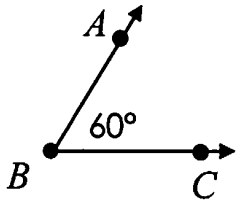
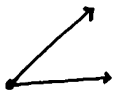
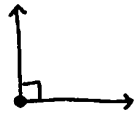
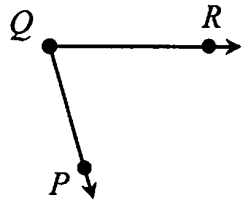
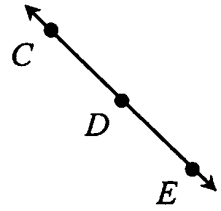
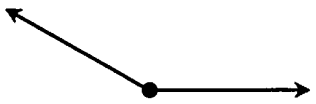
Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
ANGLES 	**Parts of an Angle:** • An angle is formed by two rays with a common endpoint. • This common endpoint is called the vertex. • The rays are called the sides. **Naming Angles:** • Symbol for an angle: ∠ • Angles are typically named using three letters. *The middle letter must always represent the vertex. • Angles can also be named using just the vertex if it is the only angle located at that vertex. **Angle Measures:** • When referring to the measure of an angle, use a lowercase m. **Example:** $m\angle ABC = 60°$
TYPES OF ANGLES	 Acute ($m < 90°$)  Right ($m = 90°$)  Obtuse ($90° < m < 180°$)  Straight ($m = 180°$)
Example 1: 	a) Name the vertex of the angle. Q b) Name the sides of the angle. $\overrightarrow{QR}$, $\overrightarrow{QP}$ c) Give three ways to name the angle. ∠RQP, ∠PQR, ∠Q d) Classify the angle: acute
Example 2: 	a) Name the vertex of the angle. D b) Name the sides of the angle. $\overrightarrow{DC}$, $\overrightarrow{DE}$ c) Give three ways to name the angle. ∠CDE, ∠EDC, ∠D d) Classify the angle: Straight

USING A PROTRACTOR

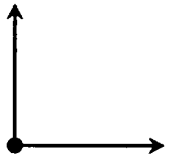
Directions: Use a protractor to find the measure of each angle. Then, classify the angle as acute, obtuse, right or straight.

3.



150°; obtuse

4.

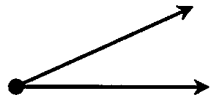


90°; right

5.

180°; straight

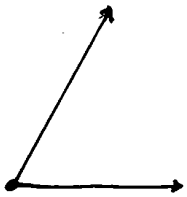
6.



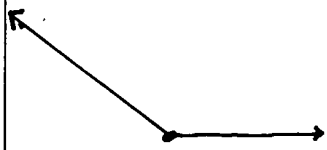
25°; acute

Directions: Use a protractor to draw angles with the given measurements. Then, classify the angle as acute, obtuse, right, or straight.

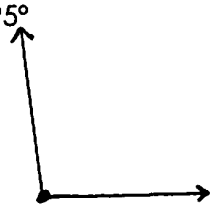
7. 60°



8. 145°



9. 95°

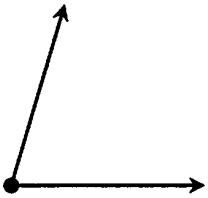


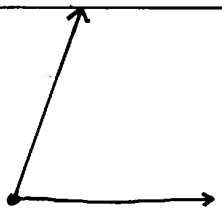
CONGRUENT ANGLES

Congruent angles have the same measure.

Directions: Using a protractor, construct an angle congruent to each given angle.

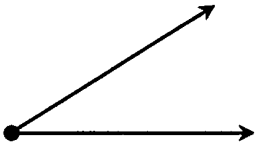
10.

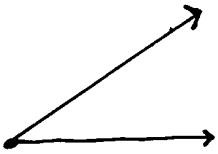




73°

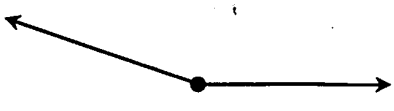
11.





35°

12.



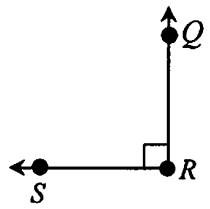
162°

Name: _____ **Unit 6:** Geometry

Date: _____ **Per:** _____ **Homework 1:** Introduction to Angles

Directions: For each angle, a) name the vertex, b) name the sides, c) name the angle three ways, and d) classify the angle.

1.



a) Name the vertex of the angle. R

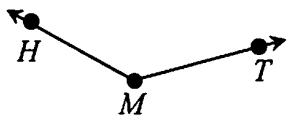
b) Name the sides of the angle. $\overrightarrow{RS}$, $\overrightarrow{RQ}$

c) Give three ways to name the angle.

∠QRS, ∠SRQ, ∠R

d) Classify the angle: right

2.



a) Name the vertex of the angle. M

b) Name the sides of the angle. $\overrightarrow{MH}$, $\overrightarrow{MT}$

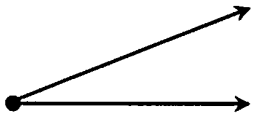
c) Give three ways to name the angle.

∠HMT, ∠TMH, ∠M

d) Classify the angle: obtuse

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

3.

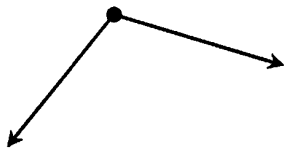


21°; acute

4.

180°; straight

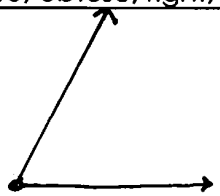
5.



112°; obtuse

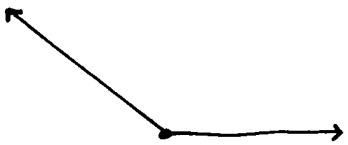
Directions: Use a protractor to draw angles with the given measurements. Then, classify the angle as acute, obtuse, right, or straight.

6. 65°



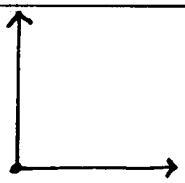
Acute

7. 140°



Obtuse

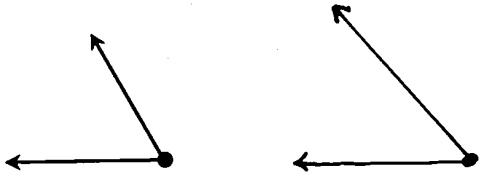
8. 90°



right

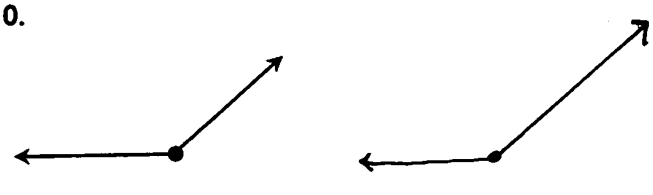
Directions: Using a protractor, construct an angle congruent to each given angle.

9.



60°

10.



140°

Name:	Date:
Topic:	Class:

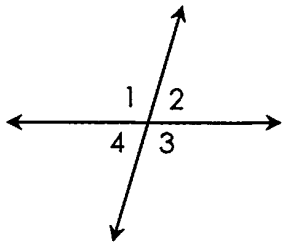
Main Ideas/Questions	Notes/Examples

ADJACENT ANGLES

Adjacent angles are two angles that share a common Vertex and side.

They are next to each other.

Examples: ∠1 and ∠2, ∠2 and ∠3, ∠3 and ∠4, ∠1 and ∠4

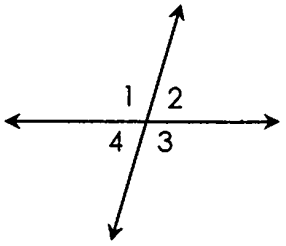


VERTICAL ANGLES

Vertical angles are two angles that are across of each other when two lines intersect.

Vertical angles are congruent!

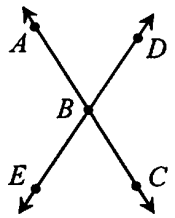
Examples: ∠1 ≅ ∠3 , ∠2 ≅ ∠4



NAMING ANGLES

Directions: Using the diagram, name two pairs of adjacent angles and two pairs of vertical angles.

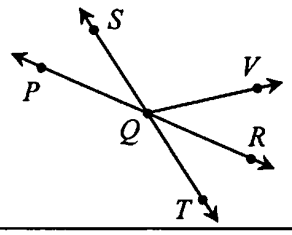
1.



Adjacent Angles:
∠ABD and ∠DBC, ∠DBC and ∠CBE, ∠CBE and ∠EBA, ∠EBA and ∠ABD

Vertical Angles:
∠ABD and ∠EBC , ∠DBC and ∠ABE

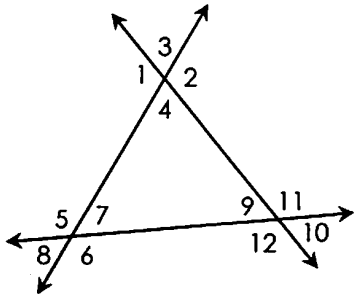
2.



Adjacent Angles:
∠PQS and ∠SQV, ∠SQV and ∠VQR, ∠VQR and ∠RQT, ∠RQT and ∠TQP, ∠TQP and ∠PQS

Vertical Angles:
∠SQR and ∠PQT , ∠RQT and ∠SQP

3. Given the diagram, classify each angle pair as vertical, adjacent, or neither.



a) ∠1 and ∠4
Adjacent

b) ∠7 and ∠9
Neither

c) ∠5 and ∠6
Vertical

d) ∠11 and ∠12
Vertical

e) ∠6 and ∠7
Adjacent

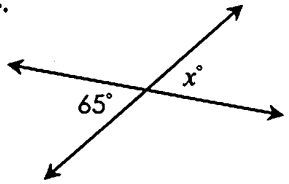
f) ∠4 and ∠9
Neither

FINDING ANGLE MEASURES

•Recall•
A right angle measures 90° and a straight angle measures 180°.

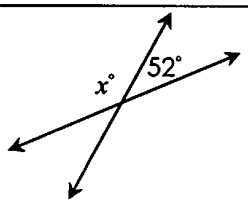
Directions: Tell whether the angles are adjacent or vertical, then find the value of x.

4.



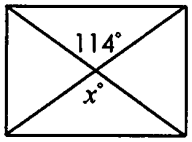
Vertical ; 65°

5.



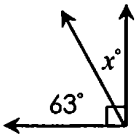
Adjacent ; 128°

6.



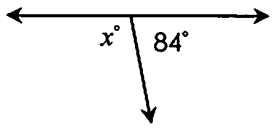
Vertical ; 114°

7.



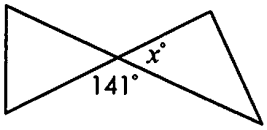
Adjacent ; 27°

8.



Adjacent ; 96°

9.

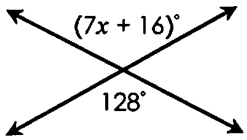


Adjacent ; 39°

USING ALGEBRA

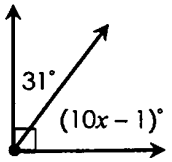
Directions: Tell whether the angles are adjacent or vertical, then find the value of x.

10.



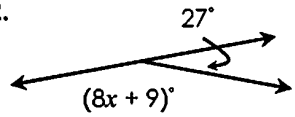
Vertical ; $7x+16=128$
$-16 \quad -16$
$\frac{7x}{7}=\frac{112}{7}$
$x=16$

11.



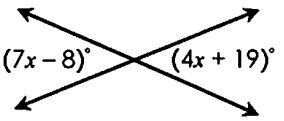
Adjacent ; $31+10x-1=90$
$10x+30=90$
$-30 \quad -30$
$\frac{10x}{10}=\frac{60}{10}$
$x=6$

12.



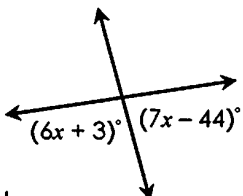
Adjacent ; $8x+9+27=180$
$8x+36=180$
$-36 \quad -36$
$\frac{8x}{8}=\frac{144}{8}$
$x=18$

13.



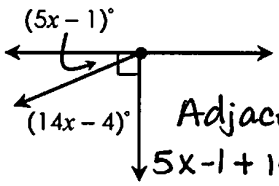
Vertical ; $7x-8=4x+19$
$-4x \quad -4x$
$3x-8=19$
$+8 \quad +8$
$\frac{3x}{3}=\frac{27}{3}$
$x=9$

14.



Adjacent ; $6x+3+7x-44=180$
$13x-41=180$
$+41 \quad +41$
$\frac{13x}{13}=\frac{221}{13}$
$x=17$

15.

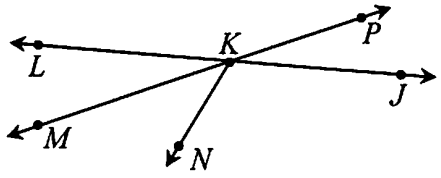


Adjacent ;
$5x-1+14x-4=90$
$19x-5=90$
$+5 \quad +5$
$\frac{19x}{19}=\frac{95}{19}$
$x=5$

Name: _____ **Unit 6:** Geometry

Date: _____ **Per:** _____ **Homework 2:** Adjacent and Vertical Angles

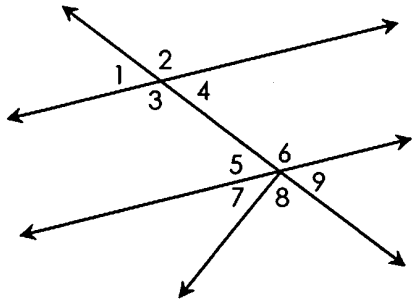
1. Using the diagram, name two pairs of adjacent angles and two pairs of vertical angles.



Adjacent Angles:
∠LKP and ∠PKJ, ∠PKJ and ∠JKN, ∠JKN and ∠NKM, ∠NKM and ∠MKL, ∠MKL and ∠LKP

Vertical Angles:
∠LKP and ∠JKM, ∠LKM and ∠PKJ

2. Given the diagram, classify each angle pair as vertical, adjacent, or neither.



a) ∠4 and ∠6 — Neither

b) ∠7 and ∠5 — Adjacent

c) ∠2 and ∠3 — Vertical

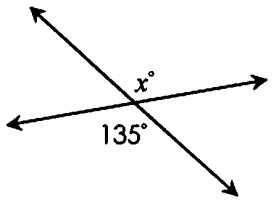
d) ∠9 and ∠6 — Adjacent

e) ∠1 and ∠5 — Neither

f) ∠5 and ∠9 — Vertical

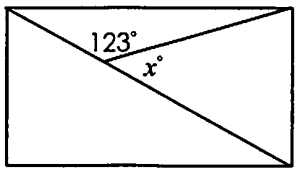
Directions: Tell whether the angles are adjacent or vertical, then find the value of x.

