

GEOMETRY

Unit Two Project: "Using & Measuring Basic Geometric Principles"

OBJECTIVES:

- ✓ Correctly identify basic geometric principles
- ✓ Measure segment length and angles using rulers and protractors
- ✓ Solve linear equations.
- ✓ Graph a linear equation by plotting points.

In this unit, you will be spending time working with basic geometric principles. You will be defining, drawing, and describing these ideas a lot. It will also be important to measure using various instruments. Along with the ability to use algebraic tools to solve problems in Geometry, it is essential to know and understand the foundational principles of which Geometry is built.

*This project will allow you to use some of the skills you will be exploring in this unit. Throughout the unit, you will experience everything you need to learn to complete this project. **This project is worth 50 points, will be scored using the rubric that follows, and is due the day before the unit one exam.***

PROJECT INTRODUCTION

YOU are an important person! People may know your name and some of the things that you do, but do they really "know" YOU! During the Middle Ages, it became somewhat difficult to tell warriors apart from each other because they wore armored suits and helmets. A coat of arms was developed by warriors to distinguish one from another. A coat of arms was a design that warriors often painted on their shields to show something personal about themselves. Over time, the coat of arms not only represented a warrior but came to represent a family and their beliefs and values. A coat of arms also became a family seal on important documents. Today a coat of arms has been transformed to represent not just families, but companies by referring to a company's logo. When one sees the logo, people know what product line it represents. Some logos are simple while others are very detailed.

You are to create a coat of arms (or logo) about yourself with a few twists. You will not be using a shield. You will not be allowed to make any marks that are not straight (no curves, arcs, circles, etc...). Your coat of arms or logo will represent some things about you while using the geometric principles learned in the unit. You will include your name (either first or last) and any pictures or designs that show who you are! You must include some geometric principles and measure them correctly. After you make your finished product, you will then make another sheet of paper to be used as a guide (with the letter) that shows where all your necessary elements are on the coat of arms are located; therefore, you will turn in two pieces of paper by the due date.

PROJECT DETAILS and SCORING (in parentheses)

1. Materials (paper size = 2 points)
Use any type of plain white paper but the paper must be exactly 8 ½" by 8 ½". You will also need a ruler (both metric and customary units of measure) and a protractor. You will need a pencil first to draw your coat of arms or logo. Thin black or other colored writing instruments will also be needed so that items can be accurately drawn to the correct measurements. You will finish with any type of coloring instruments from crayons, colored pencils, or markers to fill in your coat of arms or logo.
2. Rules (all marks are straight or points used = 6 points, nearly all = 3 points, few = 0 points)
ALL marks on the coat of arms must be straight OR they can be dots meant to represent points. You must include the mandatory items. Other than that, you can put in anything you want.
3. What to Include (your name = 4 points, 2 points for each picture included (max. of 6 points)
*Your name (either first or last or both)...this should be the biggest thing and the only use of letters on your coat of arms (as you make your letters, remember that the letters cannot curve...everything must be straight or made with points).
*Pictures representing who you are (at least three).
*Designs (keep reading for examples!)

4. **Essential Geometric Principles to Include (2 points each, point deducted on each if an essential aspect if missing...EX.-arrows on lines or rays are not included)**

These principles must be included somewhere in your coat of arms:

- At least three collinear points.
- At least three noncollinear points.
- At least two planes that intersect.
- At least two lines that intersect.
- At least one three-sided figure with all sides measuring 1.2 cm
- At least one four-sided figure with all sides measuring $7/8$ ".
- At least one line.
- At least one segment measuring $2\ 1/2$ ".
- At least two segments measuring 2 cm each that bisect each other.
- At least one 30° angle made of rays.
- At least one 120° angle made of rays or segments.
- At least one pair of 45° adjacent angles made of rays or segments.

5. **Color (colored carefully with neatness = 8 points, color and somewhat neat = 4 points, no color,not neat = 0 points)**

Fully color your coat of arms or logo (read below for what the colors mean). Make sure you are neat!

6. **Guide Page (ESSENTIAL TO GRADE INSTRUCTION #4)**

On a separate sheet of paper, make a rough sketch of your coat of arms or logo using pen or pencil. Label using the letters (a through l) from instruction #4 where all the essential geometric principles are located. You may have more than one example of each letter; therefore, only identify one occurrence of each (you will have the letters a through l only once on your guide). Place your name on the guide page. Without the guide, it will not be clear whether you placed the essential elements in or not or whether you have the knowledge about what each is.

Colors And Shapes of Heraldry (From: <http://www.coatofarms-shop.com/Co&Shap.html>)

"There are literally hundreds of different symbols that can appear on coats of arms. The colors that are chosen and even the shape of the shield itself can be of significance to the family. The use of animals and image on the shields meant different things at different times to different people. The colors that were used however were more constant as were the shapes on the shields."

COLORS:

Modern Color	Meaning
Purple	Justice, Sovereignty, Regal
Red	Warrior , Martyr , Military Strength
Blue	Strength , Loyalty
Green	Hope , Loyalty in Love
Maroon	Victorious , Patient in Battle
Orange	Worthwhile Ambition
Black	Faithful, Constant , Grief
Gold	Noble, the Sun
Silver	Sincerity, Peace, the Moon

Shapes and Styles:

Name	Description	Represents
Chief	a bar across the top of the shield	Dominion, authority, wisdom, achievement in battle
Pale	a center column on the shield - top to bottom	Military strength, fortitude
Bend	a column from a top corner to opposite bottom corner	A Knights scarf - signifies Defense
Fess	a center column - left to right	Signifies the Military Belt - represents Honor
Chevron	a column shaped like ^	Roof of a house - signifies Protection, faithful service
Saltire	an x shaped cross going corner to corner	signifying Resolution
Pile	A "V" shape on the front	Wood used in bridge building - signifies construction, building
Canton	a small square located in the upper corner	A flag 'added' to the arms, and may contain a charge granted by a Sovereign
Bordure	a border around the shield	Honor, as used to differentiate between family members