Name_____ Date_____ Class _____

Monuments

Many monuments include geometric elements. You have probably seen
the Washington Monument or another monument that seems to be made
up of geometric figures. Geometric solids are frequently used by monument
designers.

1. This system of linear equations represents the outline for
   the profile of a monument whose baseline is the *x*-axis.

$$\begin{cases} m : y = 4.5x - 4.5 \\ n : y = x + 6 \\ p : y = -x + 14 \\ q : y = -4.5x + 31.5 \end{cases}$$
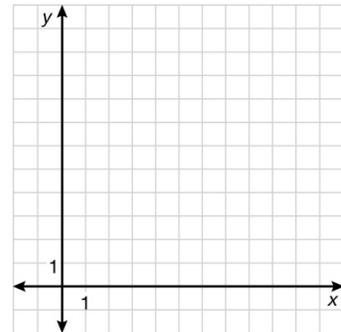
   a. On this grid, graph lines *m*, *n*, *p*, and *q*. Label the
      intersection of *m* and *n* as *B*, the intersection of
      n and *p* as *C*, and the intersection of *p* and *q* as *D*.

   b. In this table, list the coordinates of the intersections
   of each pair of lines.

Pair of lines	*m* and *n*	*n* and *p*	*p* and *q*
Coordinates			

   c. Using an algebraic method, find the coordinates of the intersection of lines *m* and *n*.
      Show your work.

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2. An architect proposed a right square pyramid as a model
   for a monument.

   a. Explain how to use *AD* to find *ED*. Then find *ED*.

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   b. Specifications require that m∠*EDX* be greater than
      70° but less than 75°. Find m∠*EDX*. Then determine
      whether the plan meets the specifications.

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       Saxon Geometry
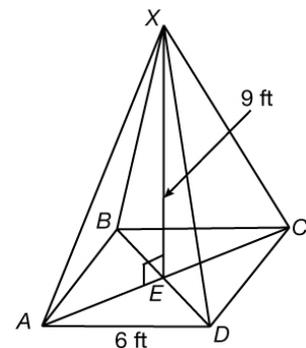
3. The board of a museum of communications decided to build a monument in the shape of a radio tower to commemorate the history of radio. In the diagram, quadrilaterals *ABCD*, *DCXW*, and *WXYZ* are isosceles trapezoids in which the lower base is 150% of the upper base.
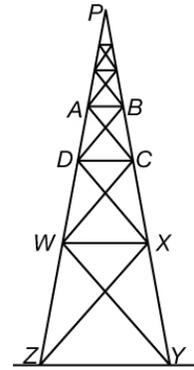
a. Trapezoid *WXYZ* is a dilation of trapezoid *ABCD* with center of dilation *P*. What is the scale factor by which trapezoid *WXYZ* is an enlargement of trapezoid *ABCD*? Justify your response.

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b. If *AB* = 3 ft long, how long is *ZY*? Show your work.

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4. This diagram shows a monument that commemorates medieval times. The monument consists of a right rectangular prism with four congruent cubes positioned at the four corners of the top face.
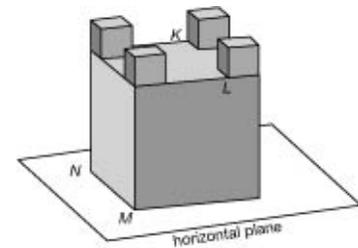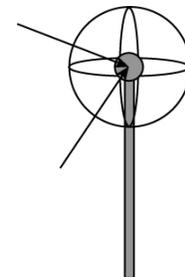
a. Describe the horizontal cross sections.

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b. Describe the vertical cross sections parallel to $\overline{NM}$.

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c. Describe the cross section that contains points *K*, *L*, *M*, and *N*.

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5. This diagram shows a monument that commemorates the first split of the atom.

a. Sketch the sum of the vectors shown. Position the vector so that its tail is where the heads of the given vectors are.

b. Assume the vector extends horizontally 5.5 units and vertically 1 unit. Estimate the magnitude of the sum.

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Saxon Geometry