3.



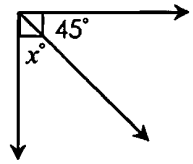
Vertical; 135°

4.



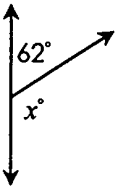
Adjacent; 57°

5.



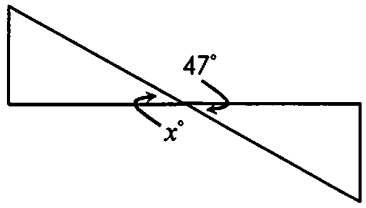
Adjacent; 45°

6.



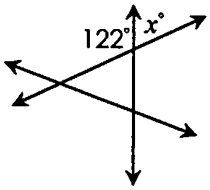
Adjacent; 118°

7.



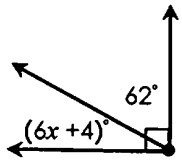
Vertical; 47°

8.



Adjacent; 58°

9.



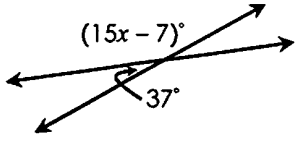
Adjacent; $6x+4+62=90$

$6x+66=90$

$6x=24$

$\boxed{x=4}$

10.



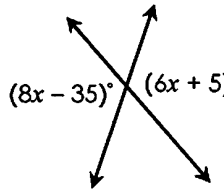
Adjacent; $15x-7+37=180$

$15x+30=180$

$15x=150$

$\boxed{x=10}$

11.



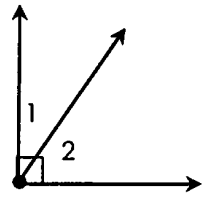
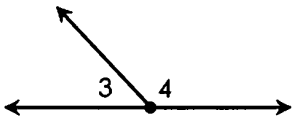
Vertical; $8x-35=6x+5$

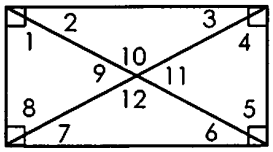
$2x-35=5$

$2x=40$

$\boxed{x=20}$

Name:	Date:
Topic:	Class:

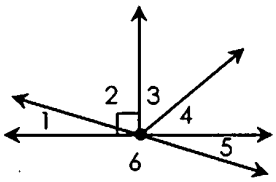
Main Ideas/Questions	Notes/Examples
COMPLEMENTARY ANGLES	**Complementary angles** are any two angles in which the Sum of their measures is 90°. $m\angle 1 + m\angle 2 = 90°$ 
SUPPLEMENTARY ANGLES	**Supplementary angles** are any two angles in which the Sum of their measures is 180°. $m\angle 3 + m\angle 4 = 180°$ 
	Complementary and supplementary angles do NOT have to be adjacent!
EXAMPLES	**1.** Using the diagram, name two pairs of complementary angles and two pairs of supplementary angles.



Complementary Angles:
$\angle 1$ and $\angle 2$, $\angle 3$ and $\angle 4$,
$\angle 5$ and $\angle 6$, $\angle 7$ and $\angle 8$

Supplementary Angles:
$\angle 9$ and $\angle 10$, $\angle 10$ and $\angle 11$,
$\angle 11$ and $\angle 12$, $\angle 9$ and $\angle 12$

2. Given the diagram, classify each angle pair as complementary, supplementary, or neither.



a) $\angle 1$ and $\angle 6$: Supplementary

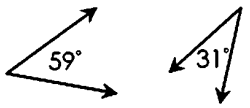
b) $\angle 1$ and $\angle 2$: Complementary

c) $\angle 4$ and $\angle 5$: Neither

d) $\angle 3$ and $\angle 4$: Complementary

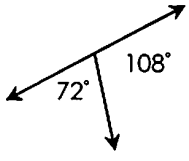
Directions: Classify each pair of angles as complementary, supplementary, or neither.

3.



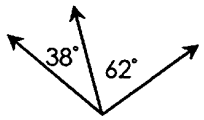
Complementary

4.



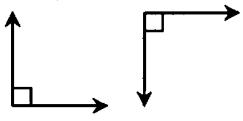
Supplementary

5.



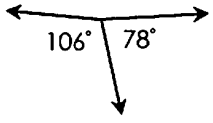
Neither

6.



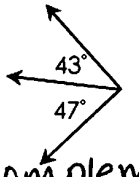
Supplementary

7.



Neither

8.

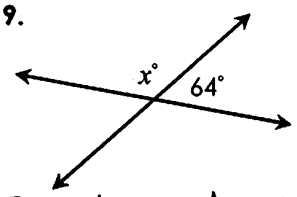


Complementary

FINDING ANGLE MEASURES

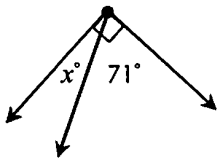
For questions 9-11: Tell whether the angles are complementary or supplementary, then find the value of x.

9.



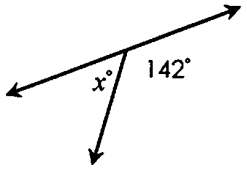
Supplementary;
$x = 116°$

10.



Complementary;
$x = 19°$

11.



Supplementary;
$x = 38°$

12. If $\angle A$ is supplementary to $\angle B$, and $m\angle A = 26°$, find $m\angle B$.

$x + 26 = 180$
$-26 \quad -26$
$x = 154°$

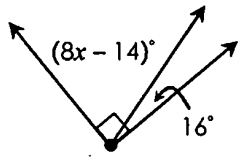
13. If $\angle G$ is complementary to $\angle H$, and $m\angle H = 63°$, find $m\angle G$.

$x + 63 = 90$
$-63 \quad -63$
$x = 27°$

USING ALGEBRA

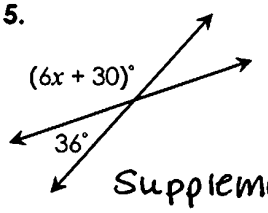
Directions: Tell whether the angles are complementary or supplementary, then find the value of x.

14.



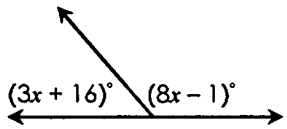
Complementary;
$8x - 14 + 16 = 90$
$8x + 2 = 90$
$8x = 88$
$x = 11$

15.



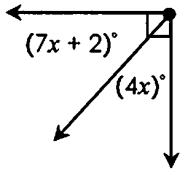
Supplementary;
$6x + 30 + 36 = 180$
$6x + 66 = 180$
$6x = 114$
$x = 19$

16.



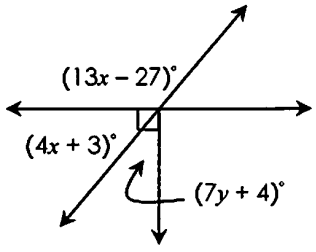
Supplementary;
$3x + 16 + 8x - 1 = 180$
$11x + 15 = 180$
$11x = 165$
$x = 15$

17.



Complementary;
$7x + 2 + 4x = 90$
$11x + 2 = 90$
$11x = 88$
$x = 8$

18. Find the value of x and the value of y.



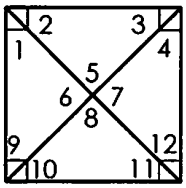
$13x - 27 + 4x + 3 = 180$
$17x - 24 = 180$
$17x = 204$
$x = 12$

$4(12) + 3 + 7y + 4 = 90$
$51 + 7y + 4 = 90$
$7y + 55 = 90$
$7y = 35$
$y = 5$

Name: _____ **Unit 6:** Geometry

Date: _____ **Per:** _____ **Homework 3:** Complementary and Supplementary Angles

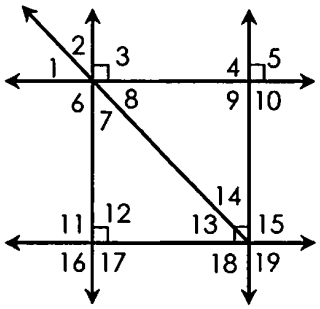
1. Using the diagram, name two pairs of complementary and two pairs of supplementary angles.



Complementary Angles:
∠1 and ∠2, ∠3 and ∠4, ∠12 and ∠11, ∠9 and ∠10

Supplementary Angles:
∠6 and ∠5, ∠5 and ∠7, ∠7 and ∠8, ∠8 and ∠6

2. Given the diagram, classify each angle pair as complementary, supplementary, or neither.



a) ∠9 and ∠10
Supplementary

b) ∠7 and ∠8
Complementary

c) ∠13 and ∠14
Complementary

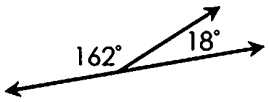
d) ∠6 and ∠7
neither

e) ∠11 and ∠17
Supplementary

f) ∠18 and ∠19
Supplementary

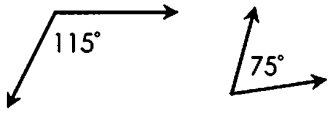
Directions: Classify each pair of angles as complementary, supplementary, or neither.

3.



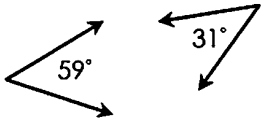
Supplementary

4.



neither

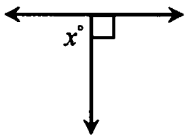
5.



Complementary

Directions: Tell whether the angles are complementary or supplementary, then find the value of x.

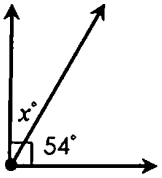
6.



X+90=180
X=90

Supplementary

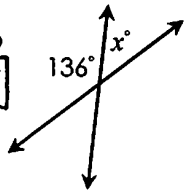
7.



X+54=90
X=36

Complementary

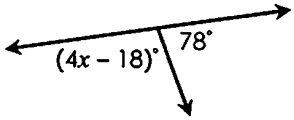
8.



X+136=180
X=44

Supplementary

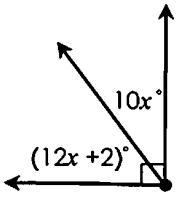
9.



Supplementary

4X-18+78=180
4X+60=180
4X=120
X=30

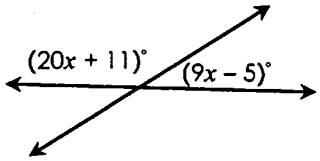
10.



Complementary

12X+2+10X=90
22X+2=90
22X=88
X=4

11.



Supplementary

20X+11+9X-5=180
29X+6=180
29X=174
X=6

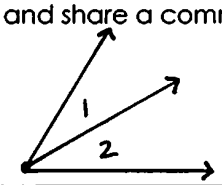
Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples

ANGLE Relationships

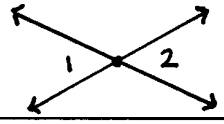
Adjacent

Two angles that are **next to each other** and share a common side.



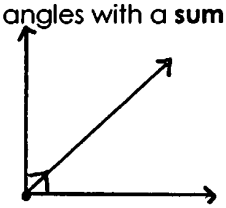
Vertical

Two angles **across** from each other on intersecting lines. They are always **congruent!**



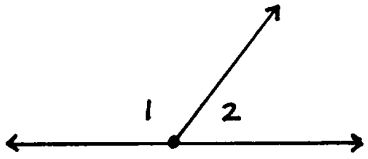
Complementary

Two angles with a **sum of 90°**.



Supplementary

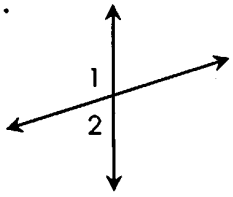
Two angles with a **sum of 180°**.



Classifying ANGLES

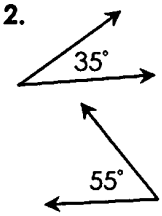
Directions: Classify the angle pair using all names that apply.

1.



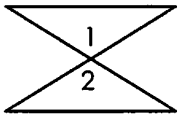
- ☑ Adjacent
- ☐ Vertical
- ☐ Complementary
- ☑ Supplementary
- ☐ Congruent

2.



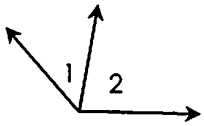
- ☐ Adjacent
- ☐ Vertical
- ☑ Complementary
- ☐ Supplementary
- ☐ Congruent

3.



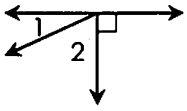
- ☐ Adjacent
- ☑ Vertical
- ☐ Complementary
- ☐ Supplementary
- ☑ Congruent

4.



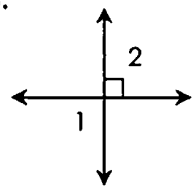
- ☑ Adjacent
- ☐ Vertical
- ☐ Complementary
- ☐ Supplementary
- ☐ Congruent

5.



- ☑ Adjacent
- ☐ Vertical
- ☑ Complementary
- ☐ Supplementary
- ☐ Congruent

6.

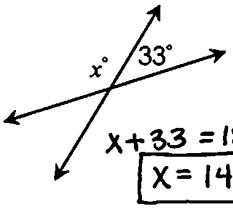


- ☐ Adjacent
- ☑ Vertical
- ☐ Complementary
- ☑ Supplementary
- ☑ Congruent

Finding MEASURES

Directions: Find each missing measure.

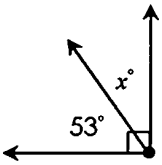
7.



$x + 33 = 180$

$x = 147$

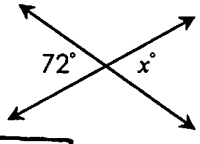
8.



$x + 53 = 90$

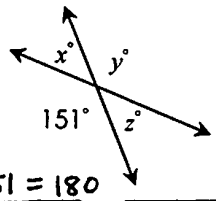
$x = 37$

9.



$x = 72$

10.

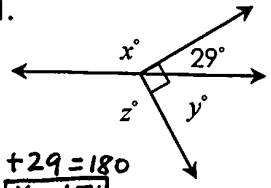


$X+151=180$

$X=29$ $Y=151$

$Z=29$

11.



$x+29=180$

$X=151$

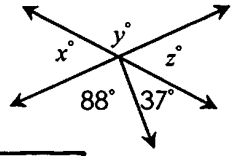
$z+61=180$

$Z=119$

$y+29=90$

$Y=61$

12.



