UNIT 1: Tools of Geometry

NAME:_____

REVIEW FOR TEST

DATE:_____

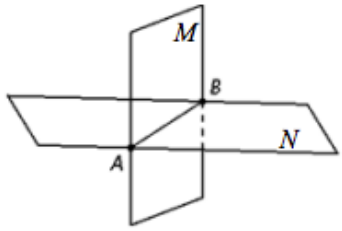
Make sure you know ALL of this vocab!

• acute, right, obtuse straight angle • adjacent angles • angle bisector • collinear points • coplanar • complementary angles • congruent	• distance • line • linear pair • measure of an angle • midpoint • plane • point • postulate	• ray, opposite rays • segment • segment bisector • sides of an angle • space • supplementary angles • vertex of an angle • vertical angles

You will also need to know the following vocabulary as well.

- Linear Pairs
- Angle pairs created by parallel lines (Corresponding, Same-Side Interior/Consecutive Interior, Alternate interior angles, and Alternate Exterior)
- Sum on Interior Angles of a Triangle Theorem

1. Add a point C to the picture so that it is collinear with A and B. Then add a point D so that it is coplanar with plane M.



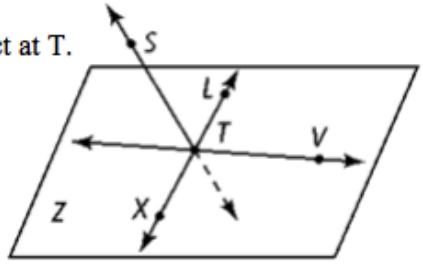
2. Use picture to answer the following:

a. Name the 3 lines that intersect at T.

b. Name two opposite rays.

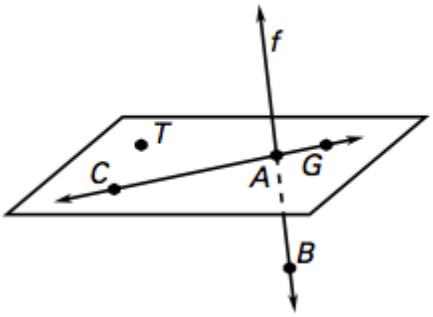
c. Draw $\overrightarrow{XV}$.

d. What is the intersection of plane Z and plane STL?

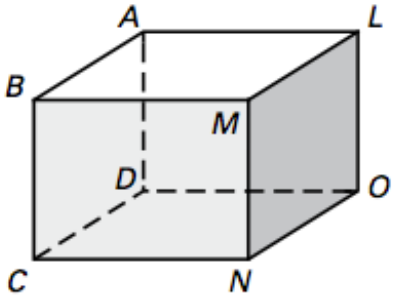


In Exercises 1–3, use the diagram.

1. Give two other names for $\overleftrightarrow{AB}$.
2. Name three points that are collinear.
3. Name a point not coplanar with A, C, and T.

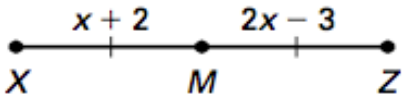


1. Name the intersection of $\overleftrightarrow{AL}$ and $\overleftrightarrow{LO}$.
2. Name the intersection of plane ABC and plane LOD.
3. Name three planes that intersect at point O.
4. Name three lines that intersect at point N.

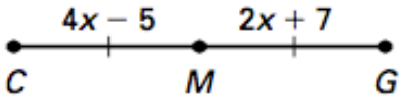


In each diagram, *M* is the midpoint of the segment. Find the indicated length.

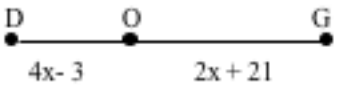
5. *XM*



6. *CG*



7. Given the figure and DG = 60 ft.



x = _____

DO = _____

OG = _____

8. If U is collinear with & between T and B, find the value of x and the lengths of the segments. Draw a picture for each problem with the given information, then write the equation to solve.

TU = 4x-1, UB = 2x -1, TB = 5x

x = _____

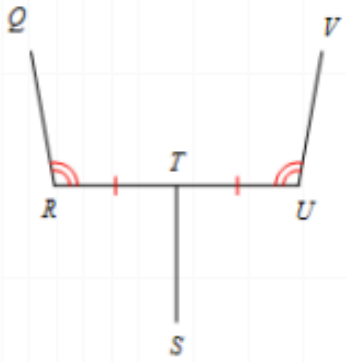
TU = _____

UB = _____

TB = _____

List all information given by the marks on the diagram.

