Chapter Audio Summary for McDougal Littell
Geometry

Chapter 1 Basics of Geometry

In Chapter 1 you studied patterns and inductive reasoning. Then you learned the basic undefined terms and defined terms of geometry. You found the distance between two points and the measures of angles. You learned to use a straightedge and compass to construct segment and angle bisectors. You also used the Midpoint Formula to find the coordinates of the midpoint of a segment. Finally, you used a problem-solving plan to solve problems involving perimeter, area, and circumference.

Turn to the lesson-by-lesson Chapter Review that starts on p. 60 of the textbook.

Lesson 1.1 Patterns and Inductive Reasoning

Important words to know are: *conjecture, inductive reasoning,* and *counterexample.*

The first goal of Lesson 1.1 is to find and describe patterns.

The second goal of Lesson 1.1 is to use inductive reasoning to make real-life conjectures. Notice that each 6-digit number is formed by repeating its first three digits. The 6-digit number is divided by 7, then 11, and then 13. The result is the original number. So your conjecture could be: Given a 3-digit number, form a 6-digit number by repeating the digits. Divide the number by 7, then 11, then 13. The result is the original number.

Remember that a single counterexample shows that a conjecture is false.

Now try Exercises 1 through 6. If you need help, go to the worked-out Examples on pages 3 through 5.

Lesson 1.2 Points, Lines, and Planes

Important words to know are: *definition, undefined, point, line, plane, collinear points, coplanar points, line segment, endpoints, ray, initial point, opposite rays, intersect,* and *intersection.*

The first goal of Lesson 1.2 is to understand and use the basic undefined and defined terms of geometry. In the Example, note that points *C, E,* and *D* are collinear. Points *A, B C, D,* and *E* are coplanar. *CD* is a line. *AB* is a segment. Rays *EC* and *ED* are opposite rays. Keep in mind that a point has no dimension.

The second goal of Lesson 1.2 is to sketch the intersections of lines and planes. For examples, see page 12.

Now try Exercises 7 through 9. If you need help, go to the worked-out Examples on pages 10 through 12.

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Lesson 1.3 Segments and Their Measures

Important words to know are: *postulates, axioms, coordinate, distance, length, between, Distance Formula,* and *congruent segments.*

The first goal of Lesson 1.3 is to use segment postulates. An axiom (or postulate) is a rule in geometry that is accepted without proof.

The second goal of Lesson 1.3 is to use the Distance Formula to measure distances. The graph locates three points, *A* (-5, 2), *B* (-3, 1), and *C* (3, -2). Use the Distance Formula to find *AB* and *BC*. $AB = \sqrt{[-3 - (-5)]^2 + (1 - 2)^2} = \sqrt{2^2 + (-1)^2} = \sqrt{5}$. $BC = \sqrt{[3 - (-3)]^2 + (-2 - 1)^2} = \sqrt{6^2 + (-3)^2} = \sqrt{45}$. $AB \neq BC$, so *AB* and *BC* are not congruent segments.

Now try Exercises 10 through 13. If you need help, go to the worked-out Examples on pages 17 through 20.

Lesson 1.4 Angles and Their Measures

Important words to know are: *angle, sides, vertex of an angle, congruent angles, measure, interior and exterior of an angle, acute, obtuse, right, straight,* and *adjacent angles.*

The first goal of Lesson 1.4 is to use angle postulates. Using the angle addition postulate, the measure of angle *ACD* + the measure of angle *DCB* is equal to the measure of angle *ACB.*

The second goal of Lesson 1.4 is to classify angles as acute, right, obtuse, or straight. Angle *ACD* is an acute angle because the measure of angle *ACD* is $< 90°$; angle *DCB* is a right angle because the measure of angle *DCB* = 90°; angle *ACB* is an obtuse angle because the measure of angle *ACB* is $> 90°$.

Remember that when naming angles, the letter at the vertex must be the middle letter in the angle name.

Now try Exercises 14 through 19. If you need help, go to the worked-out Examples on pages 26 through 28.

Lesson 1.5 Segment and Angle Bisectors

Important words to know are: *midpoint, bisect, segment bisector, compass, straightedge, construct, construction, Midpoint Formula,* and *angle bisector.*

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The first goal of Lesson 1.5 is to bisect a segment. Line *CD* intersects segment *AB* at its midpoint. To find the coordinates of the midpoint of segment *AB,* use the Midpoint Formula: $M = (-2 + 0/2, 0 + 2/2) = (-1, 1)$. You can think of the coordinates of the midpoint as the average of the corresponding coordinates of the endpoints.

The second goal of Lesson 1.5 is to bisect an angle. Ray *ME* bisects angle *BMD,* so the measure of angle *BME* equals the measure of angle *EMD,* or 45°.

Now try Exercise 20 through 25. If you need help, go to the worked-out Examples on pages 34 through 37.

Lesson 1.6 Angle Pair Relationships

Important words to know are: *vertical angles, linear pair, complementary angles, complement of an angle, supplementary angles,* and *supplement of an angle.*

The first goal of Lesson 1.6 is to identify vertical angles and linear pairs. Two angles are vertical angles if their sides form two pairs of opposite rays. Angle 1 and angle 3 are vertical angles. Two adjacent angles, such as angles 1 and 2, are a linear pair and are supplementary angles if their combined measures equal 180º.

The second goal of Lesson 1.6 is to identify complementary and supplementary angles. Two angles that combine to form a 90º angle, such as angles 3 and 4, are complementary angles. Remember that the angles in a linear pair are always supplementary.

Now try Exercises 26 through 29. If you need help, go to the worked-out Examples on pages 44 through 46.

Lesson 1.7 Introduction to Perimeter, Circumference, and Area

The first goal of Lesson 1.7 is to find the perimeter and area of common plane figures. In the Example, the circle has a diameter of 24 feet. Its circumference is $C = 2\pi r$, so the circumference, 2(3.14)(12), is approximately equal to 75.36 feet. Its area is $A = \pi r^2$, which approximately equals $3.14(12^2)$, or 452.16 square feet. Remember that calculations involving π are always approximate.

The second goal of Lesson 1.7 is to use a problem-solving plan. Keep in mind that the area of a figure is the measure of the space inside the figure. The perimeter is the measure of the distance around the figure.

Now try Exercises 30 through 33. If you need help, go to the worked-out Examples on pages 51 through 54.