$Y=125$

$125+x=180$

$X=55$ $Z=55$

13. If $\angle R$ and $\angle S$ are complementary angles and $m\angle R = 27°$, find $m\angle S$.

$27+X=90$

$X=63$

$m\angle S = 63°$

14. If $\angle 1$ and $\angle 2$ are vertical angles and $m\angle 2 = 115°$, find $m\angle 1$.

$m\angle 1 = 115°$

15. If $\angle C$ and $\angle D$ are supplementary angles and $m\angle D = 49°$, find $m\angle C$.

$49+X=180$

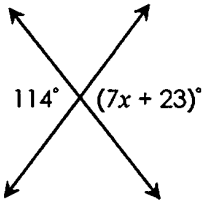
$X=131$

$m\angle C = 131°$

Using ALGEBRA

Directions: Find the value of x.

16.

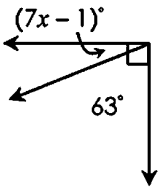


$7x+23=114$

$7x=91$

$X=13$

17.



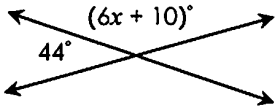
$7x-1+63=90$

$7x+62=90$

$7x=28$

$X=4$

18.



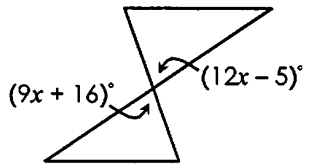
$6x+10+44=180$

$6x+54=180$

$6x=126$

$X=21$

19.



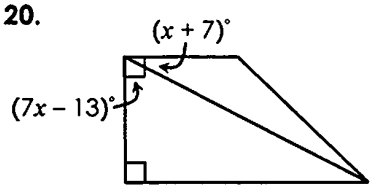
$12x-5=9x+16$

$3x-5=16$

$3x=21$

$X=7$

20.



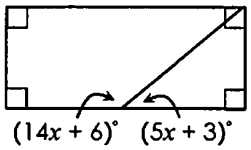
$7x-13+x+7=90$

$8x-6=90$

$8x=96$

$X=12$

z21.



$14x+6+5x+3=180$

$19x+9=180$

$19x=171$

$X=9$

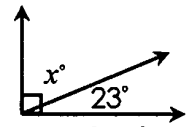
Angle Relationships Maze!

Directions: Begin at the **Start** box. Find each missing measure. Use your solutions to navigate through the maze.

Start!

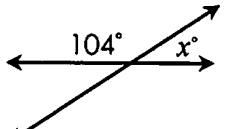
If $\angle 1$ and $\angle 2$ are vertical angles and $m\angle 2$ is 112°, find $m\angle 1$.

67° | 112° | 68°



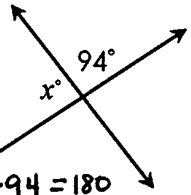
$x+23=90$
$x=67$

76° | 57° | 112°



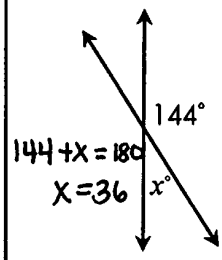
$104+x=180$
$x=76$

94° | 24° | 76°



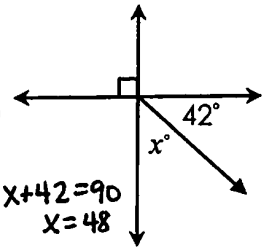
$x+94=180$
$x=86$

86° | 77° | 94°



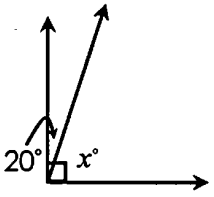
$144+x=180$
$x=36$

36° | 89° | 48°



$x+42=90$
$x=48$

48° | 138° | 42°



42° | 58° | 167°

If $\angle C$ and $\angle D$ are complementary angles and $m\angle C$ is 13°, find $m\angle D$.

$13+x=90$
$x=77$

167° | 70° | 13°

39°

If $\angle A$ and $\angle B$ are supplementary angles and $m\angle A$ is 89°, find $m\angle B$.

$89+x=180$
$x=91$

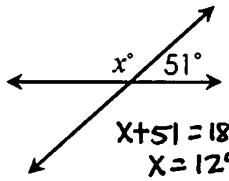
91° | 1° | 101°

End!

47° | 22° | 47°

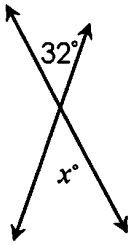
If $\angle 3$ and $\angle 4$ are vertical angles and $m\angle 3$ is 47°, find $m\angle 4$.

129° | 133° | 129°

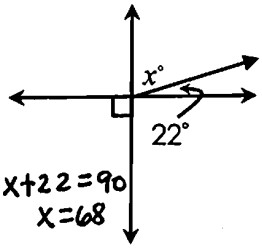


$x+51=180$
$x=129$

84° | 43° | 84°

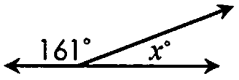


32° | 148° | 32°



$x+22=90$
$x=68$

68° | 78° | 22°



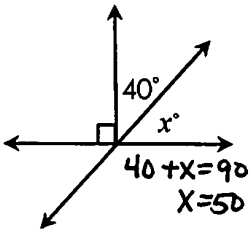
158° | 114° | 174°

If $\angle M$ and $\angle N$ are complementary angles and $m\angle M$ is 6°, find $m\angle N$.

$6+x=90$
$x=84$

174° | 90° | 6°

90°

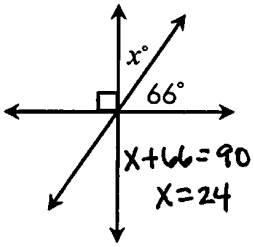


$40+x=90$
$x=50$

50° | 168° | 40°

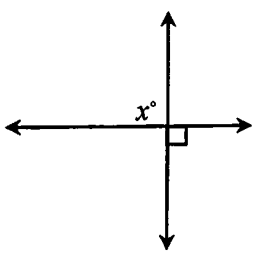
If $\angle R$ and $\angle S$ are supplementary angles and $m\angle S$ is 12°, find $m\angle R$.

$12+x=180$
$x=168$



$x+66=90$
$x=24$

24° | 66° | 168°

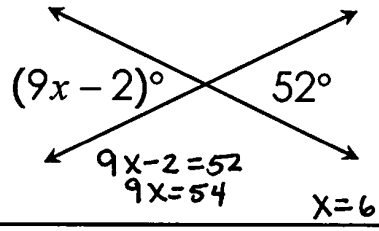


ANGLE RELATIONSHIPS RELAY PUZZLE

Directions: Beginning with the "Start" box, use the diagram to solve for x. Use the arrows to navigate through the page. Use the answer from the previous problem to fill in the box for the next problem. **STAPLE YOUR WORK TO THIS PAPER!**

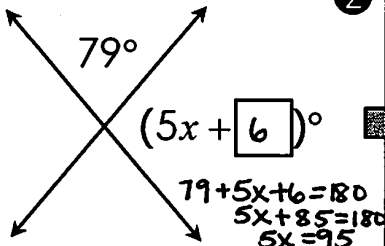
Start!

1



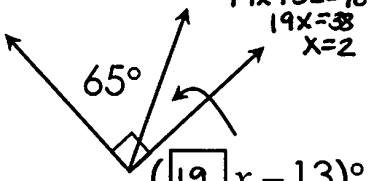
$9x - 2 = 52$
$9x = 54$
$x = 6$

2



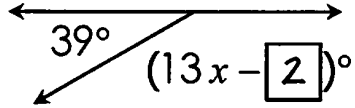
$79 + 5x + 6 = 180$
$5x + 85 = 180$
$5x = 95$
$x = 19$

3



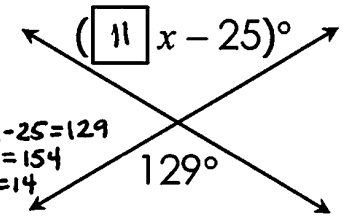
$19x - 13 + 65 = 90$
$19x + 62 = 90$
$19x = 38$
$x = 2$

4



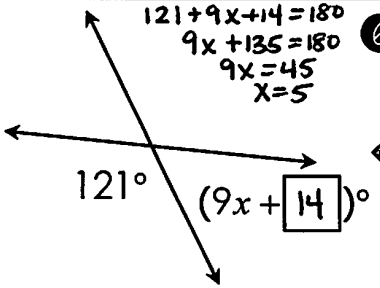
$13x - 2 + 39 = 180$
$13x + 37 = 180$
$13x = 143$
$x = 11$

5



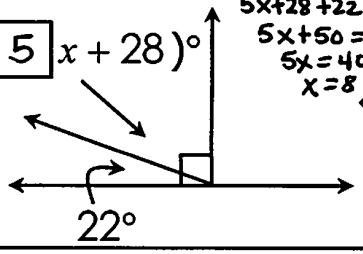
$11x - 25 = 129$
$11x = 154$
$x = 14$

6



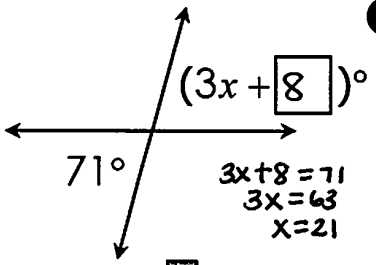
$121 + 9x + 14 = 180$
$9x + 135 = 180$
$9x = 45$
$x = 5$

7



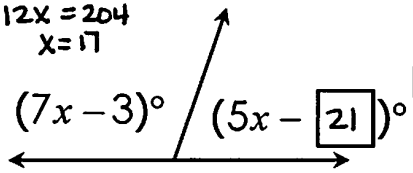
$5x + 28 + 22 = 90$
$5x + 50 = 90$
$5x = 40$
$x = 8$

8



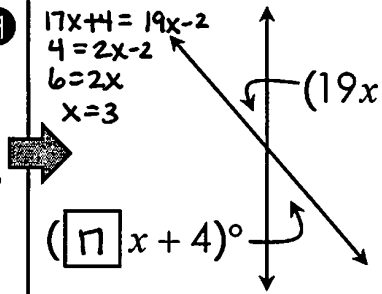
$3x + 8 = 71$
$3x = 63$
$x = 21$

9



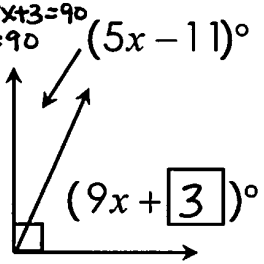
$7x - 3 + 5x - 21 = 180$
$12x - 24 = 180$
$12x = 204$
$x = 17$

10



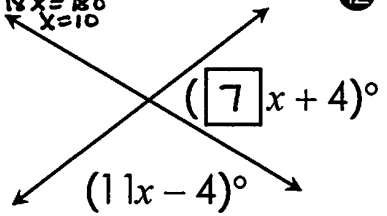
$17x + 4 = 19x - 2$
$4 = 2x - 2$
$6 = 2x$
$x = 3$

11



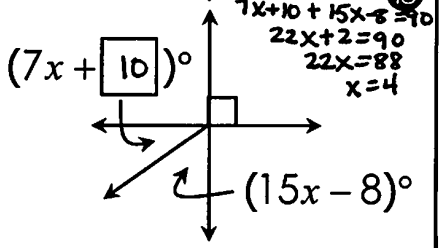
$5x + 1 + 9x + 3 = 90$
$14x - 8 = 90$
$14x = 98$
$x = 7$

12



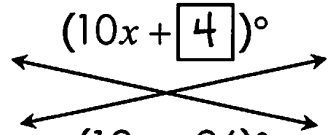
$11x - 4 + 7x + 4 = 180$
$18x = 180$
$x = 10$

13



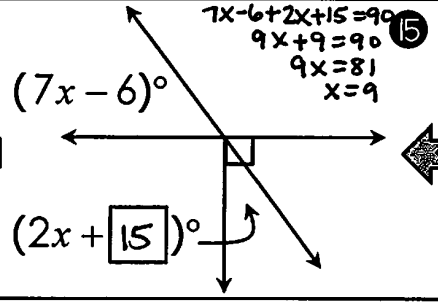
$7x + 10 + 15x - 8 = 90$
$22x + 2 = 90$
$22x = 88$
$x = 4$

14



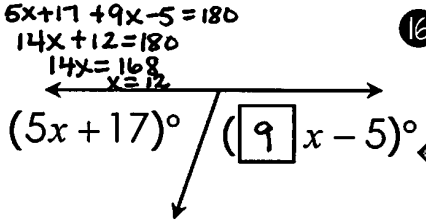
$10x + 4 = 12x - 26$
$4 = 2x - 26$
$30 = 2x$
$x = 15$

15



$7x - 6 + 2x + 15 = 90$
$9x + 9 = 90$
$9x = 81$
$x = 9$

16



$6x + 17 + 9x - 5 = 180$
$14x + 12 = 180$
$14x = 168$
$x = 12$

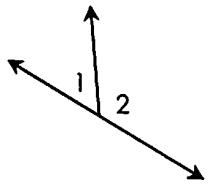
End!

Name: _____ **Unit 6:** Geometry

Date: _____ **Per:** _____ **Homework 4:** Angle Relationships

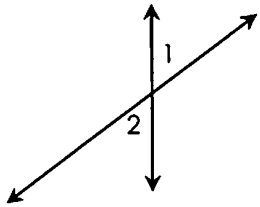
Directions: Classify the angle pair using all names that apply.

1.



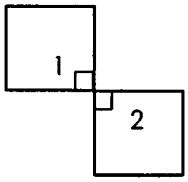
- ☑ Adjacent
- ☐ Vertical
- ☐ Complementary
- ☑ Supplementary
- ☐ Congruent

2.



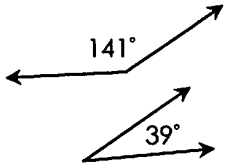
- ☐ Adjacent
- ☑ Vertical
- ☐ Complementary
- ☐ Supplementary
- ☑ Congruent

3.



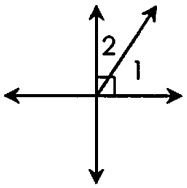
- ☐ Adjacent
- ☑ Vertical
- ☐ Complementary
- ☑ Supplementary
- ☑ Congruent

4.



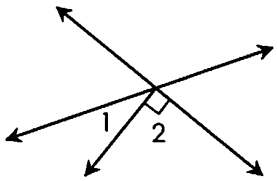
- ☐ Adjacent
- ☐ Vertical
- ☐ Complementary
- ☑ Supplementary
- ☐ Congruent

5.



