Name_____ Teacher_____

Review Packet:
1. The format of the review packet is not the format of the exam.
2. Please refer back to previous notes, homework, and class examples for more practice.
3. Complete the packet to the best of your ability on your own, then bring your remaining questions to us.

Exam Helpful Hints:
1. Read directions very carefully.
2. When necessary, draw a diagram!
3. *Use* the choices of multiple choice questions.

Exam Info:
1. Format: The exam will include multiple choice as well as open-ended questions.
2. Students will be allowed to use calculators (graphing calculators will be required to clear all memory!) You MUST bring your own! You will not be provided with one.
3. If you are found with any materials regarding this exam, or in your calculator, you will fail the exam with a ZERO.
4. No Cell phones are permitted in the exam area. Leave them at home or in your lockers.

Vocabulary: You are responsible for the following terms, theorems and postulates.

collinear Points	Parallel Lines	Right Triangle
coplanar Points	Perpendicular Lines	Scalene Triangle
ray	Skew Lines	Equilateral Triangle
plane	Parallel Planes	Equiangular Triangle
line	Perpendicular Planes	Acute Triangle
line Segment	Corresponding angles	Isosceles Triangle
segment addition postulate	a. Postulate	Obtuse Triangle
segement subtraction	b. Converse	Exterior Angle Theorem
postulate	Alternate interior angles	Base Angles Theorem
midpoint	a. Theorem	a. Converse
bisect	b. Converse	Hinge Theorem
acute angle	Alternate exterior angles	a. Converse
right angle	a. Theorem	Triangle Inequality
obtuse angle	b. Converse	Theorem
straight angle	Consecutive interior angles	Perimeter
angle bisector	a. Theorem	Area of Triangle
complementary angles	b. Converse	Midsegment
supplementary angles		a. Theorem
adjacent angles		Perpendicular Bisector
linear pair		a. Theorem
vertical angles		b. Converse
linear pair postulate		Median
vertical angle theorem		Altitude
polygon		
equilateral	SSS	
equiangular	SAS	
regular polygon	HL	
concave polygon	ASA	
convex polygon	AAS	
interior angles		
exterior angles		
conditional		
converse		
inverse		
contrapositive		

**Points, lines and planes**
For questions 1-9, use the diagram to determine if the statement is true *or* false.

1. $\overline{BC}$ & $\overline{GE}$ are parallel

2. $\overline{AB}$ & $\overline{CD}$ are perpendicular

3. $\overline{GE}$ & $\overline{HD}$ are skew

4. B, J, and C are collinear

5. A, G, and E are collinear

6. B, J, H, and G are coplanar

7. A, G, H and D are coplanar

8. K is between A and B
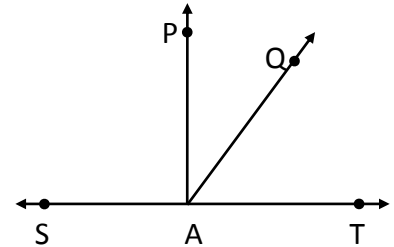
9. There are no parallel planes in this diagram.
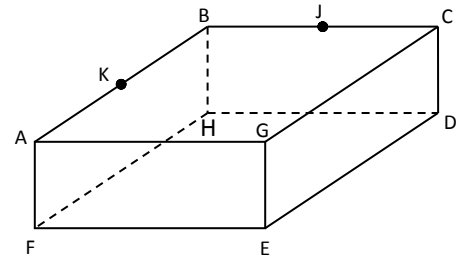
Angles

10. Use the diagram. Find the value of x and m∢1.

(4x + 3)°
1
(6x - 22)°
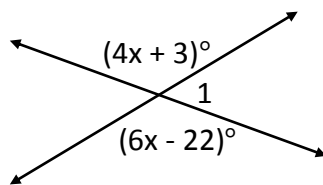
11. Use the diagram. $\overline{AQ}$ bisects ∢PAT, m∢QAT = 5x – 5 and m∢PAQ = x + 19. Find the value of x, and the m∢PAT.