11)



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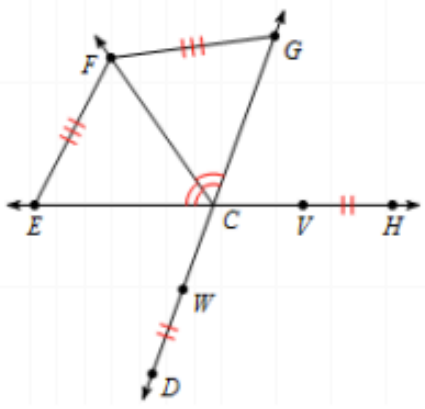
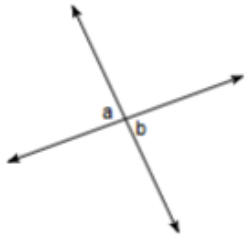


Name the relationship: adjacent, complementary, linear pair (supplementary), or vertical angles

13.



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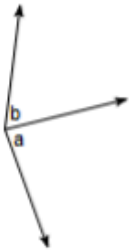

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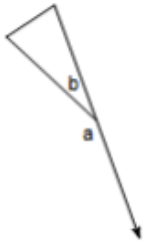

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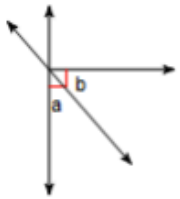
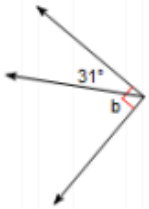


Find the measure of angle b.

17)



18)

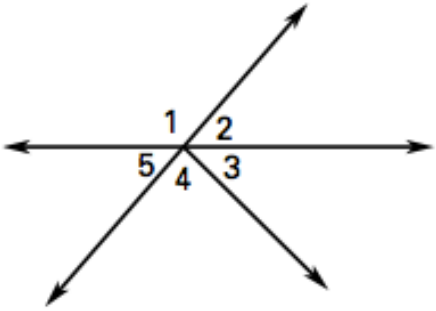
19) In the diagram at the right, *YW* bisects $\angle XYZ$, and $m\angle XYW = 18°$. Find $m\angle XYZ$.

In Exercises 24–26, use the diagram. Tell whether the angles are *vertical angles*, a *linear pair*, or *neither*.

24. $\angle 1$ and $\angle 2$

25. $\angle 2$ and $\angle 5$

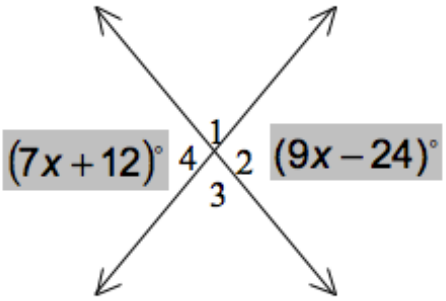
26. $\angle 1$ and $\angle 4$



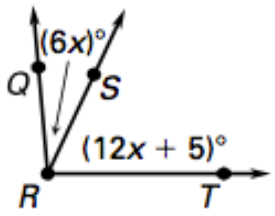
Choose the best answer. It is expected that work is shown to receive full credit.

_____ 27. Find the measure of angle one in the figure below.

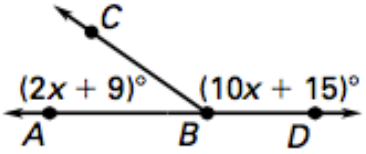
A. 12º
B. 18º
C. 42º
D. 84º
E. 138º



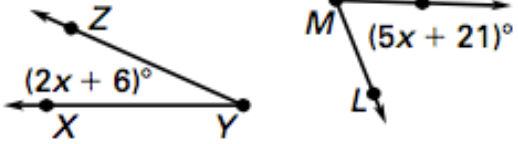
9. Given that $m\angle QRT = 95°$, find $m\angle QRS$ and $m\angle SRT$.



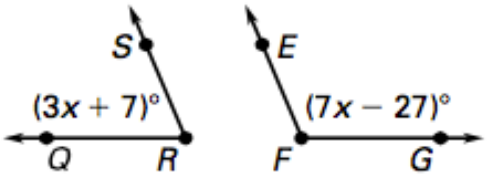
10. Given that $\angle ABD$ is a straight angle, find $m\angle ABC$ and $m\angle CBD$.



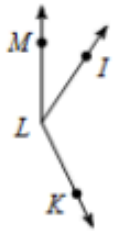
11. Given that $\angle XYZ$ and $\angle LMN$ are complementary angles, find $m\angle XYZ$ and $m\angle LMN$.



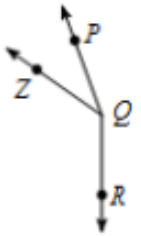
12. Given that $\angle QRS$ and $\angle EFG$ are supplementary angles, find $m\angle QRS$ and $m\angle EFG$.



9) Find $m\angle MLI$ if $m\angle MLK = 154°$, $m\angle MLI = 3x + 13$, and $m\angle ILK = 8 + 16x$.



10) $m\angle ZQP = 5x - 5$, $m\angle RQP = 20x$, and $m\angle RQZ = 125°$. Find $m\angle RQP$.



11)

Two angles form a linear pair. The measure of one angle is four times greater than the measure of the other angle. Find the measure of each angle.

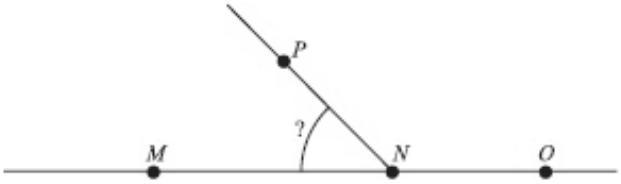
12)

Two angles form a linear pair. The measure of one angle is six more than twice the measure of the other angle. Find the measure of each angle.

13)

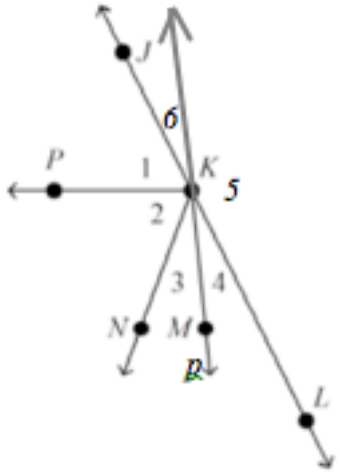
2. In the figure below, M, N, and O are colinear, the measure of angle MNP is $3x°$, and the measure of angle ONP is $6x°$. What is the measure of angle MNP?

F. 18°
G. 20°
H. 60°
J. 120°
K. 162°



14)

In the figure, $\overrightarrow{KJ}$ and $\overrightarrow{KL}$ are opposite rays. $\angle 1 \cong \angle 2$ and $\overrightarrow{KM}$ bisects $\angle NKL$.



If $m\angle 1 = 62°$, find:

a. $m\angle 4$ _____

b. $m\angle 5$ _____

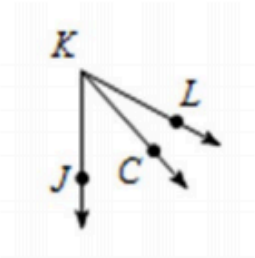
c. $m\angle 6$ _____

2. Proof

Label the picture and fill in the missing reasons in the two column proof.

Given: $m\angle CKJ = 6x$
$m\angle LKJ = 9x - 1$
$m\angle LKC = 20$

Prove: $x = 7$



STATEMENT	REASON
1. $m\angle CKJ = 6x$ $m\angle LKJ = 9x - 1$ $m\angle LKC = 20$	1.
2. $m\angle CKJ + m\angle LKC = m\angle LKJ$	2.
3. $6x + 20 = 9x - 1$	3.
4. $6x = 9x - 21$	4.
5. $-3x = -21$	5.
6. $x = 7$	6.

Some possible reasons:

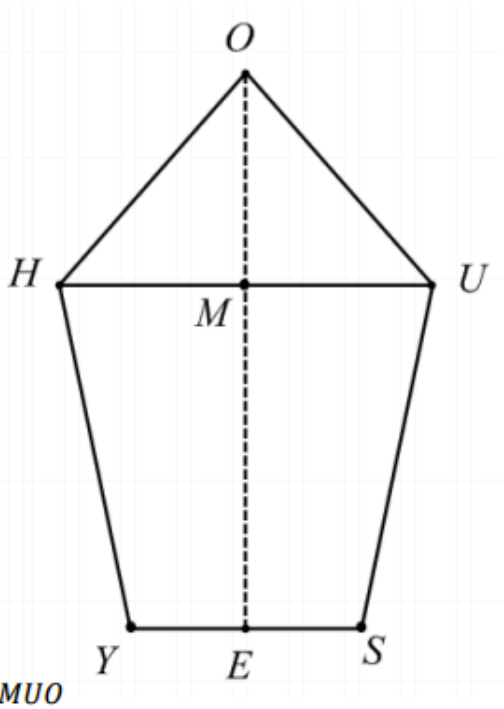
- Given
- Addition Property of Equality
- Subtraction Property of Equality
- Multiplication Property of Equality
- Division Property of Equality
- Substitution
- Distributive Property
- Combine like terms
- Definition of _____
- _____ Postulate
- _____ Theorem

3. Geometric Shape

Mr.Sullivan's dream home is in the shape of a pentagon. Help him answer the questions below.

Mark the picture with the following.

a. $\overline{HY} \cong \overline{US}$
b. $\overline{OE}$ is the bisector of $\overline{HU}$
c. $\angle HMO$ is a right angle
d. E is the midpoint of $\overline{YS}$
e. $\overline{OH} \cong \overline{OU}$
f. $\angle OHU \cong \angle MUO$

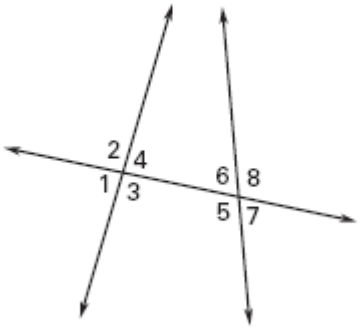


Use the info to find the following.

g. Given $YE = 4x + 3$ and $YS = 39$, find x.

h. Given $m\angle OHU = 4x + 3$ and $m\angle MUO = 5x - 9$, find x and $m\angle MUO$

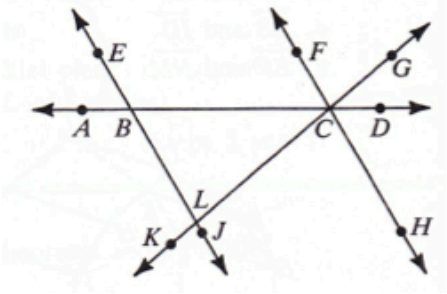
For #1-6, use the diagram below. Identify the pairs of angles as *corresponding, alternate interior, alternate exterior, consecutive (Same-Side) interior, vertical angles, or linear pair.*



1. $\angle 1$ and $\angle 8$ — 1. _____
2. $\angle 4$ and $\angle 5$ — 2. _____
3. $\angle 4$ and $\angle 6$ — 3. _____
4. $\angle 2$ and $\angle 3$ — 4. _____
5. $\angle 3$ and $\angle 7$ — 5. _____
6. $\angle 2$ and $\angle 7$ — 6. _____

Identify each pair of angles as corresponding, alternate interior, alternate exterior, or same-side interior.

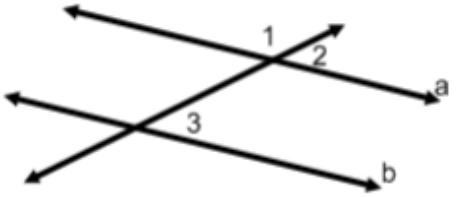
2. $\angle EBA$ and $\angle FCB$
3. $\angle DCH$ and $\angle CBJ$
4. $\angle FCB$ and $\angle CBL$
5. $\angle FCL$ and $\angle BLC$
6. $\angle HCB$ and $\angle CBJ$
7. $\angle GCH$ and $\angle GLJ$



3) Complete a two-column proof for the following.

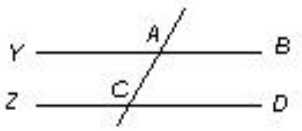
Given: $\angle 1$ *and* $\angle 3$ *are supplementary*

Prove: $a \parallel b$



_____ 4. In the picture below, *YB* // *ZD*. If *BAC* = (*a* + 30) degrees, then *ACD* expressed in terms of *a* is:

A. *a* + 30
B. *a* + 150
C. 150 - *a*
D. 60 + *a*
E. *a* - 60



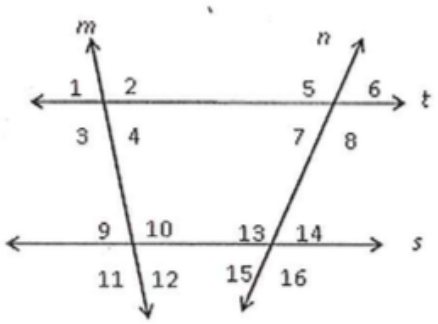
5 Find the missing angles, give line t is parallel to line s.

m∠2 = 97° m∠6 = 83°

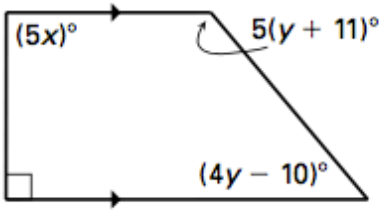
m∠3 = _____ m∠5 = _____

m∠10 = _____ m∠7 = _____

m∠9 = _____ m∠16 = _____



In Exercises 5 and 6, use the following figure.



