Geometry A – Chapter 1 Final Review Practice

Name: _____ Date: _____ Hour: _____

Section 1.1 Identify Points, Lines, and Planes

**Use the diagram to answer the following questions.**

TRUE or FALSE

1. Points **A**, **B** and **C** are collinear.   _____

2. Points **A** and **B** are collinear.   _____

3. Points **C**, **B**, and **D** are collinear.   _____

4. Points **A**, **B**, and **E** are coplanar.   _____

5. Points **A**, **B**, and **C** are coplanar.   _____

6. Another name for plane *F* is **ABE**.   _____

7. The intersection of two planes is a line.   _____

8. The intersection of two lines is a point.   _____
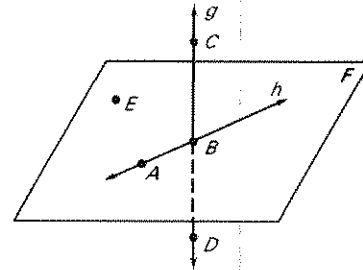
Section 1.2 Use Segments and Congruence

9. *M* is the midpoint of the segment. Find *XY*.

$$4x-10 \qquad 2x-2$$

X   M   Y
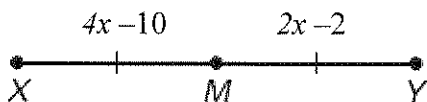
10. Let J be between H and K on $\overline{HK}$. Use the Segment Addition Postulate to solve for *x*.
Then find HJ and JK.   HINT: Draw a picture and label it.

HJ = 2x – 3
JK = 4x – 10
KH = 17

x = _____   HJ = _____   JK = _____

11. The notation for the length of the segment between S and T is _____.

A. $\angle ST$ B. $\overline{ST}$ C. ST D. $\overrightarrow{ST}$

12. If AM = 23 and AB = 53, find the length of $\overline{MB}$.


A	M	B

Section 1.3 Use Midpoint and Distance Formulas

13. Find the coordinates of the midpoint of the segment with the given endpoints.
   R(3, 4) and S(−9, − 4)

14. What is the distance between points C(–4, 5) and D(2, –1).

Section 1.4 Measure and Classify Angles

15. If $\angle X \cong \angle Y$ and $m\angle Y = 65°$, then what is $m\angle X$?

16. The measure of $\angle R$ is 100°. Classify $\angle R$ as

   A. acute   B. obtuse   C. right   D. straight

17. The measure of $\angle T$ is 89°. Classify $\angle T$ as

   A. acute   B. obtuse   C. right   D. straight

18. If $m\angle ABC = 26°$ and $m\angle ABD = 73°$, the what is the measure of $\angle CBD$?
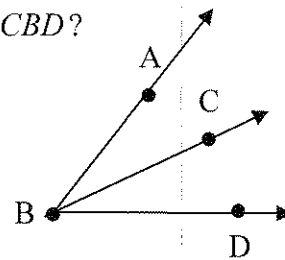
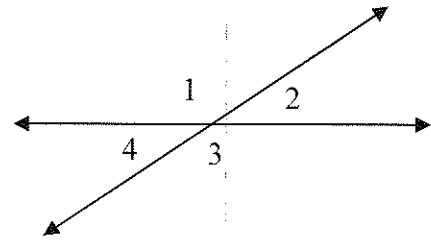19. If $\angle FUM$ is acute and $\angle FUN$ is right, then $\angle MUN$ is what kind of angle?

   A. acute   B. obtuse

   C. right   D. straight

2
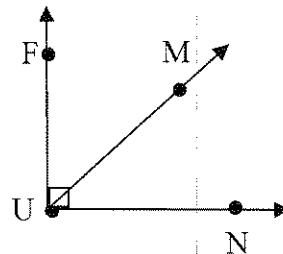
<u>**Section 1.5 Describe Angle Pair Relationships**</u>

**For questions 20 – 23 refer to the figure at the right.**

20. What type of angle pair is $\angle 1$ and $\angle 2$?

21. What type of angle pair is $\angle 1$ and $\angle 3$?

22. What type of angle pair is $\angle 2$ and $\angle 4$?

23. If $m\angle 1 = 5x + 110$ and $m\angle 2 = 10x + 40$, then solve for x.

24. If $\angle A$ and $\angle B$ are complementary and $m\angle A = 20°$, then $m\angle B = $ _____ .

25. If $\angle C$ and $\angle D$ are supplementary and $m\angle C = 50°$, then $m\angle D = $ _____ .

26. If $\angle E$ and $\angle F$ form a linear pair and $m\angle E = 60°$, then $m\angle F = $ _____ .

<u>**Section 1.6 Classify Polygons**</u>

27. Classify the polygon.

A.   B.   C.   D.
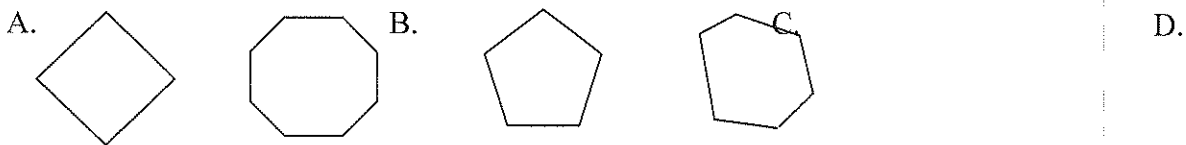
Match the vocabulary with the correct definition. Write the correct letter in the blank.

