

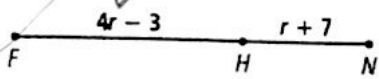
Topic 1

1. What are the undefined terms of Geometry?

Point Line Plane

2. If $FN = 29$, what is FH ?

$r=5$
 $4(5)-3$
 17



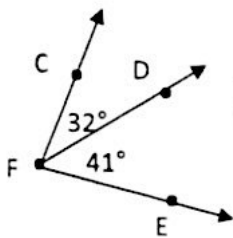
$$4r - 3 + r + 7 = 29$$

$$5r + 4 = 29$$

$$-4 \quad -4$$

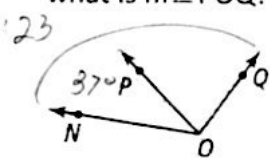
$$\frac{5r}{5} = \frac{25}{5}$$

3. Find $m\angle CFE$.



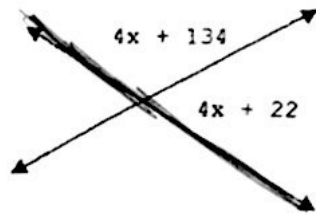
32
 41
 73°

4. If $m\angle NOP = 37^\circ$ and $m\angle NOQ = 123^\circ$, what is $m\angle POQ$?



123
 -37
 86°

5. Solve for x .



$$4x + 134 + 4x + 22 = 180$$

$$8x + 156 = 180$$

$$-156 \quad -156$$

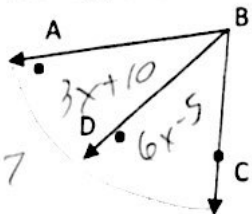
$$\frac{8x}{8} = \frac{24}{8}$$

$x = 3$

6. What theorem allows you to solve #5?

The sum of the measures of a linear pair is 180° (PAGE 54)

7. Given $m\angle ABD = (3x + 10)^\circ$, $m\angle DBC = (6x - 5)^\circ$, and $m\angle ABC = 77^\circ$, Find the $m\angle ABD$.



$$3x + 10 + 6x - 5 = 77$$

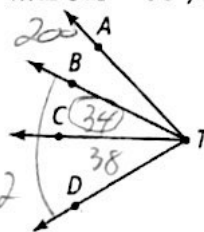
$$9x + 5 = 77$$

$$-5 \quad -5$$

$$\frac{9x}{9} = \frac{72}{9}$$

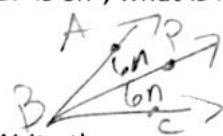
$x = 8$

8. If $m\angle ATB = 20^\circ$, $m\angle BTD = 72^\circ$, and $m\angle CTD = 38^\circ$, what is $m\angle ATC$?



54°

9. The angle bisector of $\angle ABC$ is \overline{BP} . If $m\angle ABP$ is $6n^\circ$, what is $m\angle ABC$?



$12n$

10. Write the converse of the statement below.

If $m\angle A = 30^\circ$, then $\angle A$ is acute.

If $\angle A$ is acute, then $m\angle A = 30^\circ$.

11. What is the truth value of the converse of the statement:

If it snows, then they cancel school.

False.

12. What is the distance between points $A(2, 9)$ and $B(-2, 6)$? Round to the nearest tenth if needed.

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \sqrt{(-2 - 2)^2 + (6 - 9)^2}$$

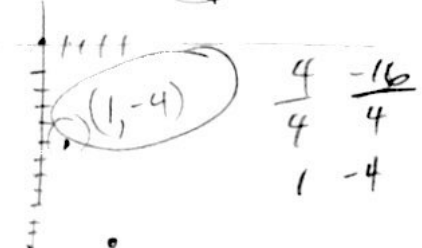
$$= \sqrt{(-4)^2 + (-3)^2} = \sqrt{16 + 9} = \sqrt{25} = 5$$

13. What is the midpoint between points $A(3, 12)$ and $B(6, -15)$?

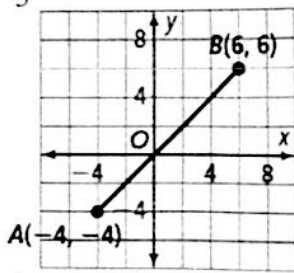
$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) = \left(\frac{3 + 6}{2}, \frac{12 + (-15)}{2} \right)$$

$$= \left(\frac{9}{2}, -\frac{3}{2} \right) = (4.5, -1.5)$$

14. The coordinates of points A and B are $A(0, 0)$ and $B(4, -16)$. What are the coordinates of the point that is $\frac{1}{4}$ of the way from A to B ?



