ACP GEOMETRY – MIDTERM REVIEW

Chapter 1 Review

1. Find the next two terms in the sequence:

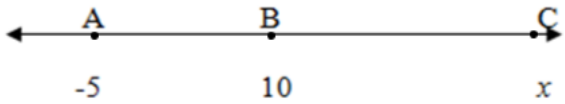
a) 384, 192, 96, 48, _____. _____

b) -4, -8, 24, 48, -144, _____, _____

c) $\frac{1}{4}, \frac{1}{16}, \frac{1}{64}, \frac{1}{256}$, _____, _____

2. Which is the next figure in the sequence?

a)  b)  c)  d)  e) None of the above

3. 

If AC= 36, then x = _____

4. 

The distance between the two points is _____.

5. Identify what each of the following means:

a) AB b) $\overline{AB}$ c) $\overleftrightarrow{AB}$ d) $\overrightarrow{AB}$

6. Find a counterexample to show that each conjecture is false:

a) A number squared is greater than the number.

b) The difference of two positive integers is positive.

7. Use the figure to answer the questions:

a) Name two collinear points.

b) Name two lines that intersect at point B.

c) Name three planes that intersect at point F.

d) Name two planes that do not intersect.

e) Name four points that are not coplanar.

f) Plane EFGH and $\overleftrightarrow{CH}$ intersect at _____.

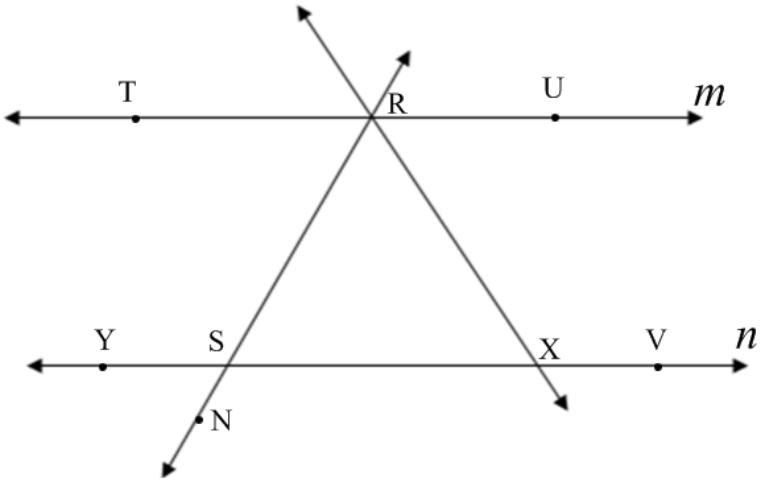
g) Name a line that is skew to $\overleftrightarrow{FE}$.

8. a) Name a line segment.

b) Name a pair of opposite rays.

c) Name line *m* three different ways.

d) Name 2 lines which appear parallel.



9. a) M is a point on $\overline{GS}$, between G and S.

GS = 32
GM = 3*x* + 10
MS = *x* – 2
Find: *x, GM, MS*

b) G is the midpoint of $\overline{LS}$.

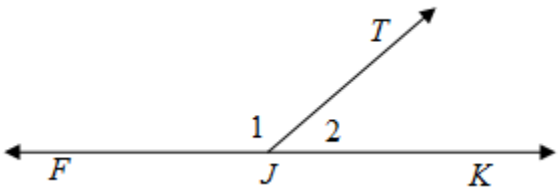
LG = 6*x* + 5
GS = 2*x* + 9
Find *x, LS, GS, LG*

10. a. Name $\angle 1$ two other ways.

b. If $m\angle 1 = 142°$, find $m\angle 2$.

c. $\angle$KJT and $\angle$TJF are _____.

d. If $m\angle 2 = 5x + 2$ and $m\angle 1 = 24x + 2$, find *x*.



11. Use the points below to answer the following questions

A(0, 3) B(-1, -4) C(-7, -9) D (8, 10) E (0, -2)

Find: a) AE

b) BC

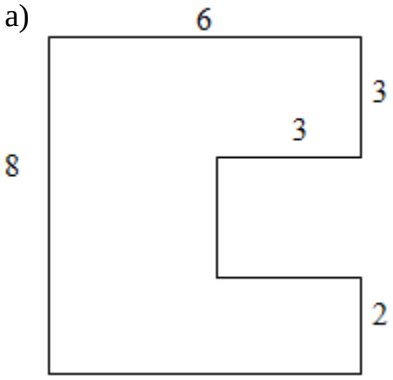
c) midpoint of $\overline{BE}$

d) midpoint of $\overline{CD}$

12. The midpoint of $\overline{QT}$ is (-5, 1). The coordinates of point Q are (-7,4). Find the coordinates of point T.

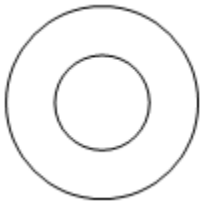
13. Find the area of the region:

a)



