Geometry
Worksheet 5.5

Name KEY
Period _____

Can a triangle have sides with the given lengths? Explain.

1. 4 *m*, 7 *m*, and 8 *m*

$4+7>8$
$7+8>4$ YES
$4+8>7$

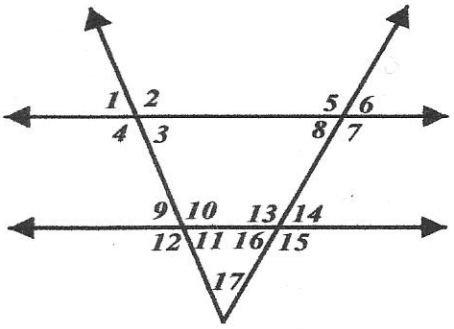
2. $8\frac{1}{2}$ *yd.*, $9\frac{1}{4}$ *yd.*, and 18 *yd.*

$8.5+9.25<18$
NO

3. 2.5 *m*, 3.5 *m*, and 6 *m*

$2.5+3.5=6$
NO

Use the figure at the right to complete each statement with either < or >.



4. $\angle 4$ ___>___ $\angle 8$

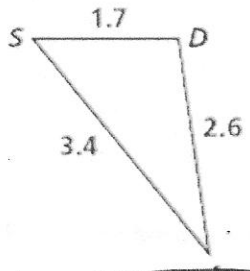
5. $\angle 13$ ___>___ $\angle 11$

6. $\angle 17$ ___<___ $\angle 2$

7. If $m\angle 15 = m\angle 7$, then $m\angle 11$ ___<___ $m\angle 7$

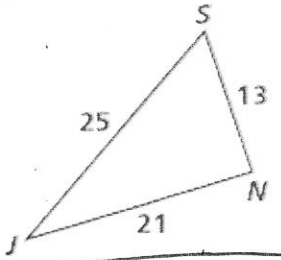
List the angles of each triangle in order from largest to smallest.

8.



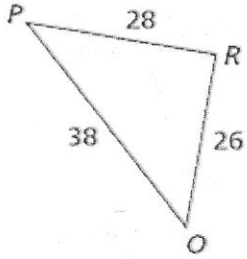
∠D, ∠S, ∠A

9.



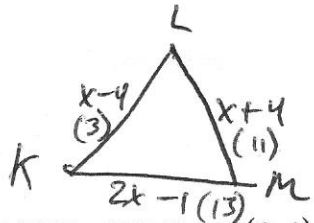
∠N, ∠S, ∠J

10.



∠R, ∠O, ∠P

11. In ΔKLM, $KL = x-4$, $LM = x+4$, $KM = 2x-1$, and the perimeter of ΔKLM is 27.



$4x-1=27$
$4x=28$
$x=7$

∠L, ∠K, ∠M

12. In ΔEFG, $E(0,0)$, $F(2,4)$, $G(5,1)$

$EF = \sqrt{4^2+2^2} = \sqrt{20} = 2\sqrt{5}$

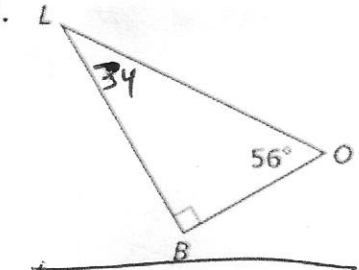
$FG = \sqrt{(2-5)^2+(4-1)^2} = \sqrt{18} = 3\sqrt{2}$

$EG = \sqrt{5^2+1^2} = \sqrt{26}$

∠F, ∠G, ∠E

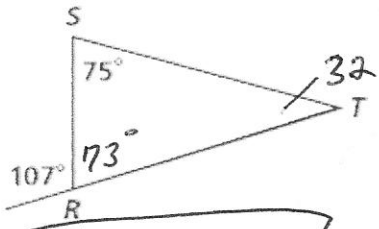
List the sides of each triangle in order from shortest to longest.

13.



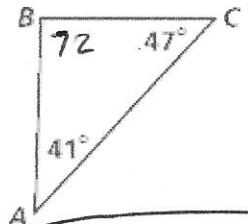
$\overline{BO}, \overline{LB}, \overline{LO}$

14.