15. What are the coordinates of the point $\frac{4}{5}$ of the way from A to B?



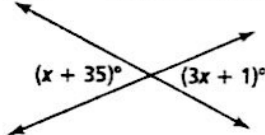
- A (-2, -2)
 B (0, 0)
 C (2, 2)
 D (4, 4)

$$-4 - 6 = -10 \cdot \frac{4}{5} = -8$$

16. Which number is a counterexample for the conditional below?
 If a number is divisible by 6, then it is divisible by 18.

- A 18
 B 36
 C 24
 D 54

17. What is the value of x?



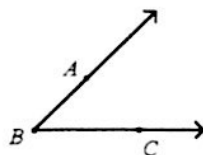
$$\begin{aligned} x + 35 &= 3x + 1 & x &= 17 \\ -x & & & \\ 35 &= 2x + 1 & & \\ \frac{34}{2} &= \frac{2x}{2} & & \\ 17 & & & \end{aligned}$$

18. What theorem allows you to solve #15?
 Vertical angles are congruent

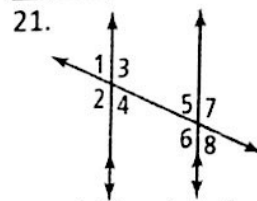
19. Construct the perpendicular bisector of the segment.



20. Construct the angle bisector of the angle.



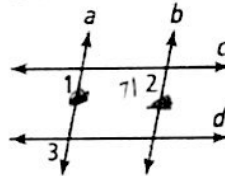
Topic 2



- A. Which pairs of angles are alternate interior angles?
 $\angle 4$ & $\angle 5$ $\angle 3$ & $\angle 6$

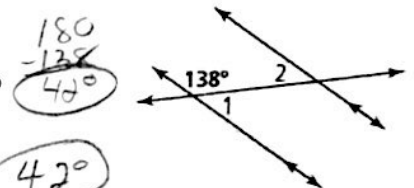
- B. Which pairs of angles are corresponding angles?
 $\angle 1$ & $\angle 5$ $\angle 3$ & $\angle 7$ $\angle 2$ & $\angle 6$
 $\angle 4$ & $\angle 8$

22. If $a \parallel b$ and $m\angle 2 = 71^\circ$, what is $m\angle 1$?



71°

23. A. What is $m\angle 1$?

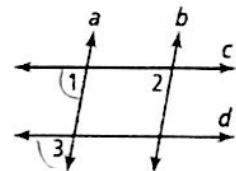


180 - 138 = 42°

- B. What is $m\angle 2$?

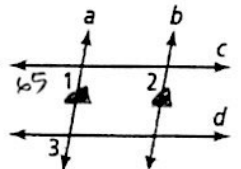
24. If $\angle 1 \cong \angle 3$, which conclusion can be made?

- A $a \parallel b$
 B $c \parallel d$
 C $c \perp a$
 D $b \perp d$



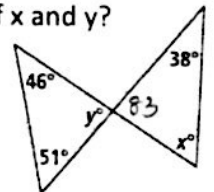
25. If $a \parallel b$ and $m\angle 1 = 65^\circ$, what is $m\angle 2$?

65°



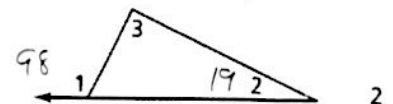
26. What are the values of x and y?

y = 83
 x = 59



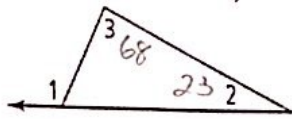
27. If $m\angle 1 = 98^\circ$ and $m\angle 2 = 19^\circ$, what is $m\angle 3$?