28. ____   hexagon   A. 3 sided polygon.

29. ____   quadrilateral   B. 4 sided polygon.

30. ____   octagon   C. 5 sided polygon.

31. ____   heptagon   D. 6 sided polygon.

32. ____   triangle   E. 7 sided polygon.

33. ____   pentagon   F. 8 sided polygon.

## Section 1.7 Find Perimeter, Circumference, and Area

34. Your parents ask you to mow the lawn. It is a square plot that is 12 ft on each side and it has a circle cement fountain in the center that has a radius of 4 ft. What is the area of the lawn that you will mow?

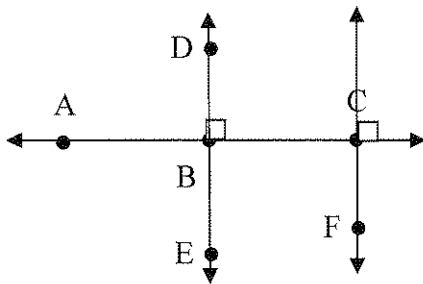35. Find the circumference and area of the circle.

3 in.
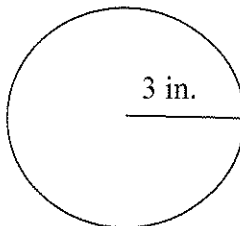
36. You are cutting out a triangular shape. The triangle is 7 inches in height and has a base of 6 inches. What is the area of the triangular shape?

37. Find the perimeter of the regular octagon.

$5x - 13$

$2x - 1$
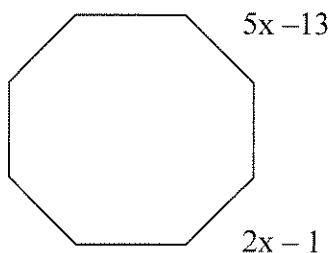
Section 2.4: Use Postulates and Diagrams

Use this diagram to answer the next questions as **True** or **False**.

10. Points *A, B, D,* and *C* are coplanar.
11. ∠*EBA* is a right angle.
12. Points *E, B,* and *D* are collinear.
13. $\overrightarrow{FC} \perp \overleftrightarrow{AB}$
14. ∠*ABD* and ∠*EBC* are vertical angles.
15. $\overleftrightarrow{AB}$ contains *C*.
16. $\overleftrightarrow{FC}$ and $\overleftrightarrow{DE}$ intersect.
17. ∠*ABD* and ∠*CBD* are congruent angles.
18. m∠*ABD* + m∠*CBD* = 180°.
19. ∠*ABD* and ∠*CBD* are adjacent angles.
20. ∠*ABD* and ∠*CBD* are supplementary angles.
21. ∠*ABD* and ∠*CBD* are a linear pair.
22. ∠*ABD* ≅ ∠*BCF*.
23. m∠*ABE* = 90°.
24. Perpendicular lines always form right angles.

Match the postulate illustrated by the diagram.

A. Through any two points there exists there exists exactly one line.
B. Through any three noncollinear points there exists exactly one plane.
C. If two lines intersect, then their interaction is exactly one point.
D. If two points lie in a plane, then the line containing them lies in the plane.
E. If two planes intersect, then their intersection is a line.
F. A line contains at least two points.
G. A plane contains at least three noncollinear points.

25. If   then

26. If   then

27. If   then

28. If   then
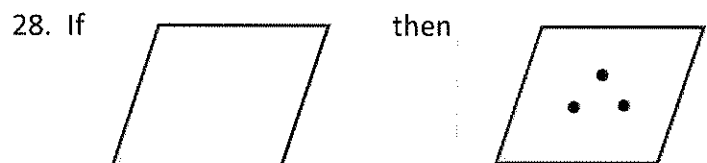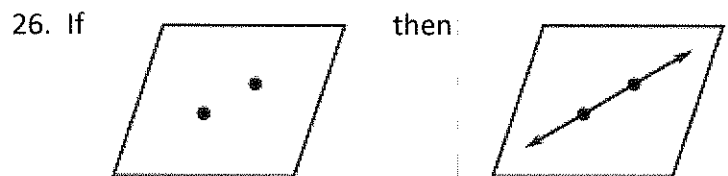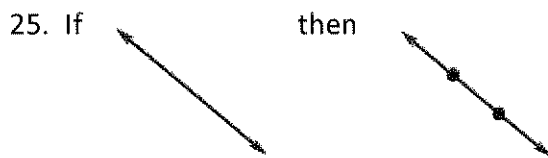
Section 2.5: Reason Using Properties from Algebra & Section 2.6: Using congruence Theorems

Name the property that justifies the conclusion or statement.

