

Name Kay

Date _____

Final Review – Chapter 1 - Homework

Part A

Find the missing term in the sequence.

1. $4, 8, 12, 16, \underline{20}, \underline{24}$

2. $-5, 3, -2, 1, -1, 0, \underline{-1}, \underline{-1}$

3. $1, 5, 14, 30, 55, \underline{91}, \underline{140}$

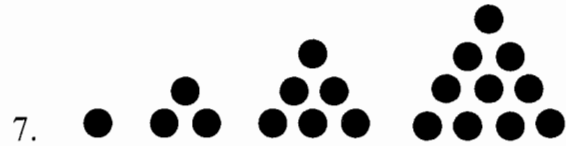
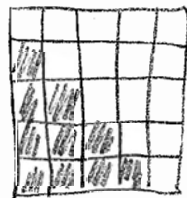
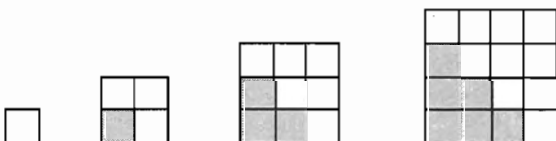
4. $1, 3, 7, 15, 31, 63, \underline{127}, \underline{255}$

Algebra Review: Simplify.

$$\begin{aligned}
 5. \quad & -5(x-4)^2 + 8x - 6(x+7) \\
 & = -5(x^2 - 8x + 16) + 8x - 6x - 42 \\
 & = -5x^2 + 40x - 80 + 2x - 42 \\
 & = -5x^2 + 42x - 122
 \end{aligned}$$

Draw the next shape in each pattern.
(1 pt each)

6.



7.



8. List the three steps of inductive reasoning:

- Make observation
- Find a pattern
- Make a conjecture

9. What is a conjecture that can be proven?

Theorem

10. What's the difference between the converse and the inverse of a conditional statement?

Converse → IF, then switched
Inverse → Opposites of original conditional

11. Write the following for the following statement: "An angle whose measure is 34° is an acute angle".

If-then form:

If it is angle that measures 34° , then it is an acute angle.

Converse: If it is an acute angle,
then it is an angle that
measures 34°

Inverse: If it is not an angle that
measures 34° , then it
is not an acute angle.

Contrapositive:
If it is not an acute angle,
then it is not an angle that
measures 34° .

12. Write the definition of an equiangular polygon as a single biconditional statement.

A polygon is an equiangular polygon
if and only if all angles
are congruent.

13. Use the Law of Detachment to make a valid conclusion. "If an angle is more than 90° , then it is an obtuse angle. $\angle M$ is 90° ."

Therefore, it is not an obtuse
angle.

14. Use the Law of Syllogism to write the statement that follows from the following:

If $x = 3$, then $2x = 6$

If $4x = 12$, then $x = 3$

If $4x = 12$, then $2x = 6$

15. What's the difference between inductive and deductive reasoning?

Inductive reasoning is based
upon conclusions from finding
a pattern

Deductive reasoning is based
upon conclusions from
previous knowledge.

16. What is the Segment Addition Postulate?
(Use words and a drawing to help you.)



$$AB + BC = AC$$

17. State the Plane Intersection Postulate.

If two planes intersect,
they form a line.

18. In a conditional, what parts are the conclusion and the hypothesis?

If \rightarrow hypothesis
then \rightarrow conclusion

Part B

Properties of Algebra

Directions: Use A–K to name the property demonstrated by the exercises.

- A. Associative Property
- B. Commutative Property
- C. Distributive Property
- D. Reflexive Property
- E. Symmetric Property
- F. Transitive Property
- G. Substitution Property
- H. Addition Property of Equality
- I. Subtraction Property of Equality
- J. Multiplication Property of Equality
- K. Division Property of Equality

1. $6x^2 + x = x(6x + 1)$

C

2. $(m\angle 1 + m\angle 2) + m\angle 3 =$
 $m\angle 1 + (m\angle 2 + m\angle 3)$

A

3. $(m\angle 1 + m\angle 2) + m\angle 3 =$
 $(m\angle 2 + m\angle 1) + m\angle 3$

B

4. If $AB + BC = AC$, then $BC + AB = AC$

B

5. $2(AB)(MN) = (AB)(2)(MN)$

B

6. If $m\angle A = m\angle B$ and $m\angle B = 35^\circ$,
then $m\angle A = 35^\circ$

G

7. If $AB + BC = AC$, then $AC = AB + BC$

E

8. If $m\angle P - m\angle T = 75^\circ$ and $m\angle P = 115^\circ$,
then $115^\circ - m\angle T = 75^\circ$

G

9. $BD = BD$

D

10. If $PQ + QR = MN$ and $MN = ST + UV$,
then $PQ + QR = ST + UV$

G or F

11. If $AB + BC = AC$ and $BC = 15$ cm, then
 $AB + 15 = AC$

G

12. $m\angle ABC = m\angle ABC$

D

13. $AB + BC = PQ$, therefore
 $AB = PQ - BC$

I

14. $m\angle A = m\angle B$, therefore
 $m\angle A + 90^\circ = m\angle B + 90^\circ$

H

15. $2(PQ) = 16$ m, therefore $PQ = 8$ m

K

16. $m\angle P = \frac{1}{2}m\angle Q$, therefore
 $2m\angle P = m\angle Q$

J

17. If $m\angle 1 + m\angle 2 + m\angle 3 + m\angle 4 = 360^\circ$,
and $m\angle 2 + m\angle 3 = 180^\circ$, then
 $m\angle 1 + m\angle 4 = 180^\circ$

I

18. If $m\angle P - 86^\circ = 150^\circ$, then $m\angle P = 236^\circ$.

H

In exercises 19-25. Write the reason for each step.

Statements	Reasons
$4x - 2(4 - 6x) + 6 = 22 + 8x$	Given
19. $4x - 8 + 12x + 6 = 22 + 8x$	Distributive Property
20. $4x + 12x - 8 + 6 = 22 + 8x$	Commutative Property
21. $(4 + 12)x - 8 + 6 = 22 + 8x$	Reverse Distributive Property
22. $16x - 2 = 22 + 8x$	Simplifying
23. $8x - 2 = 22$	Subtraction Property of Equality
24. $8x = 24$	Addition Property of Equality
25. $x = 3$	Division Property of Equality

Final Review – Chapter 2 - Homework

Part A

Match each statement from 1 to 8 with a letter from the box.

a. Rhombus	d. Parallelogram	g. Altitude	j. Supplementary
b. Rectangle	e. Angle bisector	h. Perpendicular bisector	k. Complementary
c. Trapezoid	f. Median	i. Parallel	

- | | |
|---|--|
| <p>1. <u>j</u> Two angles whose measures add up to 180°</p> <p>2. <u>i</u> Two lines in the same plane that do not intersect</p> <p>3. <u>b</u> An equiangular parallelogram</p> <p>4. <u>c</u> A quadrilateral with exactly one pair of parallel sides</p> <p>5. <u>a</u> An equilateral quadrilateral</p> | <p>6. <u>f</u> A segment in a triangle connecting a vertex with the midpoint of the opposite side</p> <p>7. <u>g</u> A segment in a triangle from a vertex perpendicular to the line containing the opposite side</p> <p>8. <u>e</u> A segment in a triangle from a vertex to the opposite side dividing the angle into two parts of equal measure</p> |
|---|--|

Part B

Identify each statement as true or false.

1. The three basic building blocks (undefined terms) of geometry are lines, rays, and segments.	F
2. "The ray from R through points P or Q " is written in symbolic form as RQ or RP .	F
3. "The line segment from P to Q " is written in symbolic form as PQ .	F
4. The length of line segment PQ is written in symbolic form as PQ .	T
5. The vertex of angle ABC is point A .	F
6. An obtuse angle is an angle whose measure is more than 180° .	F
7. An isosceles triangle is a triangle with no two sides the same length.	F
8. A diagonal is a line segment in a polygon connecting any two vertices.	F
9. If AB intersects CD at point P , then $\angle APC$ and $\angle APD$ are a pair of vertical angles.	F
10. If the sum of the measures of two angles is 90° , then the two angles are supplementary.	F
11. If two lines do not intersect, then they are parallel.	F
12. An angle bisector in an acute triangle is a line segment connecting a vertex with the midpoint of the opposite side.	F
13. A trapezoid is a quadrilateral having exactly one pair of equal length sides.	F
14. A parallelogram is a quadrilateral with all the angles equal in measure.	F
15. A polygon with eight sides is called a hexagon.	F

Part C

Match each term with its lettered figure below.

	<p>obtuse scalene triangle <u> i </u></p> <p>isosceles right triangle <u> b </u></p> <p>hexagon <u> d </u></p> <p>prism <u> g </u></p> <p>pyramid <u> h </u></p>
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Part D

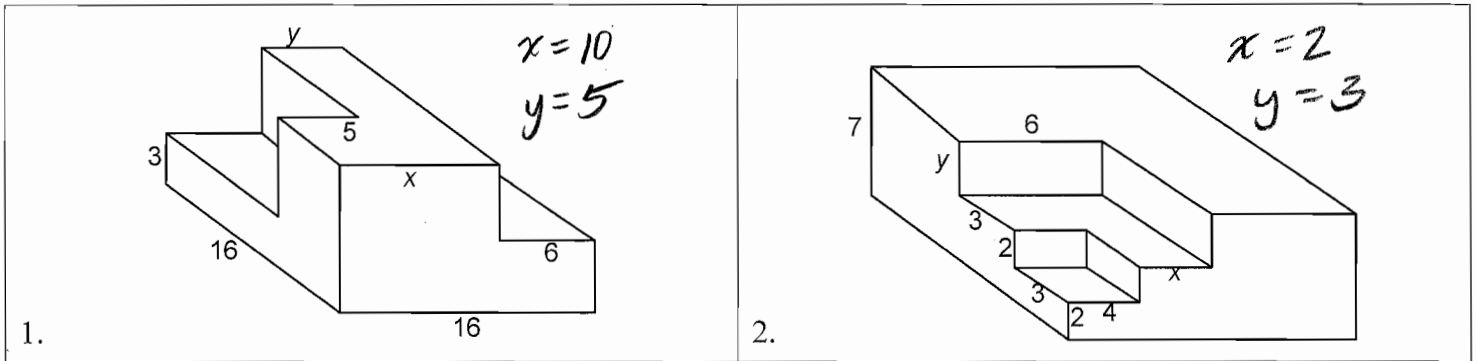
Sketch, mark, and label each figure.

<p>1. Trapezoid $ZOID$ with $ZO \parallel ID$ and $ZO = ZO$</p>	<p>2. Isosceles obtuse $\triangle ABC$ with $AB = BC$ and median AM</p>
<p>3. A hexagon $HEXAGN$ with vertices N, E, and A joined to form isosceles $\triangle NEA$ such that $NE \cong NA$</p>	<p>4. A pyramid with a pentagon base</p>

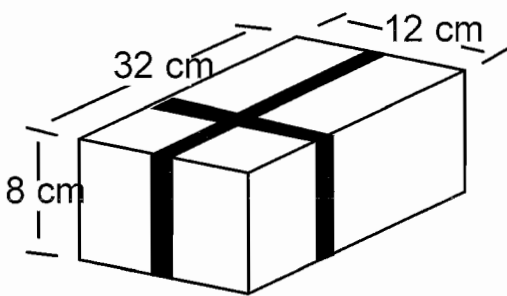
Part E

1. a. Write the converse of the statement: "If the quadrilateral is a square, then it is equiangular."
If a quadrilateral is equiangular, then it is a square.
- b. Determine if the converse is true or false. If it is false, give a counterexample.
False, A rectangle.

In Problems 2 and 3, each angle on each polygonal side of the block is a right angle. Find the length's x and y in each figure.



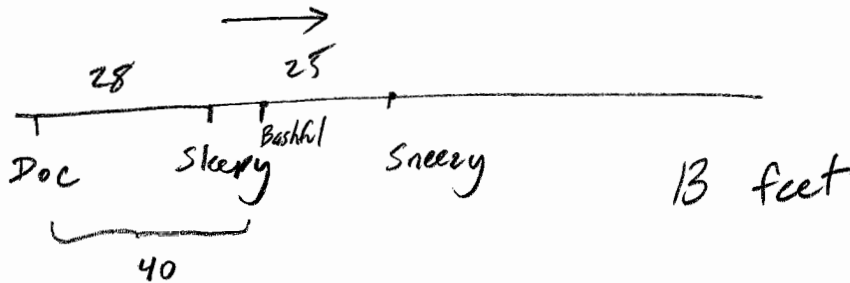
3. The box on the right is wrapped with two strips of ribbon as shown. What length of ribbon was needed to decorate the box?



12 32
12 32
8 8
8 8

120cm

4. At one point in a race, Sleepy was 25 feet behind Sneezzy and 28 feet ahead of Doc. Doc was trailing Bashful by 40 feet. Sneezzy was ahead of Bashful by how many feet?



Part F

1. In a plane, the locus of points b units from a fixed point A is a:

- a) circle
- b) line
- c) point
- d) ray

2. The locus of points equidistant from two parallel planes is:

- a) a point
- b) a line
- c) one plane
- d) two planes

Final Review – Chapter 4 – Homework

Identify each statement as true or false.

1. F The slope of a line depends on which points on the line you choose to calculate it.
2. F If two parallel lines are cut by a transversal then the alternate interior angles are supplementary.
3. F If m is the slope of \overline{AB} , then the slope of the perpendicular bisector of \overline{AB} is $-m$.
4. F If any two lines are cut by a transversal then the alternate exterior angles are congruent.
5. T If a graph has slope q and y -intercept $(0, r)$ then the equation for the line is $y = qx + r$.
6. F If lines $x, y,$ and z are in the same plane, and $x \perp y$ and $y \perp z$, then $x \perp z$.
7. T If two lines are cut by a transversal forming pairs of congruent corresponding angles, congruent alternate interior angles, or congruent alternate exterior angles, then the lines are parallel.
8. T If two distinct lines on a graph have the same slope then they are parallel.
9. T If m is the slope of \overline{AB} , then the slope of the perpendicular bisector of \overline{AB} is $\frac{-1}{m}$.
10. T If lines $x, y,$ and z are in the same plane, and $x \perp y$ and $y \perp z$, then $x \parallel z$.
11. F You can determine the slope of a segment if you are given only the coordinates of its midpoint.
12. The measure of an angle is twice the measure of its complement. Find the measures of the two angles.
 - a. $90^\circ, 180^\circ$
 - b. $45^\circ, 90^\circ$
 - c. $30^\circ, 60^\circ$
 - d. $60^\circ, 120^\circ$

$2x + x = 90$
 $3x = 90$
 $x = 30$
13. Find the midpoint of the segment connecting points $(3,5)$ and $(-1, 9)$

$x_m = \frac{3 + (-1)}{2} = 1$
 $y_m = \frac{5 + 9}{2} = 7$

$(1, 7)$

14. Write an equation of any line perpendicular to the line:

$$15x - 5y = -20$$

$$-5y = -15x - 20$$

$$y = 3x + 4$$

$$y = -\frac{1}{3}x + b$$

15. Write the equation of the line through point B(4,7) and perpendicular to the line:

$$4x + 2y = 8$$

$$2y = -4x + 8$$

$$y = -2x + 4$$

$$y = \frac{1}{2}x + b$$

$$7 = \frac{1}{2}(4) + b$$

$$7 = 2 + b \quad b = 5$$

$$y = \frac{1}{2}x + 5$$

16. Determine the slope and y-intercept of the following line.

$$4x + 6y = -12$$

$$m = -\frac{2}{3}$$

$$y\text{-int} = (0, 2)$$

$$6y = -4x - 12$$

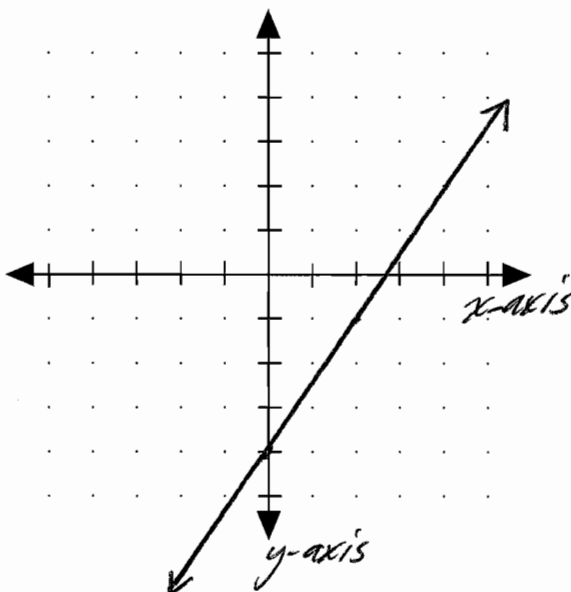
$$y = -\frac{2}{3}x - 2$$

17. Graph the linear equation. Label your axis.

$$3x - 2y = 8$$

$$-2y = -3x + 8$$

$$y = \frac{3}{2}x - 4$$



18. Determine if $\overline{AB} \perp \overline{CD}$ or not? Show why(not).

$$A(2, 5)$$

$$B(4, 8)$$

$$C(3, 2)$$

$$D(-9, 10)$$

$$\frac{8-5}{4-2} = \frac{3}{2}$$

$$\frac{10-2}{-9-3} = \frac{8}{-12} = -\frac{2}{3}$$

Yes

19. One endpoint of \overline{AB} is A(-1, 9). The midpoint is (-3, 6). Find the coordinates of the other endpoint.

$$x_m = \frac{x_1 + x_2}{2}$$

$$y_m = \frac{y_1 + y_2}{2}$$

$$-3 = \frac{-1 + x_2}{2}$$

$$6 = \frac{9 + y_2}{2}$$

$$-6 = -1 + x_2$$

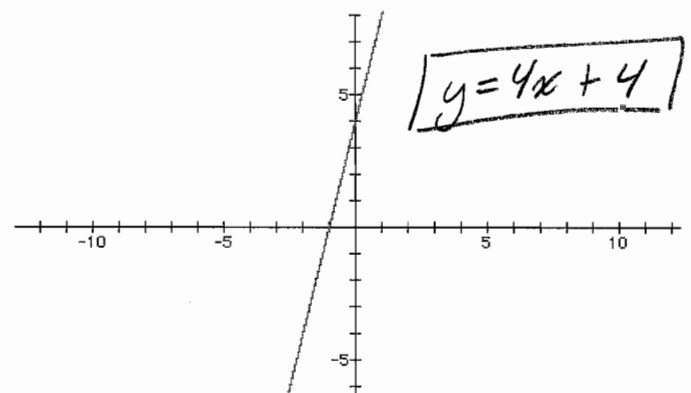
$$12 = 9 + y_2$$

$$-5 = x_2$$

$$3 = y_2$$

(-5, 3)

20. After examining the graph below, write the equation of the line.



21. Write the equation of the line which is the **perpendicular bisector** of \overline{AB}

A(9,-1) and B(1,7).

Midpoint (5, 3)

$$\text{Slope}_{AB} = \frac{7 - (-1)}{1 - 9} = \frac{8}{-8} = -1$$

Slope $_{\perp}$ = 1

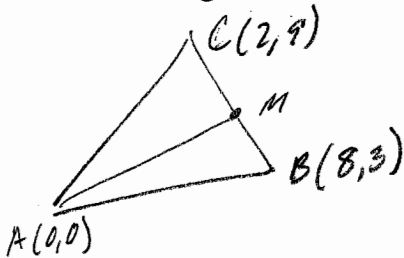
$$y = x + b$$

$$3 = 5 + b$$

$$-2 = b$$

$$\boxed{y = x - 2}$$

22. The coordinates of $\triangle ABC$ are A(0,0), B(8,3), and C(2,9). Find the equation of the line containing median \overline{AM} .



Midpoint CB = (5, 6)

$$\text{Slope}_{AM} = \frac{5 - 0}{6 - 0} = \frac{5}{6}$$

$$\boxed{y = \frac{5}{6}x}$$

23. Find the intersection of the following linear equations:

$$4x + 5y = -7 \quad \text{and} \quad 2x - 3y = 13$$

$$\begin{array}{r} 4x + 5y = -7 \\ 2x - 3y = 13 \end{array} \rightarrow \begin{array}{r} 4x + 5y = -7 \\ -4x + 6y = -26 \\ \hline 11y = -33 \\ y = -3 \end{array}$$

$$2x - 3(-3) = 13$$

$$2x + 9 = 13$$

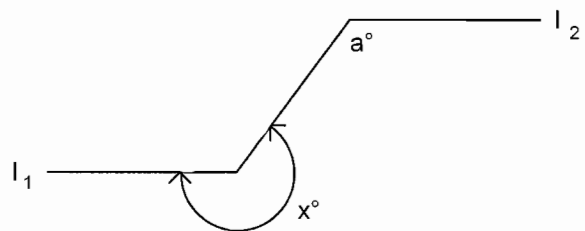
$$2x = 4$$

$$x = 2$$

$$\boxed{(2, -3)}$$

24. Find y if the line thru (7,8) and (3,y) has a slope of $\frac{3}{2}$

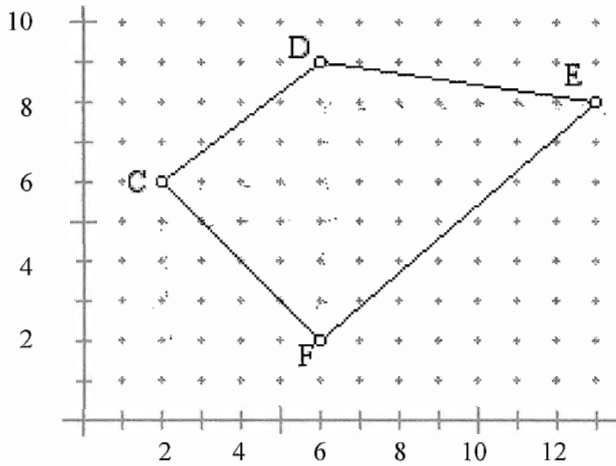
$$\begin{array}{l} \frac{y - 8}{3 - 7} = \frac{3}{2} \\ 2(y - 8) = -12 \\ y - 8 = -6 \\ \boxed{y = 2} \end{array}$$



25. In the figure above, if $l_1 \parallel l_2$, what is the value of x in terms of a?

- a. $180 - a$ b. $180 + a$
 c. $270 - a$ d. $360 + a$
 e. $360 - a$

26. Determine whether the figure is a trapezoid, a parallelogram, a rectangle or an ordinary quadrilateral. Explain how you know.



Slope_{CD} = $\frac{3}{4}$

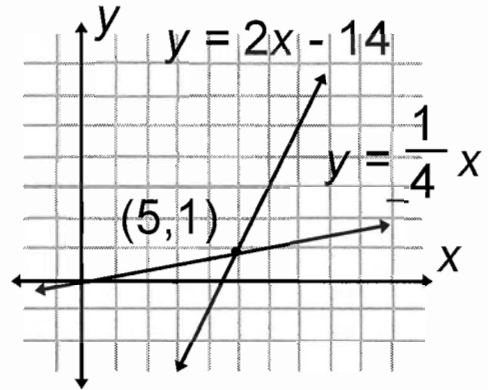
Slope_{FE} = $\frac{6}{7}$

Slope_{CF} = -1

Slope_{DE} = $-\frac{1}{7}$

Ordinary
Quadrilateral

27. What's wrong with this picture?

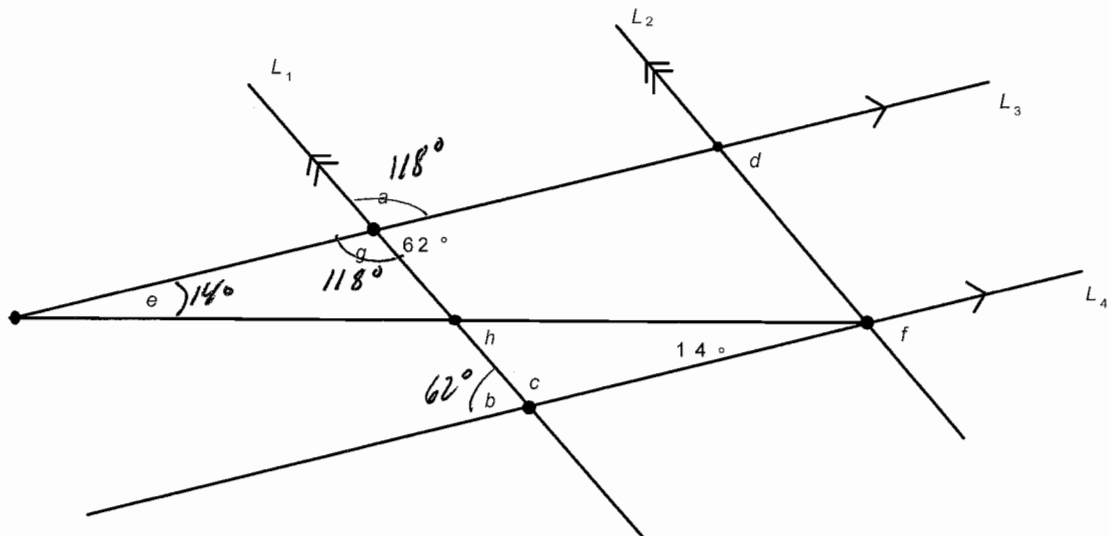


(5,1) is not
the point of
intersection

28. Find the measure of each lettered angle a-h in the figure below. $l_1 \parallel l_2$ and $l_3 \parallel l_4$

a = 118° b = 62° c = 118° d = 62°

e = 14° f = 62° g = 118° h = 48°



29. State the reasons to justify the following: (1 pt each)

$$\text{Equation: } x - 2 = \frac{2x + 8}{5}$$

a) $x - 2 = \frac{2x + 8}{5}$

Given

b) $5(x - 2) = 2x + 8$

Multiplication Property of =

c) $5x - 10 = 2x + 8$

Distributive Property

d) $3x - 10 = 8$

Sub. Property of =

e) $3x = 18$

Add. Property of =

f) $x = 6$

Division Prop of =

30. Complete the following proof: (1 pt each)

Given: $m\angle 4 + m\angle 6 = 180$

Prove: $m\angle 5 = m\angle 6$



a) $m\angle 4 + m\angle 6 = 180$

Given

b) $m\angle 4 + m\angle 5 = 180$

Linear Pair

c) $m\angle 4 + m\angle 5 = m\angle 4 + m\angle 6$

Substitution

d) $m\angle 4 = m\angle 4$

Reflexive

e) $m\angle 5 = m\angle 6$

Sub. Prop of Equality

Name Key

Final Review – Chapter 5

- 1) Match the following statements with the name of the conjectures.

H An equilateral triangle is equiangular, and conversely, and equiangular triangle is equilateral.

E The measure of an exterior angle of a triangle is equal to the sum of the measures of the remote interior angles.

G If a triangle has two congruent angles, then it is an isosceles triangle.

I In an isosceles triangle, the bisector of the vertex angle is also the altitude and median to the base

A The sum of the measures of the angles in a triangle are 180 degrees.

D In a triangle, the longest side is opposite the angle with greatest measure, and the shortest side is opposite the angle with the least measure.

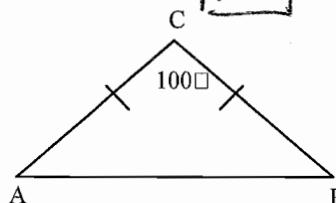
C The sum of the lengths of any two sides of a triangle is greater than the length of the third side

F If a triangle is isosceles, then its base angles are congruent.

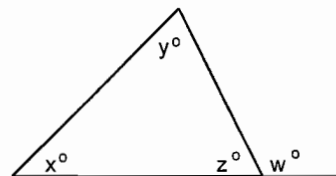
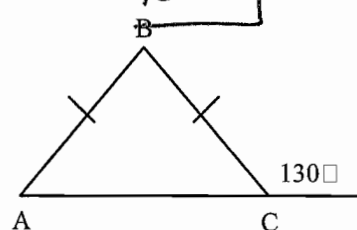
B If two angles of one triangle are equal in measure to two angles of another triangle, then the third angle in each triangle is equal in measure to the third angle in the other triangle.

- A) Triangle Sum Conjecture
B) Third Angle Conjecture
C) Triangle Inequality Conjecture
D) Side-Angle Inequality Conjecture
E) Triangle Exterior Angle Conjecture
F) Isosceles Triangle Conjecture
G) Converse of the Isosceles Triangle Conjecture
H) Equilateral Triangle Conjecture
I) Vertex Angle Bisector Conjecture

2) $m \angle CAB = 40^\circ$

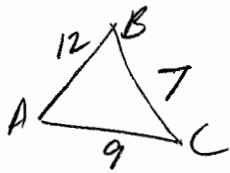


3) $m \angle BAC = 50^\circ$



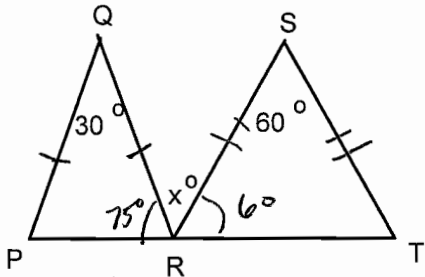
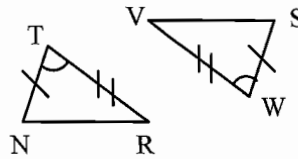
- 4) In the figure above, $x + y = 110^\circ$. What is the value of $w + x + y + z = ?$
- a. 290° b. 250° c. 235° d. 220°
e. It cannot be determined given info.

- 5) In $\triangle ABC$, $AB = 12$, $BC = 7$, and $AC = 9$. The largest angle in $\triangle ABC$ is



$\angle C$

- 9) $\triangle NTR \cong \triangle SWV$ SAS



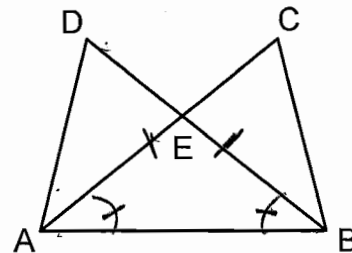
- 10) $\overline{AC} \cong \overline{BD}$ $\angle CAB \cong \angle DBA$
 $\triangle ADB \cong \triangle$ BCA

Which conjecture supports the congruence statement?

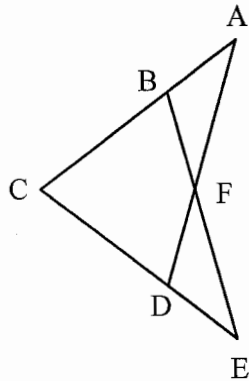
SAS

- 6) In the figure above, if $PQ = QR$, $RS = ST$, and PRT is a line segment, then $x = ?$

- a. 35° b. 45° c. 55° d. 65° e. 75°



Given the particular congruence shown, list the corresponding sides of the two triangles named.



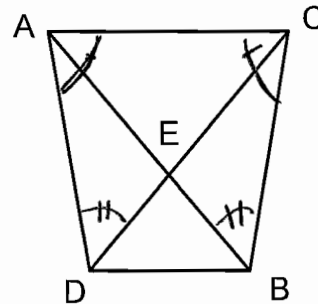
$\overline{AB} \cong \overline{ED}$
 $\overline{BF} \cong \overline{DF}$
 $\overline{AF} \cong \overline{EF}$

- 11) $\angle CAD \cong \angle ACB$; $\angle CDA \cong \angle ABC$

Which conjecture tells you that

$\triangle ACD \cong \triangle CAB$?

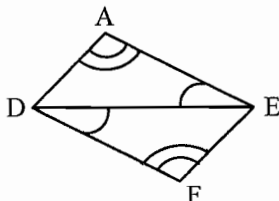
AAS



- 7) $\triangle ABF \cong \triangle EDF$

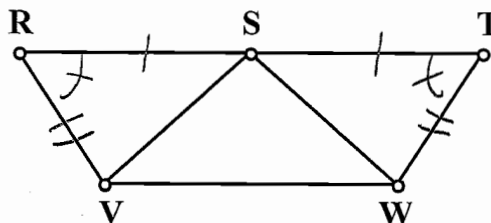
Using the given information, state the reason why each pair of triangles are **congruent**.

- 8) $\triangle ADE \cong \triangle FED$ AAS



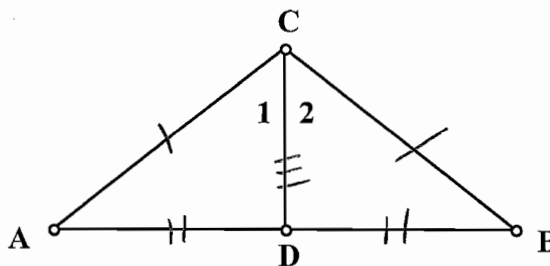
Given: $\angle R \cong \angle T$
 $\overline{RV} \cong \overline{TW}$
 S is midpoint of \overline{RT}

Prove: $\triangle SVW$ is isosceles



Statements	Reasons
12. S is midpoint of \overline{RT}	12. Given
13. $\overline{RS} \cong \overline{TS}$	13. <u>Definition of a midpoint</u>
14. $\angle R \cong \angle T$	14. Given
15. $\overline{RV} \cong \overline{TW}$	15. Given
16. $\triangle VRS \cong \triangle WTS$	16. <u>SAS</u>
17. $\overline{VS} \cong \overline{WS}$	17. <u>CPCTC</u>
18. $\triangle SVW$ is isosceles \triangle	18. <u>Definition of Iso. \triangle</u>

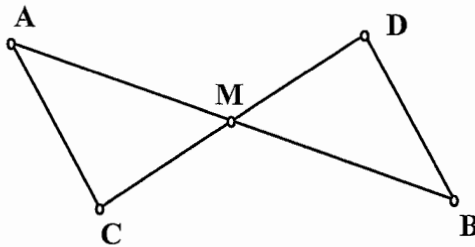
Given: Isosceles $\triangle ABC$
 with $\overline{AC} \cong \overline{BC}$
 \overline{CD} a median to the base
 Prove: \overline{CD} is the angle bisector of $\angle ACB$



19. $\overline{AC} \cong \overline{BC}$	19. Given
20. \overline{CD} a median to the base	20. Given
21. D is the midpoint of \overline{AB}	21. <u>Definition of a Median</u>
22. <u>$\overline{AD} \cong \overline{DB}$</u>	22. Definition of Midpoint
23. $\overline{CD} \cong \overline{CD}$	23. <u>Reflexive</u>
24. $\triangle ADC \cong \triangle BDC$	24. <u>SSS</u>
25. $\angle 1 \cong \angle 2$	25. <u>CPCTC</u>
26. \overline{CD} is the angle bisector of $\angle ACB$	26. <u>Def. of Ang. Bisector</u>

Given: M is the midpoint of both \overline{AB} and \overline{CD}

Prove: $\overline{AC} \cong \overline{BD}$



Statements

Reasons

27. M is the midpoint

27. Given

of both \overline{AB} and \overline{CD}

28. $\overline{AM} \cong \overline{MB}, \overline{CM} \cong \overline{MD}$

28. Definition of Midpoint

29. $\angle AMC \cong \angle BMD$

29. Vertical Angles

30. $\triangle AMC \cong \triangle BMD$

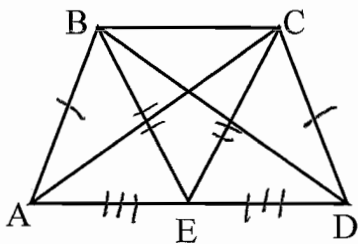
30. SAS

31. $\overline{AC} \cong \overline{BD}$

31. CPCTC

32. Given: $\overline{AB} \cong \overline{DC}$, E is the midpoint of \overline{AD} , $\overline{CE} \cong \overline{BE}$

Prove: $\overline{AC} \cong \overline{DB}$



- ① $AB \cong DC$
- ② E is the midpoint of \overline{AD}
- ③ $\overline{CE} \cong \overline{BE}$
- ④ $\overline{AE} \cong \overline{ED}$
- ⑤ $\triangle ABE \cong \triangle DCE$
- ⑥ $\angle BAE \cong \angle CDE$
- ⑦ $\overline{AD} \cong \overline{AD}$
- ⑧ $\triangle ABD \cong \triangle CDA$
- ⑨ $\overline{AC} \cong \overline{DB}$

- GIVEN
 GIVEN
 GIVEN
 Def. of Midpoint
 SSS
 CPCTC
 Reflexive
 SAS
 CPCTC

Name

Key

Date

Midyear Final Review – Chapters 6

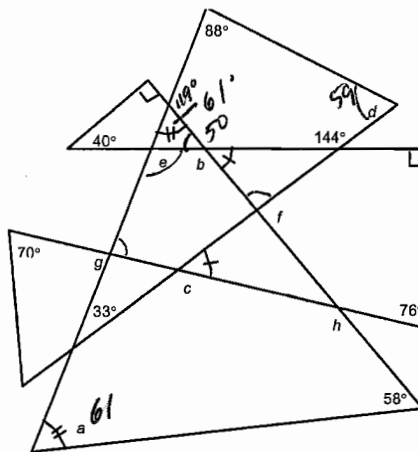
Part A

Complete each statement. *Give an answer besides *square*.

1. In an isosceles triangle, the base angles are —?—.	<i>Congruent</i>
2. The diagonals of a parallelogram —?— each other.	<i>bisect</i>
3. Each angle of a regular decagon measures —?—.	$\frac{(n-2)180}{n}$ <i>144°</i>
4. The length of a midsegment of a trapezoid is the —?— of the lengths of the bases.	<i>average</i>
5. The vertex angles of a kite are —?— by the diagonal.	<i>bisected</i>
6. The consecutive angles of a parallelogram are —?—.	<i>supplementary</i>
7. The length of a midsegment between two sides of a triangle is —?— the length of the third side.	<i>half</i>
8. *The diagonals of a —?— are perpendicular bisectors of each other.	<i>rhombus</i>
9. The opposite angles of a parallelogram are —?—.	<i>Congruent</i>
10. The sum of the measures of the angles of a hexagon is —?—.	<i>720°</i>
11. The midsegment of a trapezoid is —?— to the two bases.	<i>parallel</i>
12. The nonvertex angles of a kite are —?—.	<i>Congruent</i>
13. *The diagonals of a —?— are equal in length.	<i>rectangle</i>
14. The three midsegments of a triangle divide the triangle into —?—.	<i>4 ≅ Δs</i>
15. An equiangular quadrilateral is usually called a —?—.	<i>rectangle</i>

Part B

Determine the measure of each lettered angle in the figure below.



a. <i>61°</i>	c. <i>111°</i>
b. <i>130°</i>	f. <i>86°</i>
e. <i>130°</i>	g. <i>83°</i>
d. <i>59°</i>	h. <i>144°</i>

Part C

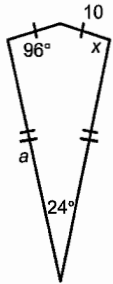
1-3. Give the value for each variable indicated.

1. Perimeter = 64

$a = 22$

$x = 96^\circ$

$y = \text{X}$



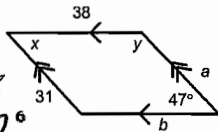
2.

$a = 31$

$b = 38$

$x = 47^\circ$

$y = 133^\circ$



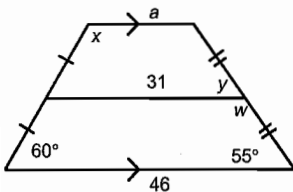
3.

$a = 16$

$w = 125^\circ$

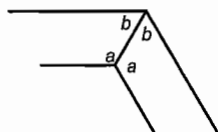
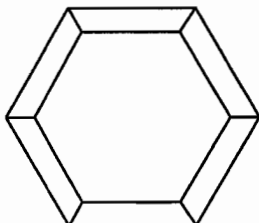
$x = 120^\circ$

$y = 55^\circ$



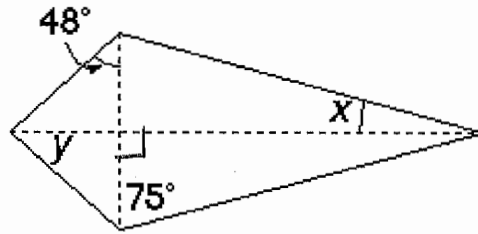
4. A regular hexagonal mirror frame is to be built from strips of 2-inch-wide pine lattice. At what angles a and b should the lattice be cut?

$m\angle a = 120^\circ$ $m\angle b = 60^\circ$

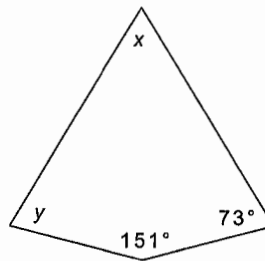


The figures in Problems 5 and 6 are kites. Find x and y for each.

5. $x = 15^\circ$ $y = 42^\circ$



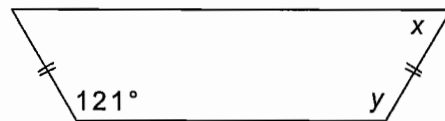
6. $x = 63^\circ$ $y = 73^\circ$



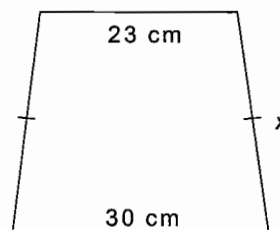
The figures in Problems 7 and 8 are isosceles trapezoids.

Find the missing values

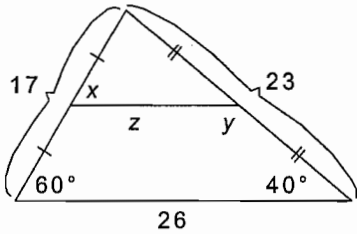
7. $x = 59^\circ$ $y = 121^\circ$



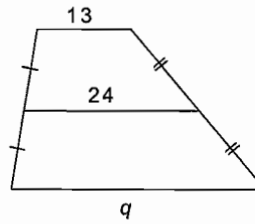
8. Perimeter = 105 cm $x = 26\text{cm}$



9. $x = 60^\circ$ $y = 140^\circ$ $z = 13$



10. The figure is a trapezoid. $q = 35$



Part D

Identify each statement as true or false

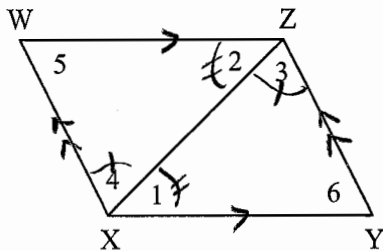
1. A geometric construction uses a protractor and ruler.	F
2. The shortest distance from a point to a line is the distance measured along the perpendicular from the point to the line.	F
3. Every point on a median in a triangle is equally distant from the sides of an angle.	F
4. The circumcenter is equally distant from all three sides of a triangle.	F
5. The centroid of a triangle divides each median into two parts, so that the shortest part is half the largest part.	T
6. It is not possible to construct an angle of 7.5° using a compass and a straight edge.	F
7. A trapezoid is a quadrilateral having exactly one pair of parallel sides.	T
8. In a right triangle the circumcenter is located at the midpoint of the side opposite the right angle.	T
9. If a point is equally distant from the endpoints of a segment, then it must be the midpoint of the segment.	F
10. The incenter of a triangle is also the "center of mass" of the triangle.	F

Part E

I. Complete the following proof

Given Quad XYZW is a parallelogram

Prove: Opposite angles are congruent

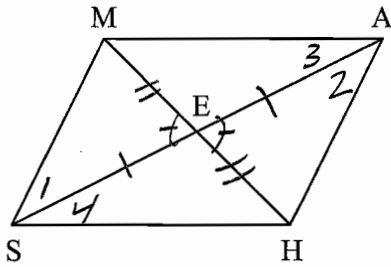


<u>Statements</u>	<u>Reasons</u>
1. Quad XYZW is a parallelogram	1. Given
2. $\overline{WX} \parallel \overline{ZY}$	2. <u>Def. of Ilgram</u>
3. $\angle 3 \cong \angle 4$	3. <u>AIA</u>
4. $\overline{WZ} \parallel \overline{XY}$	4. <u>Def. of Ilgram</u>
5. $\angle 1 \cong \angle 2$	5. <u>AIA</u>
6. $\overline{ZX} \cong \overline{ZY}$	6. <u>Reflexive</u>
7. <u>$\triangle WZX \cong \triangle YXZ$</u>	7. <u>ASA</u>
8. <u>$\angle 5 \cong \angle 6$</u>	8. <u>CPCTC</u>

