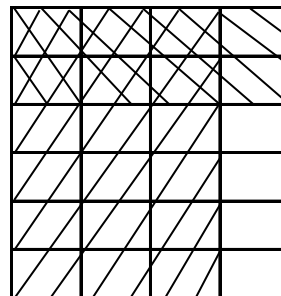$$\frac{3}{6} + \frac{4}{6} = \frac{7}{6}$$

4. Write the answer in simplest form.

$$\frac{7}{6} = 1\frac{1}{6}$$

Multiplying Fractions

~ Multiply the numerator by the numerator.

~ Multiply the denominator by the denominator.

Ex. $\quad \dfrac{3}{4} \times \dfrac{2}{6} = \dfrac{6}{24}$

*HINT: remember to simplify your answer.

Ex. $\quad \dfrac{6}{24} \qquad \dfrac{1}{4}$

Dividing Fractions

~ Invert the fraction

~ multiply the fractions

$$\frac{1}{2} \div \frac{3}{4} = \frac{1}{2} \times \frac{4}{3} = \frac{4}{6}$$

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

~ Draw a picture to represent the first fraction and draw a picture beneath that to represent the second fraction.

~ Draw a line where the second fraction ends and that fraction has a new denominator.

~ See how many squares on the bottom picture match the top picture and that is the new fraction.

Sled Method

~ The method will help you find the simplest form of a fraction AND the GCF and LCM for the numerator and denominator.

$$\frac{12}{18} = \frac{2}{3} \qquad \begin{array}{c|cc} 2 & 12 & 18 \\ 3 & 6 & 9 \\ \hline & 2 & 3 \end{array}$$

~ Draw a sled and write the fraction in it.

~ Divide by the lowest prime number.

~ Continue dividing by the lowest prime number until the numbers under the sled cannot be divided by any number other than 1

~ The two numbers under the last sled shows the fraction in simplest form.

~ To find the GCF multiply the numbers to the left of the sled. (ex. 2 x 3 = 6)   GCF = 6

~ To find the LCM multiply the numbers to the left of the sled and below the sled (ex. 2 x 3 x 2 x 3 = 36)   LCM = 36

5th Grade Math Notes

Operations With Decimals

Adding Decimals:
1. Line up the decimal points and add as usual.
2. Drag the decimal straight down.

Subtracting Decimals:
1. Line up the decimal points and subtract as usual.
2. Drag the decimal point straight down.

Multiplying Decimals:
1. Multiply as usual.
2. Count the digits behind the decimals.
3. Place your decimal point in the product (answer). Make sure the product and the original problem have the same number of digits behind the decimal.

Dividing Decimals:
1. Move the decimal in the divisor so it is a whole number. Move the decimal in the dividend the same number of spaces.
3. Divide as usual.
4. In your answer, place the decimal directly above the decimal in the dividend.

Measurement Conversions

12 inches = 1 foot
3 feet = 1 yard
1,760 yard = 1 mile
5,280 feet = 1 mile

$\Big\}$ distance

1 kilometer = 1,000 meters

1 gallon = 4 quarts
1 quart = 2 pints
1 pint = 2 cups
1 cup = 8 ounces

$\Big\}$ capacity

16 oz. = 1 lb.

8 oz. = $\dfrac{1}{2}$ lb.

4 oz. = $\dfrac{1}{4}$ lb.

$\Big\}$ weight

Fraction, Decimal and Percent

$$\frac{3}{4} = 0.75 = 75\%$$

~ To find the decimal divide the numerator by the denominator.

$$\frac{3}{4} \rightarrow 4\overline{)\ 3.00} \rightarrow \text{decimal} = 0.75$$

```
      0. 7  5      decimal =
  4 | 3. 0  0         0.75
      0
      ___
      3  0
     -2  8
     _____
         2  0
       - 2  0
       _____
         0  0
```

~ The percentage is the first two numbers behind the decimal point. (decimal 0.75 = 75%)

