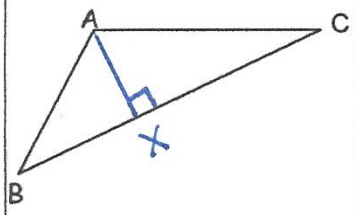
# Unit 4B Test Review

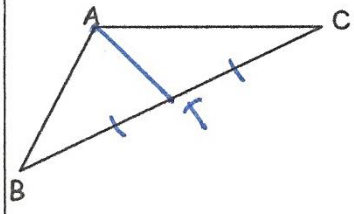
Name Master Ed
Date _____ Block ____

**Draw the following segments using a ruler.** *Do you know the definitions of the segments of a triangle?*

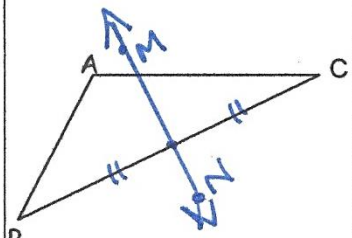
1. Altitude $\overline{AX}$



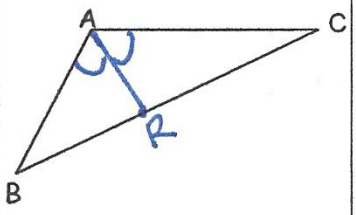

2. Median $\overline{AT}$




3. $\overline{MN}$ as the $\perp$ bisector of $\overline{BC}$

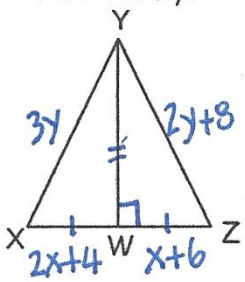



4. $\overline{AR}$ as the bisector of $\angle A$.




**Given each triangle segment, find each value.** *Do you know the definitions of altitude, angle bisector, median, and perpendicular bisector, what they look like, and how to write and solve an equation when given a problem?*

5. $\overline{YW}$ is the $\perp$ bisector of $\overline{XZ}$, XW = 2x + 4, WZ = x + 6, XY = 3y, and YZ = 2y + 8. Find x and y.

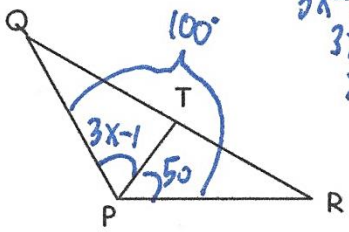



$2x+4=x+6$
$x+4=6$
$x=2$

$3y=2y+8$
$y=8$

x = 2
y = 8

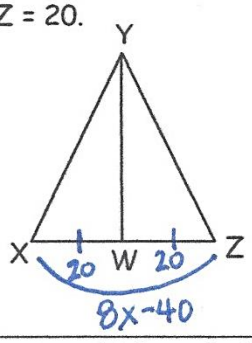
6. $\overline{PT}$ is the bisector of $\angle QPR$, $m\angle QPT = 3x - 1$, and $m\angle QPR = 100$. Find x and $m\angle QPT$.




$3x-1=50$
$3x=51$
$x=17$

x = 17
$m\angle QPT$ = 50

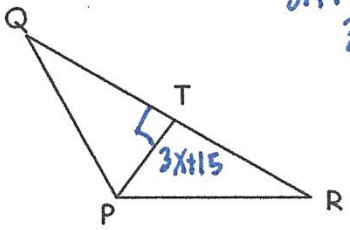
7. $\overline{YW}$ is the median of $\overline{XZ}$, XZ = 8x - 40 and WZ = 20.




$8x-40=40$
$8x=80$
$x=10$

x = 10

8. $\overline{PT}$ is an altitude of $\Delta QPR$ and $m\angle PTR = 3x + 15$. Find x.

