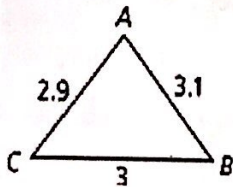


Day 5 – Triangle Inequality Theorems – Practice

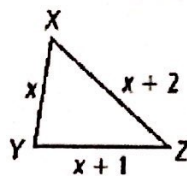
1. List the angles of each triangle in order from smallest to largest.

a.



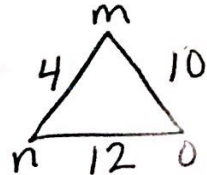
$\angle B, \angle A, \angle C$

b.



$\angle Z, \angle X, \angle Y$

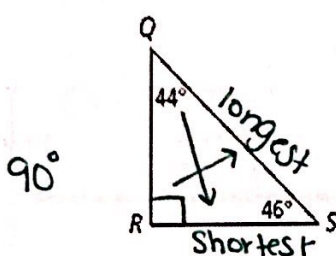
c. $\triangle MNO$, where $MN = 4$, $NO = 12$, and $MO = 10$



$\angle O, \angle N, \angle M$

2. List the sides of each triangle in order from smallest to largest.

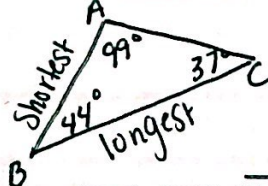
a.



$\overline{RS}, \overline{QR}, \overline{QS}$

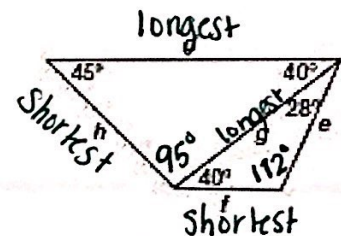
b.

$\triangle ABC$, with $m\angle A = 99$, $m\angle B = 44$, and $m\angle C = 37$



$\overline{AB}, \overline{AC}, \overline{BC}$

c.

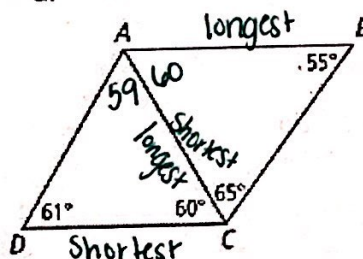


f, e, h, g, d

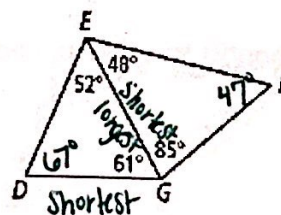
3. Decide which side is the shortest side.

a.

$\overline{DC}$



b. $\overline{DG}$



4. Determine if the following will form a triangle. If not, create an inequality that shows why.

a. 8 cm, 7 cm, 9 cm $8 + 7 > 9$ yes

b. 7 ft, 13 ft, 6 ft $7 + 6 < 13$ no

c. 20 in., 18 in., 16 in. $16 + 18 > 20$ yes

d. 3 m, 11 m, 7 m $3 + 7 < 11$ no

5. The lengths of two sides of a triangle are given. Describe the possible lengths for the third side.

a. 5, 11

$$\begin{aligned} 5 + 11 &> x \\ 16 &> x \\ x &< 16 \\ x + 5 &> 11 \\ x &> 6 \end{aligned}$$

$$6 < x < 16$$

b. 12, 12

$$\begin{aligned} 12 + 12 &> x \\ 24 &> x \\ x &< 24 \\ x + 12 &> 12 \\ x &> 0 \end{aligned}$$

$$0 < x < 24$$

c. 25, 10

$$\begin{aligned} 10 + 25 &> x \\ 35 &> x \\ x &< 35 \\ x + 10 &> 25 \\ x &> 15 \end{aligned}$$

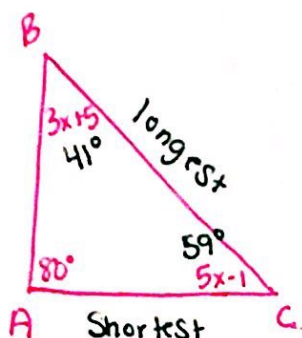
$$15 < x < 35$$

d. 6, 8

$$\begin{aligned} 6 + 8 &> x \\ 14 &> x \\ x &< 14 \\ x + 6 &> 8 \\ x &> 2 \end{aligned}$$

$$2 < x < 14$$

6. List the sides in order from shortest to longest in $\triangle ABC$, with $m\angle A = 80$, $m\angle B = 3x + 5$, and $m\angle C = 5x - 1$.



$$80 + 3x + 5 + 5x - 1 = 180$$

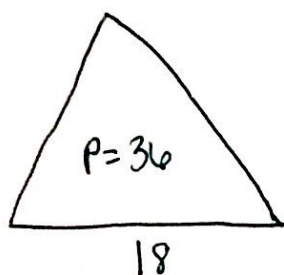
$$84 + 8x = 180$$

$$8x = 96$$

$$x = 12$$

$$\overline{AC}, \overline{AB}, \overline{BC}$$

7. A student draws a triangle with a perimeter 36 cm. The student says that the longest side measures 18 cm. How do you know that the student is incorrect? Explain.



So if one side is 18 and the perimeter 36 cm, that means 18 cm is remaining for two sides. If you let the two sides be a and b and the one side you know be c , the inequality would be

$$a + b > c$$

$$18 > 18 \text{ false inequality}$$

You would need the two sides added together to be greater than 18, not equal to it.