~ To determine a fraction from a decimal put the decimal in fraction form and simplify.
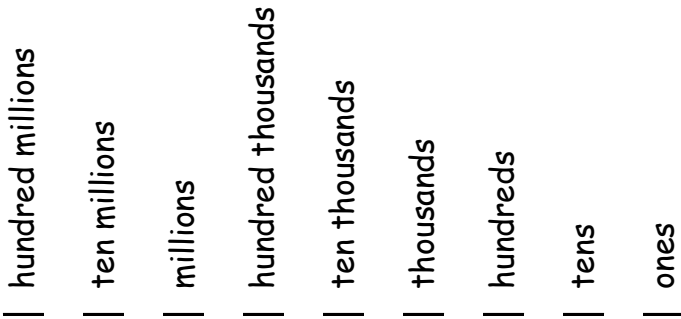
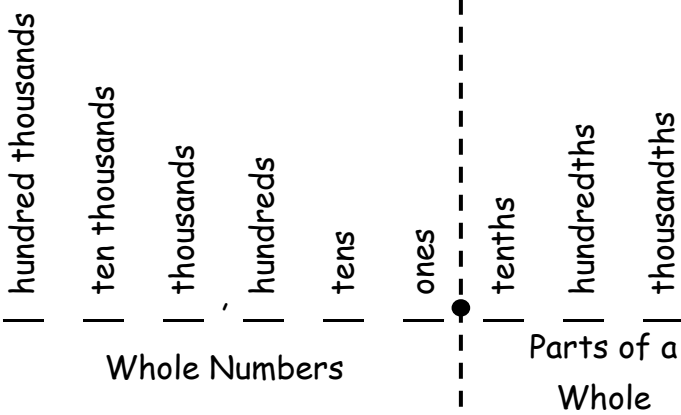Ex. $0.75 = \dfrac{75}{100} = \dfrac{3}{4}$

Rounding Rap

Yo, find that place value
Circle that digit
Move to the right, underline get it.
0-4 circle stays the same
5-9 add one is the game
Now flex your muscles like a hero
Digits to the right change to zero
All the other digits stay the same
Yo! You're the winner of the rounding game!

5th Grade Math Notes

Place Value

| hundred millions | ten millions | millions | , | hundred thousands | ten thousands | thousands | , | hundreds | tens | ones |

Whole Numbers

| hundred thousands | ten thousands | thousands | , | hundreds | tens | ones | • | tenths | hundredths | thousandths |

Whole Numbers | Parts of a Whole

Divisibility Rules 2-5

If the last digit is divisible by 2 then the original number is divisible by 2.	Example: 4,368 (Since 8 is divisible by two then 4,368 is divisible by 2.)
If the sum of the digits is divisible by three then the original number is divisible by 3.	Example: 495 4+9+5 = 18 (Since 18 is divisible by 3 then 495 is divisible by 3.)
If the last two digits are divisible by four then the original number is divisible by 4.	Example: 4,328 (Since 28 is divisible by four then 4,328 is divisible by 4.)
If the last digit is a five or a zero then the number is divisible by 5.	Example: 3,695 (Since the last digit is a 5 then 3,695 is divisible by 5.)

Long Division

Divide
Multiply
Subtract
Bring down

```
            1 2 3 7 R 1
      6 | 7 4 2 3
         -6
         1 4
        -1 2
        0 2 2
          -1 8
          0 4 3
            -4 2
            0 1
```

~ **Divide** 6 into 7 one time so 1 goes above the 7.
~ **Multiply** 1 by 6 which equals 6 and **subtract** from 7 which equals 1.
~ Then **bring down** the 4 and the process begins again until every number has been divided.
~ The final answer is 1,237 remainder 1.

**Hint: If you have to bring a number down then you start back over with divide.

Divisibility Rules 6-10

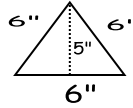| If the number is divisible by two and three then the number is divisible by 6.	Example: 534 Is it divisible by 2? – yes because 4 is divisible by 2 Is it divisible by 3? – yes because 5+3+4=12 and 12 is divisible by 3 so 534 is divisible by 6
If the last three digits are divisible by eight then the original number is divisible by 8.	Example 7,328 (Since 328 is divisible by eight then 7,328 is divisible by 8.)
If the sum of the digits is divisible by nine then the original number is divisible by 9.	Example: 495 4+9+5 = 18 (Since 18 is divisible by 9 then 495 is divisible by 9.)
If the last digit is a zero then the number is divisible by 10.	Example: 4,560 (Since the last digit is a 0 then 4,560 is divisible by 10.)