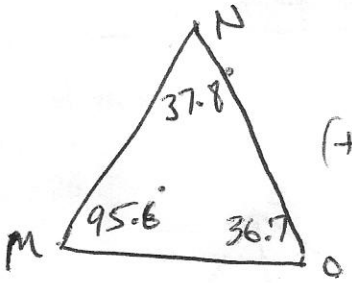
$\overline{SR}, \overline{ST}, \overline{RT}$

15.



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

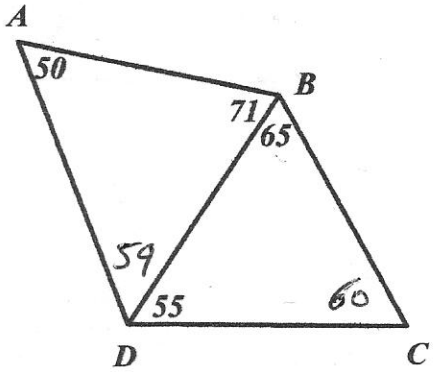
16. In ΔMNO, $m\angle M = 4x+20$, $m\angle N = 2x+10$, $m\angle O = 3x-20$.



$4x+20$
$2x+10$
$(+)\ 3x-20$
$9x+10 = 180$
$9x = 170$
$x = 18.9$

$\overline{MN}, \overline{MO}, \overline{NO}$

Refer to the figure on the right for #17 – 20.



17. Name the shortest and the longest segments in ΔBCD.

$\overline{BC}$ $\overline{DC}$

18. Name the shortest and longest segments in ΔABD.

$\overline{BD}$ $\overline{AD}$

19. Find the shortest segment in the figure.

$\overline{BC}$

20. How many of the segments in the figure are longer than $\overline{BD}$?

3

$BD < AB < AD$
$BC < BD < DC$
$BC < BD < AB < AD$

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

21. 4 *in.*, 7 *in.*

$3 < x < 11$

22. 9 *cm*, 17 *cm*

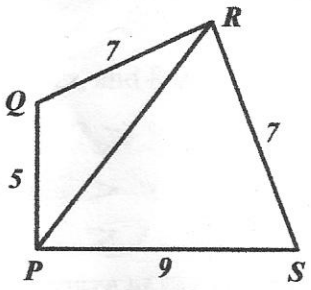
$8 < x < 26$

23. 5 *ft.*, 5 *ft.*

$0 < x < 10$

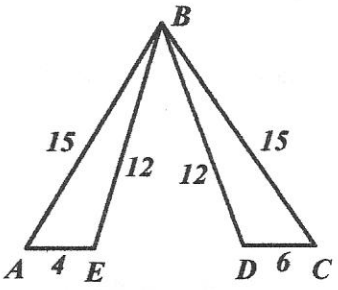
Refer to each figure to write an inequality relating the given pair of angle measures.

24. $m\angle PRQ$, $m\angle PRS$



$m\angle PRQ < m\angle PRS$

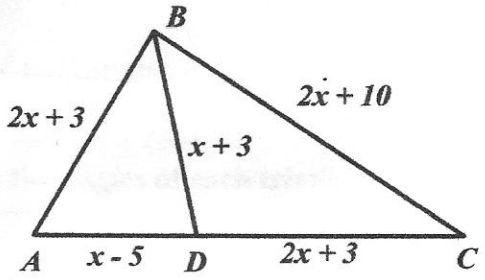
25. $m\angle ABE$, $m\angle DBC$



$m\angle ABE < m\angle DBC$

Write an inequality or pair of inequalities to describe the possible values of x.

26.



$2x + 10 > x - 5$

~~$x > -15$~~

$x - 5 > 0$

$x > 5$

$2x + 10 > 0$

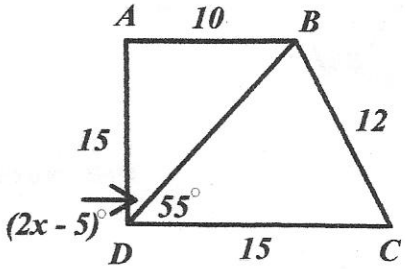
$2x > -10$

$x > -5$

$x + 3 > 0$

$x > -3$

27.



$2x - 5 < 55$

$2x < 60$

$x < 30$

$2x - 5 \geq 0$

$2x \geq 5$

$x \geq \frac{5}{2}$

OR

$\frac{5}{2} < x < 30$