**Envision’s Math Scavenger Hunt for Middle and High School**

Math may seem like an abstract concept to some students, but it actually exists all around us in the physical world. A Math Scavenger Hunt will help your students tie mathematical concepts to their reality, while making math class fun, different and hands-on.

We suggest focusing on geometry for this age level and requiring the students to not simply *find* examples of geometry in real life, but also articulate how a variety of geometric functions apply to the objects found, and make any related calculations.

**Materials Required:**

Most students at this age will have access to a phone or some other type of digital camera to record their Scavenger Hunt finds. If this requirement presents any kind of hardship, the students can simply describe or sketch their finds. As an alternate approach, they can collect pictures from magazines or the Internet.

**Activity Instructions:**

Provide the students with a list of geometric terms (see final page) and send them out to find examples of these terms in nature or manmade objects. If necessary, the hunt can be preceded by a class discussion of the terms, or the students can look up any terms that may be unfamiliar to them.

**Reporting on Their Finds**

You can customize the report requirements based on grade level and areas of class focus. We recommend asking that each student choose a minimum of 5 of their hunt items and provide the following:

* A definition of the term this object illustrates
* A description of how the object fits that definition, in the mathematical sense
* A calculation of the area of the object, the degrees of any associated angles, and/or any related formulas
* Evaluation of the significance of the geometric concept in this object.
  + Why did nature – or man – design this object in this way? For example, why is a honeycomb composed of hexagons?
  + What practical concerns are addressed in this design?
    - What would happen if the support beams in a building were not parallel or perpendicular?
    - Why must railroad tracks be parallel – and do they truly qualify as parallel *lines*?
    - Why must a ball be round?
    - Are all baseball diamonds symmetrical? Why or why not?
  + What is the relationship between the various shapes or lines seen in this object?

Challenge the students to use their creativity in determining exactly what is interesting, mathematically-speaking, about the objects in their list. This part of their report should be open-ended, encouraging critical thinking. You can also award extra points for students who are able to devise word problems that reflect one or more of the objects in their lists.

The reports can be either written, or presented to the class orally, ala show-and-tell.

**The Competitive Element**

Since competition often generates an extra level of engagement, you can award prizes to students based on a variety of elements, such as:

* The most unique examples of the geometric terms
* The most thorough evaluation of how geometric concepts apply to the objects
* The most complex calculations
* The most *artistic* example of geometry in the students’ photos
* A class vote on which oral presentation made math the most interesting

**List of Geometric Terms for Scavenger Hunt – Student Hand-Out**

Assignment: Find real-world examples of each of the following:

* Parallel lines
* Right angle
* Concentric
* Obtuse angle
* Congruent
* Perpendicular
* Hypotenuse
* Symmetry
* Equilateral
* Diameter
* Arc
* Vertex
* Tangent
* Convex
* Sphere
* Cone
* Complimentary angles
* Bisector
* Trapezoid
* Regular polygon