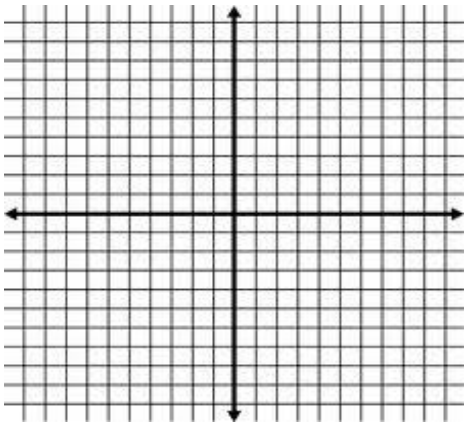
b) Radius of larger circle = 4
Radius of smaller circle = 2

Find the area of the 'donut'



14. Dave wants to put a fence around his rectangular pool. His pool measures 33 feet by 39 feet. The pool has a path around it that is 3 feet wide. How much fencing material does Dave need to enclose the pool and the path?

15. Find the perimeter of a four sided figure with the following vertices:
A (-4, 5), B(3, 5), C(5, -2) and D(-4, -2).
(Use the coordinate plane if necessary)

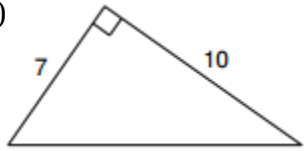


16. Write each radical in simplest radical form.

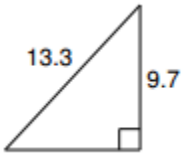
a) $\sqrt{121}$ b) $\sqrt{40}$ c) $\sqrt{72}$ d) $\sqrt{112}$

17. Find the length of each missing side. Write each answer as an exact answer and rounded to the nearest hundredth.

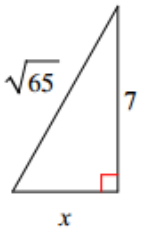
a)



b)



c)



18. Jayden is admiring a statue in Trumbull Park from 9 meters away. If the distance between the top of the statue to Jayden's head is 15 meters, how much taller is the statue than Jayden? (Hint: draw a picture)

19. Greenville is 17 miles due north of the airport, and Livingston is 8 miles due east of the airport. How far apart are Greenville and Livingston?

Chapter 2 Review

Use the given property to complete each statement.

1. Addition Property of Equality: If $2x-5=10$, then $2x$ = _____.

2. Subtraction Property of Equality: If $5x+6=21$, then _____ = 15.

3. Symmetric Property of Equality: If $AB = YU$, then _____ = _____.

4. Symmetric Property of Equality: If $\angle H \cong \angle K$, then _____$\cong \angle H$.

5. Reflexive Property of Equality: $\angle PQR \cong$ _____.

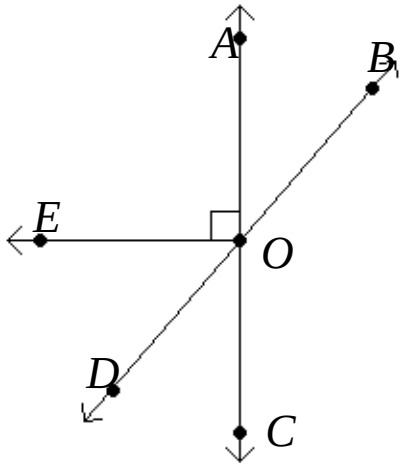
6. Distributive Property: $3(x-1) =$ _____.

7. Substitution Property: If $LM = 7$ and $EF + LM = NP$, then _____ = NP.

8. Transitive Property of Congruence: If $\angle XYZ \cong \angle AOB$ and $\angle AOB \cong \angle WYT$, then _____.

9. Multiplication Property of Equality: If $\frac{1}{3}TR = UW$, then _____.

Use the figure to identify the following.



10. an angle supplementary to $\angle AOD$ _____

11. an angle adjacent AND congruent to $\angle AOE$ _____

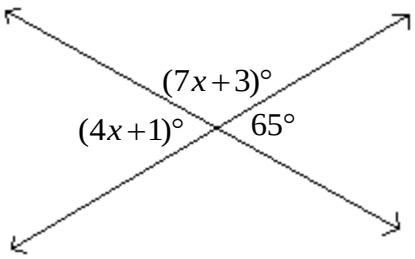
12. an angle supplementary to $\angle EOA$ _____

13. an angle complementary to $\angle EOD$ _____

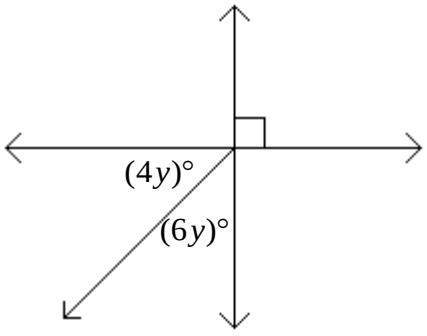
14. a pair of vertical angles _____

Find the value of the variables.

15.

