Geometry Name: _____

1st Semester Review for Final Exam

1. Two lines intersect in a _____.
2. Two planes intersect in a _____.
3. Three points determine _____ plane(s).
4. Three noncollinear points determine _____ plane(s).

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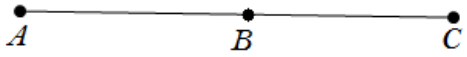
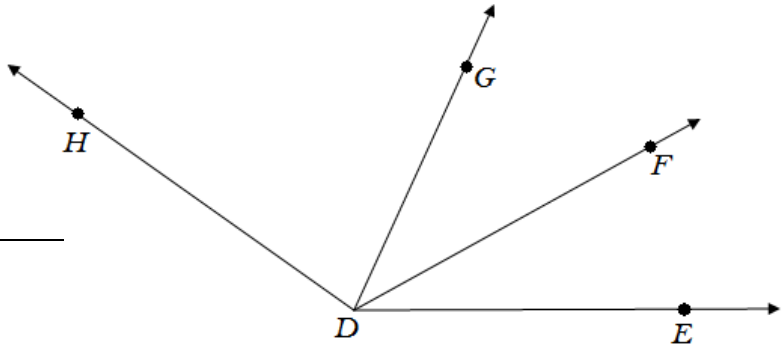
5. Write the segment addition postulate for the segment shown.



6. If $AB = 4x - 3$, $BC = 3x + 2$, and $AC = 41$, find the value of x.

7. If $\overline{AB} \cong \overline{BC}$, then B is the _____ of $\overline{AC}$.

Given: $\overrightarrow{DF}$ bisects $\measuredangle EDG$.



8. $\measuredangle EDF \cong \measuredangle$_____
9. $m\measuredangle EDF + m\measuredangle FDG = m\measuredangle$ _____
10. $m\measuredangle EDG + m\measuredangle GDH = m\measuredangle$_____

Fill in the blank with the with the best response.

11. Measures of an interior angle of a triangle sum to _____.
12. The measure of each angle in an equilateral triangle is _____.
13. If two angles have a sum of 90, the angles are called _____ angles.
14. If two angles have a sum of 180, the angles are called _____ angles.
15. If two parallel lines are cut by a transversal, then corresponding angles are _____.

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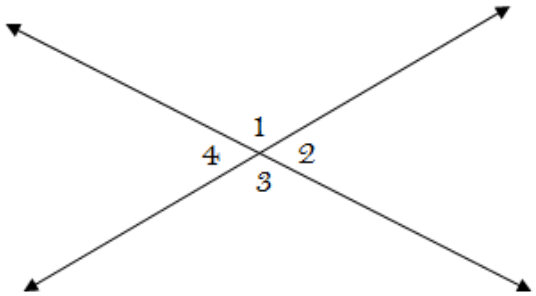
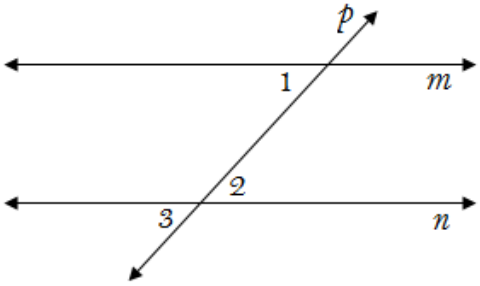
16. Prove the theorem: Vertical Angles are Congruent
Given: Diagram as shown

Prove: $\measuredangle 4 \cong \measuredangle 2$



Statements	Reasons
1. $m\measuredangle 4 + m\measuredangle 1 =$ _____ $m\measuredangle 1 + m\measuredangle 2 =$ _____	1. _____
2. $m\measuredangle 4 + m\measuredangle 1 = m\measuredangle 1 + m\measuredangle 2$	2. _____
3. $m\measuredangle 1 = m\measuredangle 1$	3. _____
4. $m\measuredangle 4 = m\measuredangle 2$ or $\measuredangle 4 \cong \measuredangle 2$	4. _____

17. Prove the theorem: If two parallel lines are cut by a transversal, then alternate interior angles are congruent.
Given: *m* || *n*
Prove: $\measuredangle 1 \cong \measuredangle 2$



Statements	Reasons
1. _____	1. _____
2. $\measuredangle 2 \cong \measuredangle 3$	2. _____
3. _____	3. If two parallel lines are cut by a transversal, then corresponding angles are congruent.
4. _____	4. _____

Find the distance between the given points. Then find the midpoint of the segment having the two points as endpoints.

18. (4, -7) and (5, 3)

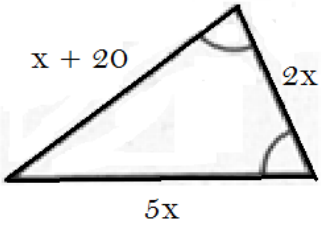
19. (-2, 4) and (7, 10).

