5th Grade Design a Product Project

The We-Box-It Company is having a design contest since there is a growing need for creative mathematicians who can design attractive and efficient packaging and shipping boxes. Your task is to create a product package, marketing tool, and presentation to show your skills in order to win the contest and land a dream job with benefits.

Product: __________________________________________________________

Partner: __________________________________________________________

Parent Signature: ________________________________________________

☐ Part 1: Product Package Creation
Create a Product Package using a 3-D geometric solid (Except NO rectangular prism, such as a regular box, unless it is ADDITIVE volume).

☐ Part 2: Package Data
Use mathematical formulas to determine the volume and weight of your product package.

☐ Part 3: Shipping Box Data
Design a box on paper to ship out at least 12 of your product. Determine the volume and weight of your shipping box filled with products.

☐ Part 4: Product Pricing
Determine an appropriate price for your product and calculate a percentage discount for purchasing a complete shipping box full of the product.

☐ Part 5: Shipping Costs
Research the distances to three different U.S. cities that you would like to ship your products to. Then calculate the cost to ship a full box of your products from Delaware, Ohio to those cities.

☐ Part 6: Marketing Strategy
Create a strategy to market your product that includes a slogan or jingle, logo, and a Commercial or Weebly Webpage. Your strategy must be shared with the class.

☐ Part 7: Class Presentation
Prepare a presentation with GoogleApps, Prezi, Emaze, or Powtoon for your class that includes all your math and your marketing strategy (commercial or webpage).
Part 1: Product Package Creation

A. Type of 3-D geometric solid for Package:____________________________________

B. Sketch a plan of your product package.

C. List the materials needed to construct a 3-D model of your package. (product model inside optional).

D. Create package as a 3-D model of your product package (does not need to have the product inside unless you want to). Bring it to class on the due date for credit and to measure its mass for Part 2. Also, bring it again for your presentation.

DUE DATE:____________________________________  SCORE OUT OF POSSIBLE 4 POINTS:___________
Part 2: Package Data - Don’t forget to include the units!

A. Calculate the Volume of the Package in a cubic UNIT.

Type of 3-D geometric solid for Package: ____________________________________________

Volume Formula for type of geometric solid: _________________________________________

Package Measurements (can include a sketch):

Volume of the package: ____________________________________________________________

Show your work to prove the volume:

B. Calculate weight of the package in pounds.

Mass of the package in grams: _____________________________________________________

(Measure on the balance in class.)

Convert the mass in grams to weight of the package in pounds: ________________________

(Use the conversion 1 g = 0.0022 lbs.)

Show your work to prove the weight conversion:

DUE DATE: _______________________________ SCORE OUT OF POSSIBLE 4 POINTS: __________
Part 3: Shipping Box Data - Don’t forget to include the units!

A. Plan for the Shipping Box.
   Number of product packages to fit in the shipping box: ________________________________
   Total Volume Required to hold ________ packages: _____________________________________
   Show your work to prove the total volume needed for the shipping box.

B. Design your shipping box and calculate its volume.
   Show a diagram of your shipping box with the dimensions labeled.

   Volume Formula for the Shipping Box: \( V = \) \( \underline{\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\\) x \( \underline{\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\\) x \( \underline{\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\:\\) 
   Work to prove the volume:

   Volume of the Shipping Box = __________________________________________________________

C. Determine the Weight of the Shipping Box in pounds.
   Estimate the weight for the empty cardboard shipping box: ______________________________
   Determine the weight of all the packages to go into the shipping box: ____________________
   Work to prove the weight:

   Total Weight to be shipped:
   Work to prove the total weight:

DUE DATE: ___________________________________________  SCORE OUT OF POSSIBLE 6 POINTS: __________________
Part 4: Product Pricing

A. Price of 1 product: __________________________________________
   Explain how you determined an appropriate price for your product.

B. Price of 1 shipping box full of products: _____________________________
   Work to prove the price:

C. Percentage of Discount for full shipping box of products: ____________
   Explain how you determined an appropriate percentage for the discount.

D. Price of 1 shipping box full of products with Discount: _______________________
   Work to prove the Discounted Price:

DUE DATE: ___________________________  SCORE OUT OF POSSIBLE 4 POINTS: __________
Part 5: Shipping Costs

A. Use the Internet to research distances to three different U.S. cities that you would like to ship your products to and add them to the table below.

<table>
<thead>
<tr>
<th>U.S. City and State</th>
<th>Distance from Delaware, Ohio in miles</th>
<th>Distance Charge: (Distance x rate of $0.03 per mile)</th>
<th>Package Weight in pounds</th>
<th>Weight Charge: (shipping box weight x rate of $3.75 per pound)</th>
<th>Total Shipping Cost: (distance charge + weight charge)</th>
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List the research source(s) for this distance information:

B. Calculate the Distance Charge as shown above and show your work below to prove the distance charge.

C. Calculate the Weight Charge as shown above and show your work below to prove the weight cost.

D. Calculate the Total Shipping Cost, complete the table, and show your work below to prove the total cost.
Part 5: Marketing Strategy

A. Create a slogan and/or jingle to help sell your product. Record it below.

B. Design a logo for your product or fictitious company. Show it below.

C. Create a Commercial or Weebly Webpage to market your product. It should include the package (or a picture of it), the slogan and/or jingle, and the logo.

DUE DATE: ____________________________
Part 6: Class Presentation

A. Prepare a presentation to show your project to the class using one of four on-line presentation applications: GoogleApps, Prezi, Emaze, or Powtoon.

B. Include at least one page/slide for each part of the project.
   Presentation Checklist:

   □ Part 2: Package Data – Include the volume and weight of the package and the equations.
   □ Part 3: Shipping Box Data – Include a diagram of the shipping box, its volume, its weight, and the equations.
   □ Part 4: Product Pricing – Include the regular and discounted prices and the equations.
   □ Part 5: Shipping Costs – Include the table with three U.S, cities and the equations.
   □ Part 6: Marketing Strategy – Include your slogan and/or jingle, your logo, and an intro slide for your commercial OR a link to your Marketing Weebly Webpage.
   □ Resources – List all the people, Internet sites, and printed materials that helped you complete the project AND explain how they helped or were used.

C. Practice your presentation in front of an audience. Plan for 5 – 6 minutes and make sure to look over the project evaluation.

D. In-Class Project Work Days with Chromebooks

   ∞ Tuesday, May 6
   ∞ Wednesday, May 7
   ∞ Monday, May 12
   ∞ Thursday, May 15
   ∞ Tuesday, May 20

DUE DATE: _____________________________________________________________