6TH GRADE MATH EOG

Keep Calm and PASS THE EOG!

GCF AND LCM

- **Greatest Common Factor (GCF):** the largest number that will go in two or more given #s
  Ex. 12, 24, 60 GCF = 12
- **Least Common Multiple (LCM):** the smallest multiple that two or more numbers have in common
  Ex. 4, 6, 16 = 48. LCM is also used in finding the least common denominator with fractions.

PRIME & COMPOSITE NUMBERS

- **Prime:** one set of factors, 2 is the only even prime #
- **Composite:** more than 2 factors

SOLVING TWO STEP EQUATIONS

- Do the opposite to reverse the operation and work backwards with order of operations to get x by itself and what you do to one side you have to do to the other
- Example

$$2x + 3 = 15$$
$$-3 \quad -3$$
$$\frac{2x}{2} = \frac{12}{2}$$
$$x = 6$$

TEST STRATEGIES

- Guess and Test
- Make a table/chart/graph
- Make a diagram/picture
- Make and organized list
- Work backwards
- Work a simpler problem
- Find a pattern

EXPONENTS

- **Cubed:** third power
- **Squared:** second power
- $5^4 = 5 \times 5 \times 5 \times 5$

SUBSTITUTION

- Put a number in place of a letter
- Ex. If a= 2 b=5 and c=1 what does ab-c equal?

ORDER OF OPERATIONS

Please: Parentheses
Excuse: Exponents
My: Multiplication
Dear: Division
Aunt: Addition
Sally: Subtraction

- Treat multiplication and division as equals
- Treat addition and subtraction as equals
- Work left to right if you've got signs that are treated equally (Ex. If you got – before + do – first… L→R)

TEST TIPS

- Get plenty of rest the night before
- Eat a good breakfast the morning of the test
- RELAX!!
- As soon as you're allowed to start, quickly write down helpful formulas and notes on your scrap paper so you don't forget during the test
- Use process of elimination
- You can write in your test book so WRITE ALL OVER IT. Cross out wrong answers, /underline/circle important words.
- Circle your correct answer in the test book so if you get off on your bubble sheet you can easily go back and fix things.
- Pace yourself and don't rush through the test because you could make careless mistakes.
- **BELIEVE IN YOURSELF!!**

PROPERTIES OF ADDITION AND MULTIPLICATION

- **Distributive Property:** "Distribute the papers" →
  3(x-4) = -18
  3*x + 3*-4 = -18
- **Associative Property:** "Parentheses"
  o 2(3y) = (2x3)y
  o 2+(4+6) = (2+4)+6
- **Commutative Property:** "Mirrors" → 5x4x3 = 3x4x5
- **Additive Identity Property:**
  4 + 0 = 4
- **Multiplicative Identity Property:** 9x1 =9
- **Zero Property:** 5 x 0 = 0

MEASUREMENT

- **Area of squares/rectangles:** L x W
- **Area of triangle:** ½bh or bh ÷ 2
- **Area of trapezoid:** (base1 + base2) x height ÷ 2
- **Area of Parallelogram:** b x h
- **Perimeter:** add all of the sides together
- **Volume of Rectangular Prism:** L x W x H
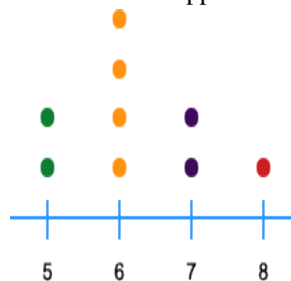- **Surface Area:** find the area of each face then add all them up

ABSOLUTE VALUE

| 6 | = 6 | -4 | = 4

-| 5| = -5   -|-2| = -2

DOT PLOTS

- Very similar to a bar graph but instead of bars a dot is placed above the category for each time it appears

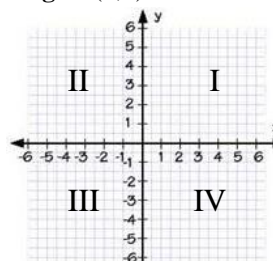

COORDINATE GRID

- **Coordinates:** (x,y)
- **Origin:** (0,0)

FRACTIONS

- **Mixed # to Improper fraction:** multiply denominator by whole # then add the numerator
- **Improper fraction to Mixed #:** figure out how many times denominator goes into numerator and this is the whole #, remainder is numerator, denominator stays same
- **Multiplying Fractions:** Turn mixed #s into improper fractions and multiply across, then simplify
  $2 \frac{1}{3} \times \frac{3}{4} \rightarrow \frac{7}{2} \times \frac{3}{4} = \frac{21}{8} = 2 \frac{5}{8}$
- **Dividing Fractions:** Dividing fractions is easy as pie, flip the last fraction and multiply
  $\frac{5}{7} \div 1 \frac{3}{5} \rightarrow \frac{5}{7} \div \frac{8}{5} \rightarrow \frac{5}{7} \times \frac{5}{8} = \frac{25}{56}$
- If you are multiplying or dividing by a whole # you put it over 1…
  Ex: $4 \times \frac{3}{5} = \frac{4}{1} \times \frac{3}{5} = \frac{12}{5} = 2 \frac{2}{5}$