79°



28. If $m\angle 2 = 23^\circ$ and $m\angle 3 = 68^\circ$, what is $m\angle 1$?

91°



29. A. Choose one:

Parallel/Perpendicular lines have equal slopes.

B. Choose one:

Parallel/Perpendicular lines have slopes whose product is -1.

30. A line has slope $\frac{2}{3}$.

What would the slope be of a line that is:

a) parallel to it $\frac{2}{3}$

b) perpendicular to it $-\frac{3}{2}$

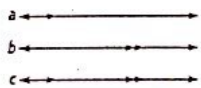
31. In $y = mx + b$, what variable represents the slope? m

32. What is the relationship between the lines $y = -\frac{4}{5}x + 1$ and $y = -\frac{5}{4}x - 3$, parallel, perpendicular, or neither? neither

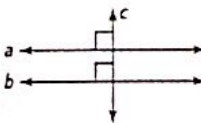
33. If $m \perp n$ and the slope of line m is 5, what is the slope of line n ? $-\frac{1}{5}$

For #34-35, fill in the blank to complete the relationship that can be concluded.

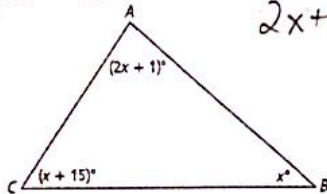
34. If $a \parallel c$ and $b \parallel c$, then $a \parallel b$.



35. If $a \perp c$ and $b \perp c$, then $a \parallel b$.



36. Solve for x .



$$2x + 1 + x + x + 15 = 180$$

$$4x + 16 = 180$$

$$\frac{-16}{-16} \quad \frac{-16}{-16}$$

$$4x = 164$$

$$x = 41$$

Topic 3

37. What are the 4 rigid motions?

Translation, Reflection, Rotation, Glide Reflection

38. How do you know if a transformation is a rigid motion? Figures same lengths and angle measures.

39. Match the rigid motion to its notation

Glide Reflection D . A. $r_{(x^*, p)}(\Delta ABC)$

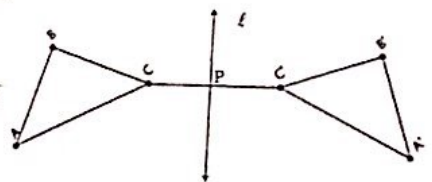
Reflection C . B. $T_{(x, y)}(\Delta ABC)$

Rotation A . C. $R_{line m}(\Delta ABC)$

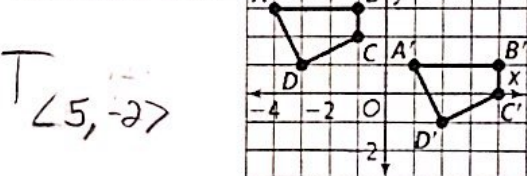
Translation B . D. $(R_{line n} \circ T_{(x, y)})(\Delta ABC)$

40. Use the diagram below of $R_{line l}(\Delta ABC) = \Delta A'B'C'$ to decide which statement is false.

- A. $AC = A'C'$
 B. $CP = C'P'$
 C. $m\angle B = m\angle B'$
 D. $AB = C'B'$



41. Describe the translation that maps $ABCD$ to $A'B'C'D'$.



42. Quadrilateral $ABCD$ has coordinates $A(-2, 0)$, $B(0, 4)$, $C(4, 6)$, and $D(2, 2)$.

A. What are the coordinates after $R_{y\text{-axis}}$?

$A'(-2, 0)$ $B'(0, 4)$ $C'(-4, 6)$ $D'(-2, 2)$

B. What are the coordinates after $R_{x\text{-axis}}$?

$A'(2, 0)$ $B'(0, -4)$ $D'(2, -2)$
 $C'(4, -6)$

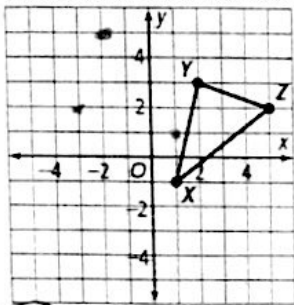
Rotations page 122

43. $\triangle ABC$ has vertices $A(1, 3)$, $B(2, 5)$, and $C(5, 3)$. What are the coordinates of B' after $T_{(1,4)}$?

