

MATH
EOG
STUDY
PACKET

Student: By signing below you are agreeing to study this packet AT LEAST 20 minutes EVERY NIGHT to help prepare for your Science EOG. When available, I will study with a parent, sibling or friend to help better my understanding of our Science content.

Student Signature: _____

Parent: By signing below, I am verifying that I have seen my child's EOG study packet and I will encourage my student to study at least 20 minutes every night. When available I will study with my student in a "question & answer" method to help ensure my student is prepared for the upcoming EOG on May, 28th.

Parent Signature: _____

5th Grade
Math EOG Study Guide

Formulas:

1. Perimeter of a rectangle: Add all sides or $P = (2L + 2w)$ 2 times the length plus 2 times the width
2. Area of a rectangle: $A = (L \times w)$ length times width
3. Perimeter of a polygon: add the length of all sides
4. Area of a parallelogram: $A = (b \times h)$ base times height
5. Area of a triangle: $A = (\frac{1}{2} b \times h)$ one half base times height

Important Facts about Perimeter and Area:

- The unit of measurement for perimeter does not have an exponent.
 - For example:

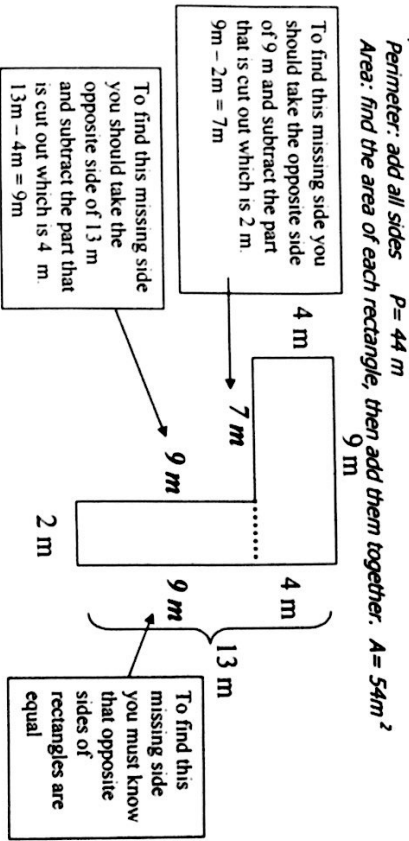
5 cm
2 cm

$P = 14 \text{ cm}$
 - For example:

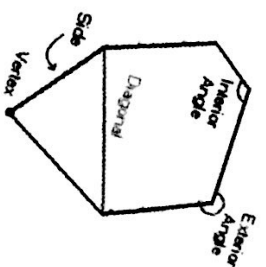
5 cm
2 cm

$A = 10 \text{ cm}^2$
- The unit of measurement for area does have an exponent. It should be square units

- Perimeter is the distance around a figure. The fence that goes around your yard
- Area is the amount of space a figure takes up. The grass that covers the area inside your yard
- When finding the area or perimeter of an irregular figure, be sure to break the figure into known parts like squares, and rectangles.
 - For example: you can break this L shape into two rectangles and calculate the perimeter and area based on the known facts.



- Side - one of the line segments that make up the polygon.
- Vertex - point where two sides meet. Two or more of these points are called vertices.
- Diagonal - a line connecting two vertices that isn't a side.
- Interior Angle - Angle formed by two adjacent sides inside the polygon.
- Exterior Angle - Angle formed by two adjacent sides outside the polygon.



Fractions: Adding, Subtracting and Multiplying.

- When adding or subtracting fractions you must find the Least Common Multiple (LCM) to get a common denominator before you can add or subtract. Remember to change improper fractions to mixed numbers and reduce your final answer. Also "Watch the sign", many students get these questions incorrect because they add when they should subtract or subtract when they should add.
 - For example:

Find the LCM (least common multiple) of the denominators 2 and 5.
2) 2, 4, 6, 8, 10, 12
5) 5, 10, 15, 20

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

Get a Common Denominator

The common denominator is 10

Make equivalent fractions so that the denominator is 10.

$$\frac{1 \times 5}{2 \times 5} = \frac{5}{10} + \frac{2 \times 2}{5 \times 2} = \frac{4}{10}$$

$$\frac{5}{10} + \frac{4}{10} = ?$$

Make Equivalent fractions

Add the numerators. Remember the denominator stays the same. $5 + 4 = 9$ so the answer is $\frac{9}{10}$

$$\frac{5}{10} + \frac{4}{10} = \frac{9}{10}$$

Add the top keep the denominator the same, and reduce if possible

The numerator 9 is a prime number. Its factors are 1 and 9. The denominator 10 is composite. Its factors are 1, 10, 2, and 5. The only factor they have in common is 1, so the fraction cannot be reduced.

