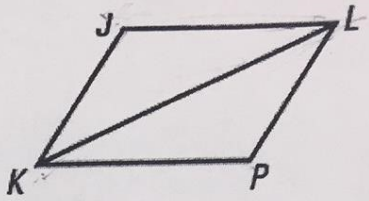
46. **Use the diagram to the right to complete the following.**

a. Name the included side between ∠P and ∠KLP. $\overline{LP}$.

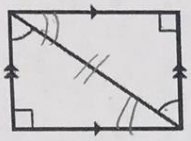
b. Name the included angle between $\overline{JK}$ and $\overline{JL}$. ∠J.

c. Name the included side between ∠JKL and ∠JLK. $\overline{KL}$.



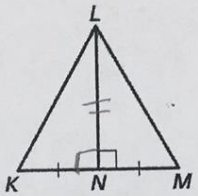
Is it possible to prove the triangles are congruent? Write yes or no. If possible, tell which congruence postulate or theorem you would use (ASA, SAS, AAS, or SSS).

47.



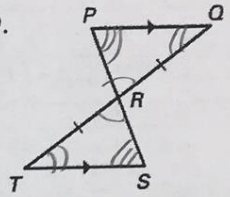
Yes, AAS or ASA

48.



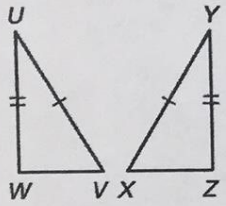
Yes SAS

49.



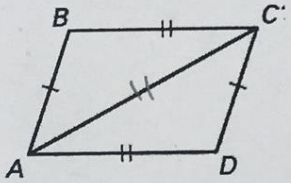
Yes, either AAS or ASA

50.



Not possible

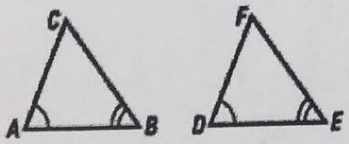
51.



Yes, SSS

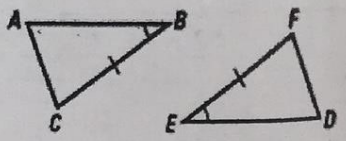
52. To prove these two triangles congruent by ASA,

it must also be given that $\overline{AB} \cong \overline{DF}$.



53. To prove these two triangles congruent by AAS,

it must also be given that ∠A ≅ ∠D.

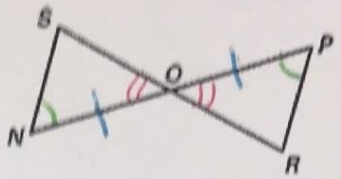


54. **Complete the proof.**

Given: O is the midpoint of $\overline{NP}$
$\angle N \cong \angle P$

Prove: $\overline{SO} \cong \overline{RO}$

ASA

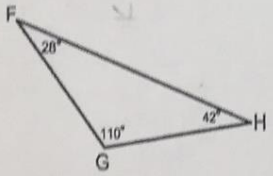


Statements	Reasons
1) O is midpoint of $\overline{NP}$	1) Given
S 2) $\overline{NO} \cong \overline{PO}$	2) Midpoint of a segment → 2 ≅ segments
A 3) $\angle N \cong \angle P$	3) Given
4) $\angle NOS$ & $\angle POR$ are vertical angles	4) Given by diagram
A 5) $\angle NOS \cong \angle POR$	5) 2 vertical ∠s → 2 ≅ ∠s
6) $\triangle SON \cong \triangle RPO$	6) Corr ASA of 2 △s ≅ → △s are ≅
7) $\overline{SO} \cong \overline{RO}$	7) CPCTC

UNIT 5

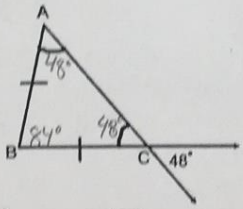
Classify the following triangles by angles and sides.

55.



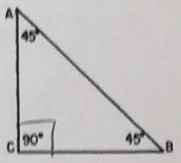
Obtuse Scalene

56.



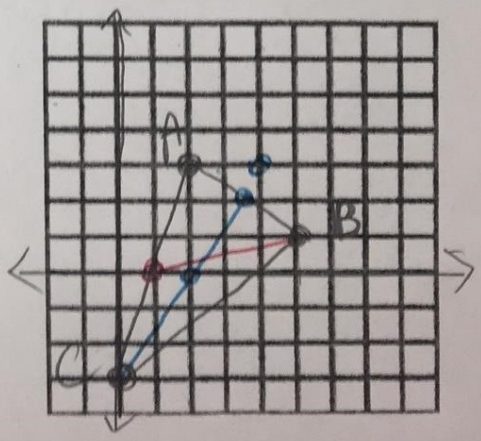
Acute Isosceles

57.



