Chapter Audio Summary for McDougal Littell
Geometry

Chapter 11 Area of Polygons and Circles

In Chapter 11, you found the measures of the interior and exterior angles of polygons, and used them to find angle measures of other polygons. You learned about perimeters and areas of similar figures. Next, you found the circumference of a circle and the length of a circular arc. This led you to finding the area of a circle and the area of a sector of a circle. Finally, you were introduced to geometric probability.

Turn to the lesson-by-lesson Chapter Review that starts on p. 708 of the textbook.

Lesson 11.1 Angle Measures in Polygons

The first goal of Lesson 11.1 is to find the measures of interior and exterior angles of polygons. If a regular polygon has 15 sides, the sum of the measures of the interior angles is $(15 - 2) \cdot 180^\circ$, which equals 2340°. Remember that regular polygons have congruent interior angles and congruent sides. Then the measure of each interior angle is $\frac{1}{15} \cdot 2340^\circ$.

Now try Exercises 1 through 8. If you need help, go to the worked-out Examples on pages 662 through 664.

Lesson 11.2 Areas of Regular Polygons

Important words to know are: *center of a polygon, radius of a polygon, apothem of a polygon,* and *central angle of a regular polygon.*

The first goal of Lesson 11.2 is to find the area of an equilateral triangle. Remember the theorem for the area of an equilateral triangle: The area of an equilateral triangle is one fourth the square of the length of the side times $\sqrt{3}$. So, in the example, the area of ΔABC equals about 84.9 $in.^2$.

The second goal of Lesson 11.2 is to find the area of a regular polygon. Note that the apothem is the distance from the center of the polygon to any side. The area of a regular polygon is 1/2 times the apothem a times the perimeter P. In the Example, the area of the octagon is about 101.8 cm^2.

Now try Exercises 9 through 12. If you need help, go to the worked-out Examples on pages 669 and 671.

Lesson 11.3 Perimeters and Areas of Similar Figures

The first goal of Lesson 11.3 is to compare perimeters and areas of similar figures. If two polygons are similar with the lengths of corresponding sides in the ratio of $a:b$, then the

ratio of their areas is $a^2:b^2$. In the Example, the two pentagons are similar so their corresponding sides are in the ratio 2:3, and the ratio of their areas is $2^2:3^2$, or 4/9.

The second goal of Lesson 11.3 is to use perimeters and areas of similar figures to solve real-life problems. Always make sure that your answer makes sense in the context of the problem.

Now try Exercises 13 through 17. If you need help, go to the worked-out Examples on pages 677 and 678.

Lesson 11.4 Circumference and Arc Length

Important words to know are: *circumference* and *arc length.*

The first goal of Lesson 11.4 is to find the circumference of a circle and the length of an arc. An arc length is a portion of the circumference of a circle. In the Example, the circumference of the circle is $2\pi(9)$, or $18\ \pi$. The length of $\overset{\frown}{AB} = \frac{m\overset{\frown}{AB}}{360} \bullet 2\ \pi r$, which simplifies to $3\ \pi$.

Now try Exercises 18 through 22. If you need help, go to the worked-out Examples on pages 683 through 685.

Lesson 11.5 Areas of Circles and Sectors

Important words to know are: *sector of a circle*.

The first goal of Lesson 11.5 is to find the area of a circle and a sector of a circle. To find the area of a circle with a radius of 12 in., use $r = 12$ in the area formula. So, Area = $\pi \bullet 12^2$, or 144π. To find the area of the sector, set up a proportion. The area of the sector over the area of the circle equals the measure of the intercepted arc over 360°. This simplifies to 36π.

Now try Exercises 23 through 28. If you need help, go to the worked-out Examples on pages 691 through 694.

Lesson 11.6 Geometric Probability

Important words to know are: *probability* and *geometric probability.*

The first goal of Lesson 11.6 is to find a geometric probability. Geometric probability is found by using a ratio of geometric measures such as length or area. The probability that

a randomly chosen point on $\overline{AB}$ is on $\overline{CD}$ is worked out in the Example. The length of $\overline{CD}$ is 3 and the length of $\overline{AB}$ is 12. So the probability that a randomly chosen point on $\overline{AB}$ is on $\overline{CD}$ is $\frac{3}{12}$, or $\frac{1}{4}$.

The second goal of Lesson 11.6 is to use geometric probability to solve real-life problems.

Now try Exercises 29 through 34. If you need help, go to the worked-out Examples on pages 699 through 701.