Fractions: Multiplying Fractions, and changing improper fractions to mixed numbers, and mixed numbers to improper fractions.

You do not need a common denominator to multiply fractions, so you simply multiply:

Numerator $1 \times 2 = 2$
Denominator $2 \times 5 = 10$

$$\frac{1}{2} \times \frac{2}{5} = \frac{2}{10}$$

Multiply across the top and bottom

Use GCF (Greatest Common Factor) to reduce the fraction:

2 is a prime number. Its factors are 1, and 2. 10 is a composite number its factors are 1, 10, 2, and 5. The GCF is 2, so divide by 2.

Numerator 2 divide by $2 = 1$
Denominator 10 divided by $2 = 5$

$$\frac{2}{10} = \frac{1}{5}$$

Reduce the fraction

Note: If you are multiplying mixed numbers you must first change them into improper fractions.

Changing an Improper Fraction to a Mixed Number:

1. Divide the numerator by the denominator.
2. The quotient becomes the whole number and the remainder becomes the numerator. The denominator stays the same.

$$\frac{11}{5} = 2 \frac{1}{5}$$

Changing a Mixed Number to an Improper Fraction:

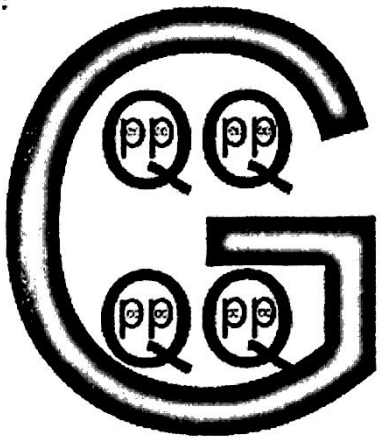
1. Multiply the whole number and the denominator.
2. Add the product to the numerator. The sum becomes the new numerator. The denominator stays the same.

$$2 \frac{1}{5} = 2 \times 5 = 10 + 1 = 11 \frac{1}{5}$$

Measurement:

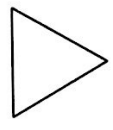

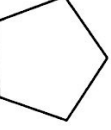



	length	Weight	capacity
Customary	1 foot (ft) = 12 inches (in.) 1 yard (yd) = 3 feet (ft) 1 yard (yd) = 36 inches (in) 1 mile (mi) = 1,760 yards (yd) 1 mile (mi) = 5,280 feet (ft)	1 pound (lb) = 16 ounces (oz) 1 ton (T) = 2,000 lbs 1 ton (T) = 32,000 oz	1 pint (pt) = 2 cups (c) 1 quart (qt) = 2 pints (pt) 1 quart (qt) = 4 cups (c) 1 gallon (gal) = 4 quarts (qt) 1 gallon (gal) = 8 pints (pt) 1 gallon (gal) = 16 cups (c)
Metric	1 centimeter (cm) = 10 millimeters (mm) 1 decimeter (dm) = 10 cm or 100 mm 1 meter (m) = 10 dm / 100 cm / 1,000 mm 1 kilometer (km) = 1,000 m	1 kilogram (kg) = 1,000 grams (g)	1 Liter (l) = 1,000 milliliters (mL)

Big G:

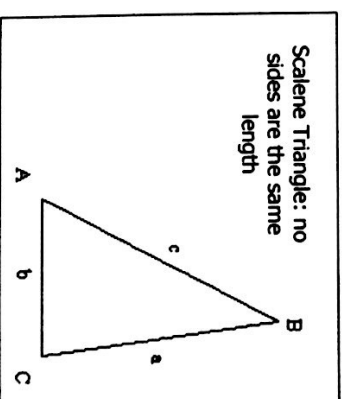
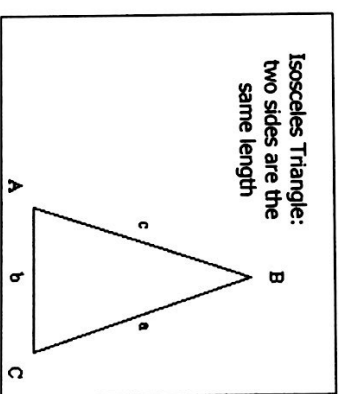
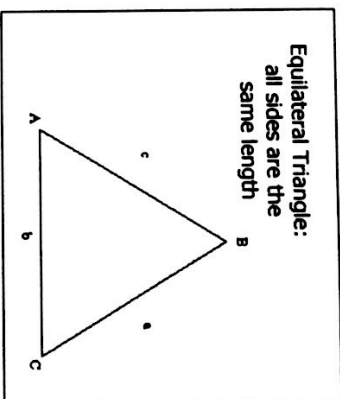
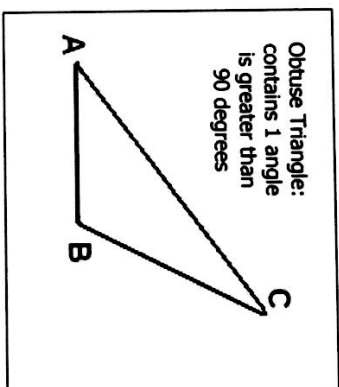
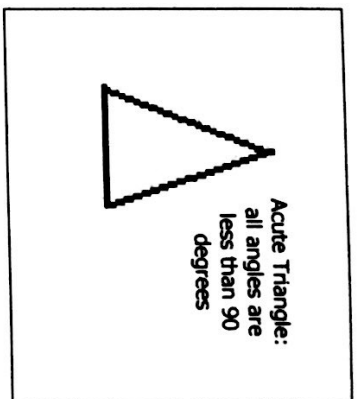
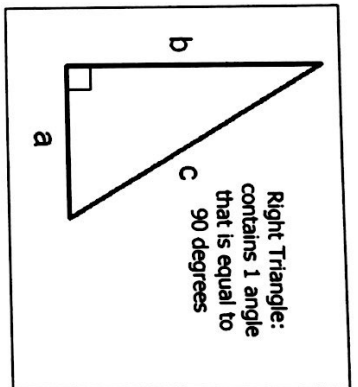