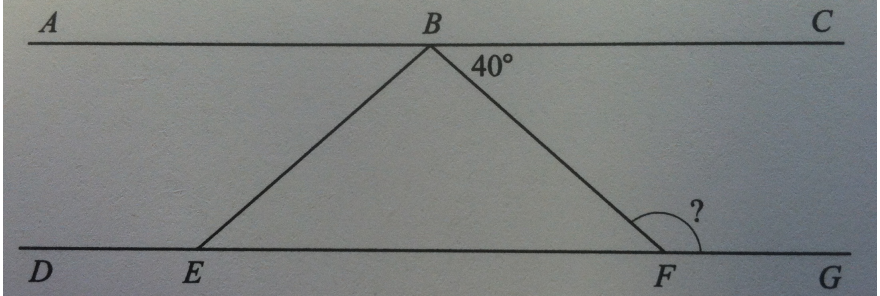
5. What is the value of x?

(A) 18
(B) 45
(C) 85
(D) 90
(E) 95

6. What is the measure of the obtuse angle?

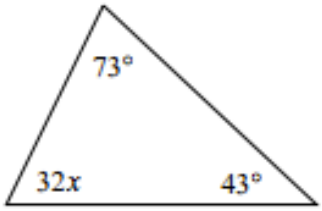
(A) 15°
(B) 50°
(C) 120°
(D) 130°
(E) 180°

7. In the figure below, B is the midpoint of $\overline{AC}$, $\overline{AC}$ is parallel to $\overline{DG}$, and $\overline{BE}$ is congruent to $\overline{BF}$. What is the measure of angle BFG?

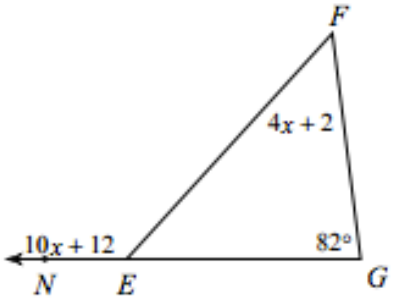


A. 40°
B. 80°
C. 90°
D. 140°
E. 180°

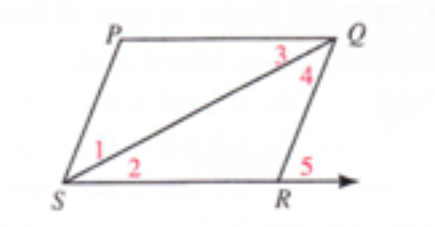
14. Solve for x.



15. **Find the measure of the exterior angle.**



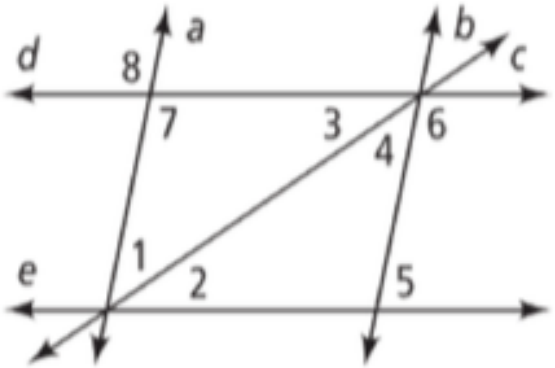
7. Use the picture below to answer the questions.



a. If $\angle 1 \cong \angle 4$, what two segments must be parallel?

b. If $\angle 2 \cong \angle 3$, what two segments must be parallel?

12. Given the following information state which lines are parallel. JUSTIFY your answer. If none are say so.



A. Given $m\angle 4 = m\angle 5$

B. Given $\angle 1 \cong \angle 4$

C. Given $m\angle 2 = m\angle 3$

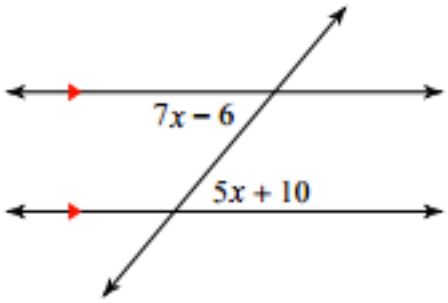
D. Given $m\angle 7 + m\angle 3 + m\angle 4 = 180$