II. Complete the following proof

Given: \overline{SA} and \overline{MH} bisect each other

Prove: Quad MAHS is a Parallelogram

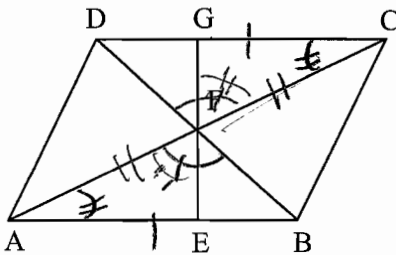


<u>Statements</u>	<u>Reasons</u>
1. \overline{SA} and \overline{MH} bisect each other	1. Given
2. E is the midpoint of both \overline{SA} and \overline{MH}	2. <u>Def of bisector</u>
3. $SE = EA$ $ME = EH$	3. <u>Def of midpoint</u>
4. $\angle MEA \cong \angle SEH$	4. <u>Vertical Angles</u>
5. $\triangle AME \cong \triangle SHE$	5. <u>SAS</u>
6. $\angle 1 \cong \angle 2$	6. <u>CPTC</u>
7. $\overline{MS} \parallel \overline{HA}$	7. <u>Conv. AIA</u>
8. $\angle MCA \cong \angle HES$	8. <u>Vertical Angles</u>
9. $\triangle MEA \cong \triangle HES$	9. <u>SAS</u>
10. $\angle 3 = \angle 4$	10. <u>CPTC</u>
11. $\overline{MA} \parallel \overline{HS}$	11. <u>Conv. AIA</u>
12. Quad MAHS is a <u>llgram</u>	12. <u>Def. of llgram</u>

III. Complete the following proof

Given: Parallelogram ABCD

Prove: $\overline{EF} \cong \overline{FG}$

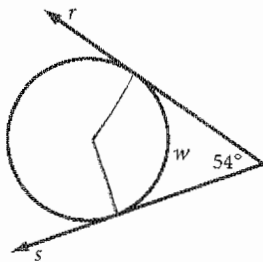


<u>Statements</u>	<u>Reasons</u>
1. Parallelogram ABCD	1. Given
2. $\overline{AB} \cong \overline{CD}$	2. <u>Prop of llgram</u>
3. $\angle DFC \cong \angle BFA$	3. <u>Vertical Angles</u>
4. $\overline{CD} \parallel \overline{AB}$	4. <u>Prop of llgram</u>
5. $\angle CAB \cong \angle DCA$	5. <u>AIA</u>
6. $\triangle CDF \cong \triangle ABF$	6. <u>AAS</u>
7. $\overline{CF} \cong \overline{AF}$	7. <u>CPTC</u>
8. $\angle GFC \cong \angle AFE$	8. <u>Vertical Angles</u>
9. $\triangle GFC \cong \triangle EFA$	9. <u>ASA</u>
10. $\overline{EF} \cong \overline{FG}$	10. <u>CPTC</u>

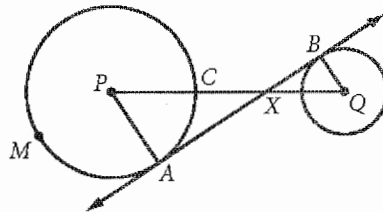
Final Review – Chapter 7

Part A

1. Rays r and s are tangents. $w = \underline{126^\circ}$



2. \overline{AB} is tangent to both circles and $m\widehat{AMC} = 295^\circ$. $m\angle BQX = \underline{65^\circ}$



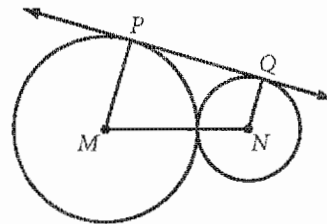
3. \overline{PQ} is tangent to two externally tangent noncongruent circles, M and N .

a. What kind of quadrilateral is $MNQP$? Explain your reasoning.

Trapezoid

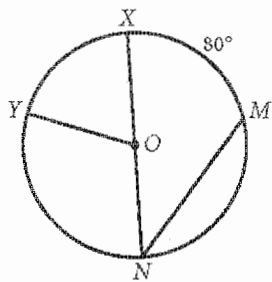
b. If circles M and N are congruent, what is $MNQP$? Explain why.

Rectangle

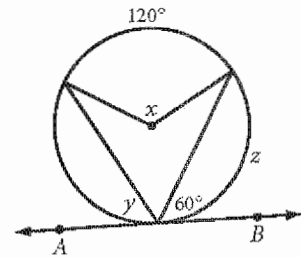


Part B

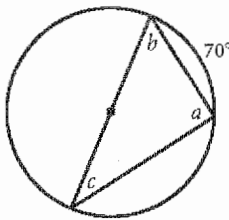
1. $m\widehat{XM} = 80^\circ$
 $m\angle XNM = \underline{40^\circ}$
 $m\widehat{XN} = \underline{180^\circ}$
 $m\widehat{MN} = \underline{100^\circ}$



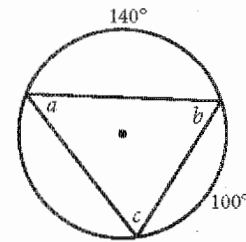
2. \overline{AB} is a tangent.
 $x = \underline{120^\circ}$
 $y = \underline{60^\circ}$
 $z = \underline{120^\circ}$



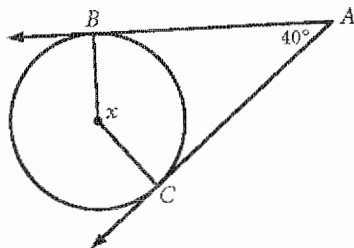
3. $a = \underline{90^\circ}$
 $b = \underline{55^\circ}$
 $c = \underline{35^\circ}$



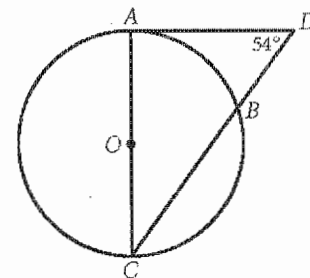
4. $a = \underline{50^\circ}$
 $b = \underline{60^\circ}$
 $c = \underline{70^\circ}$



5. \overline{AB} and \overline{AC} are tangents.
 $x = \underline{140^\circ}$



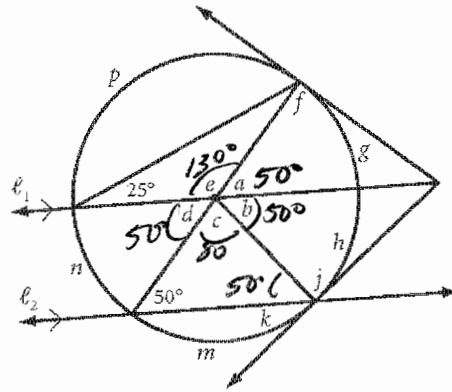
6. \overline{AD} is a tangent. \overline{AC} is a diameter.
 $m\angle A = \underline{90^\circ}$
 $m\widehat{AB} = \underline{72^\circ}$
 $m\angle C = \underline{36^\circ}$
 $m\widehat{CB} = \underline{108^\circ}$



7.

Find the lettered angle and arc measures.