BOX PLOTS

- **Minimum:** first dot from the left, it is the smallest #
- **Maximum:** last dot from the left, it is the largest #
- **Median/ Second Quartile:** middle line inside the box
- **Lower/First Quartile:** median of lower ½ of data, left side of box
- **Upper/Third Quartile:** median of upper ½ of data, right side of box
- **Interquartile Range:** Q3 minus Q1
- 25% of data is between each part of the box plot

LE   LQ   Median   UQ   UE
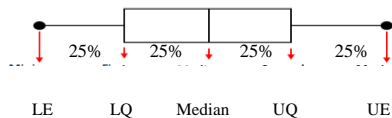
RATIOS, FRACTIONS, & DECIMALS

- **Ratio:** a way to represent a fraction using :
- **Fraction:** part over whole
- **Decimal:** another way to represent a fraction. Top # ÷ bottom # = decimal
- Example of ¾:
  - Ratio- **3:4**
  - Fraction- ¾
  - Decimal- 3 ÷ 4 = **0.75**
- **Decimal to Fraction:** take the number after the decimal and put it over the place value (Ex. 0.625 → $\frac{625}{1000}$ because the 5 is in the thousandths place… now simplify… simplifies to 5/8)
- **Bar notation:** line that shows a decimal repeats

HISTOGRAM

- Type of bar graph that uses intervals
- Intervals cannot have the same # in two categories… Ex. 1-5, 6-10 works but 1-5, 5-10 doesn't work because 5 is in both intervals
- You must have the same numbers of #s in each interval… Ex. 1-3, 4-6 works because each interval has 3 #s but 1-2, 3-6 doesn't work because only 2 #s are included in the interval 1-2 (the #s 1 and 2) and in the interval 3-6 there are 4 #s (3, 4, 5, and 6)
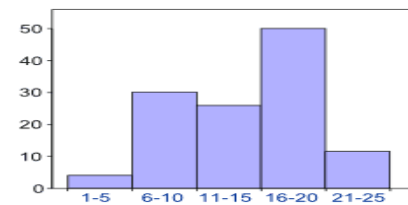
DECIMALS

- **Adding and Subtracting:** line the decimals up and add/subtract like a regular # and bring the decimal straight down
- **Multiplying:**
  Move the decimal left the number of of numbers following the #s in the ?
  $$54.78$$
  $$\times \quad 1.2$$
  $$10956$$
  $$+ \; 54780$$
  $$55.736$$
- **Dividing:**
  If you are doing DECIMAL ÷ WHOLE # *do not* move the decimal, but if you ÷ by a decimal you will have to move the decimal
  $15.6 \div 0.02 \rightarrow 1560 \div 2$
  Moved the decimal 2 times to the right to get rid of the decimal in 0.02 so had to move the decimal to the right 2 times in 15.6
- **Place Value:** after the decimal the place values from closest to the decimal and moving right are:
  . tenths hundredths thousandths ten thousandths and so on

MEASURES OF CENTER

- **Mean:** the average for a set of data… add all the data up and divide by how many #s you added together
- **Median:** the middle number when you arrange the data in order.. If two #s split the middle then find the mean of the 2 middle #s
- **Mode:** the # that occurs the most, you can have more than one mode, if there isn't one write none
- **Range:** the difference between the highest and lowest #s

PERCENTS

If you have all the percents (whole) it will be **100%**.

- **Decimal to %:** decimal * 100 (move deci. 2 to →)
- **% to Decimal:** % ÷ by 100 (move deci. 2 to ←)
- **Fraction to %:** top # ÷ bottom # *100
- **% to Fraction:** turn % to decimal then decimal to fraction (see ratio fraction decimal box)

DIVISIBILITY RULES

- **0:** numbers can't be ÷ by 0 but you can do 0 ÷ #
- **1:** any # ÷ 1 is that #
- **2:** if it ends in an even #
- **3:** add up the digits in the #, if the sum is a multiple of 3 then the bigger # can be ÷ by 3
- **4:** look at the last 2 digits in the #, if it ends in 00 or that # can be ÷ by 4 then the whole # can be ÷ by 4
- **5:** ends in 5 or 0
- **6:** must be divisible by 2 and 3
- **7 and 8:** no rule
- **9:** add the digits in the # up and if the sum can by ÷ by 9 then the bigger # can be ÷ by 9
- **10:** ends in 0