- ☑ Adjacent
- ☐ Vertical
- ☑ Complementary
- ☐ Supplementary
- ☐ Congruent

6.



- ☑ Adjacent
- ☐ Vertical
- ☐ Complementary
- ☐ Supplementary
- ☐ Congruent

Directions: Determine whether the statement is always, sometimes or never true.

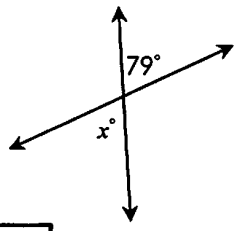
7. If two angles are vertical, then they share a side. Never

8. Two angles with a sum of 90° are complementary angles. Always

9. If two angles are supplementary, then both are right angles. Sometimes

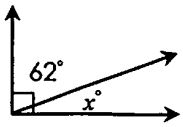
Directions: Find each missing measure.

10.



$x = 79$

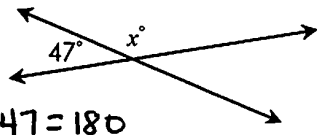
11.



$62 + x = 90$

$x = 28$

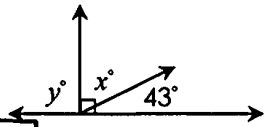
12.



$x + 47 = 180$

$x = 133$

13.

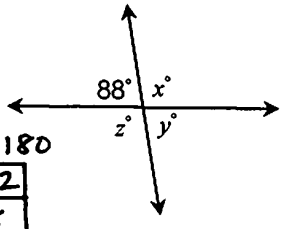


$y = 90$

$x + 43 = 90$

$x = 47$

14.



$x + 88 = 180$

$x = 92$

$y = 88$

$z = 92$

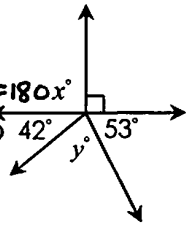
15.

$x = 90$

$42 + y + 53 = 180$

$y + 95 = 180$

$y = 85$

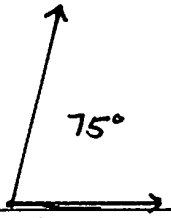


Directions: Use your protractor to construct an angle with the given conditions.

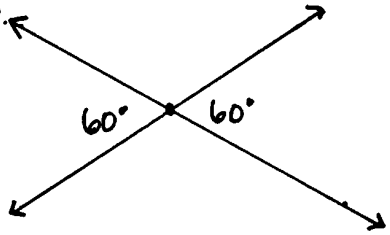
16. If $m\angle A$ is 105°, construct an angle supplementary to $\angle A$.

$x + 105 = 180$

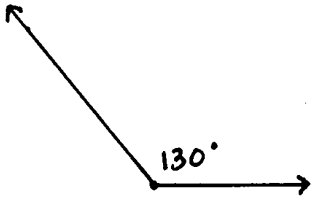
$x = 75°$



17. Construct a pair of vertical angles that are 60°.



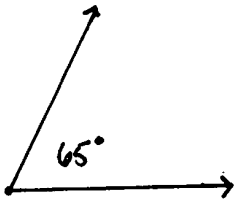
18. If $m\angle S$ is 130°, construct an angle congruent to $\angle S$.



19. If $m\angle R$ is 25°, construct an angle complementary to $\angle R$.

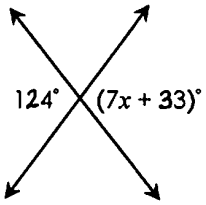
$x + 25 = 90$

$x = 65°$



Directions: Find the value of x.

20.

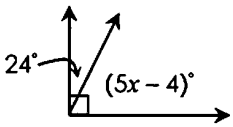


$7x + 33 = 124$

$7x = 91$

$\boxed{x = 13}$

21.



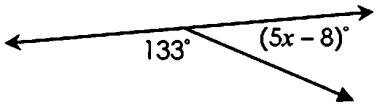
$24 + 5x - 4 = 90$

$5x + 20 = 90$

$5x = 70$

$\boxed{x = 14}$

22.



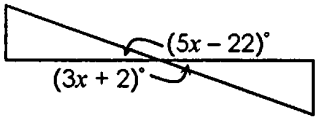
$133 + 5x - 8 = 180$

$5x + 125 = 180$

$5x = 55$

$\boxed{x = 11}$

23.



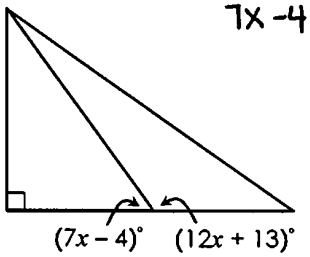
$5x - 22 = 3x + 2$

$2x - 22 = 2$

$2x = 24$

$\boxed{x = 12}$

24.



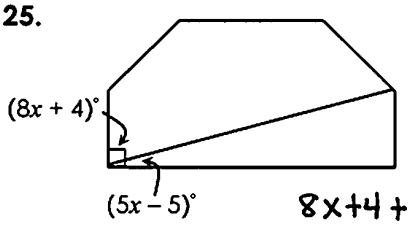
$7x - 4 + 12x + 13 = 180$

$19x + 9 = 180$

$19x = 171$

$\boxed{x = 9}$

25.



$8x + 4 + 5x - 5 = 90$

$13x - 1 = 90$

$13x = 91$

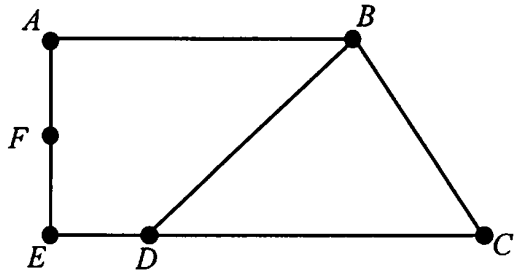
$\boxed{x = 7}$

Name: _____ **Math 7**

Date: _____ **Per:** _____ **Unit 6:** Geometry

Quiz 6-1: Angles & Angle Relationships

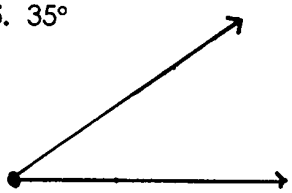
Use the diagram below and a protractor, measure each angle below and classify it as acute, obtuse, right, or straight.



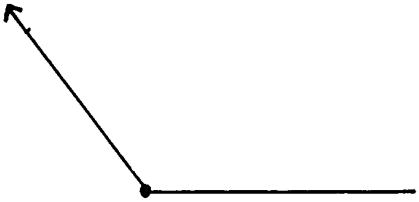
1. $m\angle EDB =$ 135° ; Classify: obtuse
2. $m\angle FED =$ 90° ; Classify: right
3. $m\angle BCD =$ 60° ; Classify: acute
4. $m\angle AFE =$ 180° ; Classify: straight

Using a protractor, construct each angle with the given measure.

5. 35°

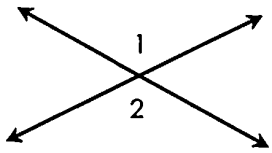


6. 128°



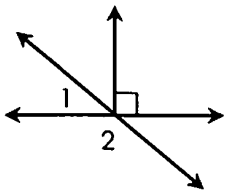
Classify each angle pair using all names that apply.

7.



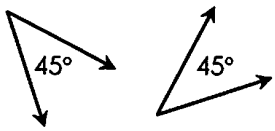
- ☐ Adjacent Angles
- ☑ Vertical Angles
- ☐ Complementary Angles
- ☐ Supplementary Angles
- ☑ Congruent Angles

8.



- ☑ Adjacent Angles
- ☐ Vertical Angles
- ☐ Complementary Angles
- ☑ Supplementary Angles
- ☐ Congruent Angles

9.



- ☐ Adjacent Angles
- ☐ Vertical Angles
- ☑ Complementary Angles
- ☐ Supplementary Angles
- ☑ Congruent Angles

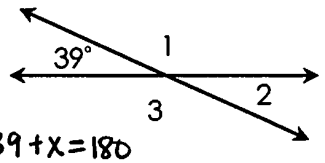
Determine whether the statement is always, sometimes, or never true.

10. If two angles are congruent, then they are vertical angles.
11. Two right angles are complementary angles.
12. If an angle is acute, then its supplement angle is obtuse.

10. Sometimes
11. Never
12. Always

Find each measure. (Diagrams are not drawn to scale)

13.



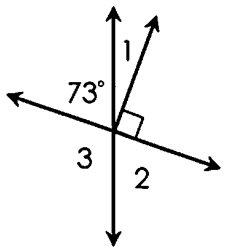
$39 + X = 180$
$X = 141$

$m\angle 1 =$ 141°

$m\angle 2 =$ 39°

$m\angle 3 =$ 141°

14.



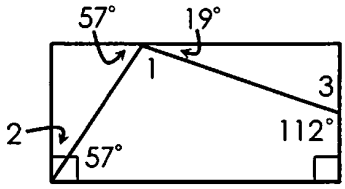
$73 + X = 90$
$X = 17$

$m\angle 1 =$ 17°

$m\angle 2 =$ 73°

$m\angle 3 =$ 107°

15.



$57 + 19 + X = 180$
$X + 76 = 180$
$X = 104$

$X + 57 = 90$
$X = 33$

$112 + X = 180$
$X = 68$

$m\angle 1 =$ 104°

$m\angle 2 =$ 33°

$m\angle 3 =$ 68°

16. If $\angle D$ and $\angle E$ are supplementary angles and $m\angle E = 29°$, find $m\angle D$.

$X + 29 = 180$
$X = 151$

17. If $\angle 1$ and $\angle 2$ are vertical angles, $\angle 2$ and $\angle 3$ are complementary angles, and $m\angle 1 = 71°$, find $m\angle 3$.

$m\angle 1 = 71°$, $m\angle 2 = 71°$

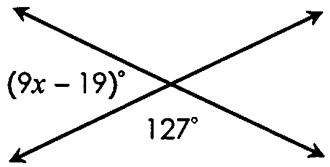
$71 + X = 90$
$X = 19°$

16. 151°

17. 19°

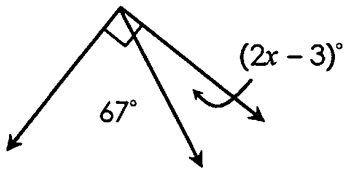
Solve for x. (Diagrams are not drawn to scale)

18.



$9X - 19 + 127 = 180$
$9X + 108 = 180$
$9X = 72$
$X = 8$

19.



$67 + 2X - 3 = 90$
$2X + 64 = 90$
$2X = 26$
$X = 13$

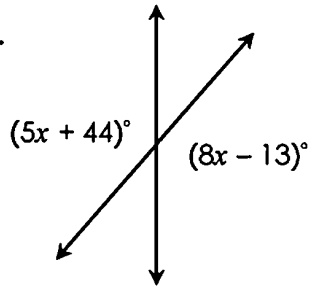
18. X = 8

19. X = 13

20. X = 19

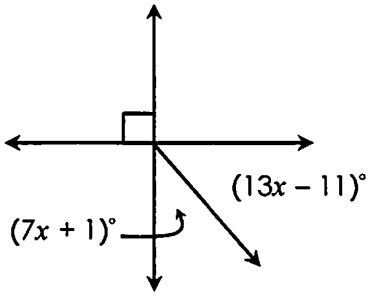
21. X = 5

20.



$5X + 44 = 8X - 13$
$44 = 3X - 13$
$57 = 3X$
$X = 19$

21.

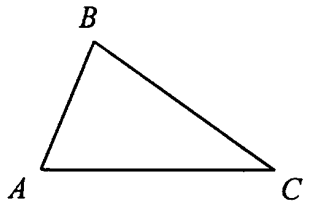


$13X - 11 + 7X + 1 = 90$
$20X - 10 = 90$
$20X = 100$
$X = 5$

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples

Triangles



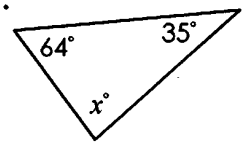
- A **triangle** is a polygon with 3 sides and 3 angles.
- On the triangle to the left, the **sides** are $\overline{AB}$, $\overline{BC}$, and $\overline{AC}$; the **angles** are $\angle A$, $\angle B$, and $\angle C$.
- The angle sum theorem states that the sum of the measures of the three angles is always 180°.

Therefore, $m\angle A + m\angle B + m\angle C = 180°$

Examples

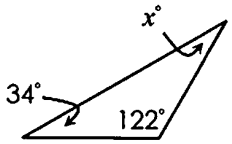
Directions: Find each missing measure.

1.



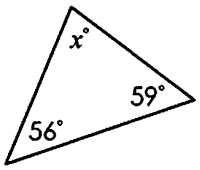
$64+35+x=180$
$99+x=180$
$\boxed{x=81}$

2.



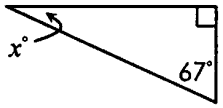
$x+34+122=180$
$x+156=180$
$\boxed{x=24}$

3.



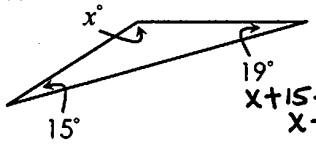
$x+56+59=180$
$x+115=180$
$\boxed{x=65}$

4.



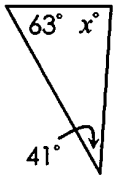
$x+67+90=180$
$x+157=180$
$\boxed{x=23}$

5.



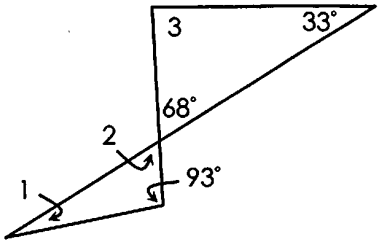
$x+15+19=180$
$x+34=180$
$\boxed{x=146}$

6.



$63+x+41=180$
$x+104=180$
$\boxed{x=76}$

7.

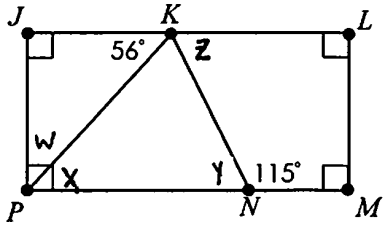


$x+68+33=180$
$x+101=180$
$x=79$

$68+93+y=180$
$161+y=180$
$y=19$

$m\angle 1 = 19°$
$m\angle 2 = 68°$
$m\angle 3 = 79°$

8.



