Gingerbread House History

The history of symbolic gingerbread treats goes back to the Middle Ages. Medieval ladies would give gingerbread to knights in different shapes to represent different ideas. A gingerbread heart was said to ward off evil and protect men in battle. Queen Elizabeth I even gave her guests gingerbread treats that looked like them as gifts.

When America was discovered, molasses began being used in the recipe for gingerbread. This made it affordable for everyday people, not just the royal and wealthy.

After this, gingerbread house building became a popular pastime in America. The folktale of Hansel and Gretel also helped this sweet holiday tradition grow.

Activity – Gingerbread Geometry

For this project, you’ll use your knowledge of geometry, area of quadrilaterals, area of triangles, surface area of prisms, and volume of prisms.

First, construct a gingerbread house made of graham crackers and frosting.

Then, calculate the area of each side (house and roof), surface area of the house and volume of the house. Use the worksheet to track the dimensions and answer the questions regarding surface area and volume.
Activity – Gingerbread Geometry Worksheet

ALL WORK MUST BE SHOWN TO RECEIVE CREDIT!!!

You can use the back of the paper to complete work if needed.

Prism (the house itself)

<table>
<thead>
<tr>
<th>Top</th>
<th>Bottom</th>
<th>Front</th>
<th>Back</th>
<th>Side</th>
<th>Side</th>
<th>TOTAL</th>
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Triangular Prism (the rooftop)

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<tr>
<th>Bottom</th>
<th>Front</th>
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If we wanted to paint the outside of the house (do not worry about windows, doors or things of that nature), what areas are we worried about?

Which ones do we not need (what will not be covered by paint)?

What is the surface area for the painted area?

How much frosting could we use to fill the house from ground to ceiling?

What formula(s) must you use?
Activity – Gingerbread Geometry Teaching Resources

Materials Needed:

• Graham crackers (one sleeve)
• Frosting (1/2 tub)
• Zip lock bags (used as pastry bags...cut off a small corner after passing out to the students)
• Candy...assorted (no peanuts or chocolate to accommodate those students with allergies)
• Math worksheet (provided) generic measurements (inches or centimeters) must be given to create a uniform answer for the students
• Cleaning supplies...such as paper towels, hand wipes, spray cleaner ( I cover my desks with butcher paper and that seems to help)
• Shoe box or cardstock (if the students do not bring in a shoebox, their creation may be taken home in a zip lock bag...while it is not together, they still get to eat the goodies)
• $3 from each student (Wal-Mart sells a box of graham crackers for $1, tubs of icing for $1 which covers two students...the remaining goes to the candy)

Math Lesson Prep

This can be done prior to or after the Gingerbread house creation day. It depends on your schedule. I like to do it after because I enjoy having this activity prior to holiday break. Doing the math part after break gets their brains back in the swing of things with a real life situation.

Using the provided worksheet, have the students apply the necessary geometric concepts by dissecting the original picture of the house to find the individual side areas.

Once that step is completed, the students translate the individual areas to find the overall surface area.

At that point, you must discuss the individual areas needed if you were finding how much paint you would need to cover the house (note: you will not need the bottom of the house, top of the house, or bottom of the roof. This is an important step because that is a huge concept for them when they get to the geometry portion of the 8th grade curriculum).

After completion of the surface area portion, you must then move on to the volume. I refer to the volume as how much frosting could you fill the house with if you could do so. The kids love the idea of a house of SUGAR!! They will need to find the volume of base shape (house) and the roof top. Combining the numbers will complete the solution.

Extension

Give the students a more involved set of numbers to work with. For example, fractions with unlike denominators or decimals.