10-3 Solve It!

Getting Ready!
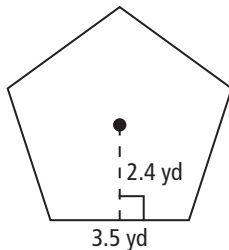
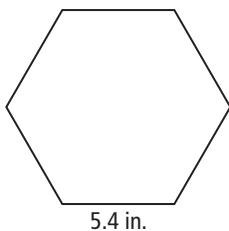Let's see. What figure encloses the greatest area for a given perimeter?

You want to build a koi pond. For the border, you plan to use 3-ft-long pieces of wood. You have 12 pieces that you can connect together at any angle, including a straight angle. If you want to maximize the area of the pond, in what shape should you arrange the pieces? Explain your reasoning.

10-3 Lesson Quiz

1. What is the area of the regular pentagon below?

2.4 yd

3.5 yd

2. What is the length of the apothem of a regular hexagon with 10-cm sides? Round to the nearest tenth if necessary.

3. Do you UNDERSTAND? Geoff uses hexagonal tiles to make a tessellation pattern in his garden. What is the area of each tile? Round to the nearest whole number.

5.4 in.

Answers

Solve It!

The shape should be a regular polygon with 12 sides (dodecagon), where each side is 3 ft long. Explanations may vary. Sample: A regular dodecagon has a larger area than an equilateral triangle, a square, or any other polygon that can be formed using the 12 pieces of wood and its shape is closer to the shape of a circle, which has the largest area for the fixed perimeter 36 ft.

Lesson Quiz

1. 21 yd^2

2. about 8.7 cm

3. about 76 in.^{2}