$(2, 5) \rightarrow 2+1 \quad 4+5$

$B'(3, 9)$

44. $\triangle XYZ$ is rotated 90° counterclockwise about the origin to produce $\triangle X'Y'Z'$. What are the coordinates of $\triangle X'Y'Z'$?



$X(0, -1)$

$Y(2, 3)$

$Z(5, 2)$

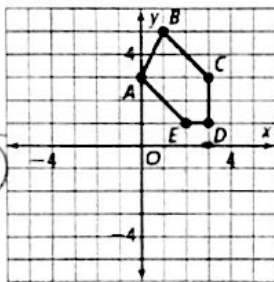
- A $X'(1, 1)$, $Y'(-4, 2)$, $Z'(-2, 5)$
- B $X'(-1, -1)$, $Y'(4, -2)$, $Z'(2, -5)$
- C $X'(-1, -1)$, $Y'(-2, 4)$, $Z'(-5, 2)$
- D $X'(0, 0)$, $Y'(1, 4)$, $Z'(4, 3)$

45. What are the coordinates of E' after the pentagon is rotated 270° about the origin?

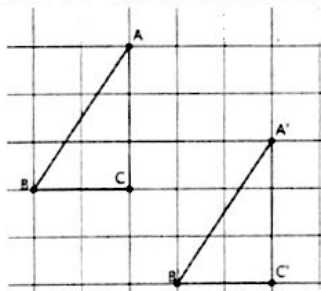
$A(0, 3)$

$E(2, 1)$

$E'(2, -1)$

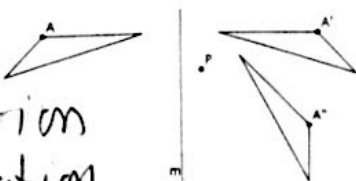


46. Describe the translation from $\triangle ABC$ to $\triangle A'B'C'$. Use the translation notation.



$T_{\langle 3, -2 \rangle}$

47. Describe the composition of rigid motions that maps $\triangle A$ to $\triangle A''$?

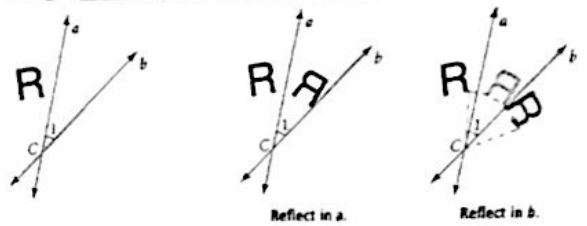


Reflection
Rotation

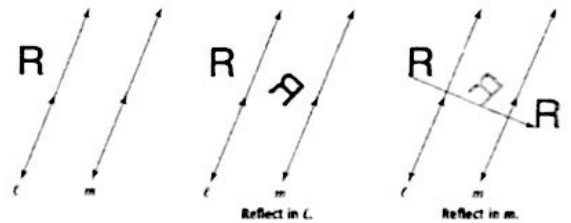
48. You are given the rotation $r_{(30^\circ, P)}$. In general, how many times does this rotation need to be applied to a figure to map it onto itself? (Hint: 360° always maps a figure onto itself.)

$360/30 = 12$

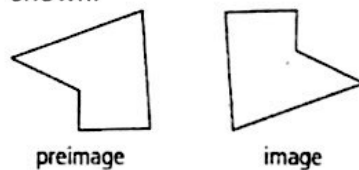
49. a) A composition of two reflections over intersecting lines is equivalent to a single Rotation.



b) A composition of two reflections over parallel lines is equivalent to a single Translation.