Remember: when you go from a larger unit to a smaller unit you should multiply "horse to fly multiply" but when you go from a smaller unit to a larger unit you should divide "fly to horse divide of course"

Polygon Names and Properties
 Sample questions about polygons and their properties can be found on pages 206-211 of your math text book.

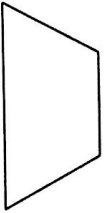
Number of Sides	Polygon Name	Sum of Interior angles	These are regular polygons, that means that all the sides and angles are equal, the shapes will not always look this way. You will need to learn the # of sides to identify the name of a polygon.
3	Triangle 3 sides 3 angles	180	
4	Quadrilateral 4 sides 4 angles	360	
5	Pentagon 5 sides 5 angles	540	
6	Hexagon 6 sides 6 angles	720	
7	Heptagon 7 sides 7 angles	900	
8	Octagon 8 sides 8 angles	1080	

Triangles: Triangles can be identified by the kind of angles and the lengths of its sides.

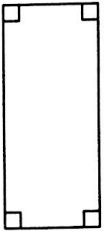


Special quadrilaterals (4 sided figures)

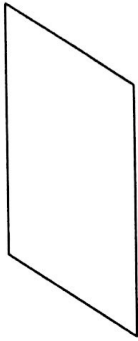
Trapezoid: 1 pair of parallel sides



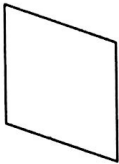
Rectangle: a parallelogram with 4 right angles,



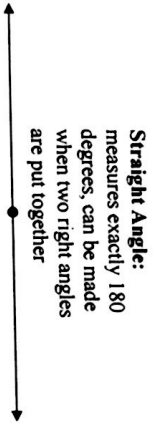
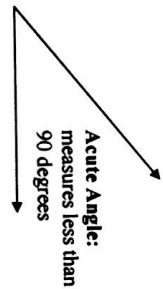
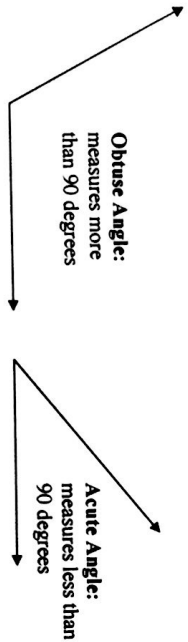
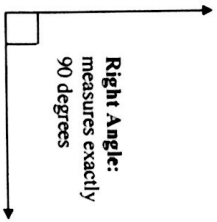
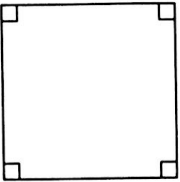
Parallelogram: opposite sides are equal and parallel



Rhombus: a parallelogram with all sides the same length



Square: a rectangle with all sides the same length



Math Vocabulary

Numbers and Operations

- Place value of numbers one through hundred million (1-100,000,000)
- Standard (number), word, and expanded form ex: $324 = 300 + 20 + 4$
- NEW Expanded form ex: $324 = 3 \times 100 + 2 \times 10 + 4 \times 1$
- Rounding numbers: Slip to the side and look for a FIVE! If it's 5 or more we go up one more, 4 or less we AVOID the mess (stay the same)! Numbers in front stay the same and numbers behind turn to ZEROS!
- Decimals: standard, word, and NEW expanded form ex: $2.45 = 2 \times 1 + 4 \times .1 + 5 \times .01$
- Rounding decimals
- Comparing and ordering decimals- Line up the DOT and give it all ya GOT!
- Adding and Subtracting decimals- (rounding and multiplying numbers)
- Estimating Products (rounding and multiplying numbers)
- Multiplying two by two and three by three digit numbers
- Dividing by one divisor (Does McDonald's Serve Cheese Burgers?)- Divide, Multiply, Subtract, Check, Bring down!
- Estimating Division (finding compatible numbers and changing the rest to zeros!)
- Dividing by two digit divisors