- | | | |
|-----------------|-----------------|----------------|
| $a = 50^\circ$ | $b = 50^\circ$ | $c = 80^\circ$ |
| $d = 50^\circ$ | $e = 130^\circ$ | $f = 90^\circ$ |
| $g = 50^\circ$ | $h = 50^\circ$ | $j = 90^\circ$ |
| $k = 40^\circ$ | $m = 80^\circ$ | $n = 50^\circ$ |
| $p = 130^\circ$ | | |



Part C

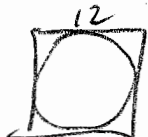
In Exercises 1–7, leave your answers in terms of π .

- If $r = 10.5$ cm, find C . 21π cm
- If $C = 25\pi$ cm, find r . 12.5 cm
- If $C = 9.6\pi$ cm, find d . 9.6 cm
- If $d = 12$ cm, find C . 12π cm
- What is the circumference of a circle whose radius is 30 cm? 60π cm
- What is the diameter of a circle whose circumference is 24π cm? 12 cm
- A square with sides that measure 2 cm is inscribed in a circle. Find the circumference of the circle. $2\sqrt{2}\pi$ cm



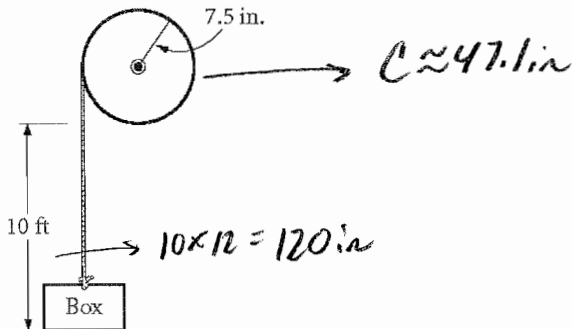
In Exercises 8–13, round your answer to the nearest 0.1 unit. Use the symbol \approx to show that your answer is an approximation.

- If $d = 9.6$ cm, find C . ≈ 30.4 cm
- If $r = 8.1$ cm, find C . ≈ 50.9 cm
- If $C = 132$ cm, find d and r . $d \approx 42$ cm, $r \approx 21$ cm
- A dinner plate fits snugly in a square box with perimeter 48 inches. What is the circumference of the plate? $C \approx 37.7$ in



Part D

To use the machine below you turn the crank, which turns the pulley wheel, which winds the rope and lifts the box. Through how many rotations must you turn the crank to lift the box 10 feet?

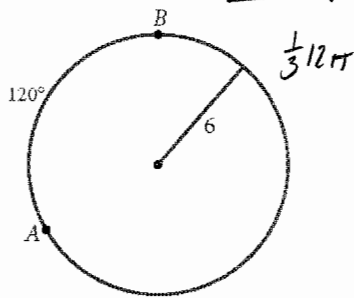


$$47.1 \overline{) 120} \begin{array}{r} 2.547... \\ \underline{94.2} \\ 25.8 \\ \underline{235.5} \\ 22.5 \end{array} \approx 2.5 \text{ times}$$

Part E

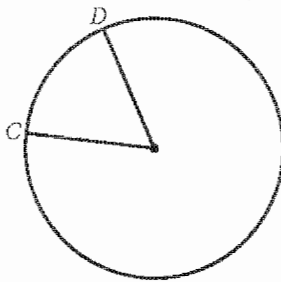
Use your conjectures to solve each problem. Leave your answers in terms of π .

1. Length of \widehat{AB} = $\boxed{4\pi}$



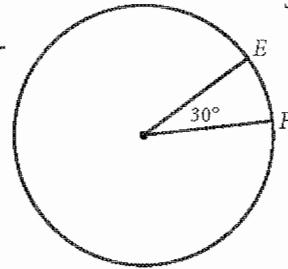
$\frac{1}{3} 12\pi$

2. The circumference is 24π and $m\widehat{CD} = 60^\circ$. Length of \widehat{CD} = $\boxed{4\pi}$



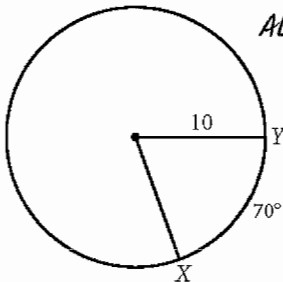
$AL = \frac{1}{6} 24\pi$

3. The length of \widehat{EF} is 5π . Radius = $\boxed{30}$



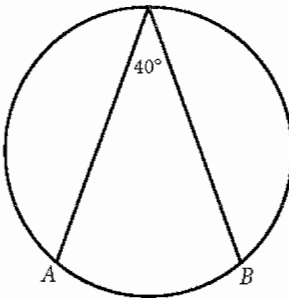
$5\pi = \frac{30}{360} \pi d$
 $60 = d$

4. Length of \widehat{XY} = $\boxed{\frac{35\pi}{9}}$



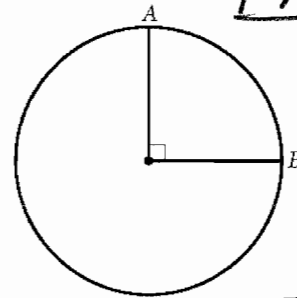
$AL = \frac{28}{360} \cdot 20\pi$

5. The radius is 20. Length of \widehat{AB} = $\boxed{\frac{80\pi}{9}}$

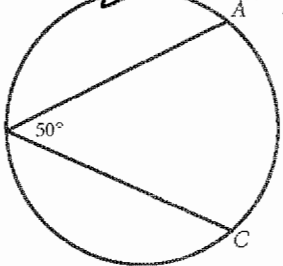


$AL = \frac{80}{360} \cdot 40\pi$

6. The circumference is 25π . Length of \widehat{AB} = $\boxed{\frac{25\pi}{4}}$

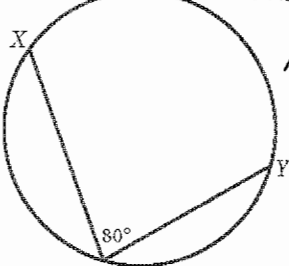


7. The diameter is 40. Length of \widehat{AC} = $\boxed{\frac{100\pi}{9}}$



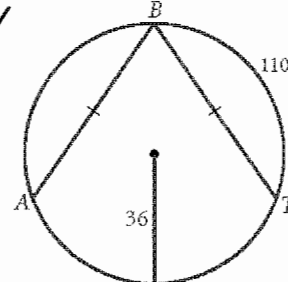
$AL = \frac{100}{360} \cdot 40\pi$

8. The length of \widehat{XY} is 14π . Diameter = $\boxed{\frac{63\pi}{2}}$



$14\pi = \frac{16d}{360} \pi d$
 $14 = \frac{4}{9} d$

9. Length of \widehat{AB} = $\boxed{22\pi}$



$AL = \frac{110}{360} \cdot 72\pi$

10. A circle has an arc with measure 80° and length 88π . What is the diameter of the circle?

$88\pi = \frac{80}{360} \pi d$

$88\pi = \frac{2}{9} \pi d$

$\boxed{396 = d}$

Part F

Match each geometric construction with its figure.

1. Construction of a perpendicular through a point on a line	a	
2. Construction of a line parallel to a given line through a given point not on the line	j	
3. Construction of a perpendicular bisector	e	
4. Construction of an angle bisector	f	
5. Construction of a perpendicular from a point to a line.	b	
6. Construction of an equilateral triangle	d	
7. Construction of an altitude in a triangle	h	
8. Construction of a circumcenter	i	
9. Construction of an incenter	c	
10. Construction of a 45° angle		