50. Decide if each rigid motion (or composition) maps the preimage to the image shown.



- a. rotation of 180° Yes No
- b. glide reflection Yes No
- c. rotation of 90° , and then reflection across vertical line Yes No
- d. reflection across horizontal line, and then rotation of 90° Yes No
- e. reflection across vertical line, and then reflection across horizontal line Yes No

51. How many lines of symmetry does a regular decagon have? 10

52. Which word has reflectional symmetry across a horizontal line?

- (A) BOOK
- B LOOK
- C NOOK
- D ROOK

53. The rule $T_{-2, 3}$ is used for point P (3, 1). Where is the translated point in the coordinate system?



$-2 + 3 = 1$

$3 + 1 = 4$

Quad 1

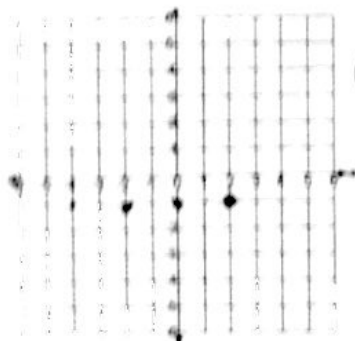
54. Write the composition of translations as one translation $T_{(4, -8)} \circ T_{(0, -2)}$

$4 + 0 = 4$ $-2 + (-8) = -10$ $T_{(4, -10)}$

55. Match the counterclockwise rotation with the equivalent clockwise rotation.

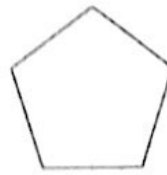
- | | |
|-------------------------------------|-------------------------------|
| $r_{(180^\circ, P)}$ (ABC) <u>D</u> | A. $r_{(270^\circ, P)}$ (ABC) |
| $r_{(90^\circ, P)}$ (ABC) <u>A</u> | B. $r_{(-90^\circ, P)}$ (ABC) |
| $r_{(135^\circ, P)}$ (ABC) <u>B</u> | C. $r_{(300^\circ, P)}$ (ABC) |
| $r_{(60^\circ, P)}$ (ABC) <u>C</u> | D. $r_{(180^\circ, P)}$ (ABC) |

56. Given P(2, -1) find the coordinates of P'' under the glide reflection $T_{(-2, 0)} \circ R_y$ axis



$P''(-4, -1)$

57.



$360/5 = 72$

A. How many lines of symmetry does the regular pentagon have?

5

B. What is the smallest angle of rotation that maps the regular pentagon onto itself?

72°

58. What is the smallest angle of rotation that maps a regular octagon onto itself?

$360/8 = 45$

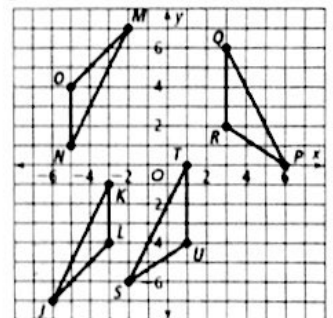
Topic 4

59. Triangle JKL is reflected across the y-axis to create $\Delta J'K'L'$. Are the two figures congruent? Explain.

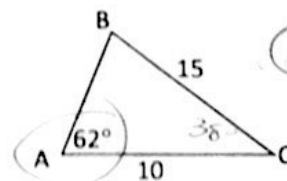
Yes, rigid motion

60. Which triangles are congruent in the diagram below?

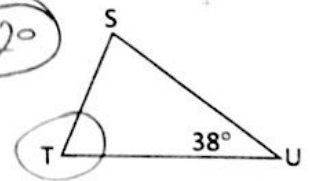
$\Delta QRP \cong \Delta TUS$
 $\Delta NOM \cong \Delta KLI$



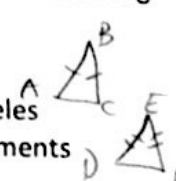
61. $\Delta ABC \cong \Delta TSU$. Find $m\angle T$?



62°



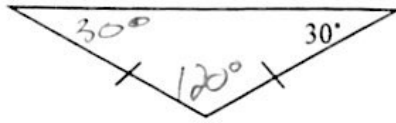
62. Triangles ABC and DEF are isosceles triangles. Answer yes or no to the statements about the triangles.