21. (-6, -8) and (-5, -7)

22. (3, -10) and (-8, 14)

Find the value of *x* and *y* when necessary.

23.



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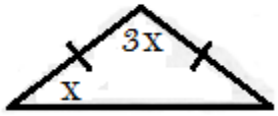

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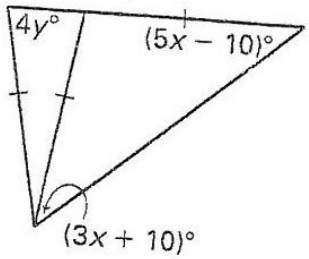

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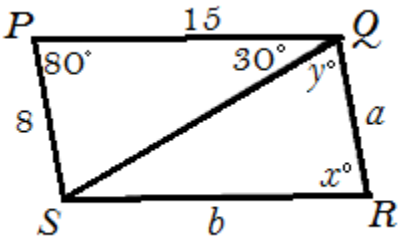
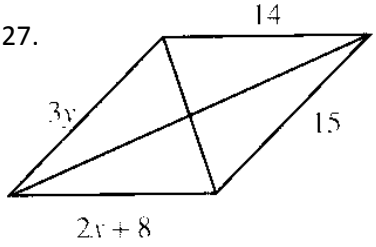
26. Given: *PQRS* is a parallelogram. Find *a, b, x,* and *y*.



Each figure shown is a parallelogram with its diagonals drawn. Find the values of *x* and *y*.

27.



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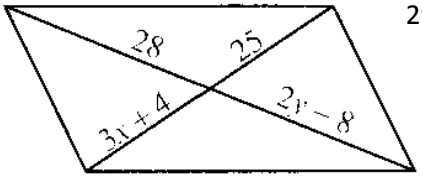

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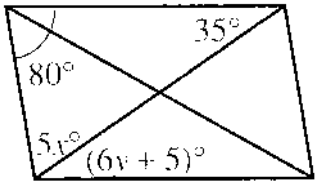

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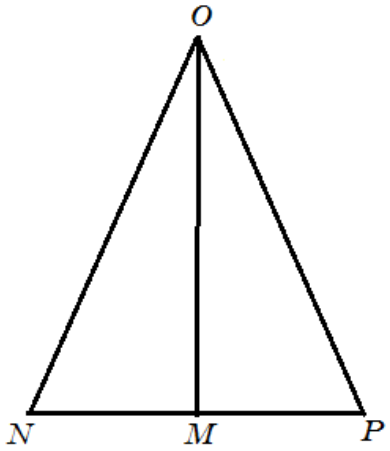
30. Prove the theorem: Base angles of an isosceles triangles are congruent.



Given: Isosceles ΔNOP; $\overline{NO} \cong \overline{OP}$; auxiliary line $\overline{OM}$ bisects $\measuredangle NOP$

Prove: $\measuredangle N \cong \measuredangle P$

Statements	Reasons
1. _____	1. _____
2. $\measuredangle NOM \cong \measuredangle POM$	2. _____
3. $\overline{OM} \cong \overline{OM}$	3. _____
4. $\Delta NOM \cong \Delta POM$	4. _____
5. $\measuredangle N \cong \measuredangle P$	5. _____

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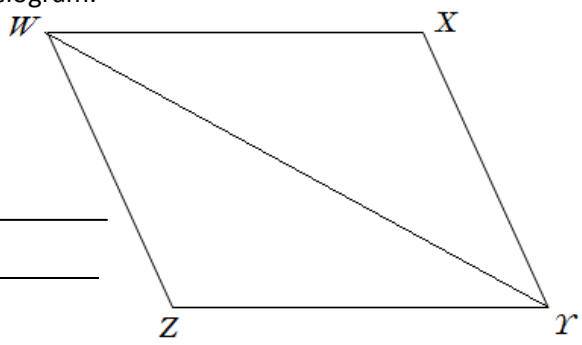
31. Prove the theorem: Opposite sides are congruent in a parallelogram.



Given: *WXYZ* is a parallelogram

Prove: $\overline{WX} \cong \overline{ZY}$; $\overline{WZ} \cong \overline{XY}$

Statements	Reasons
1. _____	1. _____
2. $\overline{WX} \parallel \overline{ZY}$; $\overline{WZ} \parallel \overline{XY}$	2. _____
3. $\measuredangle XWY \cong \measuredangle ZYW$; $\measuredangle XYW \cong \measuredangle ZWY$	3. _____
4. $\overline{WY} \cong \overline{WY}$	4. _____
5. $\Delta WXY \cong \Delta YZW$	5. _____
6. $\overline{WX} \cong \overline{ZY}$; $\overline{WZ} \cong \overline{XY}$	6. _____

