GEOMETRY SEMESTER 1
FINAL EXAM REVIEW 2015

Name: _____

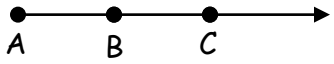
A few things …

1. Refer to your packets to help you study and complete this review.
2. You may write whatever you want on the cheat sheet.
3. Have your cheat sheet out on your desk while you're working and write things down as you complete the review.
4. Know the vocabulary!
5. Know the postulates and theorems!
6. DO **NOT** forget your cheat sheet the day of the final exam.
7. Don't wait until the night before this final to start studying! Start today and work on it **every day**!
8. Get a good night's sleep the night before your final.
9. Eat a nutritious breakfast on the morning of your final.

Good Luck!

1. Find the next two numbers in the sequence

   3, -9, 27, -81 …

2. 

   Name the ray in two different ways. _____, _____

3. ∠A supp ∠B Conclusion: _____

   ∠C supp ∠B Reason: _____

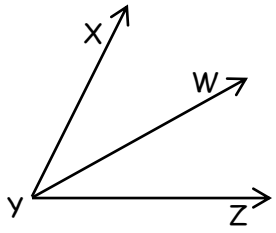
4. What is the only thing you may assume from any diagram? _____

5. The measure of an angle is ten less that tree times the measure of its compliment. What is the measure of both angles?

6. What is the compliment of 75°?

7. What is the supplement of 112°?

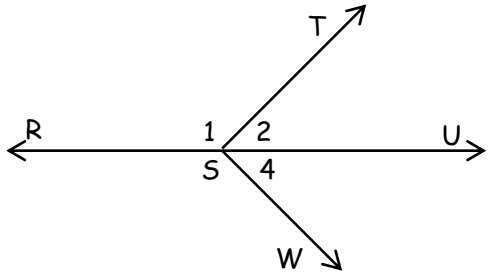
8. $\overline{YW}$ is an angle bisector of $\angle XYZ$
$m\angle XYW = 4x - 3$
$m\angle WYZ = 2x + 15$
Find: $m\angle XYZ$



Use the diagram to answer question 9 & 10.

9. Given: $\overline{TS} \perp \overline{SW}$
$m\angle 4 = 54$
Find: $m\angle 1$

$m\angle 1 =$ _____



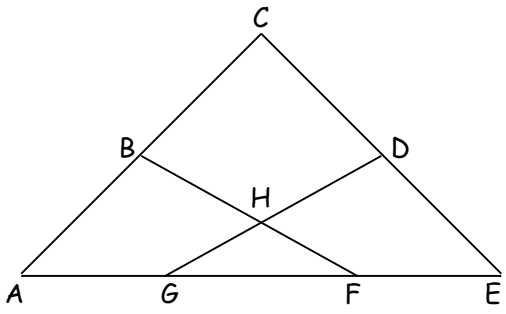
10. Given: $\overline{TS} \perp \overline{SW}$
$m\angle 2 = 2x - 3$
$m\angle 4 = 3x + 8$
Then x = _____

11. Write the converse to the statement:

"If a point is a midpoint, then the point divides a segment into two congruent parts."

_____

Directions: Use the diagram for problems 12 – 15.



12. Given: B is midpoint of $\overline{AC}$
Conclusion: $\overline{CB} \cong \overline{BA}$
Reason: _____

13. Given: $\overline{AF} \cong \overline{GE}$
Conclusion: $\overline{AG} \cong \overline{FE}$
Reason: _____

14. Given: $\overline{AB} \cong \overline{ED}$
$\overline{BF} \cong \overline{DG}$

15. Given: $\angle A \cong \angle E$
Conclusion: $\overline{AC} \cong \overline{EC}$
Reason: _____

What info is needed to prove $\Delta ABF \cong \Delta EDG$ by:

a) SAS? _____

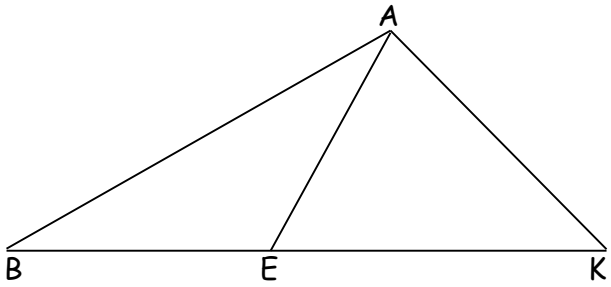
b) SSS? _____

16. If $\Delta TIM \cong \Delta ROB$, then: a) $\overline{BR} \cong$ ____ b) $\angle I \cong$ ____

17. ΔABC is isosceles with vertex angle B. Find the perimeter of the triangle if:

$\overline{AB} = 3x + 1$
$\overline{BC} = x + 9$
$\overline{AC} = 2x - 5$

Perimeter: _____



18. If $\overline{AE}$ is a median, then you may conclude _____.

19. What does "CPCTC" stand for and why do we use it? _____

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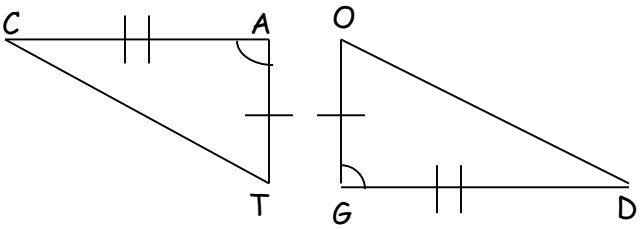
20. a. $\Delta CAT \cong \Delta$ _____ (make sure letters are in correct order!)

b. $\overline{CT} = 40$ Find x

$\overline{AT} = 32$ Find y

$\overline{OD} = 3x + 7$

$\overline{OG} = 2y - 6$



21. a) Draw a picture of an obtuse triangle that is isosceles (use markings to indicate congruencies).

b) Draw a picture of an acute triangle that is isosceles (use markings to indicate congruencies).

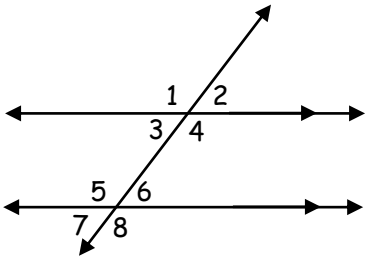
22. Find the slope & distance between (3, 1) & (-2, -5)

23. What is the <u>perpendicular</u> slope to question #22.

24. Find the midpoint between (6, -1) & (2, 5).

25. Two angles both supplementary and congruent must be _____.

26. Name the angle pair relationship between the following angles:



a. ∠4 and ∠8 _____

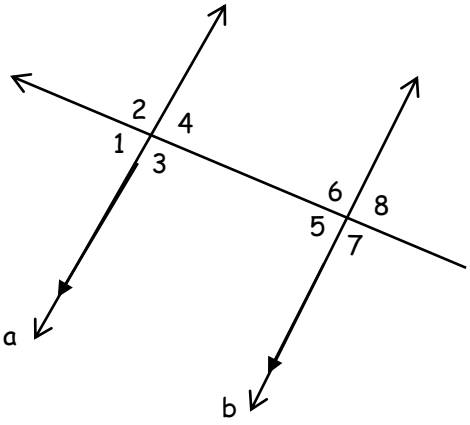
b. ∠2 and ∠7 _____

c. ∠1 and ∠5 _____

d. ∠3 and ∠6 _____

e. ∠4 and ∠6 _____

27. Given: a ∥ b



a. If m∠4 = 102°, find m∠7. _____

b. If m∠2 = 85° find m∠6. _____

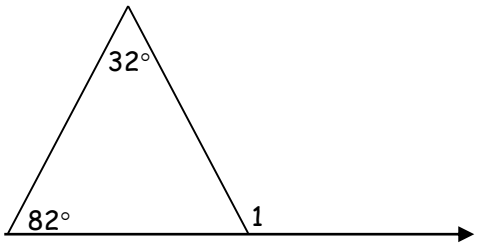
c. If m∠1 = 2x + 4 and m∠5 = 12, find x. _____

d. If m∠6 = 97°, find m∠3. _____

28. The measure of the <u>vertex</u> angle of an isosceles triangle is 24°. What is the measure of a <u>base</u> angle?

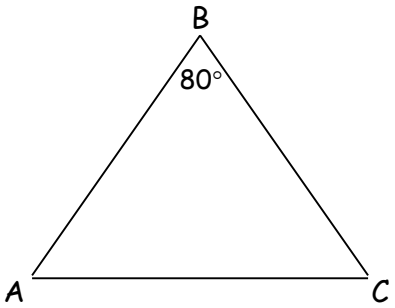
29. The measure of a <u>base</u> angle of an isosceles triangle is 48°. What is the measure of the <u>vertex</u> angle?

30. Find m∠1.



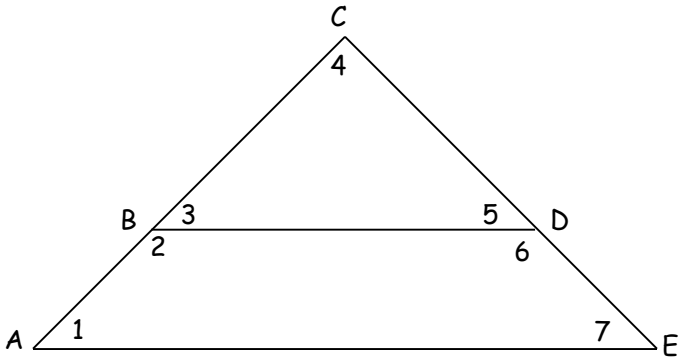
m∠1 = _____

31. Find m∠A and m∠C if ∆ABC is isosceles with base $\overline{AC}$.



32. What is the converse of the statement "If you live in Orland, then you go to Sandburg H.S."

33. If $\overline{BD} \parallel \overline{AE}$, name pairs of corresponding and supplementary angles.



34. What does equilateral and equiangular mean?

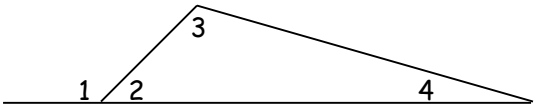
Equilateral: _____

Equiangular: _____

35. Definitions for these types of triangles:

- Acute: _____
- Obtuse: _____
- Right: _____
- Scalene: _____

36. m∠3 = 105°
m∠4 = 30°
Find m∠1



m∠1 = _____

37. Conditional statement: If p then q

Converse: _____

Inverse: _____

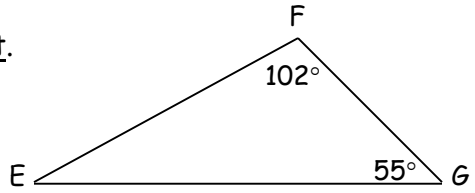
38. M is the midpoint of $\overline{XY}$. If X is (4, -7) and M is (1, -5), find the coordinate of **endpoint** Y.

39. A triangle has two sides of lengths 12 cm and 20 cm. Give the range of the third side.

40. A triangle has two sides of lengths 5m and 9m. Give the range of the third side.

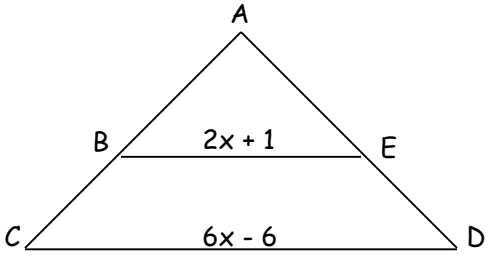
41. Rank the sides from longest to shortest.