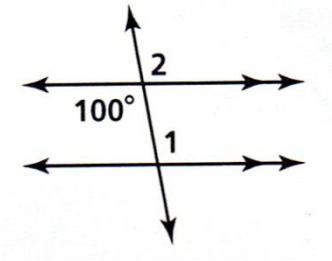


16.

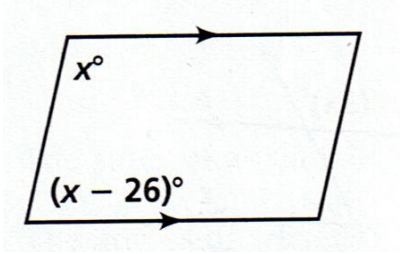


Chapter 3 Review

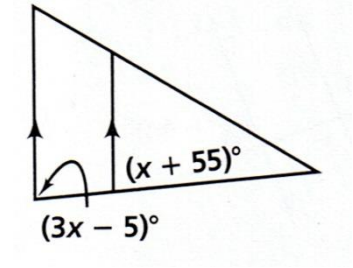
1) Find $m\angle 1$ and then $m\angle 2$. Justify each answer.



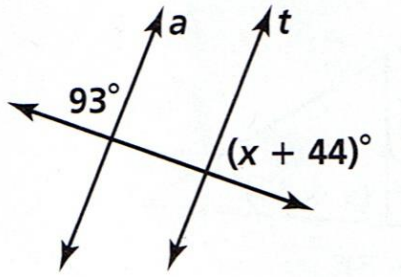
2) Find the value of x. Then find the measure of each angle.



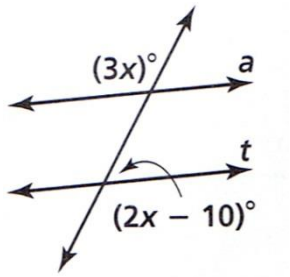
3) Find the value of x. Then find the measure of each angle.



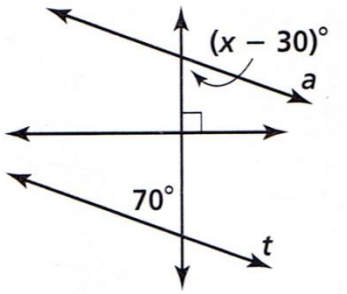
4) Find the value of x for which $a \parallel t$.



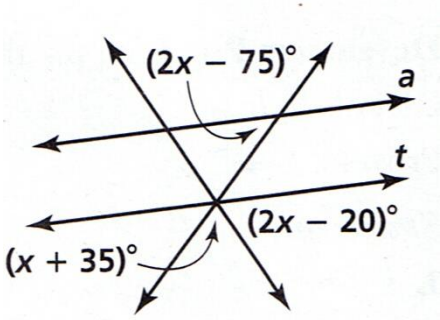
5) Find the value of x for which $a \parallel t$.



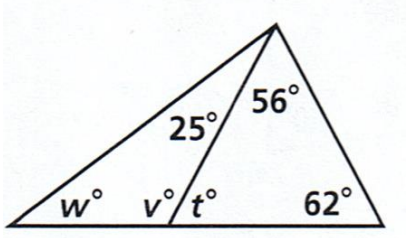
6) Find the value of x for which $a \parallel t$.



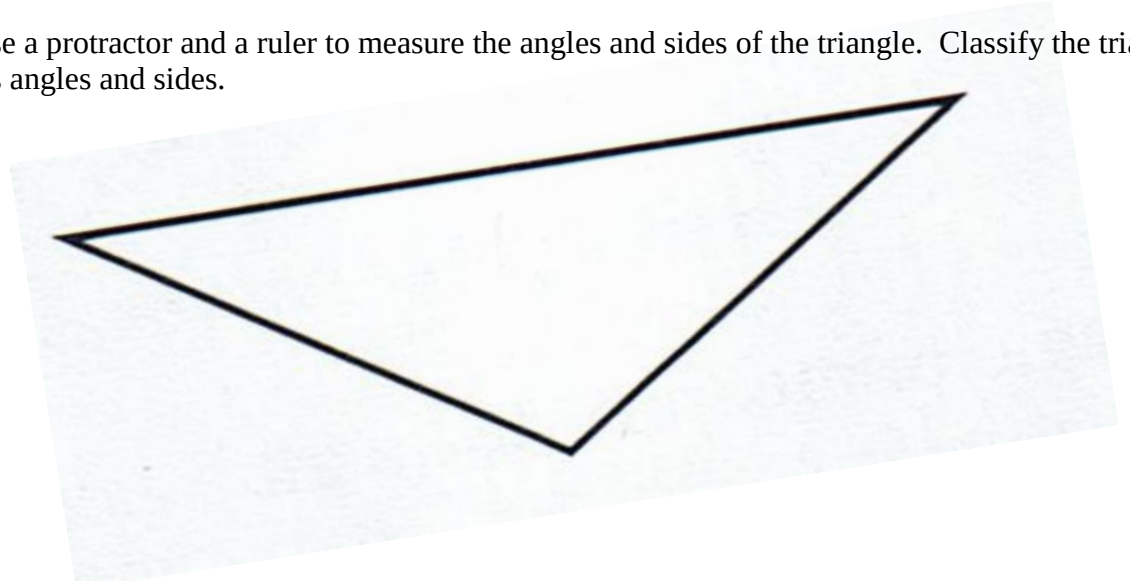
7) Find the value of x for which $a \parallel t$.



