Name _____ Date _____

LESSON 7.4

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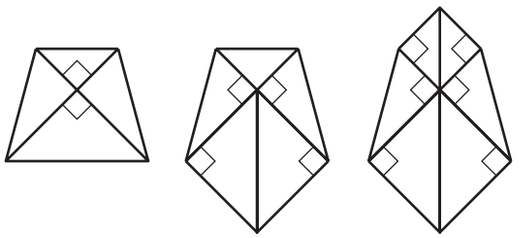
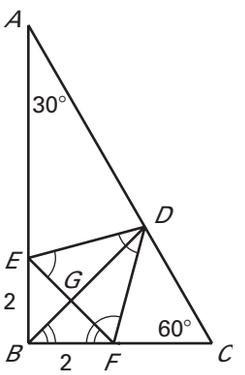
Challenge Practice

For use with pages 457–464

1. The diagram shows three polygons with four sides, five sides, and six sides, respectively. Each polygon is made of 45°-45°-90° and 30°-60°-90° triangles that share a common vertex. Is it possible to construct a seven-sided polygon that is made of 45°-45°-90° and 30°-60°-90° triangles that share a common vertex? If so, draw a sketch. If not, explain why not.

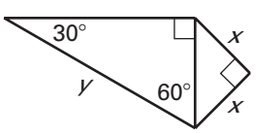


2. In the diagram at the right, find AD. Show how you found your answer and justify each step.

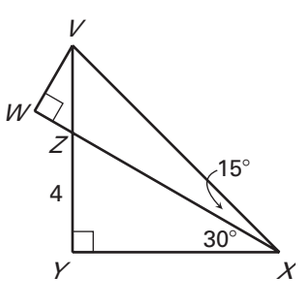


3. A circle of radius $\sqrt{2}$ is centered at the origin on a coordinate plane. How many points $P(x, y)$ can be found on the circle, such that x and y are integers?

4. **Proof** Prove that there is no integer x that will yield an integer value of y in the diagram at the right.



5. In the diagram below, $YZ = 4$. Find the side lengths of $\triangle VWX$, a 15°-75°-90° triangle.



6. In the diagram below, $CD = \sqrt{3}$. Let $BC = x$. Find the side lengths of $\triangle BCD$, a 15°-75°-90° triangle.