$56+90+w=180$
$146+w=180$
$w=34$

$34+x=90$
$x=56$

$y+115=180$
$y=65$

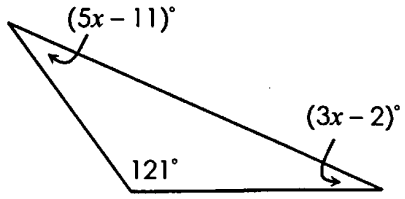
$56+59+z=180$
$z=65$

$m\angle JPK = 34°$
$m\angle KPN = 56°$
$m\angle PNK = 65°$
$m\angle NKL = 65°$

Using Algebra

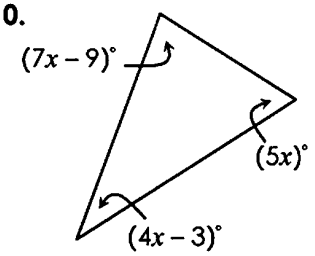
Directions: Find the value of x.

9.



$5x-11 + 3x-2 + 121 = 180$
$8x + 108 = 180$
$8x = 72$
$\boxed{x = 9}$

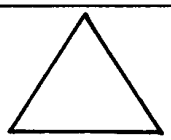
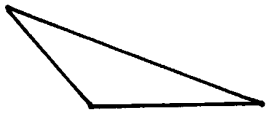
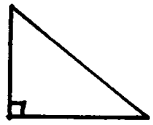
10.



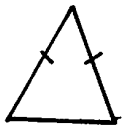
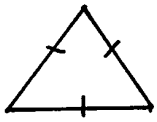
$7x-9 + 5x + 4x-3 = 180$
$16x - 12 = 180$
$16x = 192$
$\boxed{x = 12}$

Types of Triangles

CLASSIFYING BY ANGLES

All Acute Angles	One Obtuse Angle	One Right Angle
		
Acute	Obtuse	Right

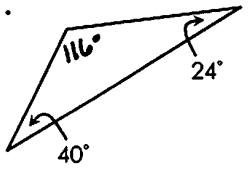
CLASSIFYING BY SIDES

No Congruent Sides	Two Congruent Sides	All Sides Congruent
		
Scalene	Isosceles	Equilateral

Examples

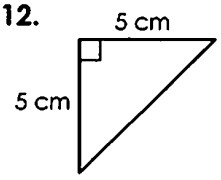
Directions: Classify each triangle by its angles and sides.

11.



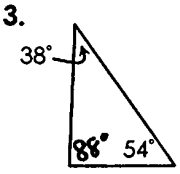
Obtuse, Scalene

12.



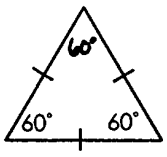
Right, Isosceles

13.



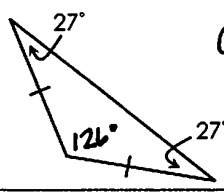
Acute, Scalene

14.



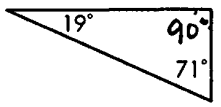
Acute, Equilateral

15.



Obtuse, Isosceles

16.



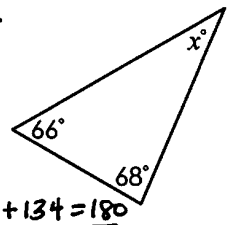
Right, Scalene

Name: _____ **Unit 6:** Geometry

Date: _____ **Per:** _____ **Homework 5:** Triangles

Directions: Find each missing measure.

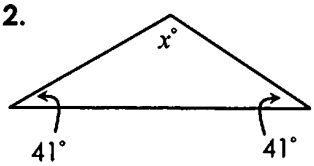
1.



$x + 134 = 180$

$x = 46$

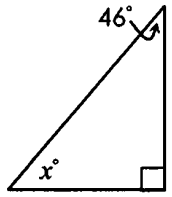
2.



$x + 82 = 180$

$x = 98$

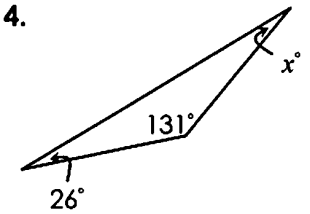
3.



$x + 136 = 180$

$x = 44$

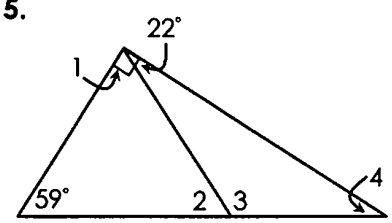
4.



$x + 157 = 180$

$x = 23$

5.



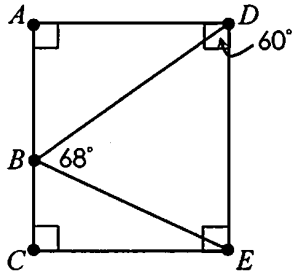
$m\angle 1 = 68°$

$m\angle 2 = 53°$

$m\angle 3 = 127°$

$m\angle 4 = 31°$

6.



$m\angle DEB = 52°$

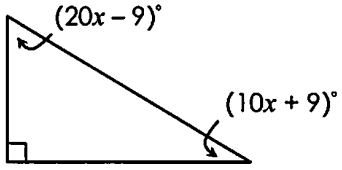
$m\angle ADB = 30°$

$m\angle CBE = 52°$

$m\angle BEC = 38°$

Directions: Find the value of x.

7.



$20x - 9 + 10x + 9 + 90 = 180$

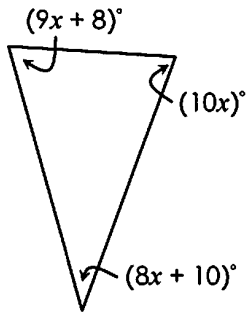
$30x + 90 = 180$

$-90 \quad -90$

$\frac{30x}{30} = \frac{90}{30}$

$x = 3$

8.



$9x + 8 + 10x + 8x + 10 = 180$

$27x + 18 = 180$

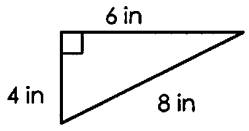
$-18 \quad -18$

$\frac{27x}{27} = \frac{162}{27}$

$x = 6$

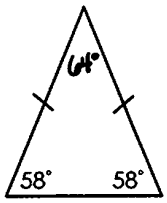
Directions: Classify each triangle by its angles and sides.

9.



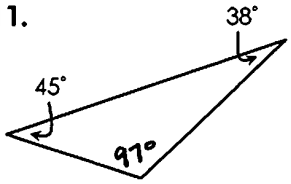
Right, Scalene

10.



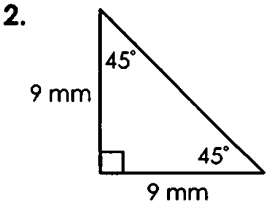
Acute, Isosceles

11.



Obtuse, Scalene

12.



Right, Isosceles

Directions: Determine whether the statement is always, sometimes, or never true.

13. If a triangle is acute, then it is an equilateral triangle. Sometimes

14. If a triangle has two acute angles it must be an acute triangle. Sometimes

15. An obtuse triangle can have a right angle. Never

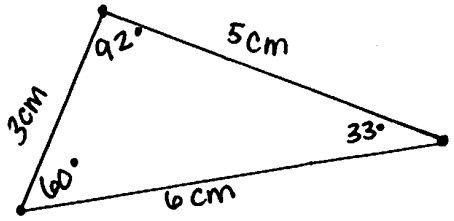
Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples

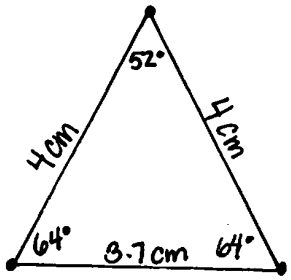
Constructing TRIANGLES

Directions: Construct a triangle with the two given side lengths. Label all side and angle measures.

1. 3 cm, 6 cm

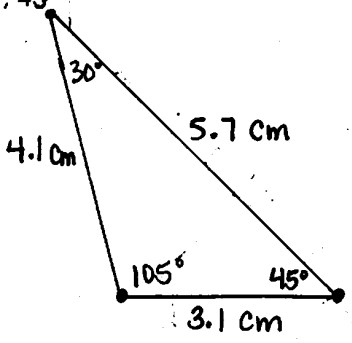


2. 4 cm, 4 cm

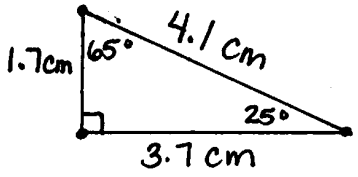


Directions: Using a protractor, construct a triangle with the two given angle measures. Label all side and angle measures.

3. 30°, 45°



4. 90°, 25°



Compare your triangles above to those drawn by your classmates. Are they the same?

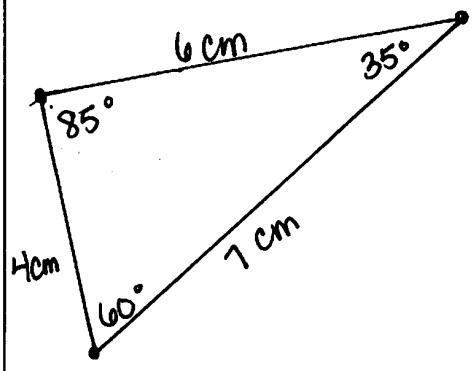
No they are not. They have differing side and/or angle measures.

Unique TRIANGLE

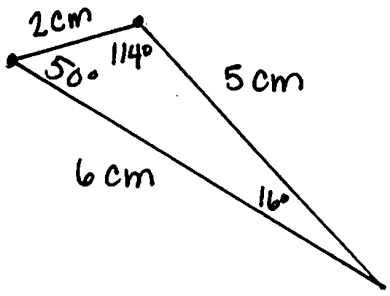
{Given 3 sides}

A **unique triangle** is a triangle that can only be drawn in one way.
Construct a triangle with the given side lengths below.
Label all side and angle measures.

5. 4 cm, 6 cm, 7 cm



6. 2 cm, 5 cm, 6 cm

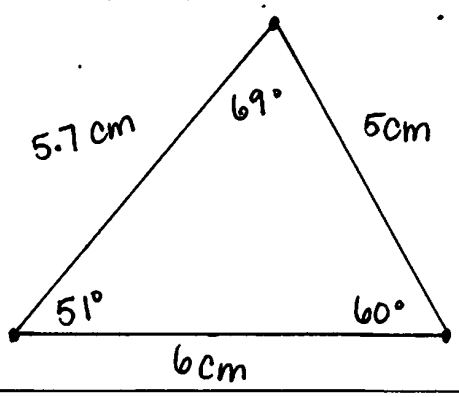


Unique TRIANGLE

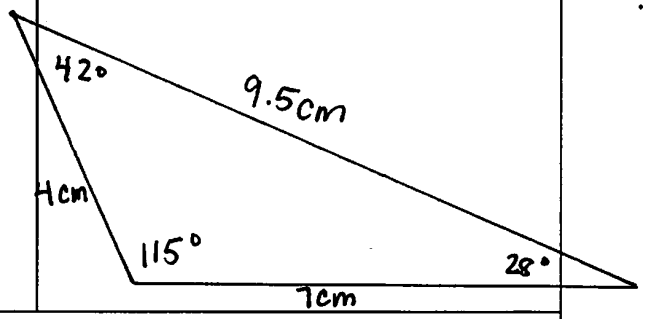
{Given 2 sides and an included angle}

An **included angle** is the angle between two given sides.
Construct a triangle with the given side lengths and their included angle.
Label all side and angle measures.

7. 5 cm, 6 cm, 60°



8. 4 cm, 7 cm, 115°



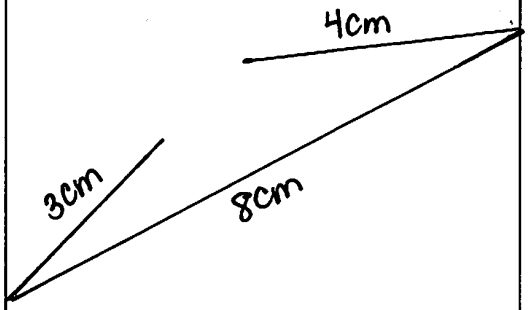
Compare your triangles above to those drawn by your classmates. Are they the same?

Yes! They have the same side length and angle measures.

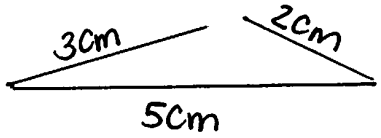
Impossible TRIANGLE

Directions: Construct a triangle given the three side lengths below.

9. 3 cm, 4 cm, 8 cm



10. 2 cm, 3 cm, 5 cm



What do you notice?

It is impossible to construct a triangle with the given side lengths.

Triangle Inequality THEOREM

The sum of the two smaller sides must be greater than the third side.

Directions: Determine if the following side lengths could form a triangle. Prove your answer with an inequality.

11. 7 cm, 8 cm, 12 cm

$7+8 > 12$

$15 > 12$ Yes!

12. 2 in, 2 in, 6 in

$2+2 > 6$

$4 > 6$ No!

13. 14 ft, 18 ft, 35 ft

$14+18 > 35$

$32 > 35$ No!

14. 10 m, 12 m, 16 m

$10+12 > 16$

$22 > 16$ Yes!

15. 5 yd, 11 yd, 16 yd

$5+11 > 16$

$16 > 16$ No!

16. 17 mm, 17 mm, 32 mm

$17+17 > 32$

$34 > 32$ Yes!

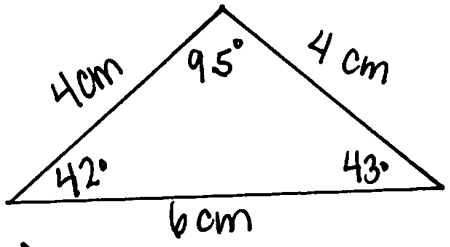
Name: _____ **Unit 6:** Geometry

Date: _____ **Per:** _____ **Homework 6:** Constructing Triangles

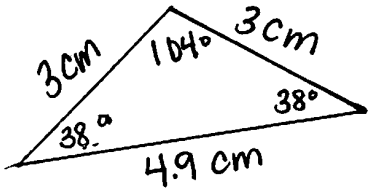
**** This is a 2-page document! ****

Directions: Construct a triangle with the given measures. Label all side and angle measurements.