29. Given: $8x - 34 = 6$
    Conclusion: $8x = 40$

30. Given: $-2x = 14$
    Conclusion: $x = -7$

31. Given: $x - 12 = 42$
    Conclusion: $x = 54$

32. Given: $4(m + 1)$
    Conclusion: $4m + 4$

33. If $\angle 1 \cong \angle 2$ and $\angle 2 \cong \angle 4$, then $\angle 1 \cong \angle 4$.

34. $\overline{XY} \cong \overline{XY}$

35. If $\angle CDE \cong \angle RST$, then $\angle RST \cong \angle CDE$.

36. If RZ = 4 and RZ + ST = 9, then 4 + ST = 9.

37. $\angle A \cong \angle A$

38. If AB = CD and CD = EF, then AB = EF.

Section 2.6: Prove Statements about Segments and Angles
Match a reason for each step of the proof.

39.   **GIVEN:** $m\angle 1 = m\angle 3$
      PROVE: $m\angle BED = m\angle AEC$

      A. Addition Property of Equality
      B. Angle Addition Postulate
      C. Given
      D. Substitution Proper of Equality
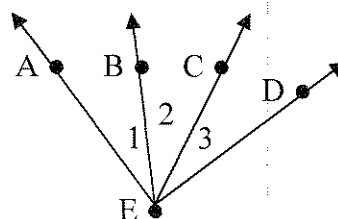
| Statements	Reasons
1. $m\angle 3 = m\angle 1$	1.
2. $m\angle 3 + m\angle 2 = m\angle 1 + m\angle 2$	2.
3. $m\angle 3 + m\angle 2 = m\angle BED$	3.
4. $m\angle 1 + m\angle 2 = m\angle AEC$	4.
5. $m\angle BED = m\angle AEC$	5.

Section 2.7: Prove Angle Pair Relationships
40. True or False   Vertical angles are always congruent.
41. True or False   Right angles are always congruent.
42. True or False   Linear pair angles are always adjacent.
43. True or False   Supplementary angles are always adjacent.
44. True or False   Complementary angles are always adjacent.
45. True or False   All birds can fly.

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Geometry A – Chapter 3 Final Review Practice

Section 3.1 Identify Pairs of Lines and Angles

Use the cube to the right to answer the following questions.
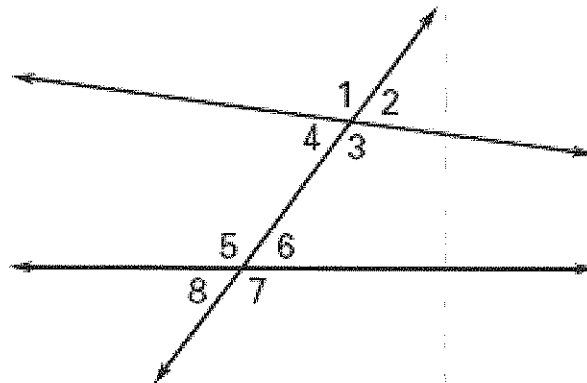   (parallel, perpendicular, or skew).
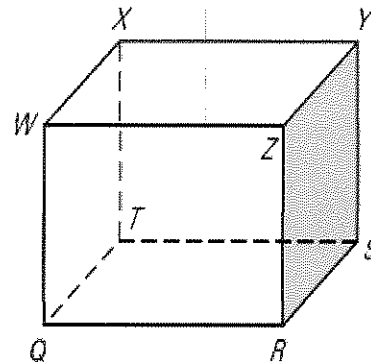
1. $\overleftrightarrow{WZ}$ and $\overleftrightarrow{WQ}$ are what type of lines?

2. $\overleftrightarrow{WZ}$ and $\overleftrightarrow{RS}$ are what type of lines?

3. $\overleftrightarrow{WZ}$ and $\overleftrightarrow{QR}$ are what type of lines?

Use the diagram to complete the next six statements with:

    A. Corresponding Angles   B. Alternate Interior Angles
    C. Alternate Exterior Angles   D. Consecutive Interior Angles

4. $\angle 1$ and $\angle 7$

5. $\angle 4$ and $\angle 6$

6. $\angle 3$ and $\angle 6$

7. $\angle 2$ and $\angle 6$

8. $\angle 1$ and $\angle 5$

9. $\angle 2$ and $\angle 8$

Section 3.2 Use Parallel Lines and Transversals

Use the figure to the right to find the measure of each angle.