32. List properties for parallelograms.

33. List properties for rhombuses.

34. List properties for rectangles.

Complete each statement with the word *always, sometimes,* or *never.*

35. If three points are coplanar, then they are _____ collinear.

36. Two intersecting lines are _____ coplanar.

37. An obtuse triangle is _____ isosceles.

38. Adjacent angles are _____ congruent.

39. Two parallel planes _____ intersect.

40. Two lines parallel to the same line are _____ parallel.

41. Through a point not on a line there is _____ more than one line parallel to the given line.

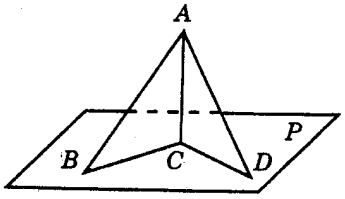
42. If a statement is true, then its converse is _____ true.

43. For the statement: a) identify the hypothesis; b) identify the conclusion; c) write the converse; d) write the inverse; e) write the contrapositive

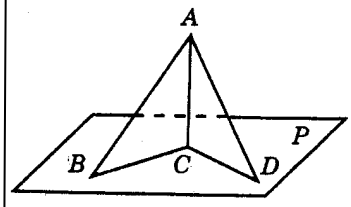
If it is snowing, then Jennifer will ride the bus to school.

Using the given information, name the postulate or theorem that can be used to prove the triangles congruent. If the triangles cannot be proved congruent, write *none*.

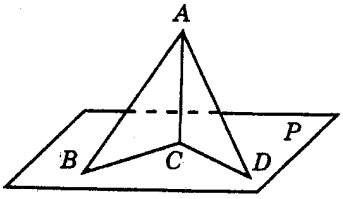
44. $\overline{AB} \cong \overline{AD}$; $\overline{BC} \cong \overline{DC}$



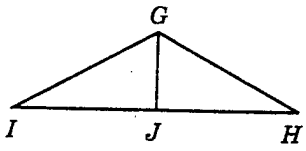
45. $\measuredangle B \cong \measuredangle D$; $\overline{BC} \cong \overline{DC}$



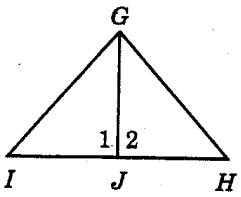
46. $\overline{AC} \perp$ plane P; $\overline{AB} \cong \overline{AD}$



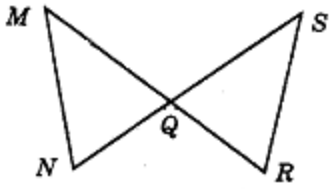
47. $\overline{GJ} \perp \overline{HI}$; $\overrightarrow{GJ}$ bisects $\measuredangle HGI$



48. *J* is the midpoint of $\overline{HI}$; $\measuredangle 1 \cong \measuredangle 2$

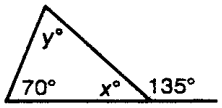


49. $\overline{MN} \cong \overline{SR}$; $\measuredangle N \cong \measuredangle R$



Find the values of *x* and *y* (when necessary).

50.



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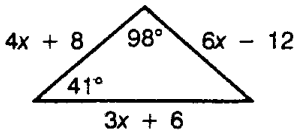

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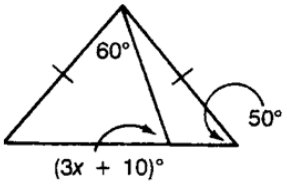
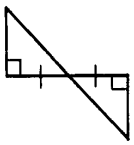


Which method can be used to prove the triangles are congruent?

a. SSS b. SAS c. ASA d. AAS e. HL f. None

53.



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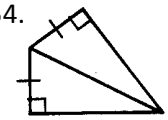

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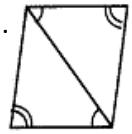

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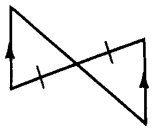

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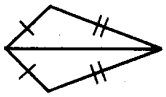
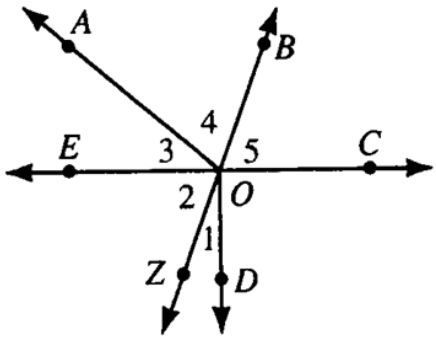


In the diagram, $\overrightarrow{OB}$ bisects $\measuredangle AOC$ and $\overleftrightarrow{EC} \perp \overrightarrow{OD}$. Find the value of *x*.