E. Given $\angle 8 \cong \angle 7$

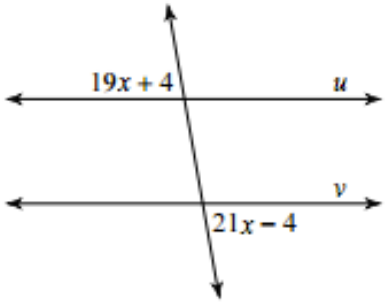
F. Given $\angle 6 \cong \angle 7$

G. Given $\angle 6$ & $\angle 5$ are supplementary

9. Solve for x.



10. Find the value of x that makes lines u and v parallel.



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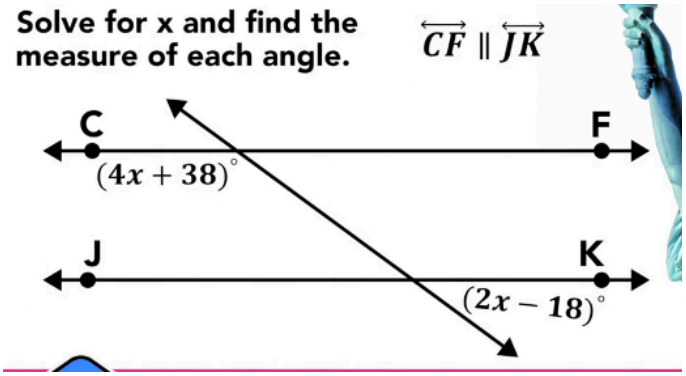

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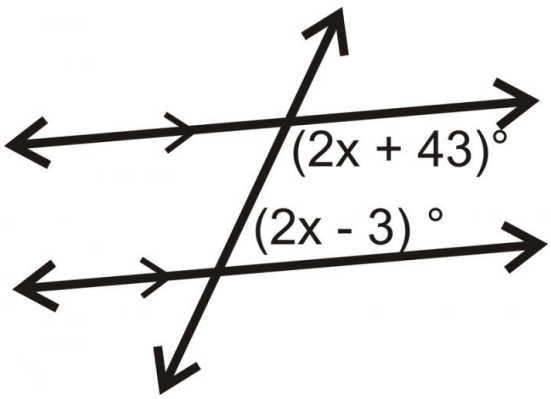
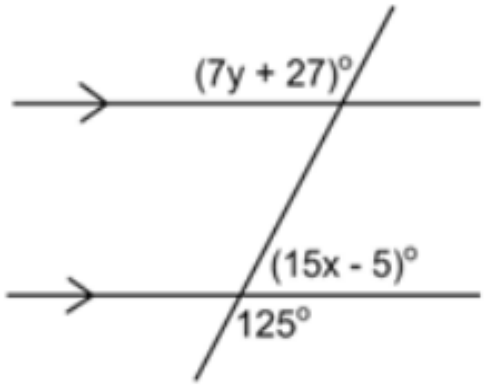
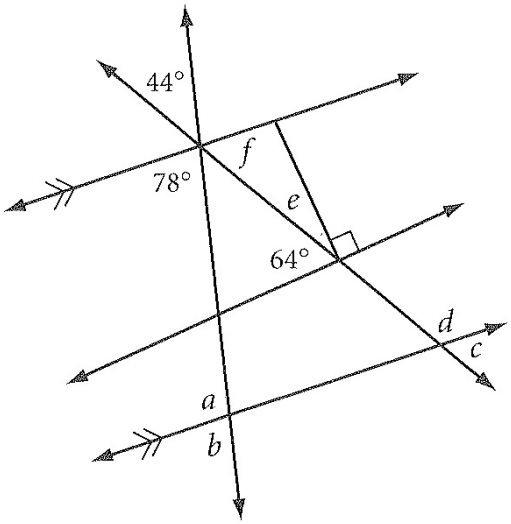


9. Find x and y.

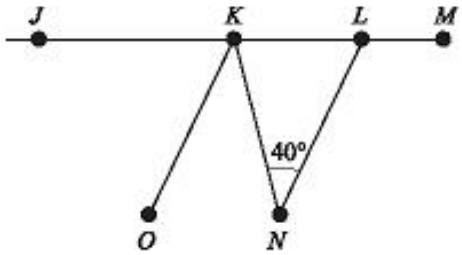


8. In the picture below, find all the missing angles measures.

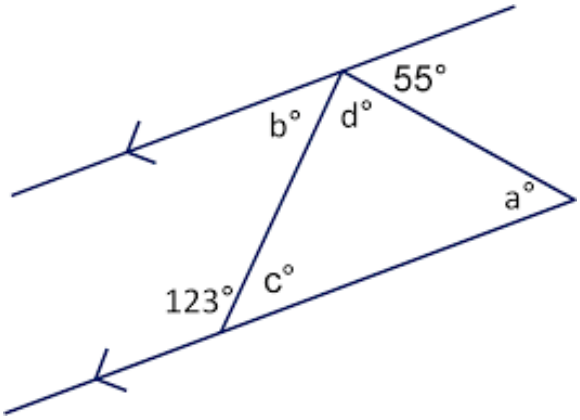


35. In the figure below, $\overline{KO}$ is parallel to $\overline{LN}$. points J, K, L, and M are collinear; The measure of angle KLN is 60 degrees.