_____, _____, _____



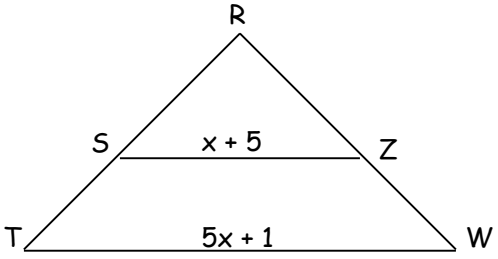
42. B is midpoint of $\overline{AC}$
E is midpoint of $\overline{AD}$

$\overline{CD}$ = _____

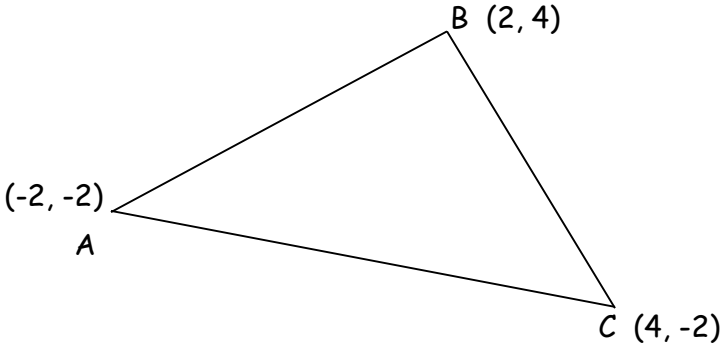


43. S is midpoint of $\overline{RT}$
Z is midpoint of $\overline{RW}$

$\overline{SZ}$ = _____



Use the following diagram to answer questions 44 – 47:



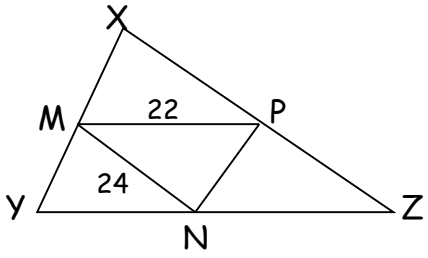
44. Find slope of $\overline{AC}$

45. Find slope of the altitude to $\overline{AC}$

46. Find slope of a line parallel to $\overline{AC}$

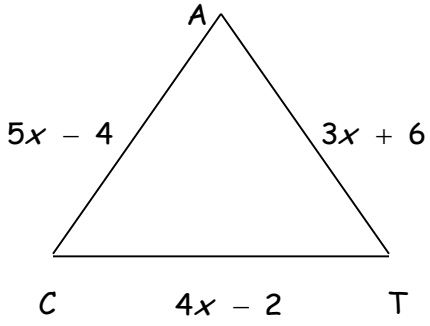
47. Find the endpoints of the midsegment of $\triangle ABC$ and is parallel to $\overline{AC}$.

48. In $\triangle XYZ$, M, N and P are midpoints. The perimeter Of $\triangle MNP$ is 60. Find NP, XZ, YZ, and XY.

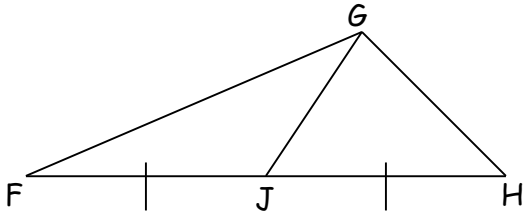


49. $\triangle CAT$ is isosceles with vertex angle A. Find the perimeter of $\triangle CAT$.

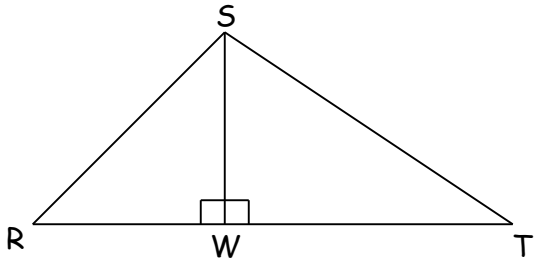
Perimeter: _____



50. What is the name of $\overline{GJ}$?



51. What are the names of $\overline{SW}$?



52. The intersection of two lines is a: _____

53. The intersection of two planes is a: _____

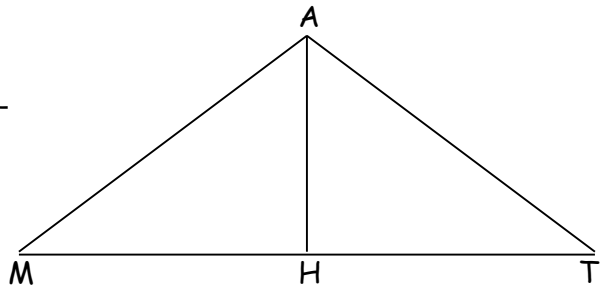
54. Define the following terms:

- Parallel: _____
- Perpendicular: _____
- Coplanar: _____
- Skew: _____

55. Given: $\overline{AH}$ bisects ∠MAT

Conclusion: _____

Reason: _____

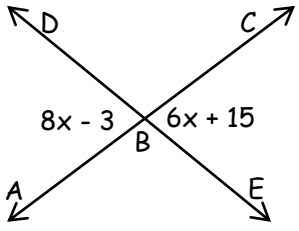


56. Find the slope between the two points. A(-8, 1) B(-3, -2)

57. Find the midpoint between the two points. C(-5, -2) D(7, 4)

58. Find the distance between the two points. E(4, -9) F(6, -3)

59. Find m∠DBC



60. Find the sum of the interior angles of a nonagon.

61. Find the sum of the interior angles of a 24-gon.

62. Find the sum of the exterior angles of a heptagon.

63. Find the sum of the exterior angles of an 18-gon.

64. Find each exterior angle of a regular decagon.

65. Find each interior angle of a regular dodecagon.

66. Find each interior angle of a regular octagon.

67. **Name** the regular polygon if each exterior angle is 24 degrees.

68. **Name** the regular polygon if each interior angle is 120 degrees.

69. $\triangle ABC$ has verities measures of $m\angle A = 4x - 5$, $m\angle B = 3x + 2$, and $m\angle C = 2x + 12$. Find the measure of each angle and rank the sides from smallest to largest.

70. Find the slope of a line parallel to $5x + 3y = 9$.

71. Write the equation of the line parallel to $2y + 10 = 2x$ that passes through the point (3, -5).

72. Write the equation of the line perpendicular to $2x - y = 8$ that passes through the point (-2, 3).

73. Find the slope of a line perpendicular to $x + y = 3$.

74. Using the line **$x + 3y = 12$**, state whether the following lines are parallel, perpendicular, or neither.

a. $3x - y = 2$

b. $2x = 6y - 6$

c. $y = 3x$

d. $x + 10 = -3y$

e. $x + 3y = 3$

75. Which statement is true of the given lines?

$$\text{Line a: } 2x + 3y = 6$$

$$\text{Line b: } y = -\frac{2}{3}x + 2$$

$$\text{Line c: } -3x + 2y = 12$$

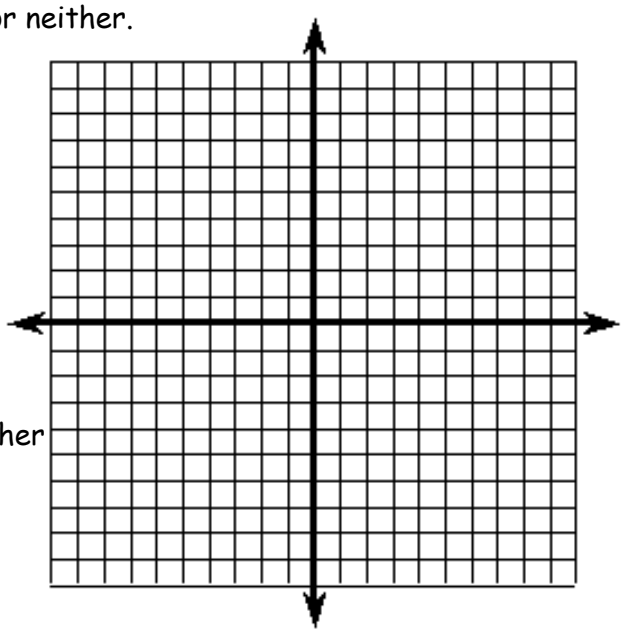
a. Lines a and b are parallel
b. Lines a and c are parallel
c. Lines a and b are perpendicular
d. Lines a and c are perpendicular