58. $m\measuredangle 5 = 2x; m\measuredangle 3 = x$

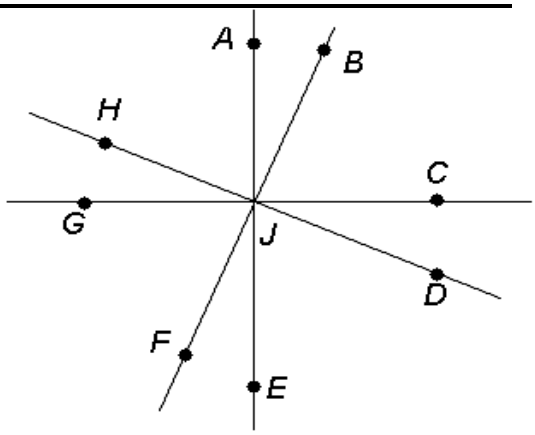
59. $m\measuredangle 1 = 2x; m\measuredangle 2 = 6x + 2$

60. $m\measuredangle 2 = 6x + 9; m\measuredangle 5 = 2x + 49$

61. $m\measuredangle 2 = 3x; m\measuredangle 3 = 2x - 4$

62. $m\measuredangle 1 = x - 8; m\measuredangle 2 = 2x + 5; m\measuredangle 4 = 3x - 26$

If $\overleftrightarrow{GC} \perp \overleftrightarrow{AE}$ and $\overleftrightarrow{BF} \perp \overleftrightarrow{HD}$ and $m\measuredangle CJD = 30$, find…



63. $m\measuredangle BJC$ _____

64. $m\measuredangle AJG$ _____

65. $m\measuredangle GJF$ _____

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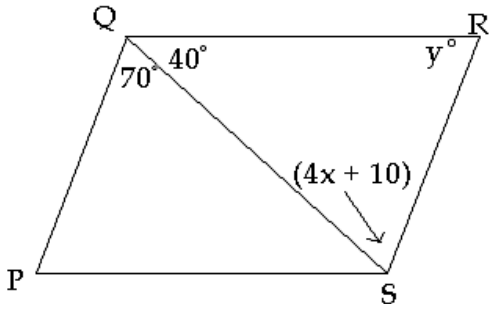
66. Find *x* and *y* if $\overleftrightarrow{QR} \parallel \overleftrightarrow{PS}$ and $\overleftrightarrow{QP} \parallel \overleftrightarrow{RS}$.



x = _____

y = _____

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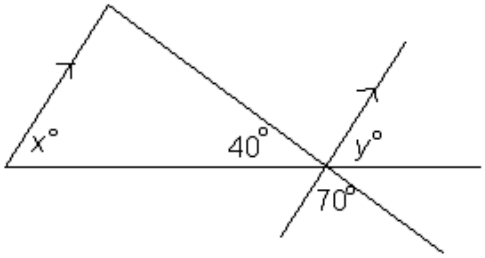
67. Find the values of *x* and *y*.



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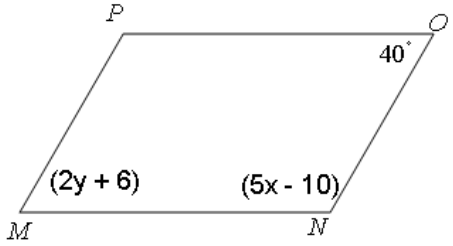
68. In parallelogram *MNOP*, find the value of *x* and *y*.



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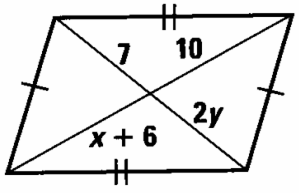
69. Find the value of *x* and *y*.



List each special parallelogram for which the statement is always true. Consider parallelograms, rectangles, rhombuses and squares.

70. Diagonals are perpendicular.

71. Opposite sides are parallel

72. It is equilateral

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73. A rectangle is (always, sometimes, never) a rhombus.
74. A rectangle is (always, sometimes, never) a square.
75. A rhombus is (always, sometimes, never) a parallelogram.
76. A parallelogram is (always, sometimes, never) a trapezoid.
77. The diagonals of a trapezoid are (always, sometimes, never) perpendicular.
78. A parallelogram is (always, sometimes, never) a rectangle.

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79. Write the equation slope-intercept form of the line in that passes through the point (4, 6) and is…

a. Parallel to the line $y = \frac{2}{3}x + 4$

b. Perpendicular to the line $y = \frac{2}{3}x + 4$

80. Write the equation slope-intercept form of the line in that passes through the point (-6, -8) and is…

a. Parallel to the line $y = \frac{1}{4}x + 7$

b. Perpendicular to the line $y = \frac{1}{4}x + 7$

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81. Prove that the quadrilateral that connects the points *A*(3, 0), *B*(2, 3), *C*(8, 2) and *D*(7, 5) is a parallelogram by proving that the opposite sides are parallel.