P
Q
S   A   T

12. Two angles are supplementary. One angle is 5 less than 4 times the other. Find the measure of each angle.

13. Two angles are complementary. One angle is 4 times the other. Find the measure of the larger angle.

For questions 14-19, use the diagram. Given that $\overline{BX} \perp \overline{AC}$ *and* $\overline{AD} \cong \overline{DB}$ *, identify each of the following.*
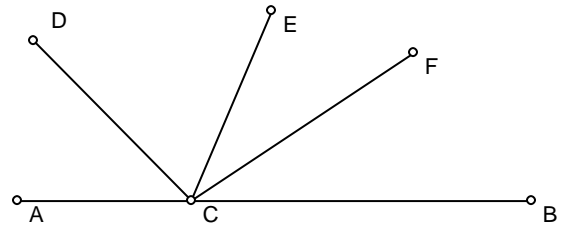
14. A right angle

15. Two congruent supplementary angles

16. Two non-congruent supplementary angles

17. Two adjacent complementary angles

18. A pair of vertical angles

19. A midpoint
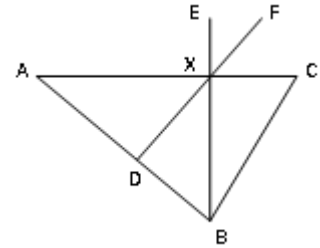
20. In the figure below $\overline{CE}$ bisects ∢DCB and $\overline{CF}$ bisects ∢ECB.

    ∢ECF = 4x + 7, ∢FCB = 7x − 20

    a) Solve for *x.*

    b) Determine the measure of ∢DCA.

21. In the figure below, ∢ACD = x + 7, ∢DCE = 2x − 20, ∢ECB = 70.

    a) Solve for *x.*
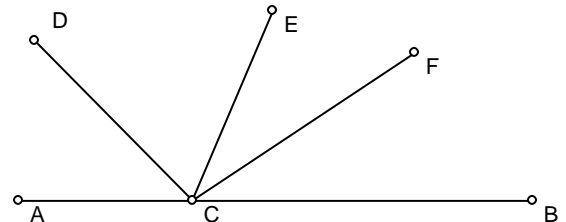
    b) Determine the measure of ∢BCD.

Segment and Line Properties

22. K is a point between A and B. $\overline{KA}$ = 3x, $\overline{AB}$ = 2x + 8, and $\overline{BK}$ = x − 5. What is the length of $\overline{AB}$?

23. H is the midpoint of $\overline{OP}$. $\overline{OP}$ = 18 and $\overline{HP}$ = 3x + 2. Find the length of $\overline{HO}$?

24. In the diagram, C is the midpoint of $\overline{AB}$ and D is the midpoint of $\overline{AC}$.
    $\overline{AD}$ = 4x-3 $\overline{AB}$ = 12x + 26
    a) Solve for x.
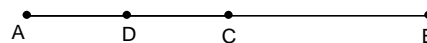
    b) What is the length of $\overline{CB}$?

25. What is the distance between the points (4,-2) & (2,-1)

26. What is the midpoint of the segment that connects the points (4,6) & (0,-4)

27. In segment $\overline{AB}$, M is the midpoint. Given A(2,3) and M(5,7), find the coordinates of endpoint B.

28. What is the slope of the line passing through the points (-8,1) & (-5,-8)?

29. What is the slope of a line that is || to a line with slope $\dfrac{-3}{5}$?

30. What is the slope of a line that is ⊥ to a line that has a slope 3?

31. K is a point between A and B. $\overline{KA}$ = 3x, $\overline{AB}$ = 2x + 8, $\overline{BK}$ = x – 5.
    a) Solve for *x*.

    b) Is K the midpoint of $\overline{AB}$?
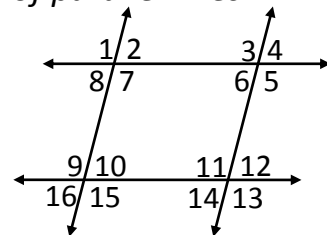
Parallel Lines
For questions 37-43, use the diagram to determine which lines, if any, are parallel based on the given statement.

32. ∢3 ≅ ∢P

33. ∢4 is supplementary to ∢5

34. ∢Q ≅ ∢7

35. ∢8 ≅ ∢ 7

36. ∢5 is supplementary to ∢X.

37. ∢Z ≅ ∢4

38. ∢1 ≅ ∢P
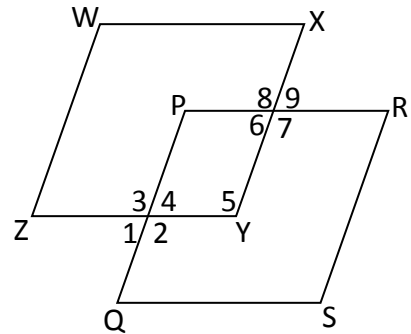
For questions 39-43, use the diagram which shows two sets of parallel lines.

39. If m∢1 = 100°, find m∢14.

40. If m∢9 = 120°, find m∢6.

41. If m∢2 = 62°, find m∢12.

42. If ∢7 = (5x + 8)°, ∢14 = (12x + 2)°,

    solve for x.

43. If ∢6 = (8x + 5)°, ∢10 = (10x - 7)°,

    solve for x.

Logic

For questions 44-48, use the conditional statement "If two angles are vertical, then they are congruent."

44. Write the converse: _____

45. Write the inverse: _____

46. Write the contrapositive: _____

47. Can this be written as a biconditional statement? _____

48. Since the conditional statement is true, which other statement is also true? _____

Triangles

49. The exterior angle at the base of an isosceles triangle measures 130°. Find the measure of the vertex angle.

50. In ΔABC, m∢A = 40°, m∢C = 70° and $\overline{AC}$ = 5. Find $\overline{AB}$.

51. The three angles of a triangle are (x + 30), (4x + 30) and (10x − 30). Find the value of the smallest angle.

52. ΔQRS is isosceles with ∢Q ≅ ∢S. If $\overline{QR}$ = x + 16, $\overline{QS}$ = 3x − 30 and $\overline{SR}$ = 2x − 20. Find the length of the base.

53. In ∆ABC, m∡A = 30° and m∡B = 70°. What is the largest side of the triangle?

54. In equilateral ∆CAR, point P is the midpoint of $\overline{CA}$, and point E is the midpoint of $\overline{CR}$. If $\overline{PE}$ = 8, what is the perimeter of ∆CAR.

55. In ∆GHI, m∡H is 20 more than m∡G and m∡G is 8 more than m∡I. What is the measure of each angle?

56. If a triangle has sides length 5 and 8, what are the possibilities for the length of the third side?

For questions 45-48, use the diagram.

57. m∡1 = 40°, m∡2 = 110°, m∡5 = _____°

58. m∡1 = 55°, m∡2 = 95°, m∡6 = _____°

59. m∡4 = 118°, m∡1 = (2x + 8)°, m∡3 = (x + 5)°. x = _____
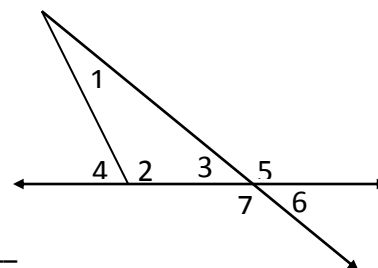
60. m∡1 = (3x +12)°, m∡2 = (2x + 14)°, m∡3 = (8x – 15)°. x = _____

For questions 61-78, use the diagram.

61. ∢QVP ≅ _____

62. $\overline{PQ}$ ≅ _____

63. $\overline{QT}$ ≅ _____

64. ∢2 ≅ _____

65. $\overline{QR}$ ≅ _____

66. ΔQRT ≅ _____

67. ∢QVS ≅ _____

68. What type of triangle is ΔPVT?

69. If m∢1 = 30°,

      m∢PVT = _____

70. ΔPVQ ≅ _____

71. ∢3 ≅ _____

72. ΔPQT ≅ _____

73. $\overline{TR}$ ≅ _____

74. ∢5 ≅ _____

75. $\overline{VQ}$ ≅ _____

76. m∢3 + _____ = 180°

77. If m ∢3 = 95°, m∢6 = _____.

78. What type of triangle is ΔPTR?

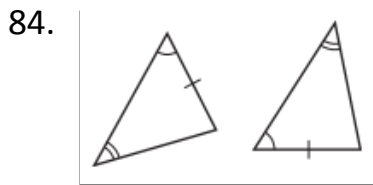*For questions 79-83, use the diagram to determine which method, if any, proves the triangles congruent.*

79. $\overline{DB}$ is a median, ∢3 ≅ ∢4.