10. $m\angle 1 =$ 11. $m\angle 5 =$

12. $m\angle 2 =$ 13. $m\angle 6 =$

14. $m\angle 3 =$ 15. $m\angle 7 =$

Name _____ Date: _____ Hour _____
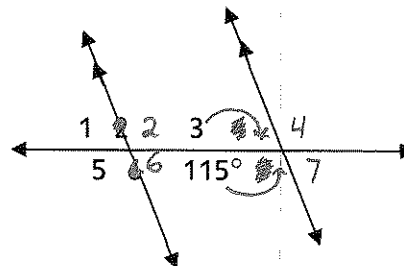
Section 3.2 Use Parallel Lines and Transversals (continued)

Find the value of x.

16.
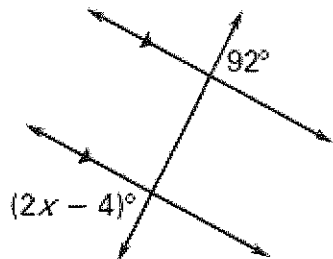
17.
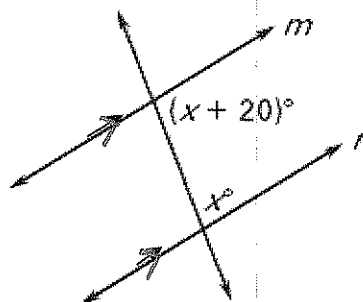
Use the diagram below and the given information to determine if $m \parallel n$, $p \parallel q$, or *neither.*

18. $\angle 2 \cong \angle 11$

19. $\angle 1 \cong \angle 8$

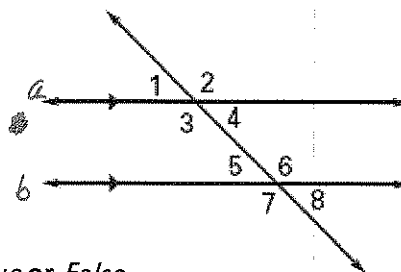20. $\angle 10 \cong \angle 14$

21. $\angle 2 \cong \angle 10$
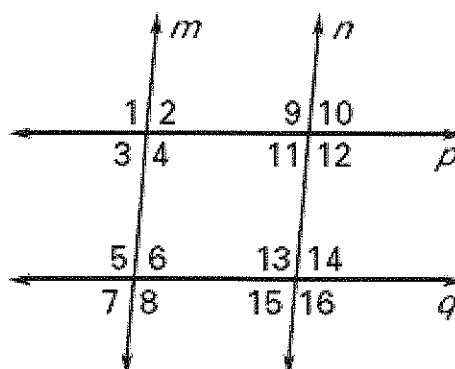
Section 3.3 Prove Lines are Parallel

Use the given angle measures to decide whether lines *a* and *b* are parallel for the next two questions.

22. $m\angle 3 = 86°$, $m\angle 6 = 94°$

23. $m\angle 1 = 63°$, $m\angle 6 = 117°$

Use the diagram above to answer the following questions as *True* or *False.*

(assume a // b)

24. $\angle 4$ and $\angle 6$ are supplementary angles?   25. $\angle 2$ and $\angle 7$ are congruent angles?

26. $\angle 3$ and $\angle 6$ are not congruent angles?   27. $\angle 3$ and $\angle 5$ are congruent angles?

Section 3.4 Find and Use Slope of Lines

28. Find the slope of the line that passes through the points (2, 5) and (7, 3). Then state the slope of the line parallel and perpendicular to the calculated slope.

29. Find the slope of the line that passes through the points (–3, 1) and (0, 3). Then state the slope of the line parallel and perpendicular to the calculated slope.

Section 3.5 Write and Graph Equations of Lines

30. Are lines $y = 2x + 5$ and $y = -\frac{1}{2}x - 3$ *parallel, perpendicular,* or *neither?*

31. What would the slope of a line be that was *perpendicular* to $y = -\frac{1}{5}x + 2$?

32. What would the slope of a line be that was *parallel* to $4x + 2y = 8$?

33. Write an equation in slope-intercept form that passes through the point (0, 7) and has a slope of $\frac{1}{2}$.

34. Write an equation in slope-intercept form that passes through the point (1, 5) and has a slope of 2.

35. Write an equation in slope-intercept form that is *parallel* to $y = \frac{3}{4}x - 2$ and passes through point (0, 0).

36. Write an equation in slope-intercept form that is *perpendicular* to $y = \frac{1}{2}x + 4$ and passes through point (2, 1).

Section 3.6 Prove Theorems about Perpendicular Lines

37. **True or False.** If two lines are perpendicular to the same transversal, then they are parallel.

