Unit 1, Lesson 7

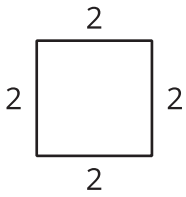
Construction Techniques 5: Squares

Let's use straightedge and compass moves to construct squares.

7.1 Which Three Go Together: Polygons

Which three go together? Why do they go together?

A



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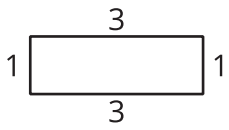

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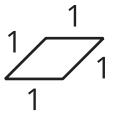

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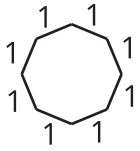
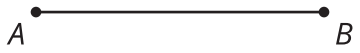


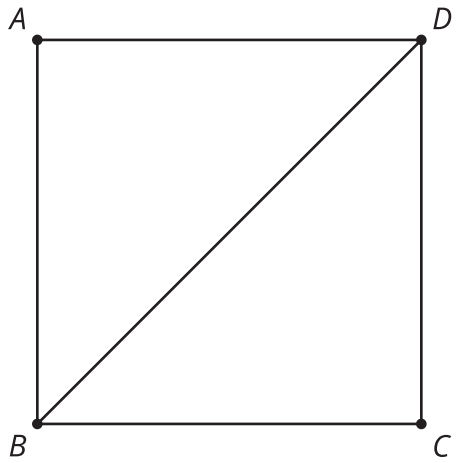
7.2 It's Cool to Be Square

Use straightedge and compass moves to construct a square with segment AB as one of the sides.

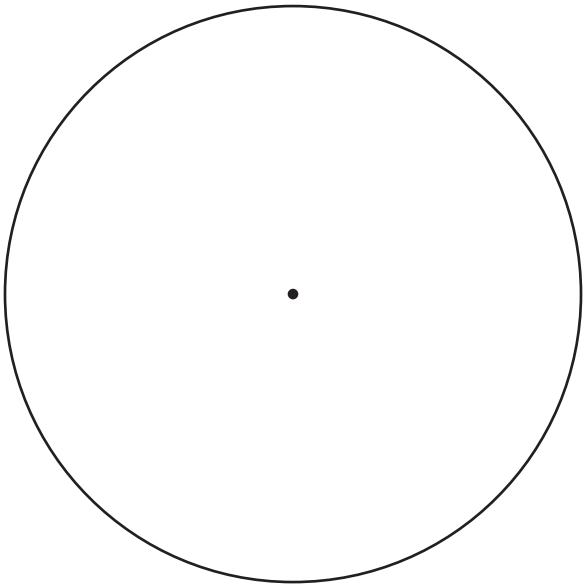


7.3 Trying to Circle a Square

1. Here is square $ABCD$ with diagonal BD drawn:
   a. Construct a circle centered at A with radius AD.
   b. Construct a circle centered at C with radius CD.
   c. Draw the diagonal AC, and write a conjecture about the relationship between the diagonals BD and AC.
   d. Label the intersection of the diagonals as point E, and construct a circle centered at E with radius EB. How are the diagonals related to this circle?



2. Use your conjecture and straightedge and compass moves to construct a square inscribed in a circle.



Are you ready for more?

Use straightedge and compass moves to construct a square that fits perfectly outside the circle so that the circle is inscribed in the square. There is now a square inscribed in the circle, and the circle is inscribed in another square. How do the areas of these 2 squares compare?

Lesson 7 Summary

We can use what we know about perpendicular lines and congruent segments to construct many different objects. A square is made up of 4 congruent segments that create 4 right angles. A square is an example of a **regular polygon** since it is equilateral (all the sides are congruent) and equiangular (all the angles are congruent). Here are some regular polygons inscribed inside circles: