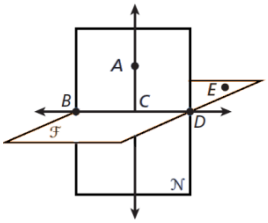
Name: _____Period_____Date_____

Pre-AP Geometry Fall 2015 Semester Exam REVIEW

*Chapter **1.1** Points Lines Planes

Use the figure to name each of the following:



1) three non-collinear points

(*A*, *C*, *B*) or (*A*, *C*, *D*) or any two points listed with E.

2) one line in three different ways

$\overleftrightarrow{BD}$, $\overleftrightarrow{DB}$, $\overleftrightarrow{BC}$, $\overleftrightarrow{CB}$, $\overleftrightarrow{CD}$, or $\overleftrightarrow{DC}$

3) the intersection of the two planes

$\overleftrightarrow{BD}$

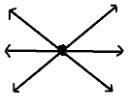
4) the intersection of the two lines

C

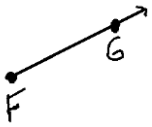
Draw and label each of the following:

5) a segment with endpoints *S* and *T* with midpoint, *M*

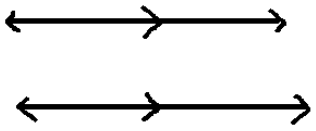
6) three coplanar lines that intersect in a common point



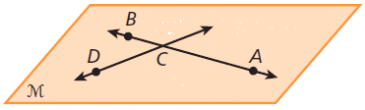
7) ray with endpoint *F* that passes through *G*



8) two lines that do not intersect



Use the figure to name each of the following:



9) a pair of opposite rays

$\overrightarrow{CB}$ and $\overrightarrow{CA}$

10) the plane in two different ways

Plane M *or DCA* (3 non-collinear points)

*Chapter **1.2** Line Segments and Distance

Find the length of the following:

11) Segment AB

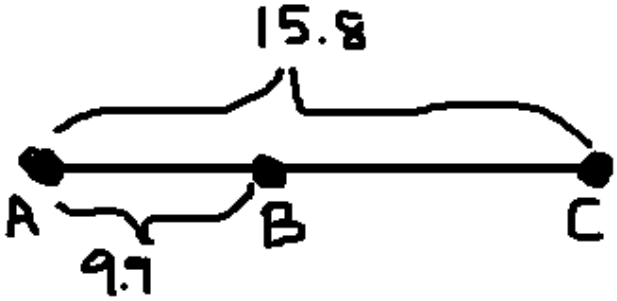
3.5

12) Segment BC

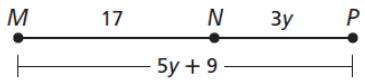
2.5

13) B is a point between points A and C, segment AC = 15.8, and segment AB = 9.9. **Find the length of segment BC**. (Draw a picture).

BC = 5.9 units by the Segment Addition Postulate



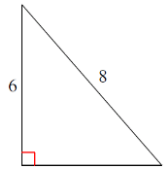
14) **Find the length of segment NP.**



NP = 12 units

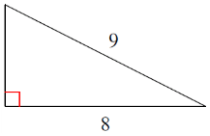
Find the missing side for each triangle in simplest radical form AND as a decimal rounded to the nearest hundredth.

15)



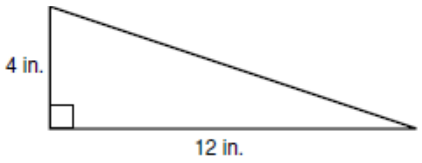
$2\sqrt{7}$ 5.292

16)



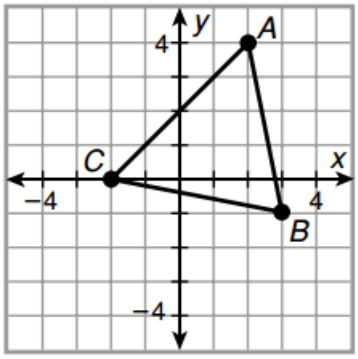
$\sqrt{17}$ 4.123

17) Determine the length of the given triangle's hypotenuse. The answer should be given both rounded to the nearest tenth and in simplest radical form.



12.649 or $4\sqrt{10}$

18) Find the lengths below and leave your answer in simplest radical form.



a. Find AB $\sqrt{26}$

b. Find BC $\sqrt{26}$

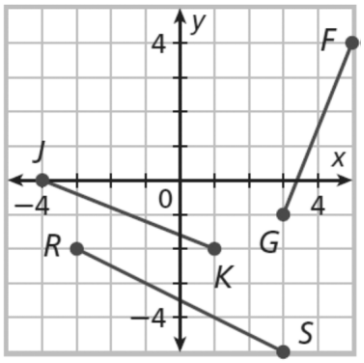
c. Find CA $4\sqrt{2}$

Use the Distance formula or Pythagorean theorem to find the length of each segment. Round answers to the nearest tenth.

19) Segment JK
5.385 or $\sqrt{29}$

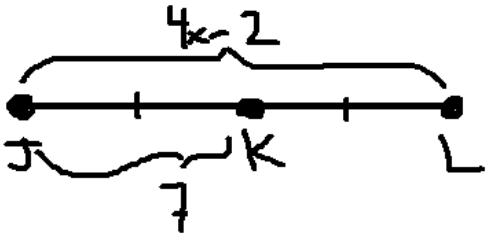
20) Segment RS
6.708 or $3\sqrt{5}$

21) Segment GF
5.385 or $\sqrt{29}$



*Chapter **1.3** Locating Points and Midpoints

22) K is the **midpoint** of segment JL, JL = 4x - 2, and JK = 7. **Find x, the length of KL, and JL.**
x = 4



23) Y is the midpoint of $\overline{XZ}$. X has coordinates (2, 4), and Y has coordinates (–1, 1). Find the coordinates of Z.
(-4, -2)

24) $\overline{TU}$ has endpoints T(5a, -1b) and U(1a, -5b). **Find the midpoint.**
(3a, -3b)

Find the coordinates of the midpoint of each segment:

25) *AB* with endpoints *A* (4, -6) and *B* (-4, 2)
(0, -2)

26) *CD* with endpoints *C* (0, -8) and *D* (3, 0)

(1.5, -4)

*Chapter **1.4 and 1.5 Angle Measure and Angle Relationships**

27) $\angle A$ is an acute angle. $\angle O$ is an obtuse angle. $\angle R$ is a right angle. **Put $\angle A$, $\angle O$, and $\angle R$ in order from least to greatest by measure.**
$\angle A$, $\angle R$, and $\angle O$

28) **a.** Which point is the vertex of ∠*BCD*?

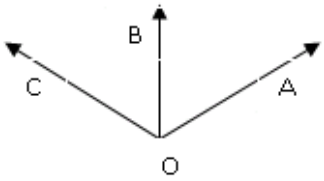
C

b. Which rays form the sides of ∠*BCD*?

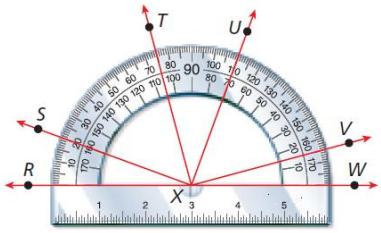
$\overrightarrow{CB}$ and $\overrightarrow{CD}$

29) Correctly name all 3 angles in the diagram.

1. ***∠COB***
2. ***∠BOA***
3. ***∠COA***



Use the protractor to find the measure of each angle. Then classify each as acute, right, or obtuse.

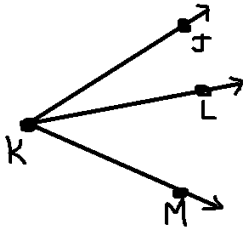


30) ∠VXW
15°; acute

31) ∠TXW
105°; obtuse

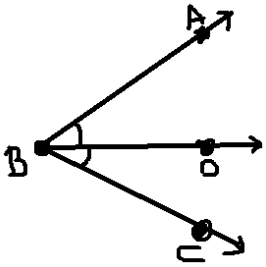
32) ∠RXU
110°; obtuse

33) L is in the interior of ∠JKM, *m*∠JKL = 42°, and *m*∠LKM = 28°. Draw and label the diagram and use it to find *m*∠JKM.



70° by the Angle Addition Postulate

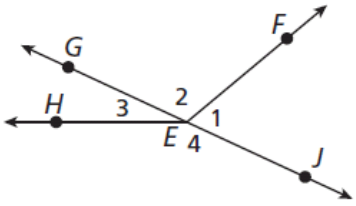
34) Ray BD bisects ∠ABC, m∠ABD = (6x + 4) °, and m∠DBC = (8x - 4)°. Draw and label the diagram and use it to **f**ind m∠ABD.



28° by the definition of angle bisector

Tell whether the angles are only adjacent, adjacent and form a linear pair, or not adjacent.

35) ∠1 and ∠2
adjacent and Linear Pair

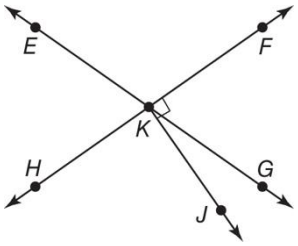


36) ∠2 and ∠4
not adjacent

37) ∠1 and ∠3
not adjacent

38) ∠2 and ∠3
adjacent only

For Exercises 39 - 44, use the figure at the right. Name an angle or angle pair that satisfies each condition.



39) Name two acute vertical angles.
∠EKH and ∠FKG

40) Name two obtuse vertical angles.
∠HKG and ∠EKF

41) Name a linear pair.
∠FKG and ∠GKH (multiple answers here)

42) Name two acute adjacent angles.
∠JKG and ∠GKF

43) Name an angle complementary to ∠EKH.
∠GKJ

44) Name an angle supplementary to ∠FKG.
∠GKH

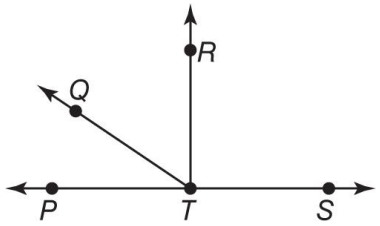
45) Find the measures of an angle and its complement if one angle measures 24 degrees more than the other.

33° and 57°

46) The measure of the supplement of an angle is 36 less than the measure of the angle. Find the measures of the angles..

108° and 72°

For Exercises 47 - 48, use the figure below.



47) If m∠RTS = 8x + 18, find the value of x so that $\overline{TR} \perp \overline{TS}$

x = 13.5

48) If m∠PTQ = 3y –10 and m∠QTR = y, find the value of y so that ∠PTR is a right angle.

y = 25

*Chapter **2.1** Inductive Reasoning

49) Inductive Reasoning is used to draw a conclusion from specific cases and/or patterns.

50) A statement you believe to be true based on Inductive Reasoning is called a _____.

conjecture.

51) To show that a conjecture is true, you must

prove it using deductive reasoning.

52) To show that a conjecture is false, you can give a counterexample.

53) Complete each conjecture:

a. A pair of complementary angles have a sum of 90 degrees.

b. The square of any negative number is always positive.

54) Show that each conjecture is false by providing a counterexample:

a. Two angles that have the same *vertex* are adjacent.

Counterexample: vertical angles

b. If $x + 1 > 5$, then x = 8

Counterexample: x = 5

*Chapter **2.4** Deductive Reasoning

55) Deductive Reasoning is used to draw conclusions from given facts, definitions, and theorems/properties/postulates.

*Chapter **2.6** Algebraic Proofs

State which property, postulate, definition, or theorem supports each statement below.

56) If R is in the interior of ∠PQS, then m∠PQR + m∠RQS = m∠PQS.

Angle Addition Postulate

_____

57) If ∠1 and ∠2 are supplementary, then m∠1 + m∠2 = 180°.

Definition of Supplementary Angles

_____

58) If m∠1 = m∠2 and m∠2 = m∠3, then m∠1 = m∠3.

Transitive Property of Equality

_____

59) If M is the midpoint of $\overline{AB}$, then $\overline{AM} \cong \overline{MB}$.

Definition of Midpoint

_____

60) If AB = CD, then AB + EF = CD + EF.

Addition Property of Equality

_____

61) ∠1 and ∠2 form a linear pair, then they are supplementary.

Linear Pair Theorem

_____

62) If m∠A + m∠B = 90,
then ∠A and ∠B are complementary.
Definition of Complementary Angles

---

63) If $\overrightarrow{BX}$ bisects $\angle ABC$, then m∠ ABX = m∠ XBC.
Definition of Angle Bisector

---

64) If AM = MB, then $\overline{AM} \cong \overline{MB}$.
Definition of Congruence

---

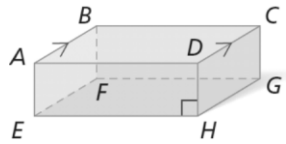
65) **Complete the following Algebraic Proof by listing each step and providing its justification.**

1. -2(x +5) = -6	1. Given
2. -2x – 10 = -6	2. Distribution
3. -2x = 4	3. Addition P.O.E.
4. x = -2	4. Division P.O.E.

*Chapter **2.7 and 2.8** Geometric Proofs
PRACTICE ANY AND ALL PROOFS!!

Places to find proofs on Wroblewski's Website:
*Writing Algebraic Proofs and Proof Practice 09/29
*Geometric Proof Notes and Practice 10/01
*Test Review for Test 2 10/15
*Test 2

*Chapter **3.1** Parallel Lines and Transversals
Identify each of the following using the figure:



66) a pair of perpendicular segments
$\overline{DH}$ and $\overline{EH}$ (answers will vary)

67) a pair of skew segments
$\overline{AB}$ and $\overline{EH}$ (answers will vary)

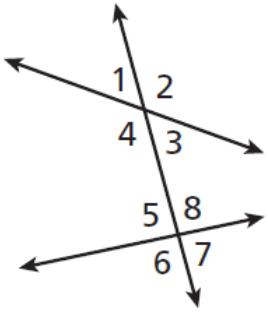
68) a pair of parallel segments
$\overline{AB}$ and $\overline{DC}$ (answers will vary)

69) a pair of parallel planes
ABCD and EFGH (answers will vary)

Write **all** possible answers for each of the following:

70) alternate interior angles
∠3 and ∠5; ∠4 and ∠8

71) alternate exterior angles
∠1 and ∠7; ∠2 and ∠6



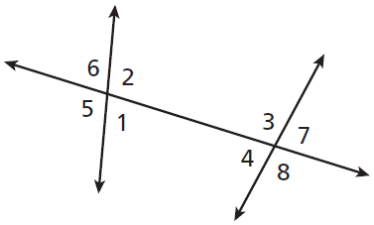
72) corresponding angles
∠1 and ∠5; ∠2 and ∠8
∠4 and ∠6; ∠3 and ∠7

73) same-side interior angles
∠4 and ∠5; ∠3 and ∠8

Identify the type of angle pair given:
(corresponding, alternate interior, alternate exterior, same side interior)

74) ∠6 and ∠8
alternate exterior angles

75) ∠2 and ∠3
same side interior angles

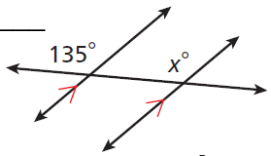


76) ∠2 and ∠4
alternate interior angles

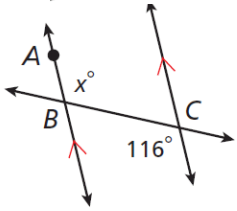
77) ∠5 and ∠4
corresponding angles

*Chapter **3.2** Angles and Parallel Lines

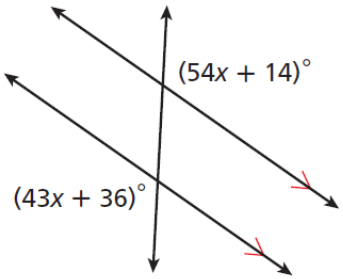
78) x = ___135 degrees____



79) x = __116 degrees __

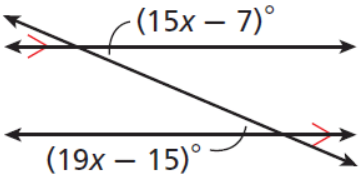


80) Solve for x and find the missing angle:



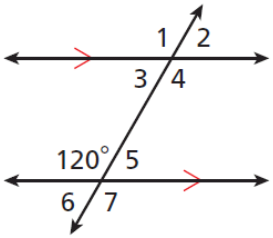
x = 2, m∠ = 122 by the Alternate Exterior Angles Theorem

81) Solve for x and find the missing angle:



x = 2, m∠ = 23 by the Alternate Interior Angles Theorem

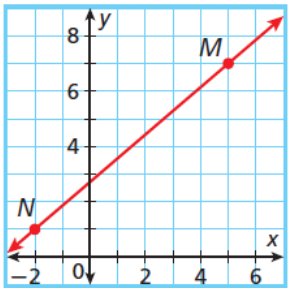
Use the figure to find the value of all the missing angles:



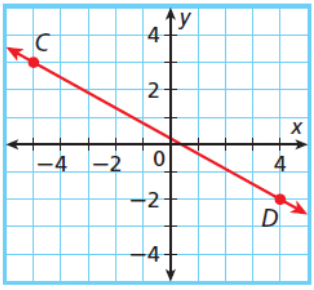
82) ∠1= 120
83) ∠2= 60
84) ∠3= 60
85) ∠4= 120
86) ∠5= 60
87) ∠6= 60
88) ∠7= 120

*Chapter **3.3** Slopes of Lines

89) Find the slope of each given line. Say if it is positive, negative, zero or undefined.



m = 6/7



m = -5/9

Determine if the lines are parallel, perpendicular or neither by comparing their slopes.

90) *HJ: H* (3, 2) , *J*(4,1)
KM: K (-2, -4), *M*(-1, -5)
Parallel

91) *LM: L*(-2, 2), *M*(2, 5)
NP: N(0, 2) , *P*(3, -2)
Perpendicular

*Chapter **3.4** Equations of Lines

Sketch and write the equation of the line that:

92) passes through (4, 7) and (-2, 1) in slope-intercept form.

y = x + 3

93) passes through (-4, 2) with slope ¾ in point-slope form.

y – 2 = 3/4 (x + 4)

For problems 94-96, determine whether the lines are parallel, intersect, or coincide.

94) $y = -3x + 4$ and $y = -3x + 1$

Parallel

95) $6x - 12y = -24$ and $3y = 2x + 18$

Intersect

96) $4x + 2y = 10$ and $y = -2x + 15$

Parallel

*Chapter **4.1** Classifying Triangles

For problems 97-99, classify each triangle based upon its angle measures:

97) ΔDFG

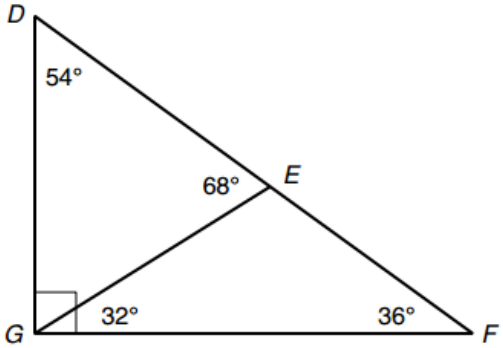
Right

98) ΔDEG

Acute

99) ΔEFG

Obtuse



For problems 101-103, classify each triangle based upon its side lengths:

100) ΔEGF

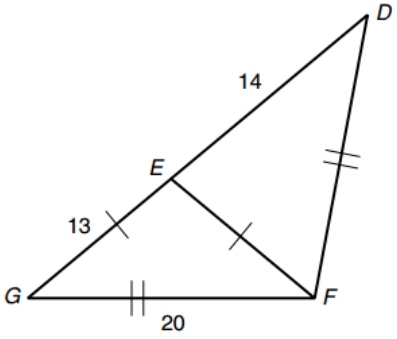
Isosceles

101) ΔDEF

Scalene

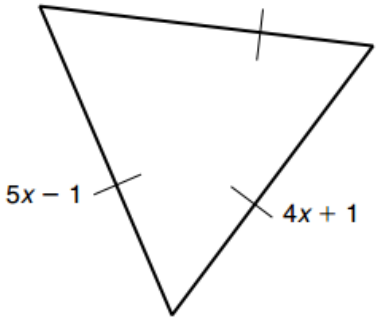
102) ΔDFG

Isosceles



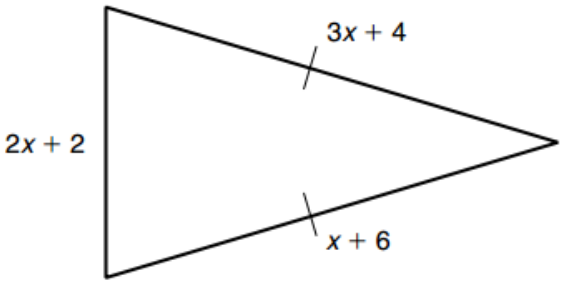
103) **Find the side lengths of each triangle:**

a.



9, 9, and 9 units

b.



7, 7, and 4 units

*Chapter **4.2** Angle Relationships in Triangles

104) Find m∠*ABC*

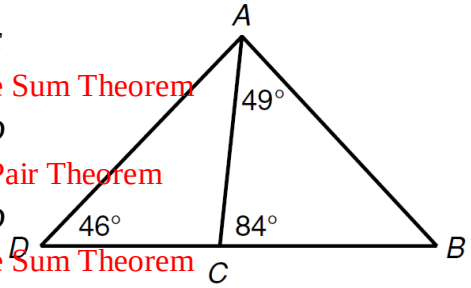
47 by The Triangle Sum Theorem

105) Find m∠*ACD*

96 by The Linear Pair Theorem

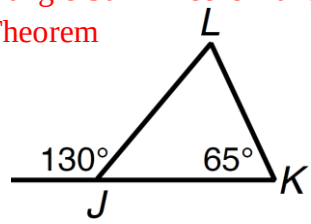
106) Find m∠*CAD*

38 by The Triangle Sum Theorem



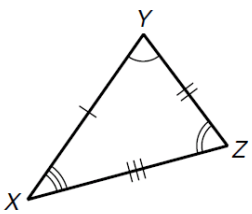
107) Find m∠*L*

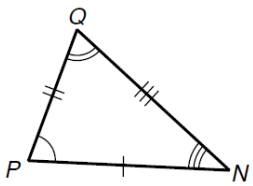
65 by The Triangle Sum Theorem and Linear Pair Theorem



*Chapter **4.3** Congruent Triangles

Identify the congruent corresponding parts:





108) ∠Z ≅ ∠Q

109) $\overline{YZ} \cong \overline{PQ}$

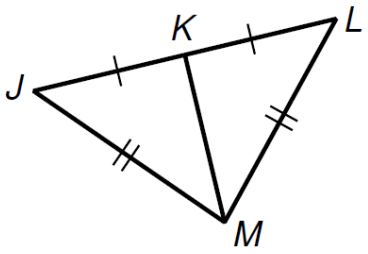
110) ∠P ≅ ∠Y 111) ∠X ≅ ∠N

112) $\overline{NQ} \cong \overline{XZ}$ 113) $\overline{PN} \cong \overline{YX}$

*Chapter **4.4-4.5** SSS, SAS, ASA, AAS

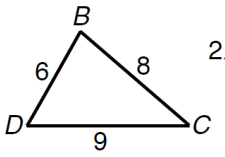
114) Explain why the two triangles are congruent.

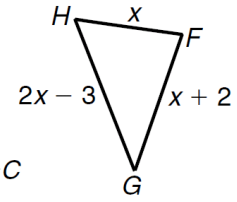
SSS



115) Show that the triangles are congruent when x = 6

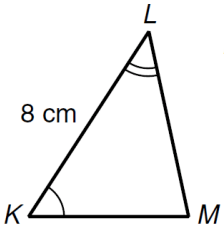
SSS

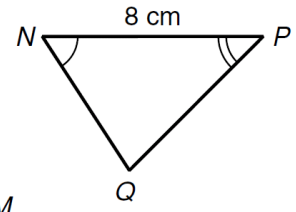




116) Use SSS, ASA, or AAS to determine if the triangles are congruent.

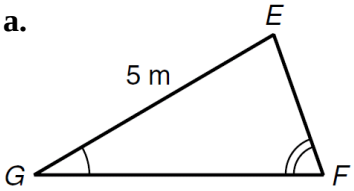
ASA



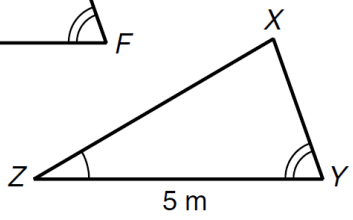


117) Determine if the triangles are congruent based upon the information given. Justify your answer.

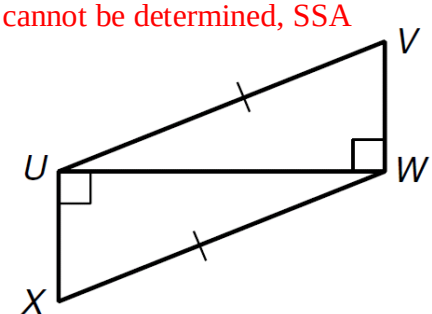
a.



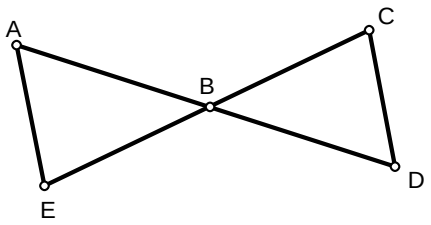
NOT congruent



b. cannot be determined, SSA

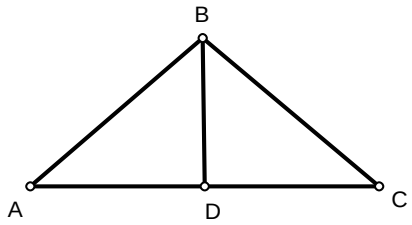


118) Given: $\overline{AE} \parallel \overline{CD}$ and $\overline{AE} \cong \overline{DC}$
Prove: $\Delta AEB \cong \Delta DCB$



We are given $\overline{AE} \parallel \overline{CD}$ and $\overline{AE} \cong \overline{DC}$. Since $\overline{AE} \parallel \overline{CD}$, then $\angle A \cong \angle D$ because they are alternate interior angles. We can also show that $\angle E \cong \angle C$ because they are alternate interior angles. Therefore, $\Delta AEB \cong \Delta DCB$ by ASA.

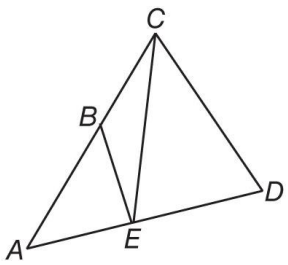
119) Given: $\overline{BD}$ bisects $\angle ABC$ and $\overline{AB} \cong \overline{BC}$
Prove: $\Delta ABD \cong \Delta CBD$



We are given $\overline{BD}$ bisects $\angle ABC$ and $\overline{AB} \cong \overline{BC}$. Since $\overline{BD}$ bisects $\angle ABC$, then we know $\angle ABD \cong \angle CBD$. Finally, the two triangles share side $\overline{BD}$. Therefore, $\Delta ABD \cong \Delta CBD$ by SAS.

*Chapter **4.6** Isosceles and Equilateral Triangles

For problem 120-123, refer to the figure below.



120) If $\overline{AC} \cong \overline{AD}$, name two congruent angles.
$\angle$ACD and $\angle$ADC

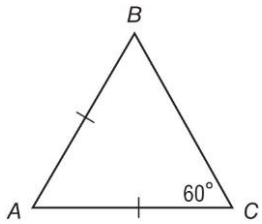
121) If $\overline{BE} \cong \overline{BC}$, name two congruent angles.
$\angle$BCE and $\angle$BEC

122) If $\angle EBA \cong \angle EAB$, name two congruent segments.
$\overline{EA} \cong \overline{EB}$

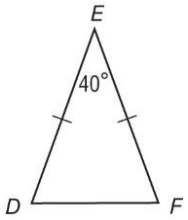
123) If $\angle CED \cong \angle CDE$, name two congruent segments.
$\overline{CE} \cong \overline{CD}$

Find each measure.

124) $m\angle ABC = 60°$

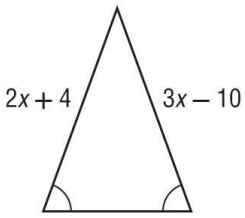


125) $m\angle EDF = 70°$



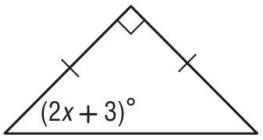
Find the value of each variable.

126)



$x = 14$

127)



$x = 21$