38. **True or False.** If two lines are perpendicular, then they intersect to form two right angles.

Find the value of x.

39.

$(x - 15)°$

$(x + 5)°$

40.

R

$25°$

$(x + 25)°$

S T
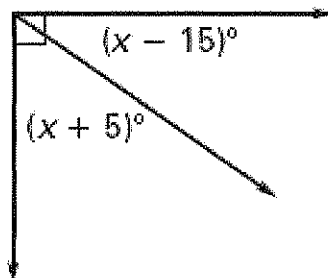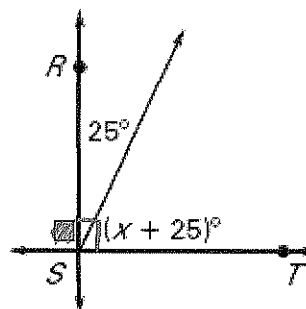
Geometry A – Chapter 4 Final Review Practice
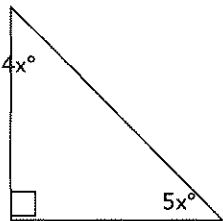
Section 4.1 Apply Triangle Sum Properties

For problems # 1 – 4 , classify the triangle by its side lengths or angles.

1. no congruent sides

2. Angles measures: 25°, 130°, 25°

3. Angles measures: 60°, 60°, 60°

4. Side lengths: 10cm, 10cm, 10cm
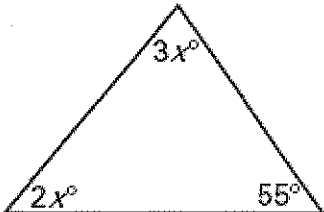
Find the value of x.

5.
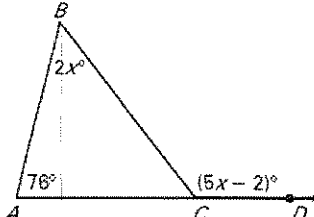
6.

7.

8. Find $m\angle DBC$.
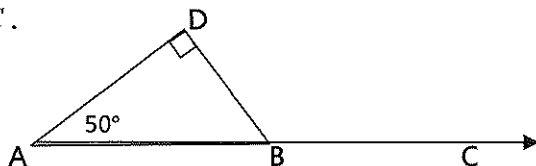
9. Find the value of x.
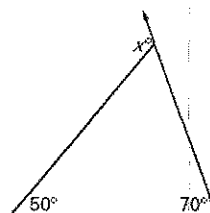
Section 4.2 Apply Congruence and Triangles

Given, $\triangle ABC \cong \triangle DEF$. Complete the statement.

10. $\overline{EF} \cong$ ____

11. $\angle A \cong$ ____

12. $\angle E \cong$ ____

13. $m\angle C =$ ____

14. $\overline{AC} =$ ____

15. $\triangle CBA \cong$ ____

Write the correct congruence statement for these triangles.

16. $\triangle$ _____ $\cong \triangle$ _____
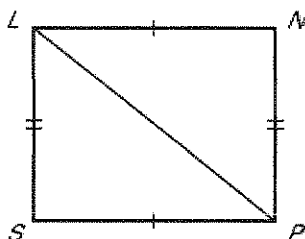
Name _____ Date: _____ Hour _____

Sections 4.3 to 4.5 Prove Triangle Congruence by SSS, SAS, HL, ASA, AAS & Use Congruent Triangles (CPCTC)

Using the diagrams, choose the appropriate postulate or theorem that proves triangle congruence:

A. SAS   B. SSS   C. ASA   D. AAS   E. HL
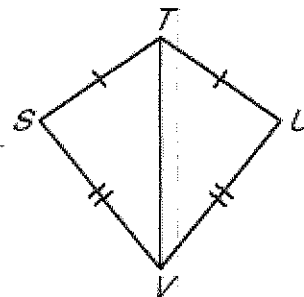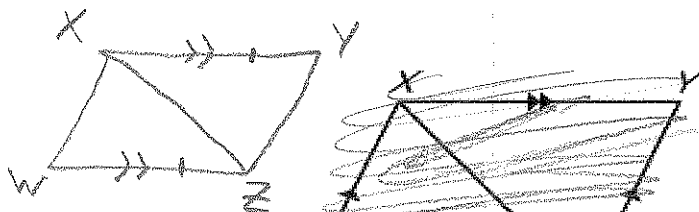
17.

18.

19.

20.

21.

22.

23.

24.

25.

26. Proof   Given: $\overline{ST} \cong \overline{UT}, \overline{SV} \cong \overline{UV}$
         Prove: $\angle TSV \cong \angle TUV$

Statements	Reasons
1. $\overline{ST} \cong \overline{UT}, \overline{SV} \cong \overline{UV}$	1.
2. $\overline{TV} \cong \overline{TV}$	2.
3. $\triangle TSV \cong \triangle TUV$	3.
4. $\angle TSV \cong \angle TUV$	4.

27. Proof   Given: $\overline{WZ} \parallel \overline{XY}, \overline{WZ} \cong \overline{XY}$
         Prove: $\triangle XWZ \cong \triangle ZYX$

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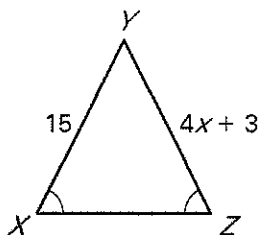
~~Prove: △XWZ ≅ △ZYX~~

Statements	Reasons
1. $\overline{WZ} \parallel \overline{XY}, \overline{WZ} \cong \overline{XY}$	1.
2. $\overline{XZ} \cong \overline{XZ}$	2.
3. $\angle WZY \cong \angle YXZ$	3.
4. $\triangle XWZ \cong \triangle ZYX$	4.

Section 4.7 Use Isosceles and Equilateral Triangles

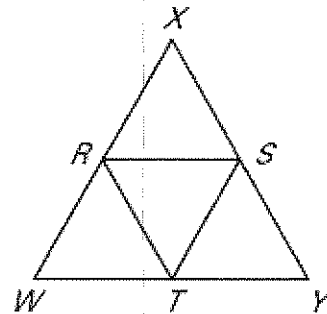28. Find $m\angle B$.
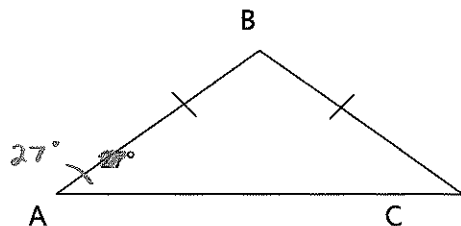
29. Find the value of x.

30. In $\triangle SAT$, if $\overline{SA} \cong \overline{AT}$ and $m\angle S = 44°$, then find the $m\angle T$.

Name _____ Date: _____ Hour _____

Geometry A – Chapter 5 Final Review Practice

Section 5.1 Midsegment Theorem and Coordinate Proof

Use $\triangle WXY$, where R, S, and T are midpoints of the sides.

1. If RS = 20, then WY = _____

2. $\overline{RT} \cong$ _____ and _____

3. If the perimeter of $\triangle RST$ is 60, then
   the perimeter of $\triangle WXY$ is _____.
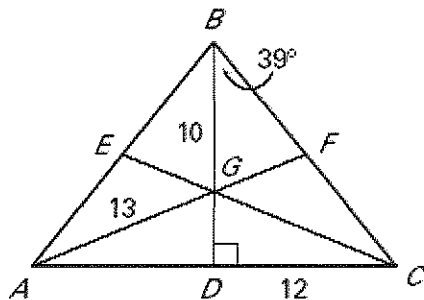
Section 5.2 Use Perpendicular Bisectors

Find the value of x.

4.

$2x$

$2x + 8$

5.

$2x - 2$

$8x - 16$
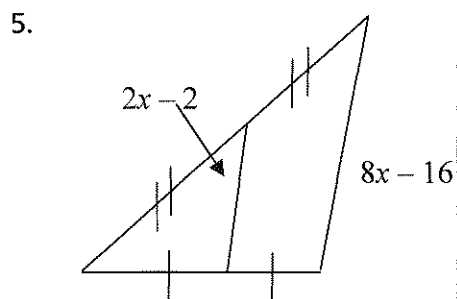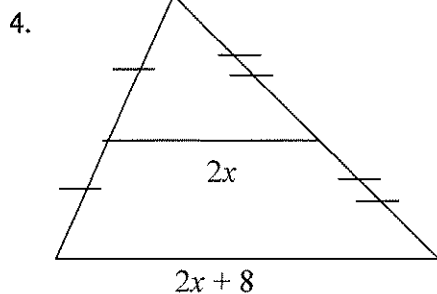
6. The point of concurrency for perpendicular bisectors of a right triangle is _____ the triangle.

         A. *inside*   B. *on*   C. *outside*

Section 5.3 Use Angle Bisectors of Triangles & Section 5.4 Use Medians and Altitudes

Use the figure for the next three questions. In $\triangle ABC$, $\overline{BD}$ is an angle bisector, $m\angle DBC = 39°$,
and $BF = FC$.

7. In Find $m\angle BAC$.

8. Identify a median of $\triangle ABC$.

9. Identify an altitude of $\triangle ABC$.

## Section 5.3 Use Angle Bisectors of Triangles & Section 5.4 Use Medians and Altitudes

10. *Balancing.* You can balance a triangle-shaped object by finding the centroid of the triangle. The length of one median is 24 centimeters. How far from the vertex of the angle that the median was drawn is the centroid?

