Proportions

Activity 2

Overview:
In this activity students design and assemble a dumbbell using specified dimensions. Students design a new dumbbell based on proportional measurements.

Objectives:

- Use spatial relationships to design a 3-D object from its 3-D component parts
- Specify the position of 3-D objects using Cartesian coordinates
- Calculate the volume of a cylinder and a prism
- Use multiple views to align geometric figures
- Combine basic 3-D figures to form a more complex figure
- Design a cylinder a prism
- Learn about dimensioning
- Learn the proper geometric terminology
- Go from the abstract of design to the concrete of building the three-dimensional model

Required Materials:
- Computer (Macintosh or PC) with printer
- aspexTabsMST 3-D Design & Mathematics software
- Card stock (maximum 110 lbs)
- Ruler
- Scissors
- Glue stick or tape

Terms to Know:
Define the following vocabulary terms:

- Cylinder: a three-dimensional figure created by two circles of the same radius and parallel planes and the parallel lines connecting those two circles from every point on the circles.
- Torus: a three-dimensional figure bound by the path formed by a circle swept around an axis.
- Circle: a two-dimensional closed shape defined by all points in a plane a given distance from a center point
- Net: a two-dimensional pattern that can be folded into a three-dimensional figure