



The Very Best Pasta Company

Additional Package Specifications

The Very Best Pasta Company wants to place several graphics on the new package, including the company's triangular logo, some artwork, an ingredients list, cooking directions, and a seal of approval from the Organic Foods Monitors. They also want to position the pattern for the rectangular prism so that multiple copies can be cut from the same piece of raw material. Your proposal should include diagrams and explanations for the following specifications.

The surface area of faces must be large enough to print the following shapes on the box.

- a trapezoid with bases of 13.5 inches and 10.5 inches and a height of 5.25 inches
- a solid arrow with a length of 14.25 inches and a maximum width of 3.75 inches
- an isosceles triangle with a base of 6 inches and a height of 13.5 inches
- a square with sides of 4.5 inches
- a rectangle with a length of 3 inches and a width of 12.75 inches
- a right triangle with a base of 4.5 inches and a height of 5.25 inches

Final Report Questions

Question 1

- Use graph paper to make a diagram of the net for a box with a volume between 400 and 410 cubic inches and sides that accommodate the shapes listed above.
 - Use a scale of $\frac{1}{4}'' = 1\frac{1}{2}''$.
 - On your diagram, give the scale, the actual dimensions, the volume, and the surface area of the package.
- Write a paragraph that includes the following information:
 - what will be packaged in your container;
 - the client's requirements;
 - the dimensions of the box you designed to meet the client's requirements; and
 - the process you used to design the package and how you know it meets the client's requirements.

Question 2

- a. Use graph paper to make a scale drawing to show how many of your nets can be placed on a 42-inch by 42-inch sheet of raw material. Use a scale of $\frac{1}{4}" = 1\frac{1}{2}"$. Position your nets to use as much of the raw material as possible. Calculate the amount of scrap (left over raw material). On your diagram, include:
- the scale;
 - the actual dimensions of the raw material;
 - the actual dimensions, volume, and surface area of the box; and
 - the amount of scrap for the configuration you chose.
- b. Explain your reasoning for the placement of the nets. Show or explain your calculations that indicate the amount of scrap your solution would generate.

Question 3

- a. Compute the area of each shape that will be printed on your box.

Use graph paper to make a scale drawing of each face (6 sketches all together). Use a scale of $\frac{1}{4}" = \frac{1}{2}"$. The lower left corner of each face should be at the origin (0, 0).

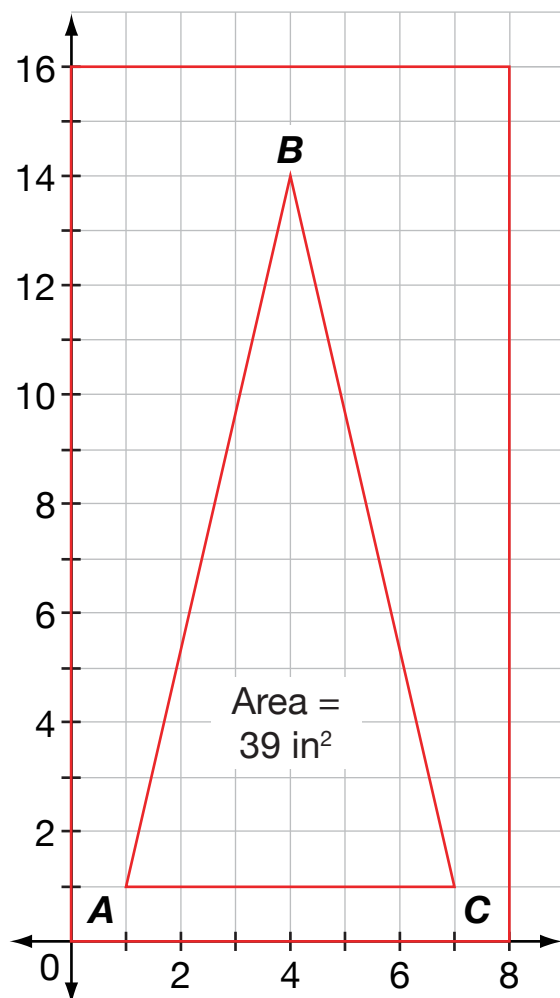
Make scale drawings of each shape on the faces. Use letters to label the vertices of each shape. On your diagram, list the coordinates of each point and the area of each shape. Label your drawings with the dimensions of the faces. A sample diagram is provided on the next page.

- b. Use the coordinates of each point to describe the position of each shape on the faces. Use the area of the shapes and the surface area of the box to explain:
- how you decided where to put the shapes on the faces of your box; and
 - how you know the shapes will fit on each face.

Sample Drawing of Two Faces with Shapes on the Faces

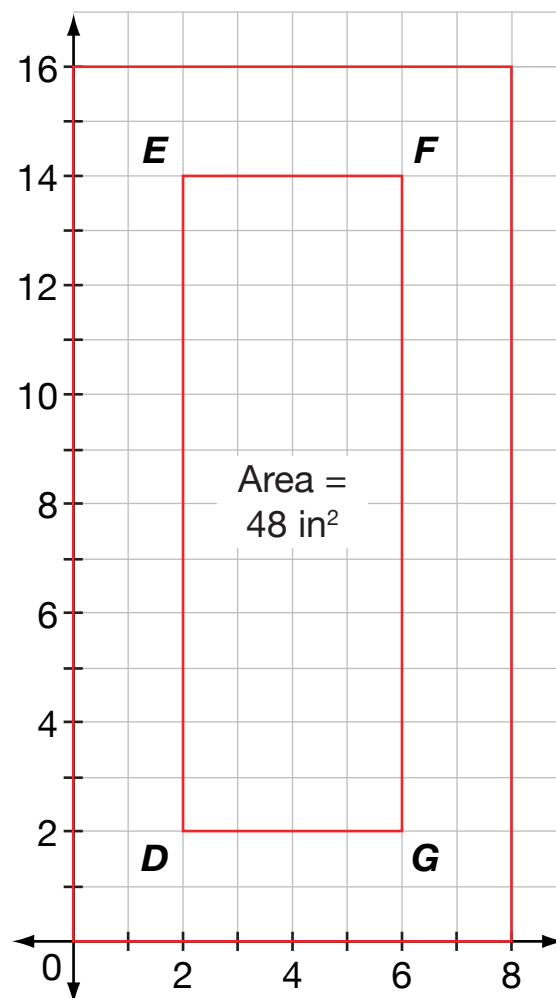
Scale: $\frac{1}{4}" = 1"$

16" x 8" Face



A = (1, 1)
B = (4, 14)
C = (7, 1)

16" x 8" Face



D = (2, 2)
E = (2, 14)
F = (6, 14)
G = (6, 2)

*NOTE: Dimensions shown in the sample drawing
will not match the dimensions of your box.*