11. In the diagram, L is the centroid of △MNO and LQ = 4. Find OQ.
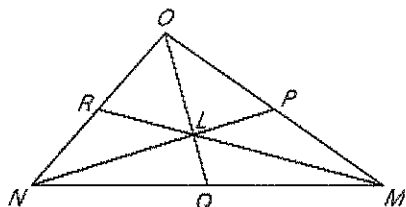
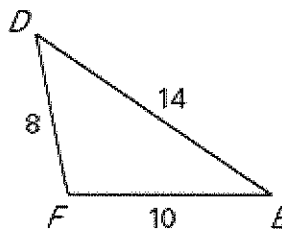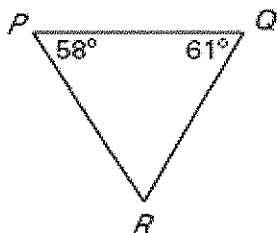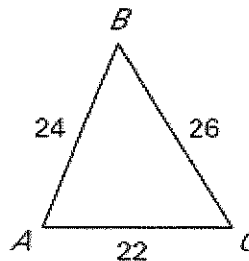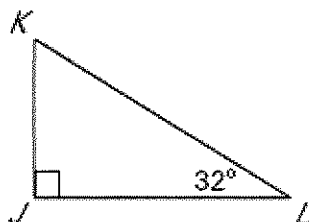12. $\overline{BD}$ is a median of △ABC. Find x

$$8x - 12 \qquad 3x + 33$$
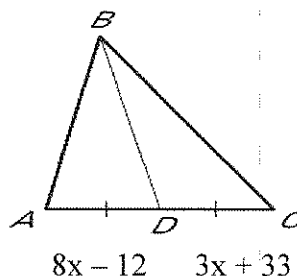
Section 5.5 Use Inequalities in a Triangle

Use the diagram below to list the following:

13. Sides in order from least to greatest.

14. Angles in order from least to greatest.

15. Sides in order from least to greatest.

16. Angles in order from least to greatest.

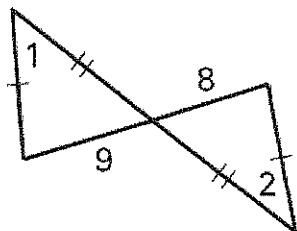**Determine whether it is possible to draw a triangle with sides of the given length.**

17. 1, 3, 6

18. 12, 17, 33

19. 5, 2, 6

20. 3, 4, 5

Name _____ Date: _____ Hour _____

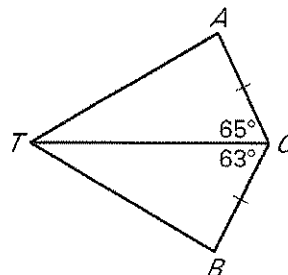Complete the statements with <, >, or =.
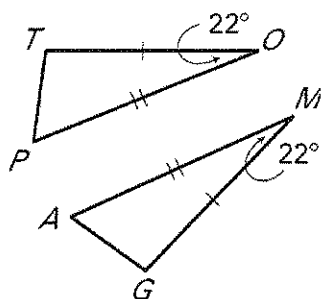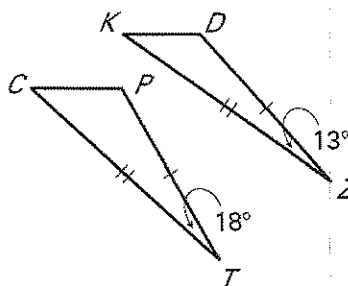
21. $m\angle 1$ _____ $m\angle 2$

22. AT _____ BT

23. TP _____ AG

24. KD _____ CP

Geometry A – Chapter 6 Final REVIEW Practice: Similarity

6.1 Ratios, Proportions & the Geometric Mean

1. Simplify the ratio.   2. Solve the proportion.

$$\frac{10in.}{3ft.}$$

a. $\dfrac{10}{y-5} = \dfrac{6}{y}$

b. $\dfrac{x-3}{6} = \dfrac{4x-2}{5}$

3. A survey found that 2 out of 7 students take a gym class per semester. If a high school has 4200 students, what is the estimate of the number of students that are taking a gym class?

4. It took you 20 minutes to burn 123 calories while exercising. At that rate, how many calories can you burn in 35 minutes?

6.2 Use Proportions to Solve Geometry Problems

5. If the exchange rate of the Euro to the American dollar is 0.81 to 1 and an Italian leather jacket costs 714 Euros, then what would its price be in American dollars?

