

Name \_\_\_\_\_

Date \_\_\_\_\_

Class # \_\_\_\_\_

Block \_\_\_\_\_

# Chapter 1-Lesson 1

## Points, Lines, and Planes

### Goals

I can determine the distance between a point and a line.

I can create a triangle using three line segments.

I can recognize and use basic geometric terminology.

### Part 1

1. Draw a line on a plane. Use the space below.
2. Draw a point not on your line.
3. Draw a line segment connecting the point to the line that is **not** as short as possible.
4. Now draw a shorter line segment connecting the point and the line, but still **not** as short as possible.
5. Now draw the shortest line segment which connects the point and the line. What do you notice about this segment? (words $\geq$ 20)
6. Complete the following:  
If a line \_\_\_\_\_ connecting a point to a line is as \_\_\_\_\_ as possible, then the segment is \_\_\_\_\_ to the line.

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## Part 2

1. Use a ruler (and possibly a compass) to draw a triangle which has sides of the following lengths. Label the vertices as well as the lengths of the sides of the triangle.

$$m\overline{AB} = 9, m\overline{BC} = 13, m\overline{AC} = 15$$

2. Using a protractor, measure each angle. Label each angle with its measure and record the measures below using proper notation.

3. What is the sum of your angles? Do you think this is correct? Explain.

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4. Complete the following:

In a triangle, the \_\_\_\_\_ of the \_\_\_\_\_ angles is always \_\_\_\_\_.

5. Re-write the statement above in "If \_\_\_\_\_, then \_\_\_\_\_" form. What is an undefined term and why do we need them?

### Part 3

1. What are the three undefined terms for Geometry?
2. Why do we need undefined terms?
3. Draw an example for each of the following. Label the drawings using proper notation:
  - a. Point A
  - b. A line which passes through points B and C.
  - c. A line segment with endpoints D and E.
  - d. A ray with endpoint F passing through point G.

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- e. A pair of opposite rays passing through points H, J, and K.
7. What does it mean for two points to be “collinear”?
8. Sketch a line that contains point R between points S and T. Then using this diagram write the name of 1) a segment, 2) a ray, and 3) a pair of opposite rays.
9. Sketch a plane that contains points A, B, and C. Then draw point D which is not on plane ABC.
10. What does it mean for points to be “coplanar”?
11. Draw four points J, K, L, and M such that no three are collinear. Then sketch  $\overline{JK}$ ,  $\overline{KL}$ ,  $\overline{LM}$ , and  $\overline{MJ}$ .

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12. On separate paper, do the following problems: Txt. p.13 #9-31, 36-39, 44-50, 61-64, 74-76. Then staple that work, and the triangle you drew, to the back of this packet.

# Chapter 1-Lesson 1

## Points, Lines, and Planes

**Goals**

I can use algebra to prove that the sum of the interior angles of a triangle is always  $180^\circ$

1. If you added up the measures of the three interior angles of a triangle, what do you think the sum should always equal?
2. Draw a triangle below showing the exterior angles of the triangle.
3. What is the sum of the exterior angles of the triangle? Why?
4. What will be the sum of an exterior angle and its adjacent interior angle? Why?
5. What is the sum of the three interior angles in terms of the measures of the exterior angles?
6. Simplify your expression above to show that the sum of the interior angles of a triangle should always be  $180^\circ$