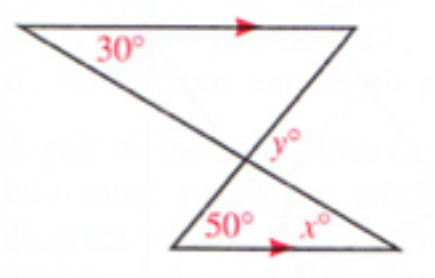
If the measure of angle LNK is $40°$, what is the measure of angle JKO?



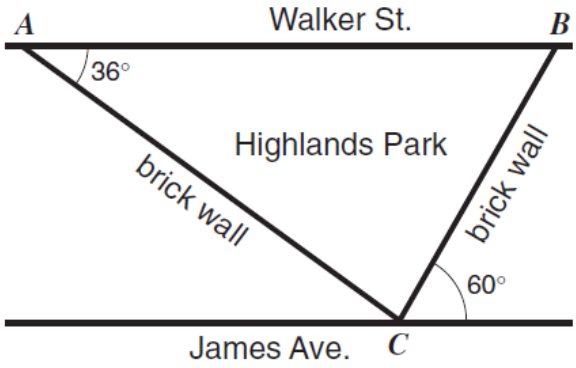
36.



8. Find x and y.

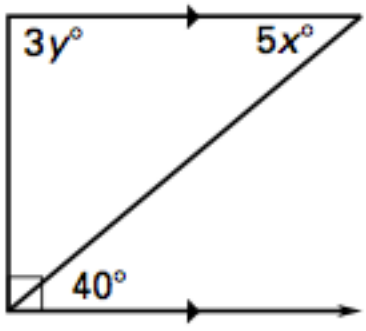


9. **Find angle BCA. Assuming the 2 streets are parallel.**

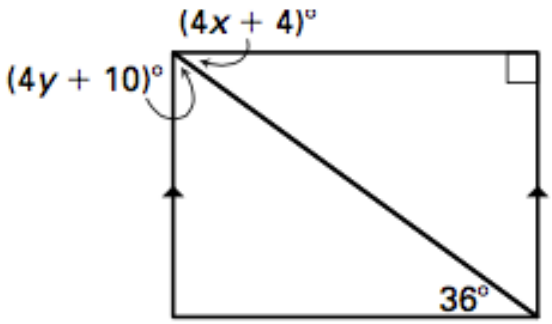


Find x and y.

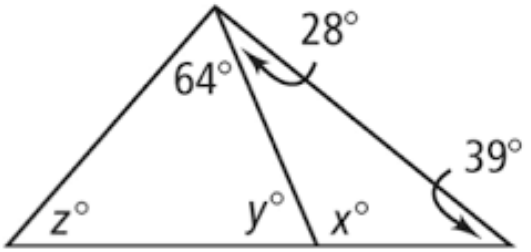
10.



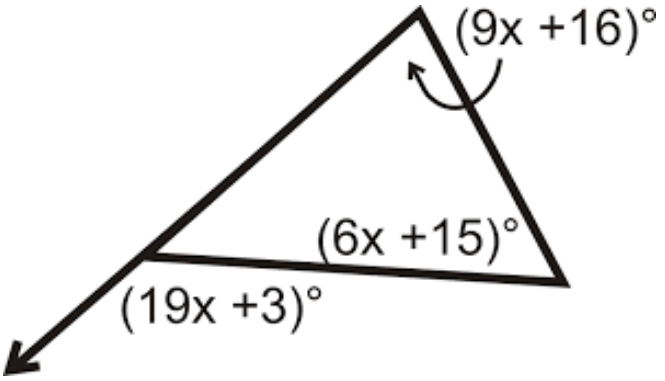
11.