6. On a map, two neighboring towns are 2.4 inches apart. The map has a scale of 1 in.:15 miles. What is the actual distance between the two towns?
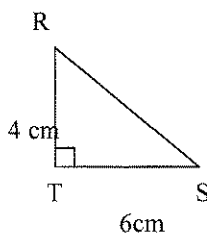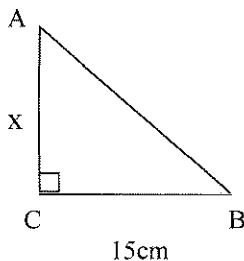
7. Given $\dfrac{XW}{WV} = \dfrac{XY}{YZ}$, find WV.
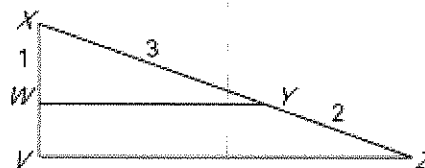
6.3 Use Similar Polygons

8. Give the definition of two SIMILAR polygons.

9. $\triangle ABC$ and $\triangle DEF$ are similar with $\angle A \cong \angle D$, $\angle B \cong \angle E$, and $\angle C \cong \angle F$. If AB, BC, and AC are 2 inches, 5 inches, and 9 inches, respectively, and DE is 6 inches, find DF.
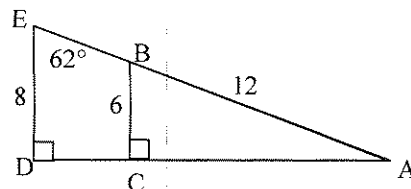
6.4 Prove Triangles Similar by AA ~
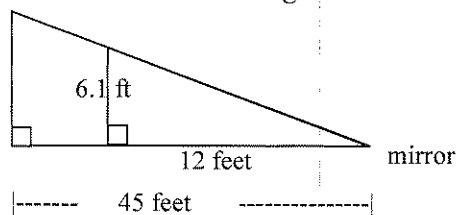
10. Find the value of x if $m\angle A = m\angle R$.

$x = $ _____

scale factor = _____

11. Find $m\angle ABC$ and AE.

12. Jeremy wants to measure the height of the
    streetlight outside his house. He places a
    mirror on the ground 45 feet from the streetlight,
    then walks backward until he is able to see the top
    of the streetlight in the mirror. His eyes are 6.1 feet
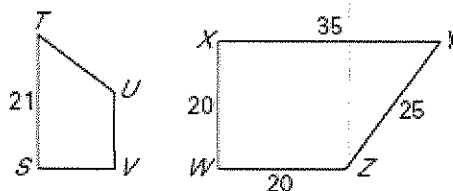   above the ground, and he is 12 feet from the mirror.
    What is the height of the streetlight to the nearest tenth of a foot?

6.5 Prove Triangles Similar by SSS~ and SAS~

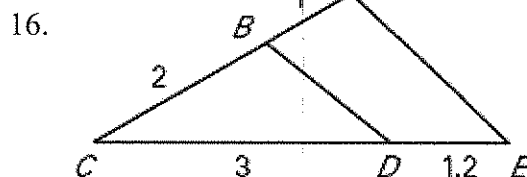13. $\triangle LMN \sim \triangle PQR$ Find QR.
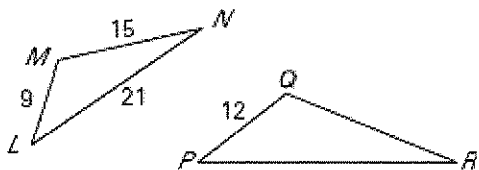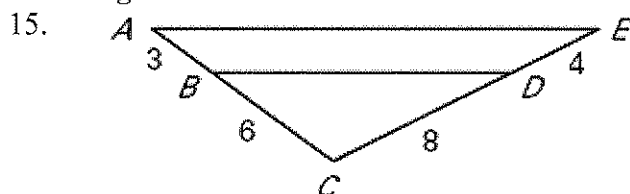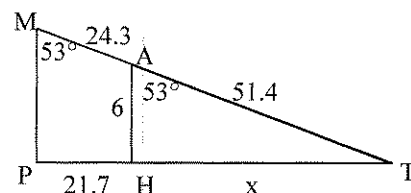

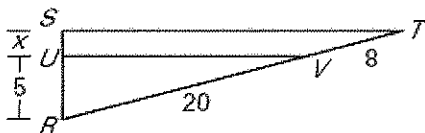14. $STUV \sim XYZW$ Find SV.

6.6 Use Proportionality Theorems

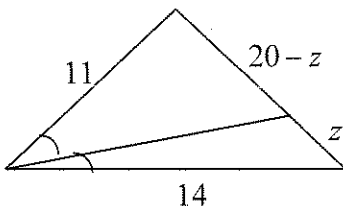**Use the given information to determine if $\overline{AE} // \overline{BD}$**

15.

16.

17. Find the value of x if possible.

18. Given that $\overline{ST} // \overline{UV}$. Find x.

19. What is the value of z in the figure?

20. Find AB.