- a. The base angles of ΔABC are congruent to the base angles of ΔEDF . Yes No
- b. Two sides of ΔABC are congruent. Yes No
- c. Two angles of ΔDEF are congruent. Yes No
- d. Two sides of ΔABC are congruent to two sides of ΔEDF . Yes No

$$\begin{array}{r} 180 \\ -60 \\ \hline 120 \end{array}$$

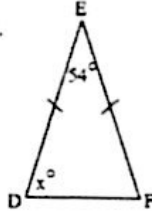
63. Find the measures of both missing angles.



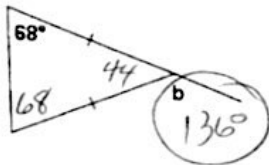
64. Determine the value of x.

$$\begin{array}{r} 180 \\ -54 \\ \hline 126/2 \end{array}$$

$$x = 63^\circ$$

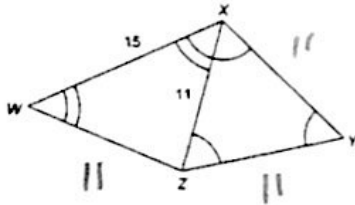


65. Find the value of b.



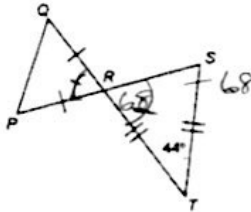
$$\begin{array}{r} 68 \quad 180 \\ +68 \quad -136 \\ \hline 136 \quad 44 \end{array}$$

66. What is the perimeter of WXYZ?



$$48$$

67. In the figure below, determine m∠QRP.



$$68^\circ$$

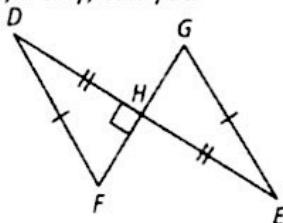
$$\begin{array}{r} 180 \\ -44 \\ \hline 136/2 \end{array}$$

68. Which of the following are ways to prove two triangles are congruent?

- a. ASA Yes No
- b. AAS Yes No
- c. AAA Yes No
- d. SSS Yes No
- e. SAS Yes No
- f. SSA Yes No
- g. HL Yes No

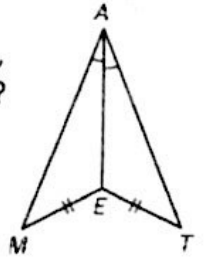
69. By which theorem, if any, can you conclude $\triangle DHF \cong \triangle EHG$?

HL



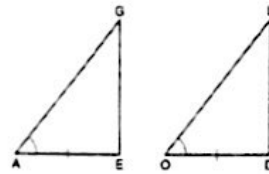
70. By which theorem, if any, can you conclude $\triangle MAE \cong \triangle TAE$?

None



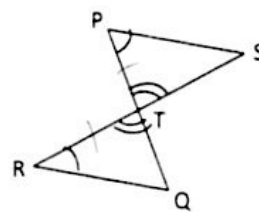
71. In the diagram below of $\triangle AGE$ and $\triangle OLD$, $\angle GAE \cong \angle LOD$ and $\overline{AE} \cong \overline{OD}$.

To prove that $\triangle AGE \cong \triangle OLD$ by SAS, what other information is needed?



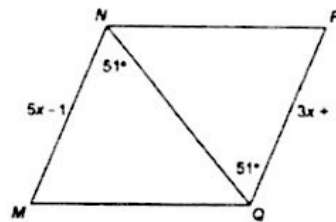
$$\overline{AG} \cong \overline{OL}$$

72. What additional piece of information do you need to show that the triangles are congruent by ASA?



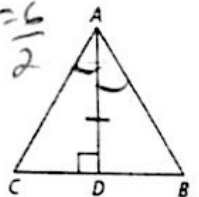
$$\overline{PT} \cong \overline{RT}$$

73. To show that $\triangle NMQ \cong \triangle QPN$ by SAS, what must be the value of x?



$$\begin{array}{r} 5x-1 = 3x+5 \\ -3x \quad -3x \\ \hline 2x-1 = 5 \\ \pm 1 \quad \pm 1 \\ \hline 2x = 6 \\ \div 2 \quad \div 2 \\ \hline x = 3 \end{array}$$