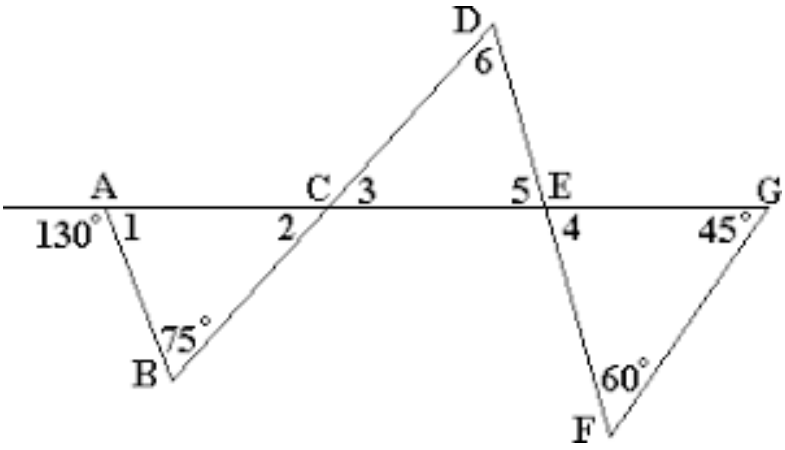
12. Find x, y, and z.



13. Find x.

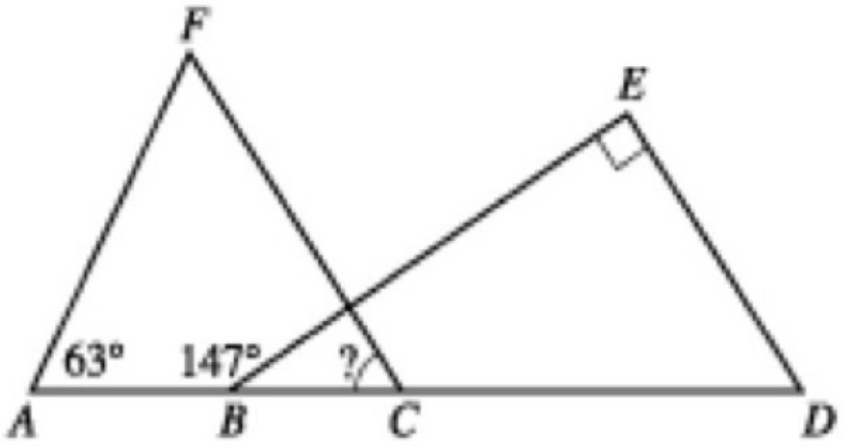


14. Find the measure of angles 1, 2, 3, 4, 5, and 6.



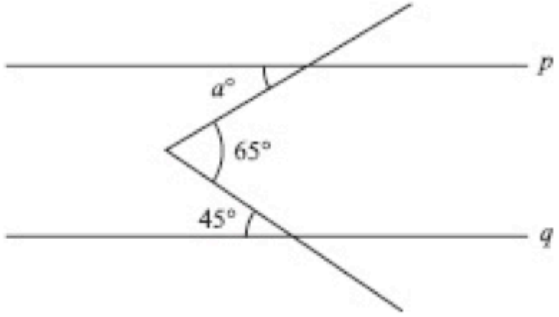
15.

In the figure below, A, B, C, and D are collinear, $\overline{FC}$ is parallel to $\overline{ED}$, $\overline{BE}$ is perpendicular to $\overline{ED}$, and the measures of $\angle FAB$ and $\angle EBA$ are as marked. What is the measure of $\angle FCB$?



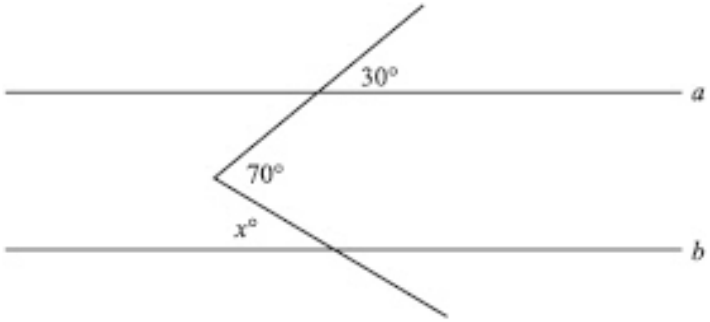
Multiple Choice

_____ 16. In the figure below, line *p* and *q* are parallel and angle measures are as marked. If it can be determined, what is the value of a?



F. 65°
G. 45°
H. 30°
J. 20°
K. Cannot be determined from the given information.

_____ 17. In the figure below, lines a and b are parallel and the angle measures are as marked. If it can be determined, what is the value of x?



F. 30°
G. 40°
H. 55°
J. 70°