Measurement

- Length: centimeter, inch, yard, meter, kilometer, mile
- Customary: system used here in the United States
- Metric: system used in most other countries
- Mass/Weight: grams, ounces, pounds, kilograms
- Capacity: The big "G" and A Liter is a little bit more than a Quart

Data Analysis

- Stem and Leaf Plot: used to organize a set of data (after it has been collected)
- Pictograph: graphs using pictures to display data
- Bar Graph: Display data by category
- Circle Graph: Graphs that show parts of a WHOLE
- Line Graph: Shows change over time
- Range (take the highest # in a set of data and lowest #, subtract 'em)
- Median (number in the middle of a set of data- you may have to average the two in the middle to find this)
- Mode (The number that occurs the most in a data set- there may be more than one- or none at all)
- Midpoint (The exact # in the middle of a data set- only available with an odd # of data collected)

Geometry

- Polygon: A closed figure made my joining line segments.
- Regular Polygon: A polygon with all equal sides and angles.
- Irregular Polygon: A polygon with one or more different sides or angles.
- Right Angle: An angle measuring exactly 90 degrees.
- Acute Angle: An angle measuring less than 90 degrees.
- Obtuse Angle: An angle measuring more than 90 degrees but less than 180 degrees.
- Straight Angle: An angle measuring exactly 180 degrees- also a straight line.
- Triangle: A 3 sided polygon
- Right Triangle: A triangle with one right angle and two acute angles.
- Acute Triangle: A triangle with three acute angles. (MUST have 3)!
- Obtuse Triangle: A triangle with one obtuse angle and two acute angles.
- Scalene Triangle: A triangle with no equal sides.
- Isosceles Triangle: A triangle with two equal sides.
- Equilateral Triangles: A triangle with ALL equal sides.
- Perimeter: distance around an object
- Area: space inside an object (Length X Width)
- Quadrilaterals: A four sided polygon
- Line Symmetry: When a figure can be folded on a line and match exactly on both sides.
- Rotational Symmetry: The figure can be rotated less than 360 degrees around a central point and still match the original figure.
- Pentagon: A five sided polygon
- Hexagon: A six sided polygon
- Octagon: An eight sided polygon
- Decagon: A ten sided polygon
- Dodecagon: A twelve sided polygon
- Supplementary angles: two angles that add up to 180 degrees or form a straight line
- Complementary angles: two angles that add up to 90 degrees or a right angle

Fractions

- Fraction: Part of a whole
- Numerator: The top number in a fraction
- Denominator: The bottom number in a fraction
- Common or like Fractions: These are two or more fractions that may look different but represent the same amount. ex: $1/2$ is $2/4$ which is also $4/8$
- Common Denominators: Two or more fractions with the same number in the denominator spot. When adding fractions with like denominators, just add the numerator and the denominator STAYS THE SAME!
- Factors: The two numbers you multiply together to get a larger number. Ex: the factors of 6 are: 1,2,3,6 (1 x 6) and (2 x 3)
- Greatest Common Factor (GCF): The largest factor that both the numerator and the denominator have in common.
- Equivalent Fractions: Fractions that share the same value but have different numerators and denominators.
- Simplest Form: When a fraction can not be reduced any further. This is the form that all answers will be in on the EOG!
- Improper Fractions: A fraction that has a larger numerator than denominator.

- Mixed Number: A value that includes a whole number and a fraction.
- Prime Number: A number that only has two factors- one and itself. (ex: 2, 3, 5, 7, 11)
- Composite Number: A number that has more than two factors.
- "big brother": The little brother (smaller denominator) always looks up and wants to be just like the BIG brother (larger denominator) - so we do whatever we need to to the little brother to make him the big brother! Then, whatever we did to the bottom, we must do to the top!
- In 5th grade we will only be adding and subtracting unlike denominators through our "fraction families" (halves, thirds, and fifths) so this concept will work every time!
- Adding mixed numbers with unlike denominators: Students will learn to "Prepare the Patient" (find common denominators), "Operate" (add or subtract mixed numbers- fractions first of course), and then "Recovery" (simplify)!