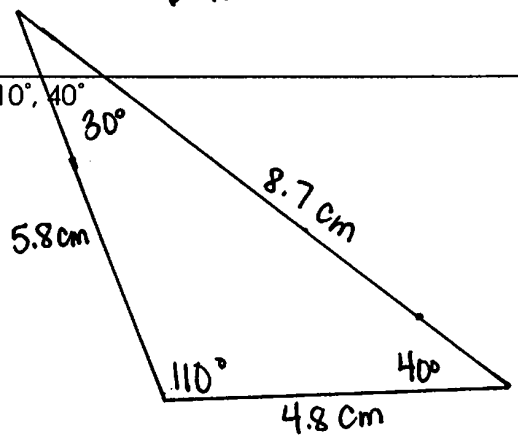
1. 4 cm, 6 cm



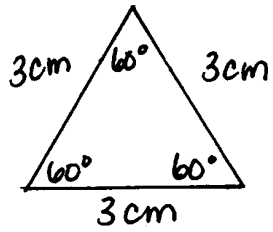
2. 3 cm, 3 cm



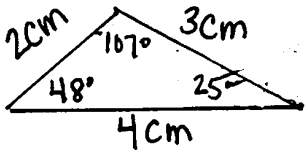
3. 110°, 40°



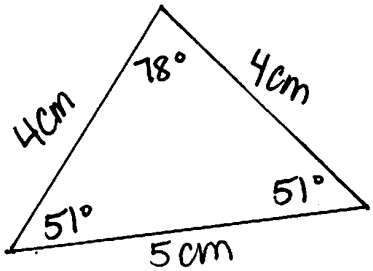
4. 60°, 60°



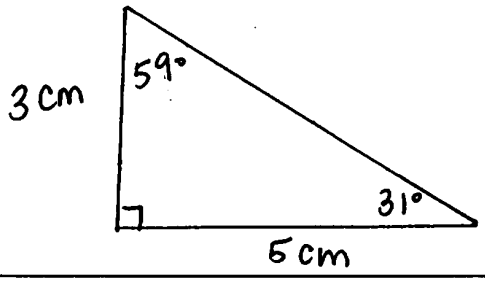
5. 2 cm, 3 cm, 4 cm



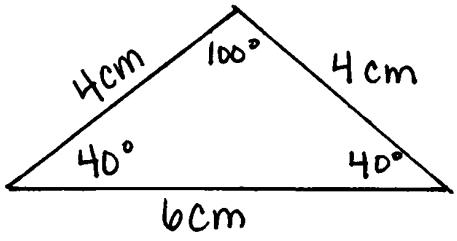
6. 4 cm, 4 cm, 5 cm



7. 5 cm, 3 cm, included angle: 90°



8. 6 cm, 4 cm, included angle: 40°



Directions: Determine if the following side lengths could form a triangle. Prove your answer with an inequality.

9. 10 ft, 12 ft, 25 ft

$10 + 12 > 25$

$22 > 25$

No!

10. 9 yd, 17 yd, 24 yd

$9 + 17 > 24$

$26 > 24$

Yes!

11. 6 in, 7 in, 13 in

$6 + 7 > 13$

$13 > 13$

No!

12. 27 m, 35 m, 65 m

$27 + 35 > 65$

$62 > 65$

No!

13. 38 mm, 45 mm, 82 mm

$38 + 45 > 82$

$83 > 82$

Yes!

14. 23 cm, 24 cm, 25 cm

$23 + 24 > 25$

$47 > 25$

Yes!

15. 19 in, 26 in, 40 in

$19 + 26 > 40$

$45 > 40$

Yes!

16. 16 ft, 20 ft, 50 ft

$16 + 20 > 50$

$36 > 50$

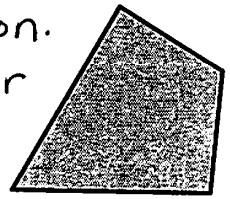
No!

Directions: Determine whether you can construct many, one, or no triangle(s) with the given measures.

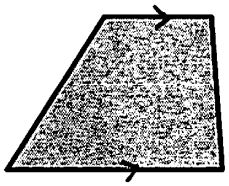
17. a triangle with angle measures of 45°, 45° and 45°	No triangles
18. a triangle with sides measuring 4 cm, 16 cm, and 7 cm	No triangles
19. a triangle with a right angle between two 6 cm sides	One triangle
20. a triangle with two 70° angles	Many triangles
21. a right triangle with an obtuse angle	No triangles
22. an isosceles triangle with two acute angles	Many triangles
23. a scalene triangle with two 35° angles	No triangles
24. a triangle with one acute, one obtuse and one right angle	No triangles
25. a triangle with sides measuring 30 ft, 30 ft, and 2 ft	One triangle

Classifying Quadrilaterals

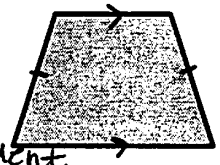
QUADRILATERAL
- 4-sided polygon.
- Sum of interior angles is 360°.



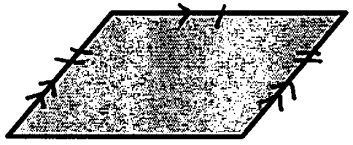
TRAPEZOID
- One pair of parallel sides.



ISOSCELES TRAPEZOID
- One pair of parallel sides.
- Non-parallel sides are congruent.

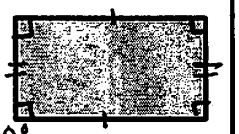


PARALLELOGRAM
- Opposite sides are parallel.
- Opposite sides are congruent.

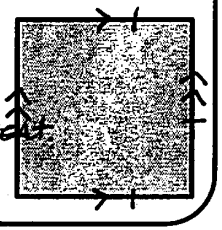


RHOMBUS
- Opposite sides are parallel.
- All sides are congruent.

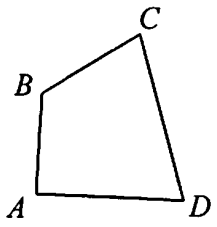
RECTANGLE
- Opposite sides are parallel and congruent.
- All angles are 90°.

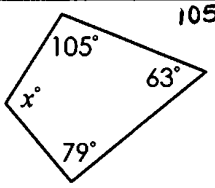


SQUARE
- Opposite sides are parallel.
- All sides are congruent.
- All angles are 90°.

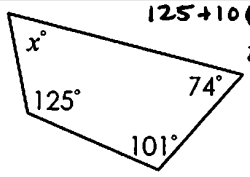


Name:	Date:
Topic:	Class:

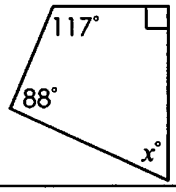
Main Ideas/Questions	Notes/Examples
QUADRILATERALS 	• A **quadrilateral** is a polygon with 4 sides and 4 angles. • On the quadrilateral to the left, the **sides** are $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, and $\overline{AD}$; the **angles** are $\angle A$, $\angle B$, $\angle C$, and $\angle D$. • The sum of the measures of the four angles is always 360°. Therefore, $m\angle A + m\angle B + m\angle C + m\angle D = 360°$
ANGLE MEASURES	**Directions:** Find each missing measure.

1. 

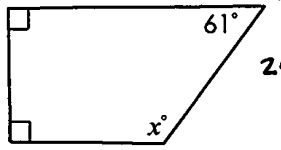
$105+63+79+x=360$
$247+x=360$
$x=113$

2. 

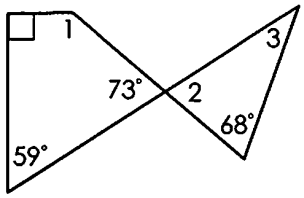
$125+101+74+x=360$
$300+x=360$
$x=60$

3. 

$117+90+88+x=360$
$295+x=360$
$x=65$

4. 

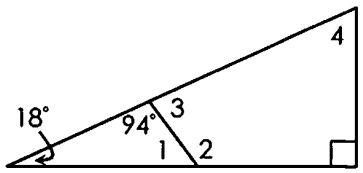
$90+90+61+x=360$
$241+x=360$
$x=119$

5. 

$\angle 1$: $90+73+59+x=360$
$222+x=360$
$x=138$

$\angle 3$: $73+68+y=180$
$141+y=180$
$y=39$

$m\angle 1 = 138°$
$m\angle 2 = 73°$
$m\angle 3 = 39°$

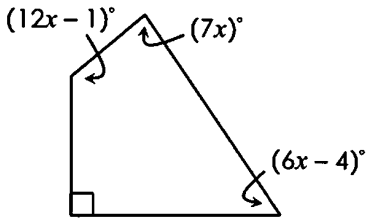
6. 

$\angle 1$: $18+94+x=180$
$112+x=180$
$x=68$

$86+112+90+y=360$
$288+y=360$
$y=72$

$m\angle 1 = 68°$
$m\angle 2 = 112°$
$m\angle 3 = 86°$
$m\angle 4 = 72°$

7. Find the value of x.



$12x-1+7x+6x-4+90=360$
$15x+85=360$
$15x=275$
$x=11$

PROPERTIES of QUADRILATERALS

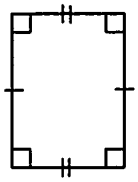
Place a checkmark on the properties that apply to each quadrilateral.

	exactly one pair of opposite sides are parallel	both pairs of opposite sides are parallel	opposite sides are congruent	four congruent Sides	four right angles
Parallelogram		X	X		
Rhombus		X	X	X	
Rectangle		X	X		X
Square		X	X	X	X
Trapezoid	X				

CLASSIFYING QUADRILATERALS

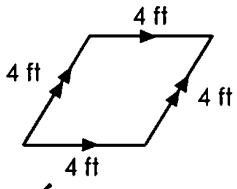
Classify each quadrilateral using all names that apply.

8.



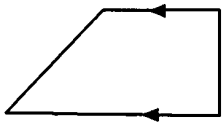
- [x] Quadrilateral
- [ ] Trapezoid
- [ ] Isosceles Trapezoid
- [x] Parallelogram
- [x] Rectangle
- [ ] Rhombus
- [ ] Square

9.



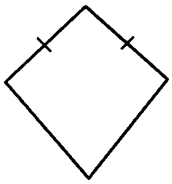
- [x] Quadrilateral
- [ ] Trapezoid
- [ ] Isosceles Trapezoid
- [x] Parallelogram
- [ ] Rectangle
- [x] Rhombus
- [ ] Square

10.



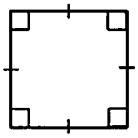
- [x] Quadrilateral
- [x] Trapezoid
- [ ] Isosceles Trapezoid
- [ ] Parallelogram
- [ ] Rectangle
- [ ] Rhombus
- [ ] Square

11.



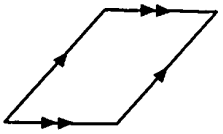
- [x] Quadrilateral
- [ ] Trapezoid
- [ ] Isosceles Trapezoid
- [ ] Parallelogram
- [ ] Rectangle
- [ ] Rhombus
- [ ] Square

12.



- [x] Quadrilateral
- [ ] Trapezoid
- [ ] Isosceles Trapezoid
- [x] Parallelogram
- [x] Rectangle
- [x] Rhombus
- [x] Square

13.



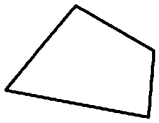
- [x] Quadrilateral
- [ ] Trapezoid
- [x] Isosceles Trapezoid
- [x] Parallelogram
- [ ] Rectangle
- [ ] Rhombus
- [ ] Square

Classify each quadrilateral using the name that best describes it.

14.

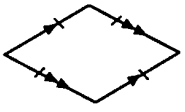
Isosceles Trapezoid

15.



Quadrilateral

16.



Rhombus

Determine whether the statement is always, sometimes, or never true.

17. A rectangle is a rhombus.

Sometimes

18. A parallelogram is a square.

Sometimes

19. A trapezoid is a quadrilateral.

Always

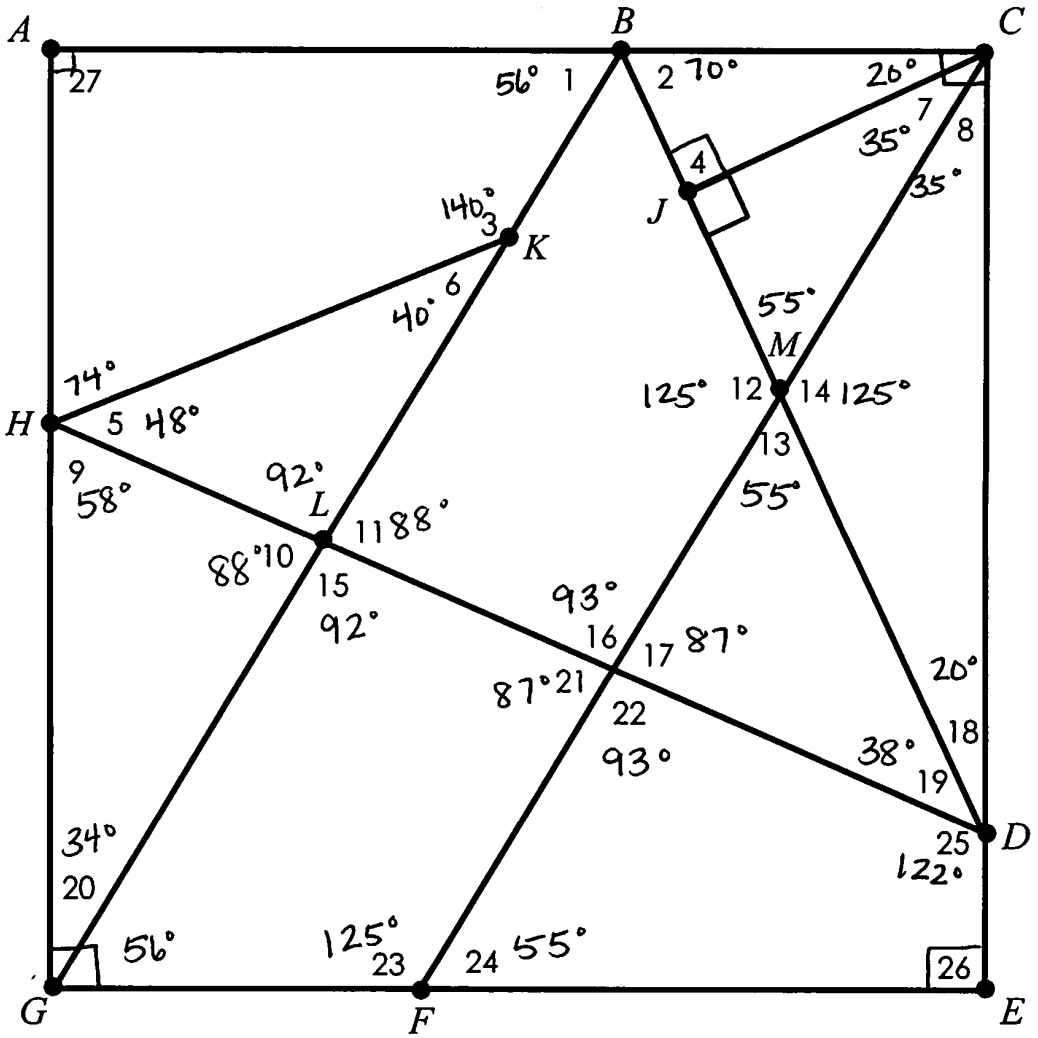
20. A square is a rectangle.

