**I've got that Geometry BUG!** 

Geometry is found everywhere in nature. The insect world provides a nice study of geometry. Insects constitute between 70 and 80 percent of all known animals. Ever since the Carboniferous period (200,000,000 years ago) insects have dominated animal life form. During this early time, dragonflies sped through the air on wings with a spread of two feet! Throughout time, insects have changed to meet the demands of their environments. Some insects crawl or hop on land, some fly through the air, and others live in the water.

Various characteristics of insects differentiate insects from all other animals. In an insect's adult form, it has a hard outside skeleton called an exoskeleton, and a body distinguished by three main divisions: head, thorax, and abdomen. It also has one pair of antennae or feelers on its head and three pair of legs attached to the thorax. Most winged insects have two pair of wings attached to the thorax. There are also minute holes along each side of an insect called spiracles which help them breathe. Insects can have one of two different types of mouths: one for biting and chewing or the other for sucking and piercing. For instance, ants have the biting/chewing type while butterflies have the sucking/piercing type of mouth. Different types of insects also have different types of legs depending on whether they need to jump, swim, fly, crawl, run, or grasp.

 Insects have many important roles to play in our environment. They aerate the soil, pollinate blossoms, and control insect and plant pests; they also decompose dead materials, thereby reintroducing nutrients into the soil. Burrowing bugs such as ants and beetles dig tunnels that provide channels for water, benefiting plants. Bees play a major role in pollinating fruit trees and flower blossoms. Gardeners love the big-eyed bug and praying mantis because they control the size of certain insect populations, such as aphids and caterpillars, which feed on new plant growth. (www.riverdeep.net)

**Creating your Bug...**

****Look at the parts of an insect's body. Can you see geometrical shapes? The body of an insect has many geometrical properties. In our study of Geometry and Bugs, you are to use your imagination and your knowledge of insects to create a *fantastic geometry bug*. Your bug should use a lot of geometrical shapes (**at least 4 different polygons—at least one of which must have more than 4 sides and be a regular polygon**) and be colorful and unique. You may use any type of materials to make your bug - let your imagination be your guide. The bugs are to be made entirely out of geometrical shapes and contain the characteristics of insects. Your finished bug should fit into a cube with an 8" side and if your bug has wings, its wingspan should not be larger than 24".

**Communicating your knowledge...**

Write a story about your bug - "A day in the life of my *Geometry Bug* ". Include the following information...

* Give it a name - hopefully something geometrical!
* Identify the shapes and geometrical properties that you used in creating your "geometry bug".
* Tell why the bug has the geometrical shapes that you gave it for each of its parts. How do the shapes help the insect function as it should?
* Describe where it lives, how it moves, and what it would eat, etc.
* Explain what geometrical challenges it faces.

**SCORING GUIDE**

Creating your Bug: Designed according to insect characteristics (5 pts.)

 Design includes at least 4 different polygons (10 pts.)

 Polygons are constructed neatly and accurately (15 pts.)

 Bug is colorful and unique (5 pts.)

 Model is correct size and is sturdy (5 pts.)

Communicating your Knowledge: Name and shapes are identified (5 pts.)

 Explanations are given for why these shapes were chosen (5 pts.)

 Descriptions of where it lives, how it moves, what it would eat, etc. (5 pts.)

 Explanation of geometrical challenges (5 pts.)

 BONUS—story is typed (5 Bonus Points)

 **TOTAL POINTS POSSIBLE = 60**

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