76. Find the slope of the line that passes through the points (7, -3) and (4, 1).

77. Determine if the lines are parallel, perpendicular, or neither.

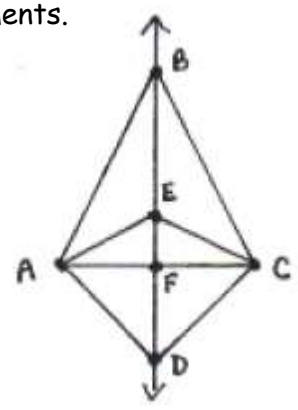
Plot the following:
Line AB : A (2, 7) B (6, 11)
Line CD : C (1, -3) D (7, -6)

a.) Slope of line AB
b.) Equation of line AB
c.) Slope of line CD
d.) Equation of line CD
e.) Are lines AB and CD Parallel, perpendicular, or neither

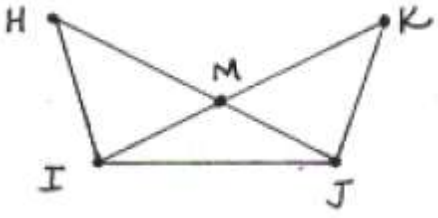


78. Line CD is perpendicular to the equation of the line $2x + 3y = 8$. If C(2, 4), find the equation of line CD.

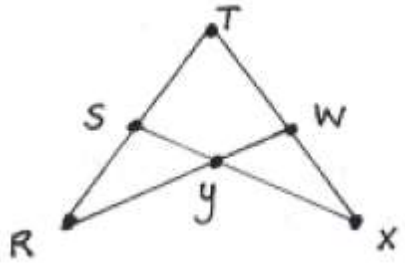
79. Given points *B*, *E*, *F*, *D* lie on the perpendicular bisector of $\overline{AC}$. List all sets of congruent segments.



80. If $\Delta HIJ \cong \Delta KJI$, which part is reflexive?



81. If $\Delta RTW \cong \Delta XTS$, which part is reflexive?

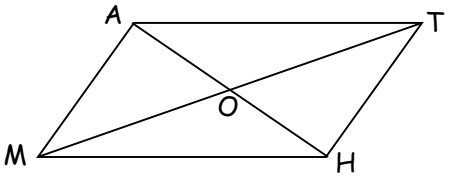


82. List the properties of the following quadrilaterals: parallelogram, rhombus, rectangle, square, kite, trapezoid?

83. List and memorize the <u>five</u> ways to prove that a quadrilateral is a parallelogram.

Use the parallelogram for problems 84 – 86.

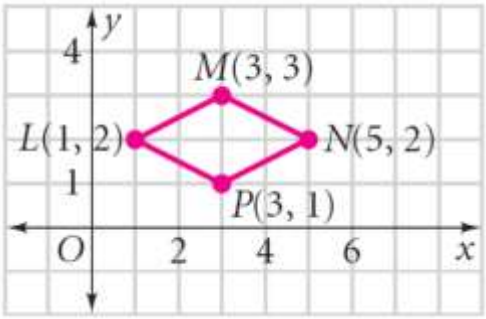
84. If $m\angle AMH = 82°$, find $m\angle MAT$ & $m\angle ATH$.



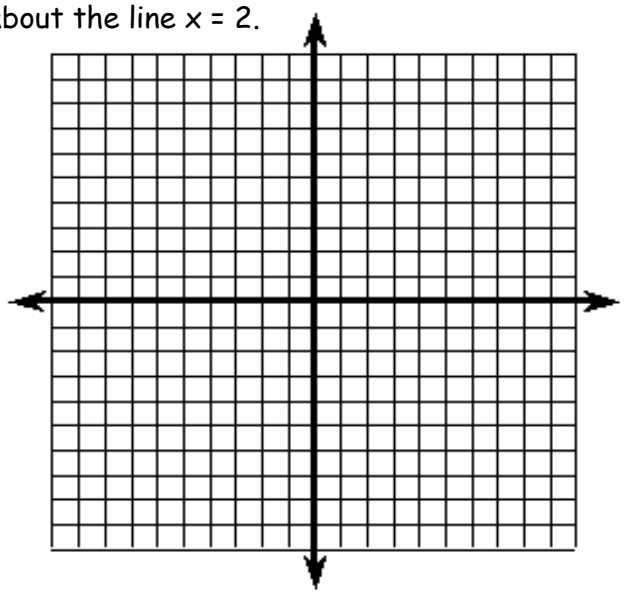
85. If $AM = 3x + 2$ and $TH = x + 14$, find x.