Always

The Great Angle CHALLENGE!

Name: _____

Directions:
Find each angle measure!



Given: $ACEG$ is a square, $m\angle BCJ = 20°$, $m\angle KLH = 92°$, $m\angle AHK = 74°$, $m\angle KBJ = 54°$, $m\angle BMC = 55°$, $m\angle LGF = 56°$

$m\angle 1 =$ 56°
$m\angle 2 =$ 70°
$m\angle 3 =$ 140°
$m\angle 4 =$ 90°
$m\angle 5 =$ 48°
$m\angle 6 =$ 40°
$m\angle 7 =$ 35°
$m\angle 8 =$ 35°
$m\angle 9 =$ 58°
$m\angle 10 =$ 88°
$m\angle 11 =$ 88°
$m\angle 12 =$ 125°
$m\angle 13 =$ 55°
$m\angle 14 =$ 125°
$m\angle 15 =$ 92°
$m\angle 16 =$ 93°
$m\angle 17 =$ 87°
$m\angle 18 =$ 20°
$m\angle 19 =$ 38°
$m\angle 20 =$ 34°
$m\angle 21 =$ 87°
$m\angle 22 =$ 93°
$m\angle 23 =$ 125°
$m\angle 24 =$ 55°
$m\angle 25 =$ 122°
$m\angle 26 =$ 90°
$m\angle 27 =$ 90°

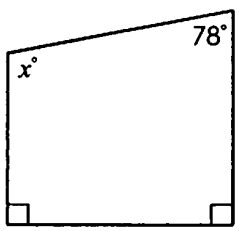
Name: _____ **Unit 6:** Geometry

Date: _____ **Per:** _____ **Homework 7:** Quadrilaterals

**** This is a 2-page document! ****

Directions: Find each missing measure.

1.

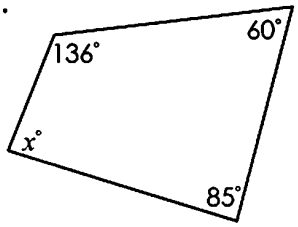


$x + 78 + 90 + 90 = 360$

$x + 258 = 360$

$\boxed{x = 102}$

2.

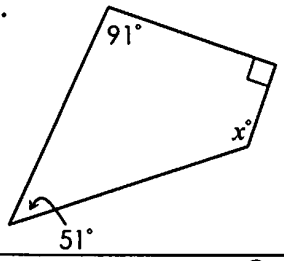


$136 + 60 + 85 + x = 360$

$281 + x = 360$

$\boxed{x = 79}$

3.

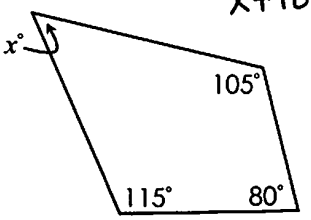


$91 + 90 + 51 + x = 360$

$232 + x = 360$

$\boxed{x = 128}$

4.

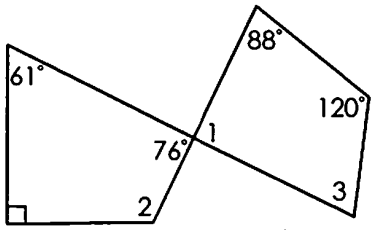


$x + 105 + 80 + 115 = 360$

$300 + x = 360$

$\boxed{x = 60}$

5.



$\angle 2$: $90 + 61 + 90 + x = 360$

$227 + x = 360$

$x = 133$

$\angle 3$: $88 + 120 + 76 + y = 360$

$284 + y = 360$

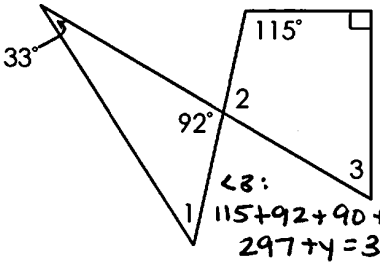
$y = 76$

$m\angle 1 =$ 76°

$m\angle 2 =$ 133°

$m\angle 3 =$ 76°

6.



$\angle 1$: $33 + 92 + x = 180$

$125 + x = 180$

$x = 55$

$\angle 3$: $115 + 92 + 90 + y = 360$

$297 + y = 360$

$y = 63$

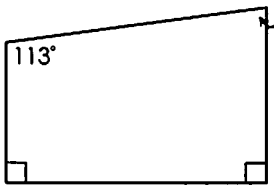
$m\angle 1 =$ 55°

$m\angle 2 =$ 92°

$m\angle 3 =$ 63°

Directions: Find the value of x.

7.



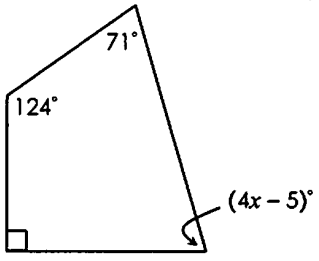
$90 + 90 + 113 + 12x + 7 = 360$

$12x + 300 = 360$

$12x = 60$

$\boxed{x = 5}$

8.



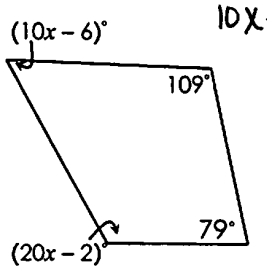
$124 + 71 + 90 + 4x - 5 = 180$

$4x + 280 = 360$

$4x = 80$

$\boxed{x = 20}$

9.



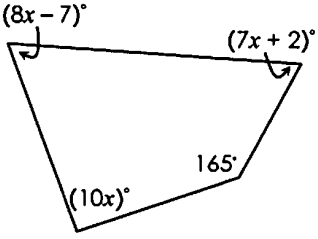
$10x - 6 + 109 + 79 + 20x - 2 = 360$

$30x + 180 = 360$

$30x = 180$

$\boxed{x = 6}$

10.



$8x - 7 + 7x + 2 + 165 + 10x = 360$

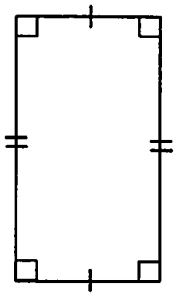
$25x + 160 = 360$

$25x = 200$

$\boxed{x = 8}$

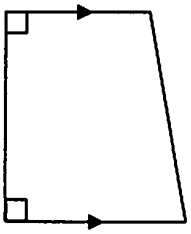
Directions: Classify each quadrilateral using all names that apply.

11.



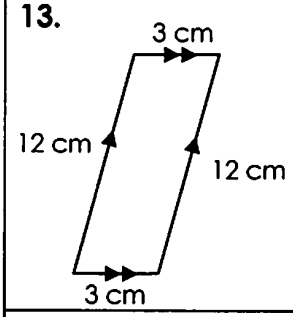
- [x] Quadrilateral
- [ ] Trapezoid
- [ ] Isosceles Trapezoid
- [x] Parallelogram
- [x] Rectangle
- [ ] Rhombus
- [ ] Square

12.



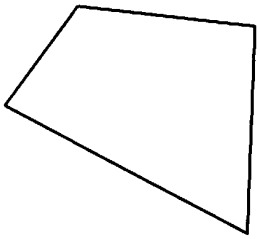
- [x] Quadrilateral
- [x] Trapezoid
- [ ] Isosceles Trapezoid
- [ ] Parallelogram
- [ ] Rectangle
- [ ] Rhombus
- [ ] Square

13.



- [x] Quadrilateral
- [ ] Trapezoid
- [ ] Isosceles Trapezoid
- [x] Parallelogram
- [ ] Rectangle
- [ ] Rhombus
- [ ] Square

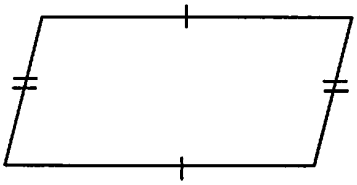
14.



- [x] Quadrilateral
- [ ] Trapezoid
- [ ] Isosceles Trapezoid
- [ ] Parallelogram
- [ ] Rectangle
- [ ] Rhombus
- [ ] Square

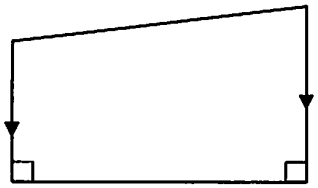
Directions: Classify each quadrilateral using the name that best describes it.

15.



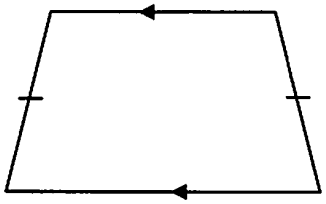
Parallelogram

16.



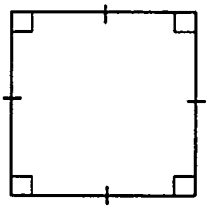
Trapezoid

17.



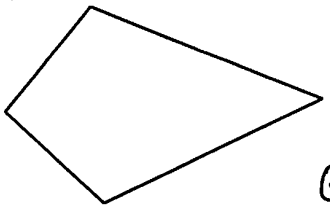
Isosceles Trapezoid

18.



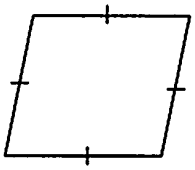
Square

19.



Quadrilateral

20.



Rhombus

Directions: Determine whether the statement is always, sometimes or never true.

21. A rectangle is a square.

Sometimes

22. A trapezoid is a parallelogram.

Never

23. A rhombus is a square.

Sometimes

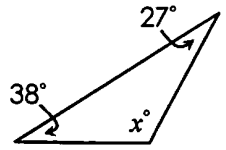
Name: _____ **Math 7**

Date: _____ **Per:** _____ **Unit 6:** Geometry

Quiz 6-2: Triangles & Quadrilaterals

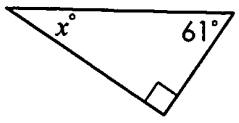
Find each measure.

1.



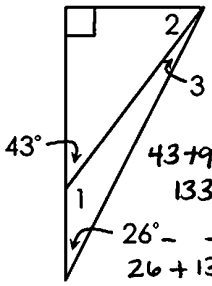
$38+27+X=180$
$65+X=180$
$X=115$

2.



$X+61+90=180$
$X+151=180$
$X=29$

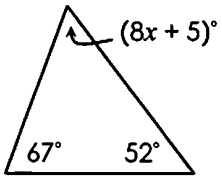
3.



$43+90+X=180$
$133+X=180$
$X=47$
$26+137+Y=180$
$163+Y=180$
$Y=17$

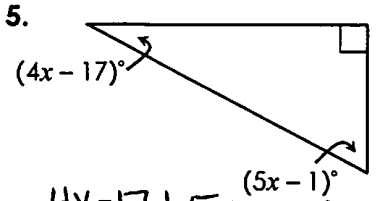
Solve for x.

4.



$8X+5+67+52=180$
$8X+124=180$
$8X=56$
$X=7$

5.

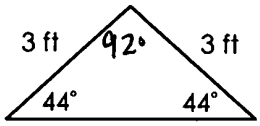


$4X-17+5X-1+90=180$
$9X+72=180$
$9X=108$
$X=12$

1. $x =$ 115°
2. $x =$ 29°
3. $m\angle 1 =$ 137°
   $m\angle 2 =$ 47°
   $m\angle 3 =$ 17°
4. $x =$ 7
5. $x =$ 12

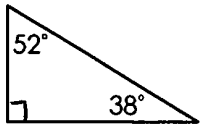
Classify each triangle by its angles and sides.

6.



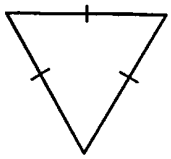
Obtuse
Isosceles

7.



Right
Scalene

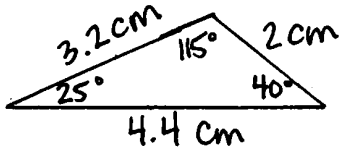
8.



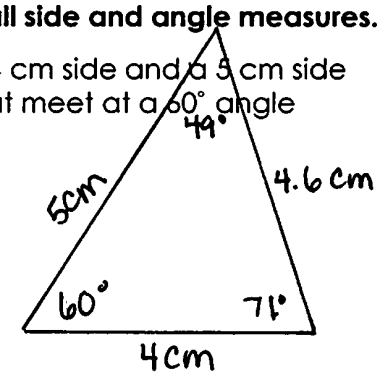
Acute
Equilateral

Construct a triangle with the given description. Label all side and angle measures.

9. angle measures of 25° and 40°



10. a 4 cm side and a 5 cm side that meet at a 60° angle



Determine whether you can construct <u>many</u>, <u>one</u>, or <u>no</u> triangle(s) with the given measurements.

11. a triangle with two obtuse angles

12. a triangle with side lengths measuring 6 ft, 10 ft, and 14 ft

13. a triangle with angle measures of 65°, 80°, and 35°.

14. a triangle with side lengths measuring 7 m, 12 m, and 19 m

15. an isosceles triangle with two 4 in. sides and a 120° angle between them

11. None

12. One

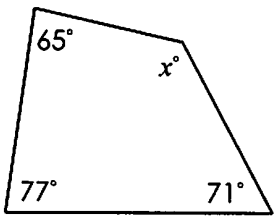
13. Many

14. None

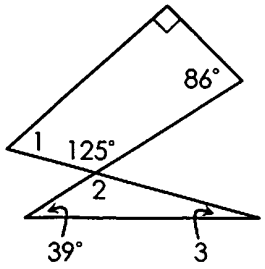
15. One

Find each measure.

16.



17.



16. $x =$ 147°

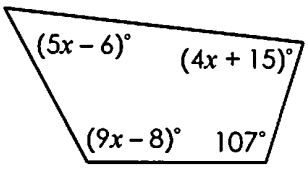
17. $m\angle 1 =$ 59°

$m\angle 2 =$ 125°

$m\angle 3 =$ 16°

Solve for x.

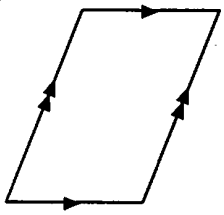
18.



18. $x =$ 14

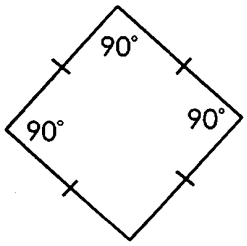
Classify each shape using all names that apply.