74. Given: \overline{AD} bisects $\angle A$.
Prove: $\triangle ADB \cong \triangle ADC$

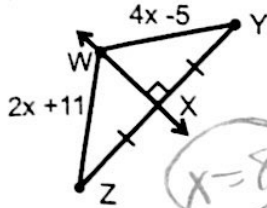


Statements	Reasons
1. \overline{AD} bisects $\angle A$.	1. Given.
2. $\angle CAD \cong \angle BAD$	2. Def of angle bisector.
3. $\overline{AD} \cong \overline{AD}$	3. Reflexive property of congruence
4. $\angle CDA \cong \angle BDA$	4. All right angles are congruent.
5. $\triangle ADB \cong \triangle ADC$	5. ASA

Topic 5

$$4(8) - 5 = 27$$

75. Determine WY.



$$4x - 5 = 2x + 11$$

$$\underline{-2x} \quad \underline{-2x}$$

$$2x - 5 = 11$$

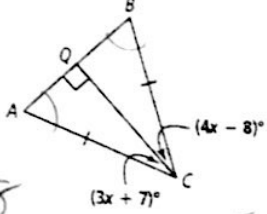
$$\underline{+5} \quad \underline{+5}$$

$$2x = 16$$

$$\underline{\div 2} \quad \underline{\div 2}$$

$$x = 8$$

76. Is each statement true for $\triangle ABC$?



$$4x - 8 = 3x + 7$$

$$\underline{-3x} \quad \underline{-3x}$$

$$x - 8 = 7$$

$$\underline{+8} \quad \underline{+8}$$

$$x = 15$$

- a. \overline{CQ} bisects $\angle BCA$. Yes No
- b. \overline{CQ} is the perpendicular bisector of \overline{AB} . Yes No
- c. $m\angle QCB = 26^\circ$. Yes No

77. Determine UW.

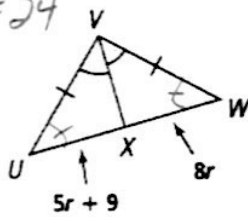
$$5r + 9 = 8r$$

$$\underline{-5r} \quad \underline{-5r}$$

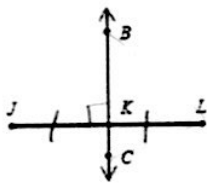
$$9 = 3r$$

$$\underline{\div 3} \quad \underline{\div 3}$$

$$3 = r$$



78. Given \overline{BC} is the perpendicular bisector of \overline{JL} . Determine if each statement is true.



- a. $BK = CK$. Yes No
- b. $CL = BL$. Yes No
- c. $m\angle JBL = 90^\circ$. Yes No
- d. K is the midpoint of \overline{BC} . Yes No

79. A.

Choose one:

The angle bisectors / perpendicular bisectors of a triangle intersect at a point equidistant from the vertices of the triangle.

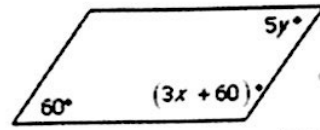
B. Choose one:

The angle bisectors / perpendicular bisectors of a triangle intersect at a point equidistant from the sides of the triangle.

Topic 6

For #80-82, find the values of x and y in the parallelograms.

80.



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

$$3x + 120 = 180$$

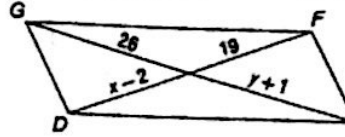
$$\frac{5y = 60}{5 \quad 5}$$

$$y = 12$$

$$\frac{3x = 60}{3 \quad 3}$$

$$x = 20$$

81.



$$x - 2 = 19$$

$$\underline{+2} \quad \underline{+2}$$

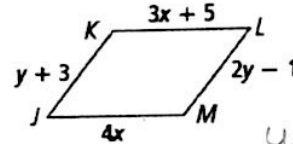
$$x = 21$$

$$26 = y + 1$$

$$\underline{-1} \quad \underline{-1}$$

$$25 = y$$

82.