5th Grade Math Notes

Geometry Formulas

triangle: $P = s + s + s$ $P = 6" + 6" + 6" = 18"$

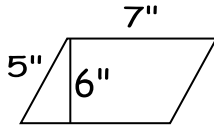$A = \dfrac{1}{2} \, bh$ $A = \dfrac{1}{2} \, 6"(5") = 15 \text{ in.}^2$

$A = \dfrac{b \times h}{2}$

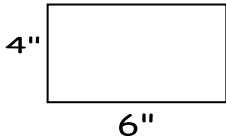**quadrilateral:** $P = 7" + 7" + 5" + 5" = 24"$

$P = s + s + s + s$ $A = 6 \times 7 = 42 \text{ in.}^2$

$A = bh$

$P = 6" + 4" + 6" + 4" = 20"$

$A = 4 \times 6 = 24 \text{ in.}^2$

circle: $C = 2\Pi r$ $(\Pi \approx 3.14)$

$A = \Pi r^2$
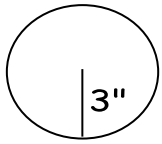
$C = 2\Pi r$ $A = \Pi r^2$
$C = 2(\Pi)(3")$ $A = \Pi(3^2)$
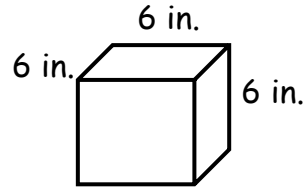$C = 6\Pi$ $A = 9\Pi$
$C = 18.84"$ $A = 28.26 \text{ in.}^2$

Geometry Formulas

P = perimeter (The distance around a figure.)
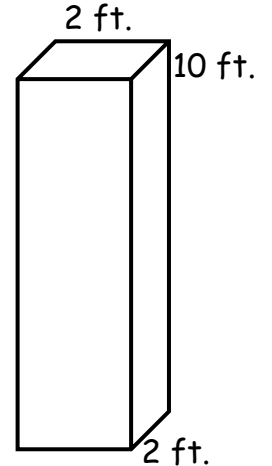A = area (The measure, in square units, of the inside of a plane figure.)
V = volume (The number of cubic units a space of a solid figure takes up.)

6 in.   6 in.   6 in.   2 ft.   10 ft.

$V = l \times w \times h$
$V = 6 \times 6 \times 6$
$V = 216 \text{ in.}^3$

2 ft.

$V = l \times w \times h$
$V = 2 \times 2 \times 10$
$V = 40 \text{ ft.}^3$

Mean, Median, Mode and Range

Data: 23, 27, 25, 22, 29, 23, 26

Mean (average):
~ Add the numbers together
~ Count up how many numbers you added together and divide the sum by that number.
Ex. 23+27+25+22+29+23+26 = 175
175 ÷ 7 = 25
Mean = 25

Median:
~ Put the numbers in numerical order and the number in the middle is the median.
22, 23, 23, (25), 26, 27, 29
Median = 25

Mode:
~ The number that occurs most often.
Mode: 23

Range:
~ The largest number subtract the lowest number.
Ex.   29 - 22 = 7   **Range = 7**

Data Analysis

Line Graph
Shows changes over time

Potatoes Consumed
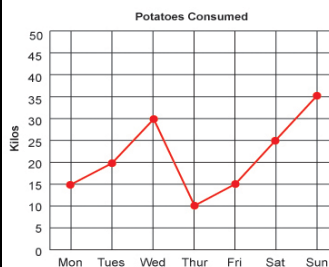
Circle Graph
Shows data that is part of a whole

Pie Preferences
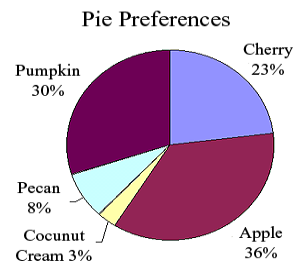
Double-Bar Graph

Compares similar Data

Our Favorite Sports

Line Plot
Shows frequency of data along a number

Number of Pets