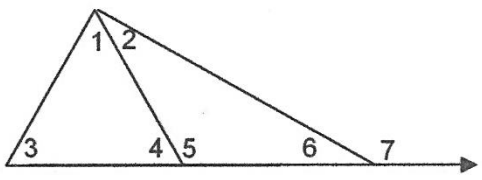



$3x+15=90$
$3x=75$
$x=25$

x = 25

**Determine which angle has the greatest measure. Circle the largest one.**
*Do you know how to compare angles using the Exterior Angle Inequality Theorem?*

9. $\angle 3$, $\angle 1$, (∠5)
10. $\angle 2$, (∠4), $\angle 6$
11. $\angle 3$, $\angle 2$, (∠7)
12. $\angle 5$, $\angle 2$, (∠7)



**Use the pictures to complete the following statements.**

*Do you know now how to compare inequalities in one triangle by looking at sides and angles that are opposite each other?*

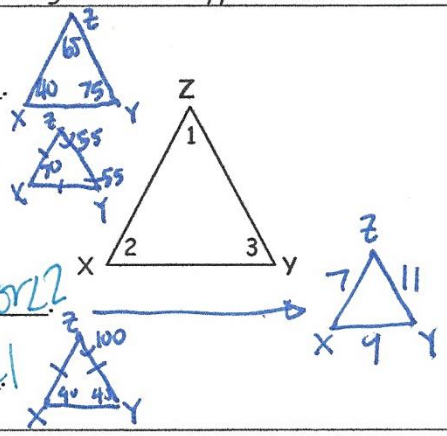
13. If $m\angle 1 = 65$ and $m\angle 2 = 40$, then the longest side is $\overline{XZ}$.

14. If $XZ = XY$ and $m\angle 2 = 70$, then the longest side is $\overline{ZY}$.

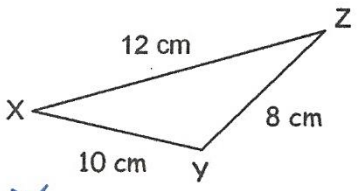
15. If $m\angle 1 = 90$, then the longest side is $\overline{XY}$.

16. If $XZ = 7$, $XY = 9$ and $ZY = 11$, then the largest angle is $\angle X$ or $\angle 2$.

17. If $\overline{XZ} \cong \overline{ZY}$ and $m\angle 3 = 40$, then the largest angle is $\angle Z$ or $\angle 1$.



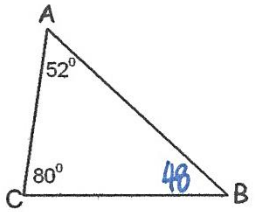

18.




The largest angle is $\angle$ Y

The smallest angle is $\angle$ X.

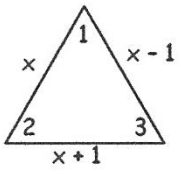
19.




The longest side is $\overline{AB}$

The shortest side is $\overline{AC}$.

20. $\angle 1$ is the largest angle




Ex. If $x = 3$

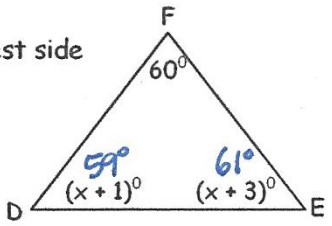

21. $\overline{DF}$ is the longest side

$x+1+x+3+60=180$

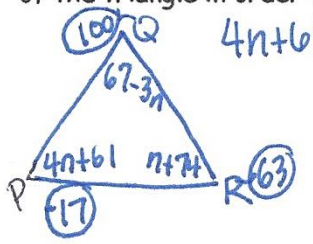
$2x+64=180$

$2x=116$

$x=58$




22. Given $\Delta PQR$, if $m\angle P = 4n + 61$, $m\angle Q = 67 - 3n$, and $m\angle R = n + 74$, find the value of n. Then list the sides of the triangle in order from longest to shortest for the given angle measures.