Right Isosceles

58. The vertices of ΔABC are at $A(2,3)$, $B(5,1)$, and $C(0,-3)$.



a) Draw a median from vertex B

Midpoint of $\overline{AC}$ $\left(\frac{2+0}{2}, \frac{3+(-3)}{2}\right) = (1, 0)$

b) Draw an altitude from vertex C

Slope $\overline{BA} = -\frac{2}{3}$

$\perp$ slope $= \frac{3}{2}$

59. Determine the possible values for x, if the sides lengths of a triangle are 7 yds., 24 yds., and $(2x - 1)$ yds.

$7 + 24 > 2x - 1$

$31 > 2x - 1$

$32 > 2x$

$x < 16$ ★

$7 + 2x - 1 > 24$

$2x + 6 > 24$

$2x > 18$

$x > 9$ ★

$24 + 2x - 1 > 7$

$2x + 23 > 7$

$2x > -16$

$x > -8$

$9 < x < 16$

Determine whether it is possible to draw a triangle with sides of the given lengths. Explain.

60. 12, 11, 17

$12 + 11 \stackrel{?}{>} 17$

$23 > 17$ ✓

Yes

Sum of 2 smallest sides greater than 3rd

61. 1, 2, 3

$1 + 2 \stackrel{?}{>} 3$

$3 \not> 3$

No, sum of smallest sides is not greater than the largest

62. 9, 41, 30

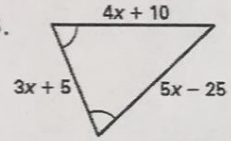
$9 + 30 \stackrel{?}{>} 41$

$39 \not> 41$

No, sum of smallest sides is not greater than the largest

Find the value of x.

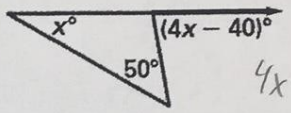
63.



$4x + 10 = 5x - 25$

$35 = x$

64.

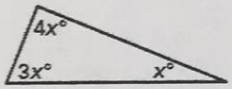


$4x - 40 = x + 50$

$3x = 90$

$x = 30$

65.

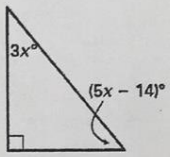


$x + 4x + 3x = 180$

$8x = 180$

$x = 22.5$

66.

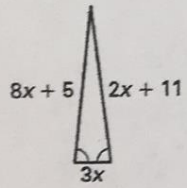


$3x + 5x - 14 = 90$

$8x = 104$

$x = 13$

67.

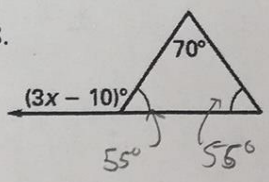


$8x + 5 = 2x + 11$

$6x = 6$

$x = 1$

68.



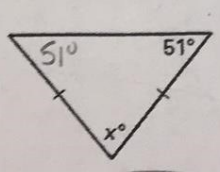
$3x - 10 = 70 + 55$

$3x - 10 = 125$

$3x = 135$

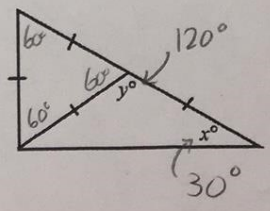
$x = 45$

69.



$x = 78°$

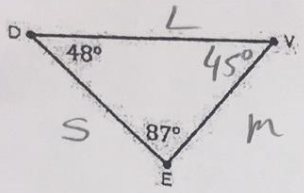
70.



$x = 30$

$y = 120$

71. List the sides in order from ***smallest to largest.***



$\overline{DE}$, $\overline{VE}$, $\overline{DV}$

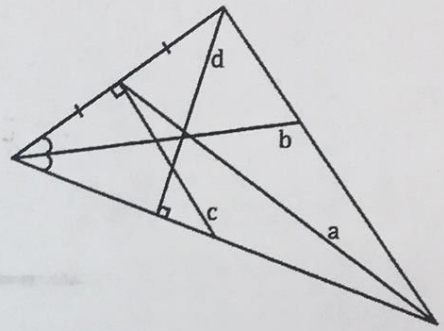
72. Identify the special segment (perpendicular bisector, angle bisector, altitude, or median).

a. Median

b. Angle Bisector

c. Perp. Bisector

d. Altitude



Formulas for Coordinate Geometry

Slope	$m = \frac{y_2 - y_1}{x_2 - x_1}$	• (x_1, y_1) = a point on the line • (x_2, y_2) = a 2nd point on the line • m = rise/run
Distance	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	• (x_1, y_1) = a point on the line • (x_2, y_2) = a 2nd point on the line • distance = length of segment
Midpoint	$M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$	• (x_1, y_1) = a point on the line • (x_2, y_2) = a 2nd point on the line • Hint: Take the average!
Slope-Intercept Form of a Line	$y = mx + b$	• m = slope • b = y-intercept • (x, y) = a point on the line
Point-Slope Form of a Line	$y - y_1 = m(x - x_1)$	• (x_1, y_1) = a point on the line • m = slope • optional to use, but must then change to slope-intercept form

Finding the Missing Side Length of a Right Triangle

Pythagorean Theorem	$a^2 + b^2 = c^2$	• for right triangles only • must be given 2 of the 3 side lengths • c = length of hypotenuse (side opposite right angle)