$$3x + 5 = 4x$$

$$\underline{-3x} \quad \underline{-3x}$$

$$5 = x$$

$$y + 3 = 2y - 1$$

$$\underline{-y} \quad \underline{-y}$$

$$3 = y - 1$$

$$\underline{+1} \quad \underline{+1}$$

$$4 = y$$

83. In rectangle ABCD if $AB = 6x - 10$ and $CD = 5x + 2$, what is the value of x?

$$6x - 10 = 5x + 2$$

$$\underline{-5x} \quad \underline{-5x}$$

$$x - 10 = 2$$

$$\underline{+10} \quad \underline{+10}$$

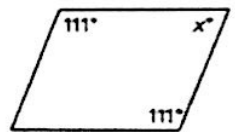
$$x = 12$$

84. For what value of x proves that the figure is a parallelogram?

$$180$$

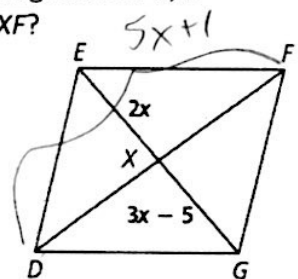
$$\underline{-111}$$

$$69$$



85. Given parallelogram DEFG, it $DF = 5x + 1$, what is XF?

- A 10
- B 13
- C 20
- D 26



$$2x = 3x - 5$$

$$\underline{-3x} \quad \underline{-3x}$$

$$-x = -5$$

$$\underline{-1} \quad \underline{-1}$$

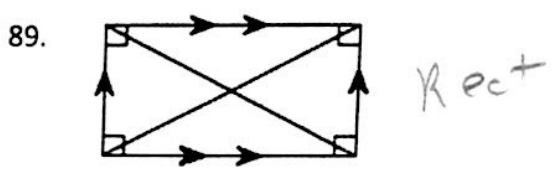
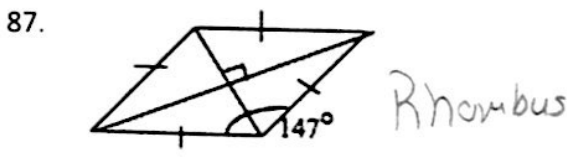
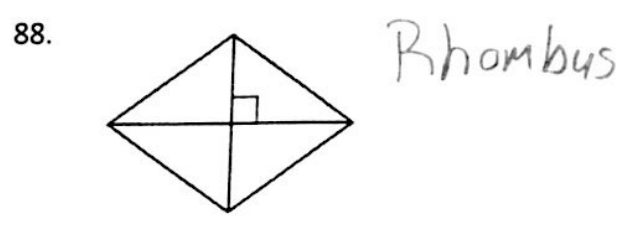
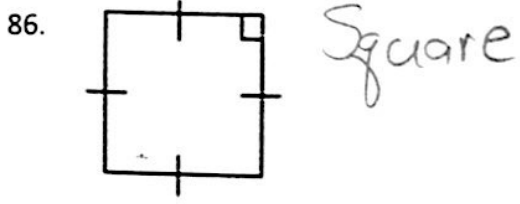
$$x = 5$$

$$5(5) + 1$$

$$25 + 1$$

$$26$$

Determine the most specific name that can be given to each parallelogram based on the marked properties.



90. Check the box for each property the figure has.

	Parallelogram	Rhombus	Rectangle	Square
All sides are congruent		✓		✓
Opposite sides are congruent	✓	✓	✓	✓
Opposite sides are parallel	✓	✓	✓	✓
Opposite angles are congruent	✓	✓	✓	✓
All angles are right angles			✓	✓
Diagonals bisect each other	✓	✓	✓	✓
Diagonals are congruent			✓	✓
Diagonals are perpendicular		✓		✓
Diagonals bisect opposite angles		✓		✓

91. Match the name of the quadrilateral to the picture of its diagonals.

Parallelogram D

Rectangle B

Square C

Rhombus A