86. If $AO = 5y - 4$ and $OH = 10 - 2y$, find y.

87. Find the perimeter of the quadrilateral shown to the right.

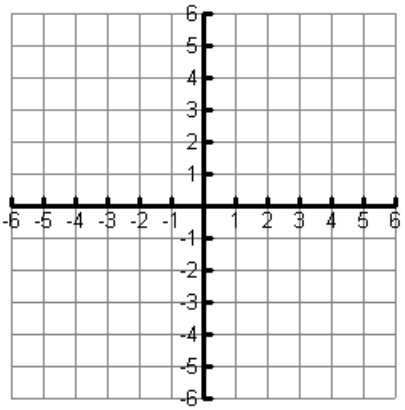


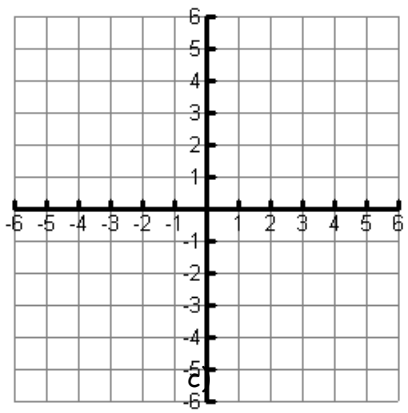
88. The vertices of ΔABC are A (−3, 4), B (0, 1), and C (2, 3). Draw the image of ΔABC if it is translated 2 units to the left and is reflected about the line x = 2.



89. a) Sketch the quadrilateral with vertices M (-3, -2), A (2, -2), T (-3, 4) and H (2, 4).

b) Quadrilateral M'A'T'H' is created through a translation of $(x, y) \rightarrow (x + 3, y - 1)$, followed by a reflection across the x-axis. What are the vertices of M, A, T, H? Sketch this new figure.