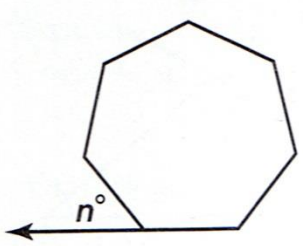
8) Find the value of each variable.



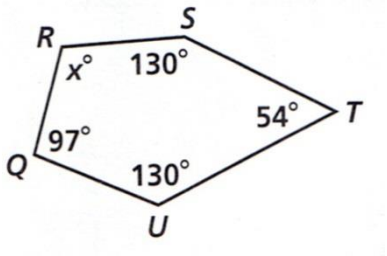
9) Use a protractor and a ruler to measure the angles and sides of the triangle. Classify the triangle by its angles and sides.



10) Find the values of the variable for the regular polygon below.



11) Find the missing angle measure.

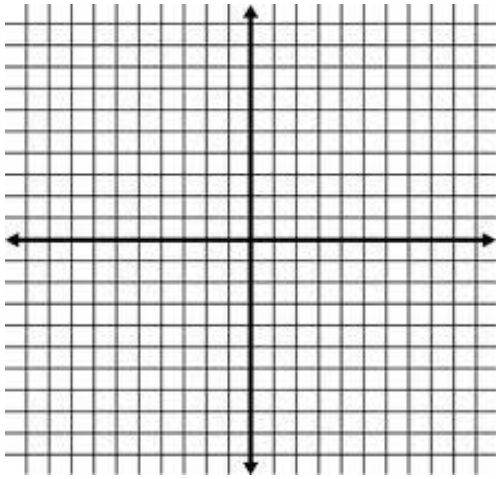


12) What is the interior angle sum of a convex 22-gon?

13) What is the measure of an exterior angle of a regular 13-gon?

14) The measure of an interior angle of a regular polygon is 135°. Find the number of sides.

15) a) Graph $3x+9y=18$ on the coordinate plane.



b) Write the equation of a line parallel to the line from part a.

c) Graph the parallel line.

16) Are the lines parallel, perpendicular or neither? Explain.

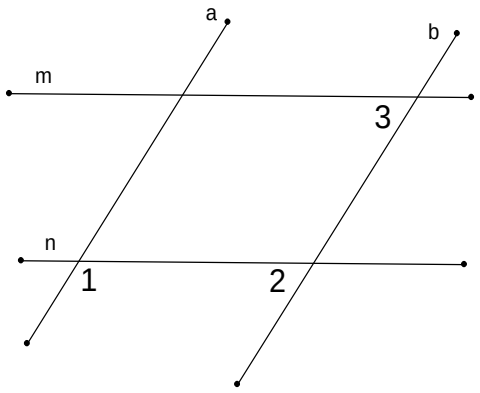
a) $y = 3x - 2$, $y = \frac{1}{3}x + 2$

b) $2x - 3y = 17$, $-6x + 9y = -2$

c) $x = -4$, $y = 10$

17) Given: $m \| n$, $a \| b$

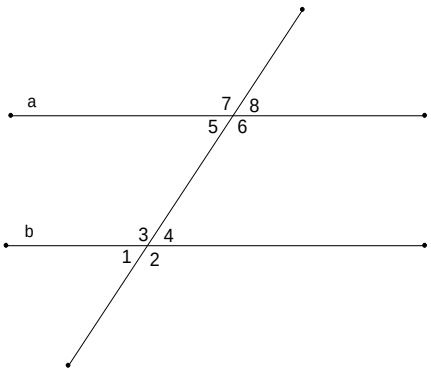
Prove: $\angle 1$ and $\angle 3$ are supplementary



Statements	Reasons

18) Given: $\angle 1 \cong \angle 8$

Prove: $a \| b$



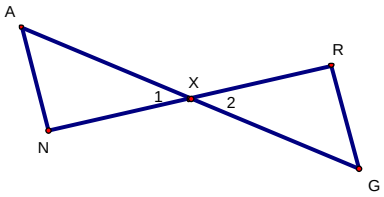
Statements	Reasons

Chapter 4 Review

1) If $\Delta HIL \cong \Delta SUV$ name the corresponding angles and sides. (Sections 4-1)

2) Supply the reasons in the two-column proof. (Sections 4-2)

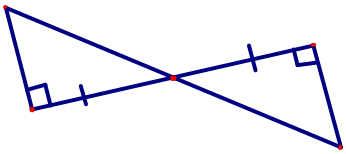
Given: X is the midpoint of $\overline{AG}$ and of $\overline{NR}$.
Prove: $\Delta ANX \cong \Delta GRX$



Statements	Reasons
a) X is the midpoint of $\overline{AG}$	
b) $\overline{AX} \cong \overline{GX}$	
c) $\angle 1 \cong \angle 2$	
d) X is the midpoint of $\overline{NR}$	
e) $\overline{NX} \cong \overline{RX}$	
f) $\Delta ANX \cong \Delta GRX$	

In #3 - 8 state which postulate/theorem, if any, could be used to prove the two triangles congruent? If not enough information is given, write not possible. (sections 4-2, 4-3, 4-6)

3)



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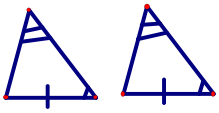

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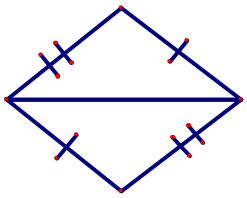

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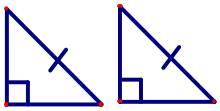

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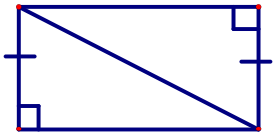

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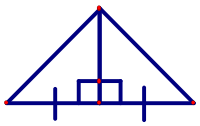
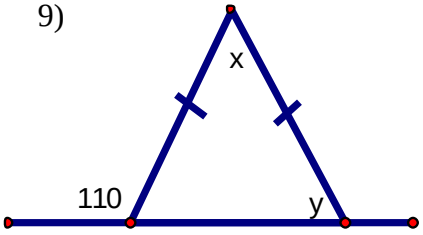


In #9 – 10, find the values of the variables (section 4-5).

9)



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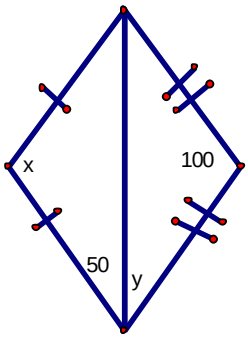
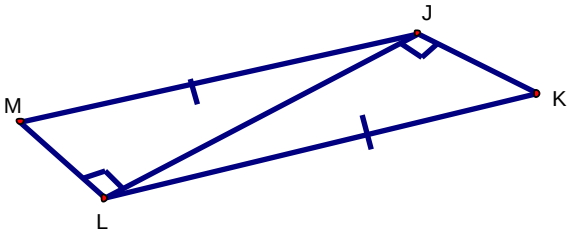


11- 12) Prove using a two- column proof . (Section 4-6 and 4-7)

11)

Given: $\overline{JL} \perp \overline{LM}$, $\overline{LJ} \perp \overline{JK}$, and $\overline{MJ} \cong \overline{KL}$

Prove: $\Delta MJL \cong \Delta KLJ$



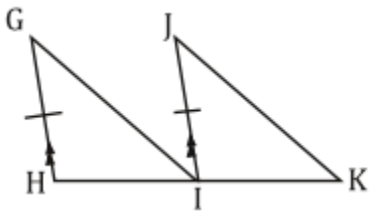
Statements	Reasons

12)

Given: $\overline{GH} \cong \overline{JI}$, $\overline{GH} \parallel \overline{JI}$

I is the midpoint of $\overline{HK}$

Prove: $\angle G \cong \angle J$

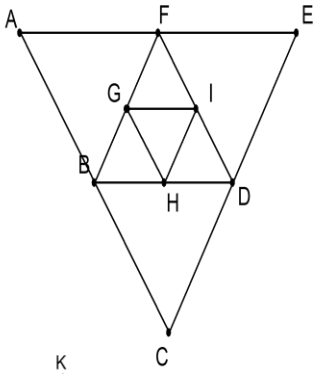


Statements	Reasons

Chapter 5 Review

1. In the diagram, points *F, B, D, G, H, I* are midpoints. If *IH* = 7 , *AE* = 28, *AB* = 8, and *GH* = 4.

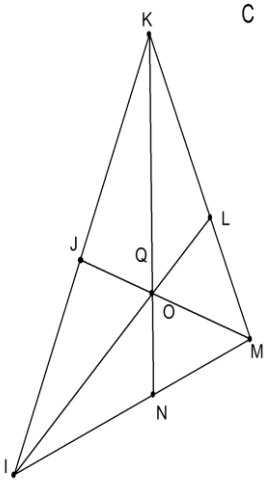
Find: *GI* =_____, *EC* =_____, *FI* = _____, *AC* =_____



2. In ΔIKM , the points *J*, *L*, and *N* are midpoints.

JO = 15, *KO* = 32, and *IL* = 33

Find *JM* = _____, *LO* = _____, *KN* = _____

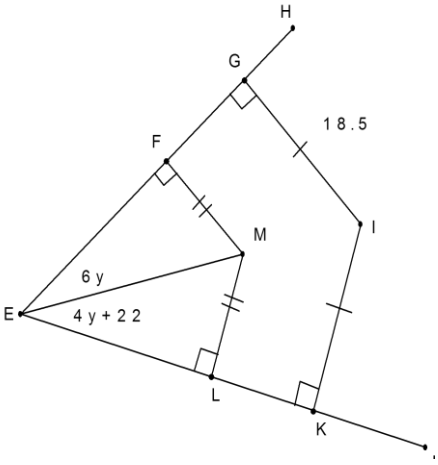


3. Use the diagram to answer the following questions.
   a. How is $\overline{EM}$ related to $\angle HEK$?

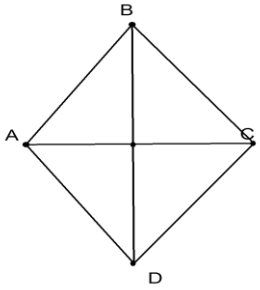
   b. Find the value of *y*, then find $m\angle MEL$.

   c. Find *IK*.

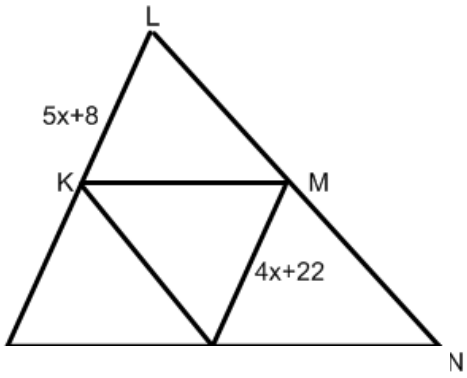
   d. What can you conclude about point *I*?



4. $\overline{AC}$ is the perpendicular bisector of $\overline{BD}$. If *AB* =12 and *CD* = 13, find *CB*=_____*AD*=_____



5. In the diagram, *K*, *O*, and *M* are midpoints. Find the value of *x*.



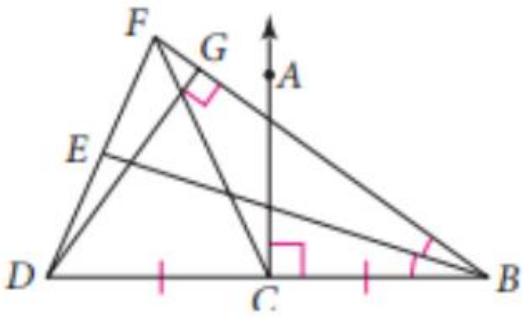
6. In ΔFDB name a(n)…

a) …altitude. _____

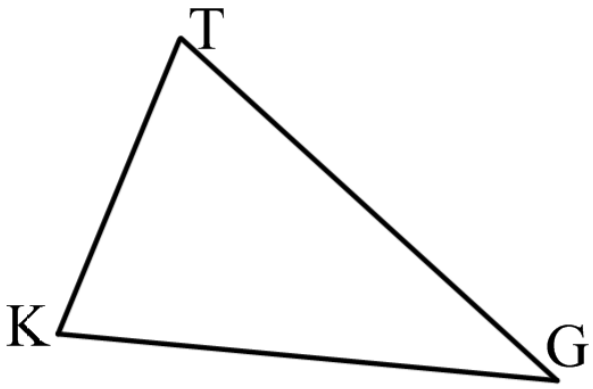
b) …median. _____

c) …perpendicular bisector. _____

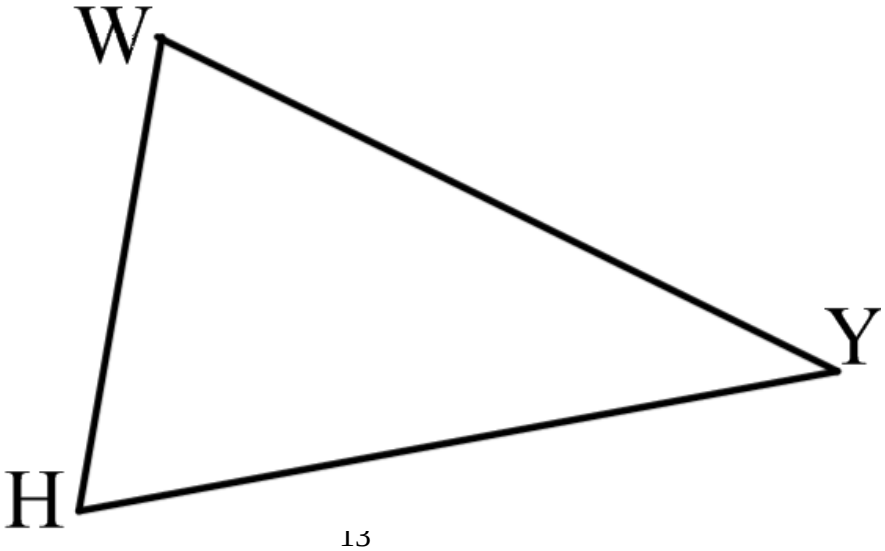
d) …angle bisector. _____



7. Use a compass and a straightedge to construct a median from point G.



8. Construct $\overrightarrow{HI}$ so that it is an angle bisector of $\angle H$.



Chapter 6 Review

1) A parallelogram is a quadrilateral with 2 pairs of _____ .

