



Determine if a triangle can be created by using the triangle inequality theorem.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1. Here are three inequalities that can be formed from 5, 18, and 11.

$5 + 18 > 11$       **TRUE or FALSE ?**

$5 + 11 > 18$       **TRUE or FALSE ?**

$11 + 18 > 5$       **TRUE or FALSE ?**

Could segments of 5 cm, 18 cm, and 11 cm form a triangle?      **YES or NO ?**

2. Form the number sentences using the values 4.2, 2.1, and 8.3. (Circle the sign that best fits the number sentence.)

\_\_\_\_\_ + \_\_\_\_\_ ( >, <, or = ) \_\_\_\_\_

\_\_\_\_\_ + \_\_\_\_\_ ( >, <, or = ) \_\_\_\_\_

\_\_\_\_\_ + \_\_\_\_\_ ( >, <, or = ) \_\_\_\_\_

Could segments of 4.2 cm, 2.1 cm, and 8.3 cm form a triangle?      **YES or NO ?**

3. For each set below, circle a measurement for the last line segment that would create a triangle.

a. 15 cm, 44 cm, and \_\_\_\_\_      **(12 cm, 33 cm, or 29 cm)**

b. 30 in, 45 in, and \_\_\_\_\_      **(27 in, 15 in, or 12 in)**

c. 103.5 cm, 154.6 cm, and \_\_\_\_\_      **(327 cm, 257 cm, or 62 cm)**

d. 3 in, 9 in, and \_\_\_\_\_      **(12 in, 7 in, or 5 in)**

4. Greg is given straws with the lengths of 8 cm, 3 cm, and 6 cm. Is it possible for Greg to form a triangle with these straws? Justify your reasoning.

5. Which of the following sets of line segments can form a triangle?

- a. 5 cm, 18 cm, 11 cm
- b. 4.2 in, 2.1 in, 3.3 in
- c. 13 cm, 20 cm, 32 cm
- d. 27 cm, 27 cm, 54 cm

Explain how you know your choices can form a triangle.

6. Camden thinks he can create a triangle with the line segments 14 cm, 26 cm, and 12 cm. Thayne tells him it would be impossible to create a triangle with those line segments. Who is correct? Justify your answer.

7. Julie is choosing line segments to create a triangle. She chooses 9 cm, 5 cm, and 2 cm. She says she can create a triangle for the following reasons:

$$2 + 9 > 5$$

$$9 + 5 > 2$$

$$2 + 5 < 9 *$$

**\*This is okay because the other sets of sides are bigger. Not every set of two sides has to be bigger than the remaining side.**

Is Julie's reasoning correct? Justify your answer.