$4n+61+n+74+67-3n=180$

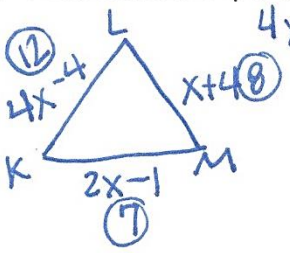
$2n+202=180$

$2n=-22$

$n=-11$

Sides: $\overline{PR}$ (L), $\overline{PQ}$ (M), and $\overline{QR}$ (S)

23. Given $\Delta KLM$ with perimeter of 27, $KL = 4x - 4$, $LM = x + 4$ and $KM = 2x - 1$, find x and the largest angle.




$4x-4+x+4+2x-1=27$

$7x-1=27$

$7x=28$

$x=4$

x = 4 largest angle = $\angle M$

**Is it possible for a triangle to have sides with the lengths indicated? Show work and write YES or NO in the blanks.** *Do you know that the sum of 2 sides of a triangle is always greater than the third side?*

24. 13, 15, 20 $13+15>20$ Yes

25. 1, 2, 3 $3 \not> 3$ No

26. 6, 6, 11 $12 \geq 11$ Yes

27. 3.2, 4.5, 7.5 $7.7 > 7.5$ yes

28. 4, 9, 13 $13 \not> 13$ No

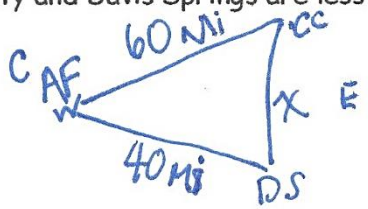
29. 5.5, 3.75, 9.25 $9.25 \not> 9.25$ No

**Given a triangle with side lengths below, find the range for the measure of the third side.** *Do you know how to find the range of lengths that the 3rd side of a triangle will be when you are given 2 sides? Do you know how to write the inequality expressing the possible values of the 3rd side?*

30. 2 and 3 $2+3>x$, $5>x$; $x+2>3$, $x>1$; $1<x<5$

31. 8 and 10 $8+10>x$, $18>x$; $x+8>10$, $x>2$; $2<x<18$

32. Curtis City is 60 miles NE of Angel Falls. Davis Springs is 40 miles SE of Angel Falls. Is it possible that Curtis City and Davis Springs are less than 100 miles apart? Justify your answer



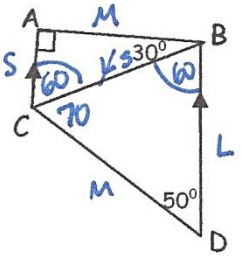

$60+40>x$, $100>x$

Yes b/c x must be less than 100 miles apart.

**Given the triangles below, complete the following statements.** *Do you know how find the smallest and largest sides or angles of a triangle when given 2 or more triangles adjacent to each other?*

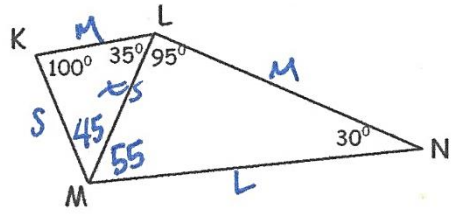
33. The shortest segment in the figure is $\overline{AC}$ (△ABC).

The longest segment in the figure is $\overline{BD}$ (△CBD).




34. The shortest segment in the figure is $\overline{KM}$ $\overline{LM}$ (△LMN).

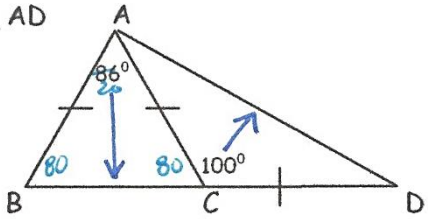
The longest segment in the figure is ~~MK~~ $\overline{LM}$ (△KLM).