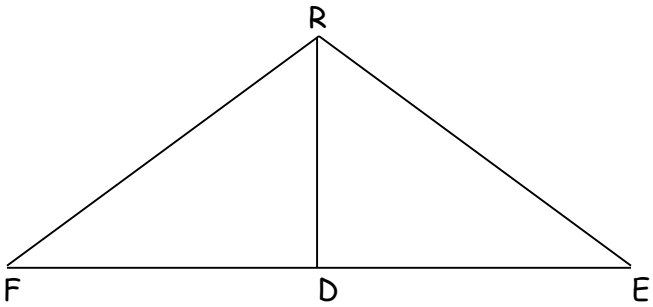


PROOFS

1. Given: $\overline{RD} \perp \overline{FE}$

   D is midpoint of $\overline{FE}$

   Prove: $\overline{FR} \cong \overline{ER}$

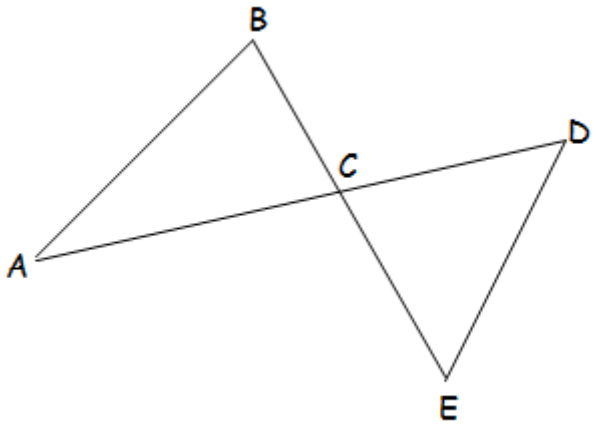


STATEMENTS		REASONS
1.	$\overline{RD} \perp \overline{FE}$; D is midpoint of $\overline{FE}$	1. Given
2.	$\angle RDF$ and $\angle RDE$ are right $\angle$'s	2.
3.	$\angle\overline{RDF} \cong \angle\overline{RDE}$	3.
4.	$\overline{FD} \cong \overline{DE}$	4.
5.	$\overline{RD} \cong \overline{RD}$	5.
6.	$\Delta FRD \cong \Delta ERD$	6.
7.	$\overline{FR} \cong \overline{ER}$	7.

2. Given: $\overline{AB} \parallel \overline{DE}$

   C is midpoint of $\overline{BE}$

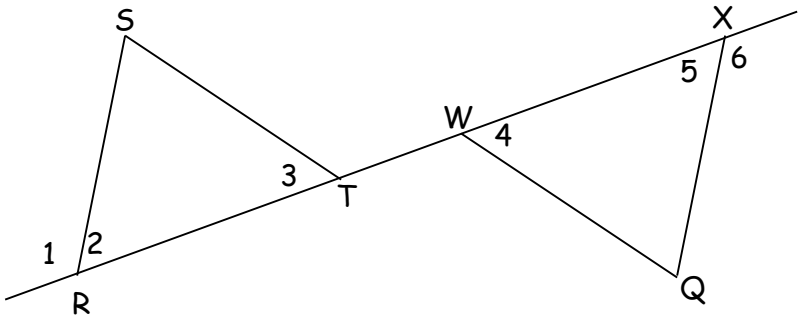
   Prove: C is midpoint of $\overline{AD}$



STATEMENTS		REASONS
1.	$\overline{AB} \parallel \overline{DE}$; C is midpoint $\overline{BE}$	1. Given
2.	$\angle B \cong \angle E$	2.
3.	$\angle BCA \cong \angle ECD$	3.
4.	$\overline{BC} \cong \overline{CE}$	4.
5.	$\Delta ABC \cong \Delta DEC$	5.
6.	$\overline{AC} \cong \overline{DC}$	6.
7.	C is the midpoint of $\overline{AD}$	7.

3. Given: $\angle 1 \cong \angle 6$
$\overline{RW} \cong \overline{TX}$
$\angle 3 \cong \angle 4$

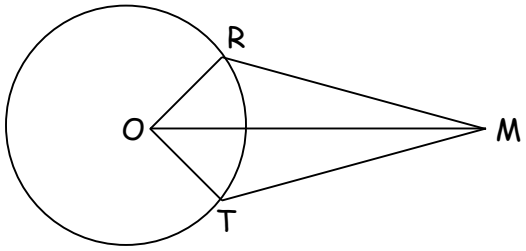
Prove: $\overline{ST} \cong \overline{YW}$



STATEMENTS		REASONS
1.	$\angle 1 \cong \angle 6$; $\overline{RW} \cong \overline{TX}$; $\angle 3 \cong \angle 4$	1. Given
2.	$\angle 1$ supp $\angle 2$ $\angle 5$ supp $\angle 6$	2.
3.	$\angle 2 \cong \angle 5$	3.
4.	$\overline{RT} \cong \overline{WX}$	4.
5.	$\Delta SRT \cong \Delta YXW$	5.
6.	$\overline{ST} \cong \overline{YW}$	6.

4. Given: Circle O; $\overline{OM}$ bisects $\angle ROT$

Prove: $\overline{RM} \cong \overline{TM}$



STATEMENTS		REASONS
1.	Circle O; $\overline{OM}$ bisects $\angle ROT$	1. Given
2.	$\overline{OR} \cong \overline{OT}$	2.
3.	$\angle ROM \cong \angle TOM$	3.
4.	$\overline{OM} \cong \overline{OM}$	4.
5.	$\Delta ROM \cong \Delta TOM$	5.
6.	$\overline{RM} \cong \overline{TM}$	6.