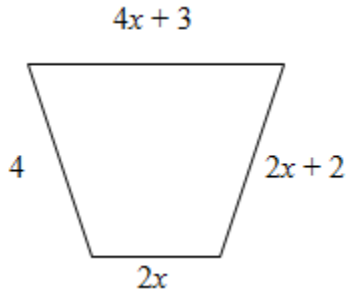
2) A trapezoid is a quadrilateral with exactly 1 pair of _____ .

3) A rectangle is a parallelogram with 4 _____ .

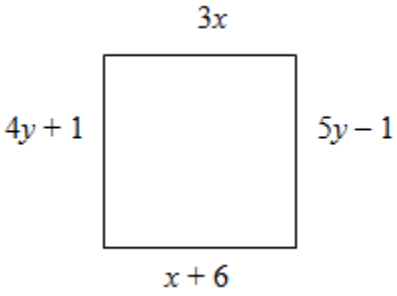
4) A rhombus is a parallelogram with 4 _____ .

5) A quadrilateral that is both a rhombus and a rectangle is called a _____.

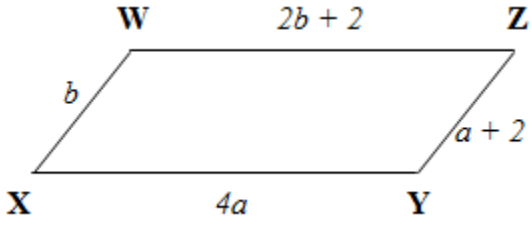
6) Find the perimeter of this isosceles trapezoid.



7) Find x and y for the square.



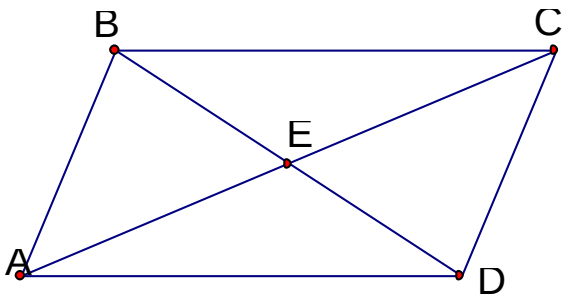
8) Find the perimeter of parallelogram WXYZ.



9) Given parallelogram ABCD and $m\angle A = 40°$, find $m\angle B$, $m\angle C$, *and* $m\angle D$.

10) Determine the values of x and y for which quadrilateral ABCD would be a parallelogram.

BE = y ED = $9 - 2x$ AE = $3y$ EC= $11 + 2x$

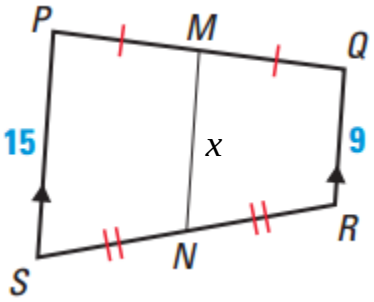


11) Determine the values of x and y for which quadrilateral ABCD would be a parallelogram.

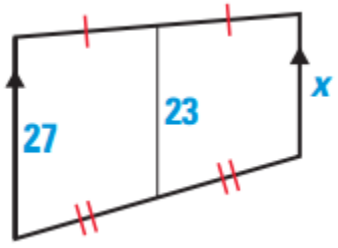
$m\angle A = x°$ $m\angle B = (x + 30)°$ AB= $4y$ - 1 CD=$3y$ + 3

12) Find x in each trapezoid.

a)



b)



ACP Geometry – Midterm Review ANSWERS

Chapter 1

1a. 24, 12 **1b.** -288, 864 **1c.** $\frac{1}{1024}, \frac{1}{4096}$

2. C
3. 31
4. 20
5a. length of the segment from *A* to *B*
5b. segment from *A* to *B*
5c. line containing points *A* and *B*
5d. ray with endpoint at *A* and goes through *B*
6a. 0, 1 **6b.** $3-7$
7&8. Multiple Answers
9a. $x = 6$, $GM = 28$, $MS = 4$ **9b.** $x = 1$, $GS = 11$, $LG = 11$, $LS = 22$

10a. $\angle TJF$ and $\angle FJT$ **10b.** 38° **10c.** Adjacent and Supplementary **10d.** $\frac{176}{29} \approx 6.067$