80. $\overline{DB}$ ⊥ $\overline{AC}$, $\overline{AD}$ ≅ $\overline{DC}$

81. ∢3 ≅ ∢4, ∢A ≅ ∢C

82. B is the midpoint of $\overline{AC}$

83. ∢1 ≅ ∢2, $\overline{AB}$ ≅ $\overline{BC}$
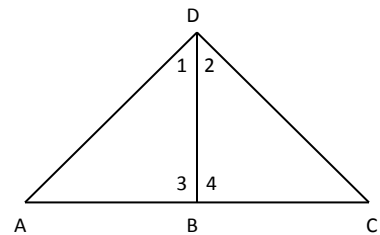
 For questions 84-86, name the postulate that proves the triangles are congruent.

84.

85.

86.
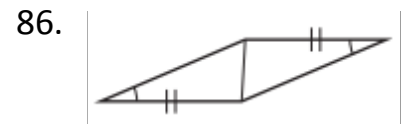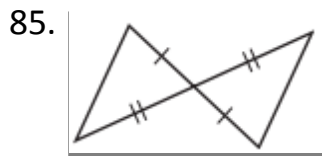
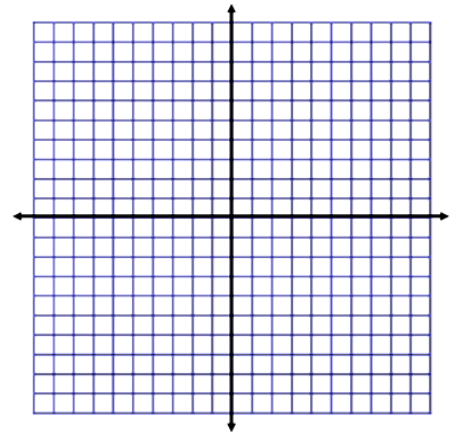For questions 87-90, use ΔABC with coordinates A(1,7), B(5,2), C(0,-2).
87. Draw the triangle.
88. Find the slopes of each side.
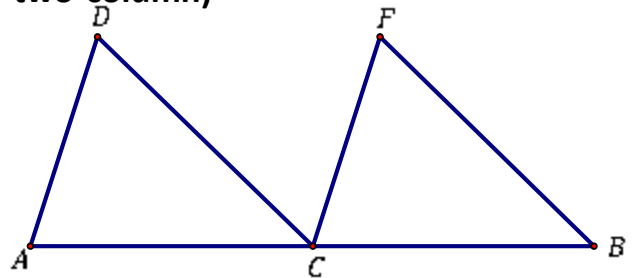
89. Find the length of each side.

90. Prove that triangle ABC is an isosceles right triangle.

Proofs – Write a complete proof (paragraph or two-column)
91. Given: C is the midpoint of $\overline{AB}$
              $\overline{DC} \cong \overline{FB}$, $\overline{DC} \parallel \overline{FB}$
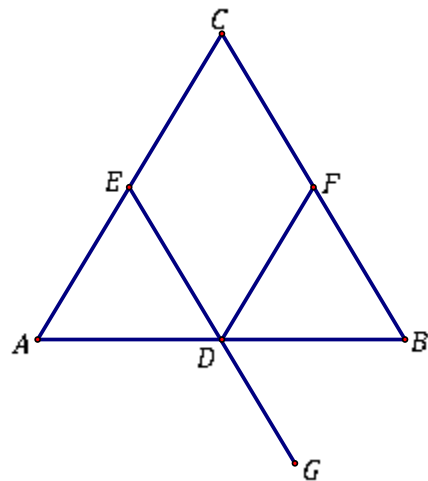   Prove: $\overline{DA} \cong \overline{CF}$

92. Given: $\overline{EG}$ bisects $\overline{AB}$
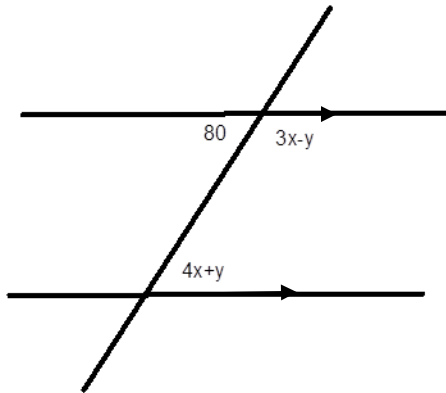 $\overline{ED} \cong \overline{FD}$
              $\overline{DB}$ bisects ∢FDG
     Prove: ∢A ≅ ∢B