**Write an inequality to describe side or angle relationships.** *Do you know how to write an inequality comparing the sides or angles of 2 triangles by using the SSS Inequality or the SAS Inequality Theorems? Do you know how to write a set of inequalities and solve them when given a problem?*

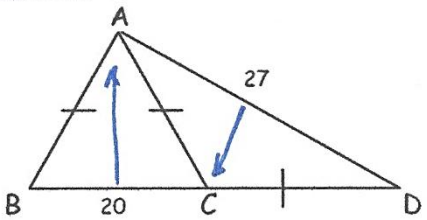
35. BC $<$ AD

error




Circle one: SSS Inequality (SAS Inequality)

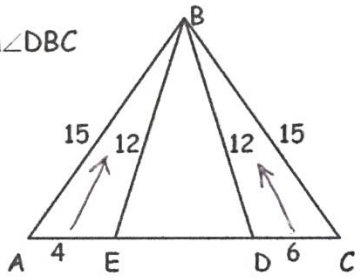
36. $m\angle ACD > m\angle BAC$




Circle one: (SSS Inequality) SAS Inequality

**37.**

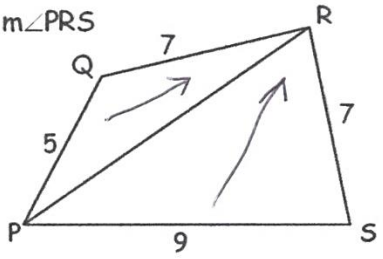
m∠ABE $<$ m∠DBC




Circle one: (SSS Inequality) SAS Inequality

**38.**

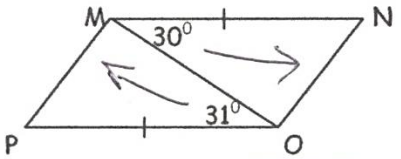
m∠PRQ $<$ m∠PRS




Circle one: (SSS Inequality) SAS Inequality

**39.**

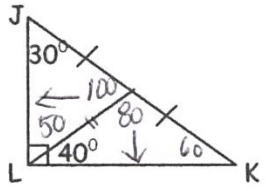
Which is longer, $\overline{MP}$ or $\overline{NO}$? MP




Circle one: SSS Inequality (SAS Inequality)

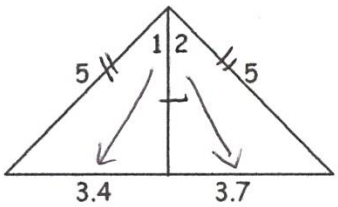
**40.**

Which is longer, $\overline{JL}$ or $\overline{LK}$? JL



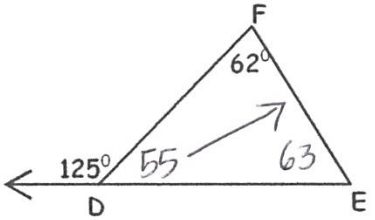

Circle one: SSS Inequality (SAS Inequality)

**41.** Which is larger, ∠1 or ∠2? ∠2

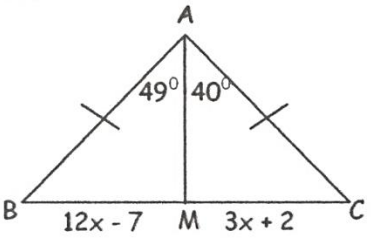



Circle one: (SSS Inequality) SAS Inequality

**42** Which is the shortest side of ΔDEF? EF




**43.** Find all values for x.




$3x+2 < 12x-7$

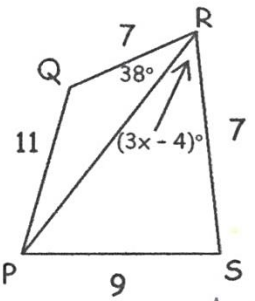
$2 < 9x-7$

$9 < 9x$

$1 < x$

$x > 1$

**44.** Find all values for x.




$3x-4 < 38$

$3x < 42$

$x < 14$

$3x-4 > 0$ *Any must be positive

$3x > 4$

$x > \frac{4}{3}$

$\frac{4}{3} < x < 14$