11a. 5 **11b.** $\sqrt{61} \approx 7.8$ **11c.** $(-0.5, -3)$ **11d.** $(0.5, 0.5)$
12. $(-3, -2)$
13a. 39 **13b.** $12\pi \approx 37.68$
14. 45+45+39+39= 168 feet
15. $7+7+9+\sqrt{53} \approx 7+7+9+7.2 \approx 30.2$
16a. 11 **16b.** $2\sqrt{10}$ **16c.** $6\sqrt{2}$ **16d.** $4\sqrt{7}$
17a. $\sqrt{149} \approx 12.21$ **17b.** $\sqrt{82.8} \approx 9.10$ **17c.** $\sqrt{16} = 4$
18. 12 meters
19. $\sqrt{353} \approx 18.79$ *miles*

Chapter 2

1. 15
2. $5x$
3. $YU = AB$
4. $\angle K$
5. $\angle PQR$
6. $3x - 3$
7. $EF + 7$
8. $\angle XYZ \cong \angle WYT$
9. $TR = 3(UW)$
10. $\angle AOB$ or $\angle DOC$
11. $\angle EOC$
12. $\angle EOC$
13. $\angle DOC$
14. $\angle DOC$ & $\angle BOA$ or $\angle BOC$ & $\angle DOA$
15. $x = 16$
16. $y = 9$

Chapter 3

1) $m\angle 1 = 100°$ Alternate interior. $m\angle 2 = 100°$ Alternate interior or vertical
2) $x = 103, 77°, 103°$
3) $x = 30, 85°, 85°$
4) 43
5) 38
6) 100
7) 48
8) $v = 118$, $w = 37$, $t = 62$
9) obtuse isosceles
10) $n = 360/7 = 51.43$
11) $x = 129$
12) 3600
13) 27.69
14) 8

15a) slope $= -\frac{1}{3}$, y-intercept at 2

15b) $y = -\frac{1}{3}x +$ [any number except 2]

15c) Draw a line with the same slope through your y-intercept.

16a) Neither…not the same, not opposite and reciprocal

16b) Parallel, both slopes are $\frac{2}{3}$.

16c) Perpendicular…a horizontal and vertical line

17)

Statement	Reason
1) m is parallel to n	1) Given
2) a is parallel to b	2) Given
3) Angle 2 is congruent to Angle 3	3) Corresponding angles are congruent
4) Angle 1 and 2 are supplementary	4) Same side interior angles are supplementary
5) Angle 1 and 3 are supplementary	5) Substitution

18)

Statement	Reason….<u>one of</u> <u>several</u> possible answers.
1) Angle 1 is congruent to Angle 8	1) Given
2) Angle 1 is congruent to Angle 4	2) Vertical angles are congruent
3) Angle 4 is congruent to Angle 8	3) Substitution property
4) a is parallel to b	4) Converse of Corresponding Angles Postulate

Chapter 4

1. Sides: HI=SU, IL=UV, LH=VS
   Angles: <H=<S,<I=<U,< L=<V
2. a. Given, b. Definition of Midpoint, c. Vert. angle Thm.,
   d. Given, e. Definition of midpoint., f. SAS
3. ASA or AAS 4. AAS or ASA
5. SSS 6. not possible 7. HL 8. SAS
9. $x = 40$ $y = 70$
10. $x = 80$ $y = 40$

11.

Statement	Reason
1	1 Given
2. <MLJ and <KJL are right angles	2 Definition of perpendicular
3 <MLJ ≅ <KJL	3 All Right angles are congruent
4 JL ≅ JL	4 Reflexive Property
5. $\triangle MLJ$ *and* $\triangle KJL$ are right triangles	5. Definition of Right Trianlges
6 $\triangle MLJ \cong \triangle KJL$	6 HL Thm.

12.

Statement	Reason
1	1. Given
2 $< H \cong < JIK$	2. Corresponding Angle Post
3 $HI \cong IK$	3. Definition of Midpoint
4 $< G \cong < J$	4. SAS Postulate
5 $< G \cong < J$	5. CPCTC

Chapter 5

1. GI = 7, EC = 28, FI = 4, AC = 16
2. JM = 45, LO = 11, KN = 48
3. a. angle bisector
   b. y = 11, 66°
   c. 18.5
   d. I is on the angle bisector of $\angle HEK$. I is equidistant from $\overrightarrow{EH}$ and $\overrightarrow{EK}$ EK
4. CB = 12, AD = 13
5. $y = 14$
6. a. $\overline{DG}$
   b. $\overline{FC}$
   c. $\overrightarrow{AC}$
   d. $\overline{EB}$

7. https://www.youtube.com/watch?v=aVDjxVMa6do
8. https://www.youtube.com/watch?v=qBw0Ly-wF4U

Chapter 6

1) opposite sides are parallel
2) parallel sides
3) right angles
4) congruent sides
5) square
6) perimeter = 17
7) $x = 3,\ y = 2$
8) $a = 3,\ b = 5$
9) $m\angle B = 140°$
   $m\angle C = 40°$
   $m\angle D = 140°$
10) $x = 2,\ y = 5$
11) $x = 75^0,\ y = 4$
12) MN = 12, $x = 19$