93. Use the diagram to solve for x and y. Round to the nearest tenth.

80   3x-y

4x+y

94. Use the diagram to solve for x and y.

5y+10

7x

12x+6   3y+1
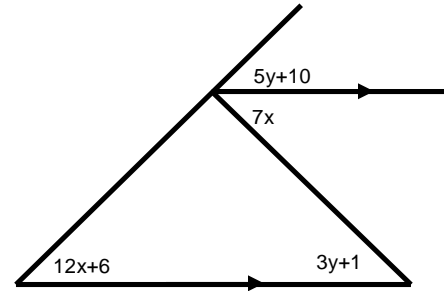
For questions 95-106, determine if the statement is always, sometimes, *or* never *true.*

95. If a triangle is isosceles it is also equilateral

96. 'AAA' is a rule used to prove two triangles congruent.

97. If two angles are congruent, then they are vertical.

98. Angles that form a linear pair are complementary

99. In triangle ABC, if point D is the midpoint of $\overline{AB}$, then $\overline{CD}$ is a median of the triangle.

100. If alternate exterior angles are supplementary, then the lines are //.

101. An equilateral triangle is isosceles.

102. An acute triangle is right.

103. An acute triangle is isosceles.

104. A right triangle is scalene.

105. An altitude of a triangle can be outside the triangle.

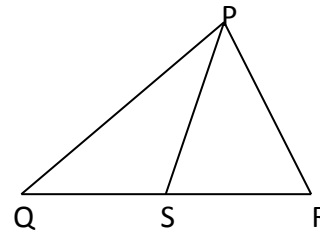106. An angle bisector of a triangle is also the median of the triangle.

Special Segments in Triangles.

107. In the diagram, $\overline{AD}$ is an altitude of ΔABC. $\overline{CD}$ = x + 7, $\overline{BD}$ = 2x − 15 and m∢ADC = (4x − 6)°. Solve for x.
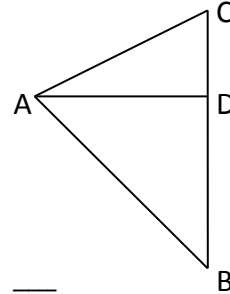
108. In the diagram, $\overline{PS}$ is a median of ΔPQR. $\overline{QS}$ = 10x − 7, $\overline{RS}$ = 5x − 3 and m∢PSR = (15x + 42)°. Solve for x.

109. Given $M, N, and\ P$ are the midpoints of the sides of ΔABC:
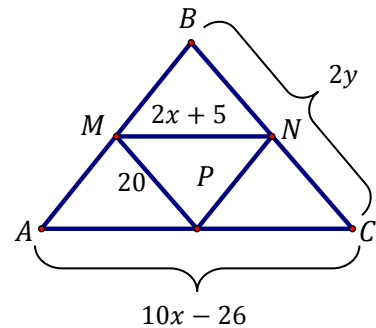
  a) Write an equation to find the value of x.
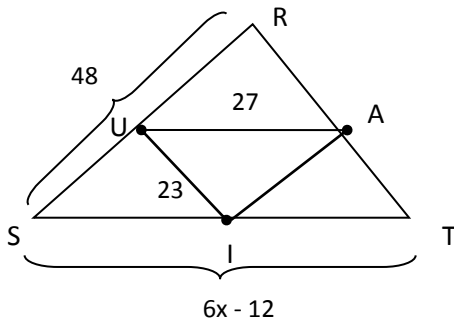
  b) Find the value of x.

  c) Find MN.

  d) Write an equation to find the value of y.
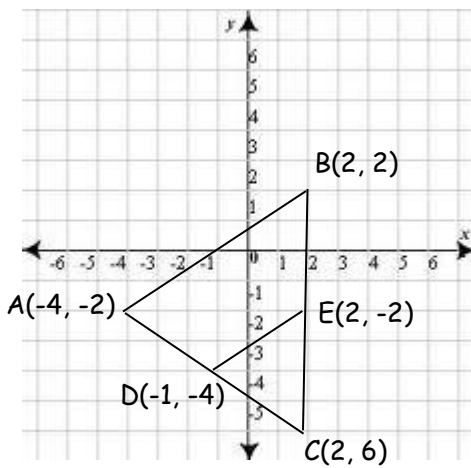
  e) Find the value of y.

110. Given the picture below, find : RT = _____   AI = _____   x =_____

R

48

27

U   A

23

S   I   T

6x - 12

U, A & I are midpoints of

RS, RT & ST respectively

111. Verify the Midsegment Theorem for $\overline{DE}$ in $\triangle ABC$ below.

B(2, 2)

A(-4, -2)

E(2, -2)

D(-1, -4)

C(2, 6)

Slope $\overline{DE}$ = _____

Slope $\overline{AB}$ = _____

DE = _____

AB = _____

Explain your conclusion using complete sentences:

_____

_____

_____

_____

13

Polygons

Identify if each shape is a polygon. If it is, state if it is convex or concave.

112.

113.

114.
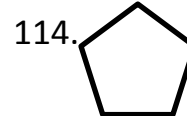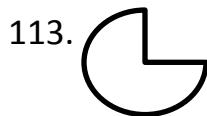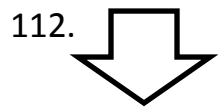
For questions 115-117, fill in the table.

Polygon	Sum of Interior Angles	Sum of Exterior Angles
115. Heptagon		
116. Dodecagon		
117. 15-gon		

For questions 118-120, fill in the table.

Regular Polygon	Each Interior Angle	Each Exterior Angle
118. Octagon		
119. Decagon		
120. 20-gon		

For questions 121-123, an interior angle measure is given. Name the regular polygon.

121. 135°   122. 170°   123. 144°

For questions 124-126, an exterior angle measure is given. Name the regular polygon.

124. 72°   125. 5°   126. 40°

127. A pentagon has angle measures of $(3x + 15)°$, $(2x + 6)°$, $(3x - 24)°$, $(5x - 18)°$, and $(5x + 3)°$. Find the measure of the largest angle.
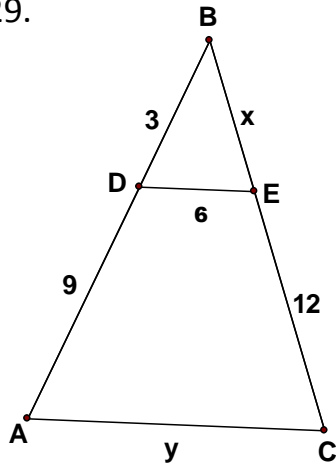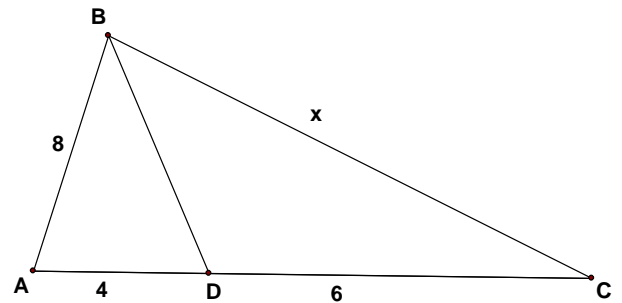
Similar Triangles

128. Given ΔWXY ~ΔLMN, with a scale factor of $\frac{3}{7}$, if $\overline{WX}$ = 5, find $\overline{LM}$.

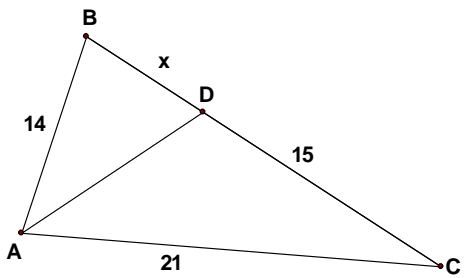*For questions 125-128, solve for the variables in each diagram.*

129.

130. $\overline{BD}$ is the angle bisector of ∢ABC

131. $\overline{AD}$ is the angle bisector of ∢BAC

132.