19.



- [x] Quadrilateral
- [ ] Trapezoid
- [ ] Isosceles Trapezoid
- [x] Parallelogram
- [ ] Rectangle
- [ ] Rhombus
- [ ] Square

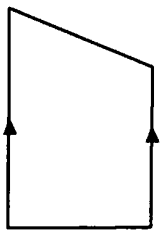
20.



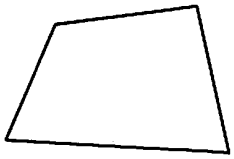
- [x] Quadrilateral
- [ ] Trapezoid
- [ ] Isosceles Trapezoid
- [x] Parallelogram
- [x] Rectangle
- [x] Rhombus
- [x] Square

Classify each shape using the name that BEST describes it.

21.



22.



21. Trapezoid

22. Quadrilateral

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples

POLYGON

A **polygon** is a Closed figure formed by three or more line segments, called sides.

POLYGON	NOT POLYGONS
	

Classifying POLYGONS

Polygons can be classified by the **number of sides** they have. Complete the table below.

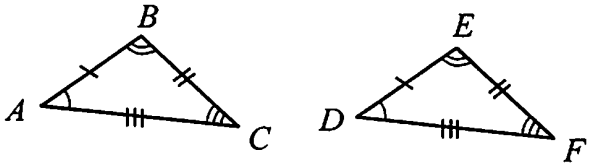
# of Sides	Polygon Name	# of Sides	Polygon Name
3	Triangle	7	Heptagon
4	Quadrilateral	8	Octagon
5	Pentagon	9	Nonagon
6	Hexagon	10	Decagon

CONGRUENT POLYGONS

- **Congruent polygons** have the same angles and sides.
- All **corresponding parts** (angles and sides) are congruent.

Congruency STATEMENTS

When polygons are congruent, we can write a **congruency statement**.



$\triangle ABC \cong \triangle DEF$

A valid congruency statement must match all corresponding angles and sides.

Directions: Identify the congruent parts given the congruency statement.

1. $\triangle CDE \cong \triangle FGH$

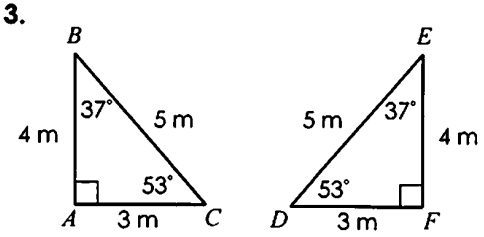
$\angle C \cong$ $\angle F$	$\overline{CD} \cong \overline{FG}$
$\angle D \cong$ $\angle G$	$\overline{DE} \cong \overline{GH}$
$\angle E \cong$ $\angle H$	$\overline{CE} \cong \overline{FH}$

2. parallelogram $PQRS \cong$ parallelogram $WXYZ$

$\angle Q \cong$ $\angle X$	$\overline{QR} \cong \overline{XY}$
$\angle Z \cong$ $\angle S$	$\overline{YZ} \cong \overline{RS}$
$\angle R \cong$ $\angle Y$	$\overline{PS} \cong \overline{WZ}$

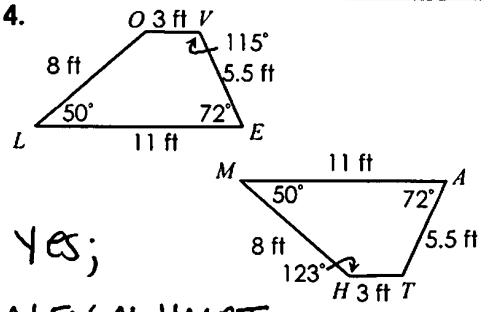
Directions: Determine if the polygons are congruent. If yes, write a congruency statement.

3.



Yes; $\triangle ABC \cong \triangle FED$

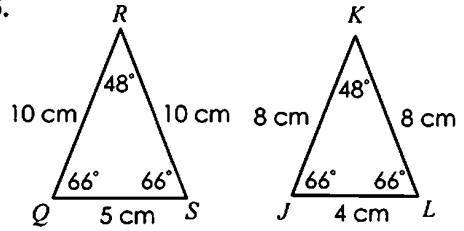
4.



Yes;

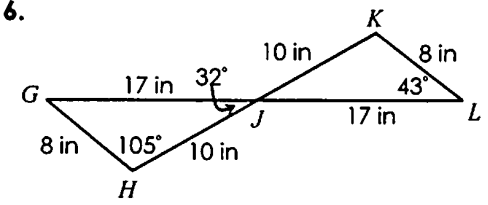
$\triangle LEV \cong \triangle HMAT$

5.



No

6.



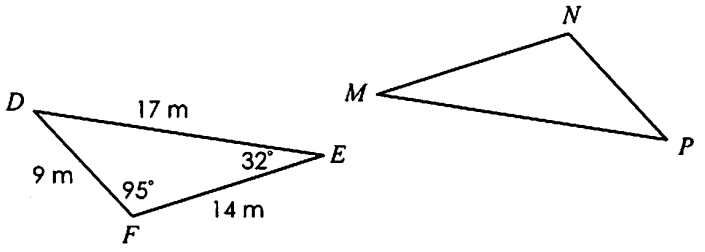
Yes;

$\triangle JGH \cong \triangle JLK$

FINDING Measures

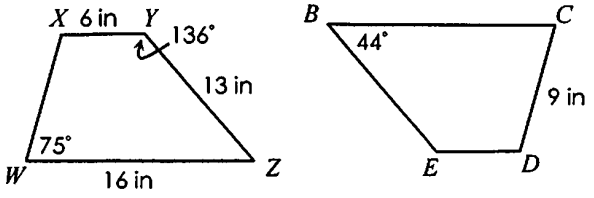
Directions: Find each measure. (Hint- match corresponding parts!)

7. $\triangle DEF \cong \triangle PMN$



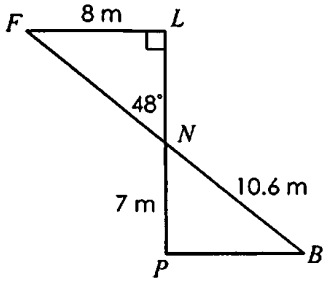
$m\angle P =$ 53°
$m\angle M =$ 32°
$m\angle N =$ 95°
$PM =$ 17m
$PN =$ 9m
$MN =$ 14m

8. trapezoid $WXYZ \cong$ trapezoid $CDEB$



$m\angle C =$ 75°
$m\angle Z =$ 44°
$m\angle X =$ 105°
$WX =$ 9in
$BC =$ 16in
$BE =$ 13in

9. $\triangle FLN \cong \triangle BPN$



$m\angle F =$ 42°
$m\angle P =$ 90°
$m\angle B =$ 42°
$FN =$ 10.6m
$NP =$ 7m
$PB =$ 8m

Name: _____ **Unit 6:** Geometry

Date: _____ **Per:** _____ **Homework 8:** Congruent Polygons

Directions: Identify the congruent parts given the congruency statement.

1. $\Delta JKL \cong \Delta XYZ$

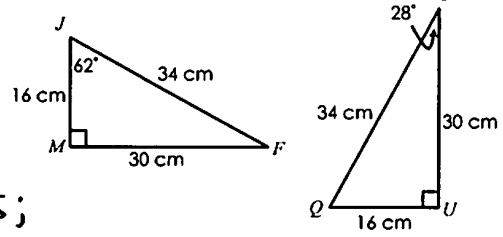
$\angle L \cong$ $\angle Z$	$\overline{KL} \cong$ $\overline{YZ}$
$\angle Y \cong$ $\angle K$	$\overline{XY} \cong$ $\overline{JK}$
$\angle J \cong$ $\angle X$	$\overline{ZX} \cong$ $\overline{LJ}$

2. rectangle $DEFG \cong$ rectangle $PQRS$

$\angle G \cong$ $\angle S$	$\overline{GD} \cong$ $\overline{SP}$
$\angle E \cong$ $\angle Q$	$\overline{QR} \cong$ $\overline{EF}$
$\angle P \cong$ $\angle D$	$\overline{DE} \cong$ $\overline{PQ}$

Directions: Determine if the polygons are congruent. If yes, write a congruency statement.

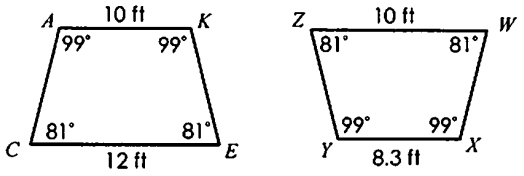
3.



Yes;

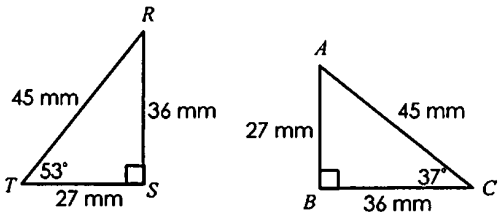
$\Delta FMJ \cong \Delta SUQ$

4.



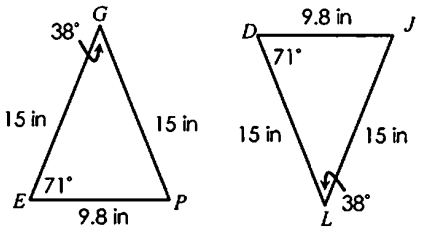
No!

5.



Yes; $\Delta RST \cong \Delta CBA$

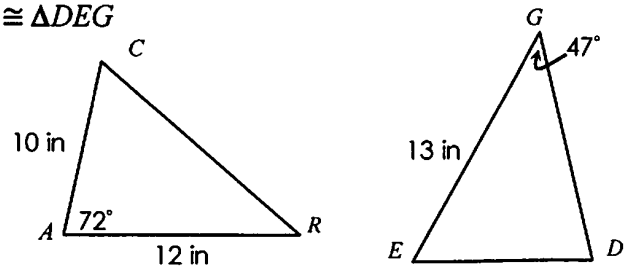
6.



Yes; $\Delta GEP \cong \Delta LJD$

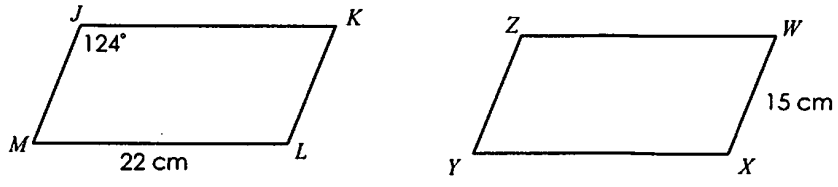
Directions: Find each measure. (Hint- match corresponding parts!)

7. $\Delta ACR \cong \Delta DEG$



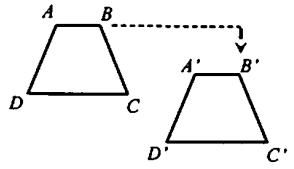
$m\angle R =$ 47°
$m\angle C =$ 61°
$m\angle E =$ 61°
$ED =$ 10 in
$CR =$ 13 in
$DG =$ 12 in

8. parallelogram $MJKL \cong$ parallelogram $WXYZ$



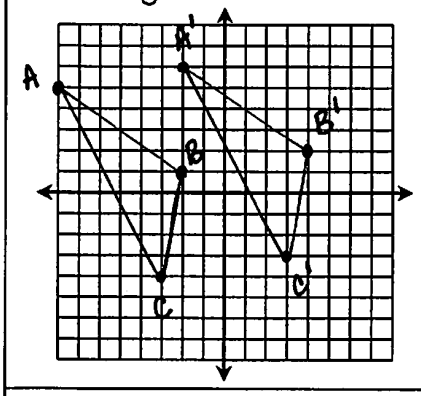
$m\angle K =$ 56°
$m\angle W =$ 56°
$m\angle X =$ 124°
$ZW =$ 22 cm
$MJ =$ 15 cm
$YX =$ 22 cm

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
TRANSFORMATION	A rule that causes a change to a figure. The new figure is called an "image" of the original.
TRANSLATION  A' is read as "A prime". The prime symbol is used to name the image.	• A **translation** slides a figure horizontally and/or Vertically. • Every point of the figure moves the same distance and in the same direction. • Translations result in Congruent polygons meaning that the figures maintain their same size and shape.

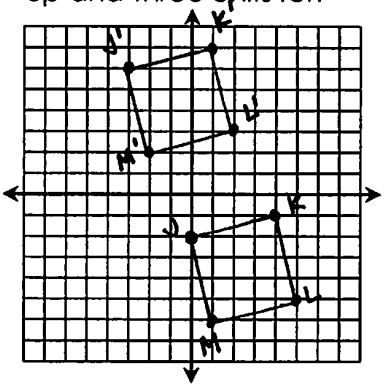
Directions: Graph and label each figure and its image under the given translation. Give the coordinates of the image.

1. Triangle ABC with vertices $A(-8, 5)$, $B(-2, 1)$, and $C(-3, -4)$: translated one unit up and six units right



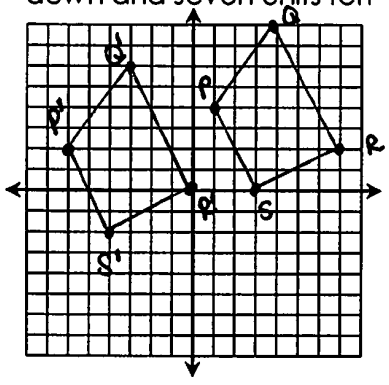
$A'(-2, 6)$
$B'(4, 2)$
$C'(3, -3)$

2. Square $JKLM$ with vertices $J(0, -2)$, $K(4, -1)$, $L(5, -5)$, and $M(1, -6)$: translated eight units up and three units left



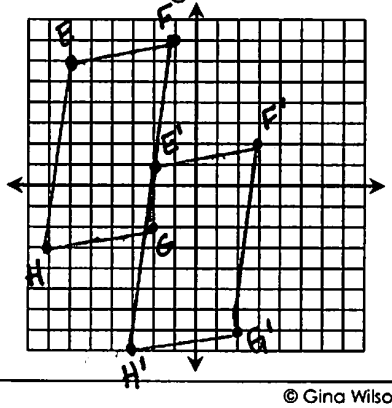
$J'(-3, 6)$
$K'(1, 7)$
$L'(2, 3)$
$M'(-2, 2)$

3. Trapezoid $PQRS$ with vertices $P(1, 4)$, $Q(4, 8)$, $R(7, 2)$, and $S(3, 0)$: translated two units down and seven units left



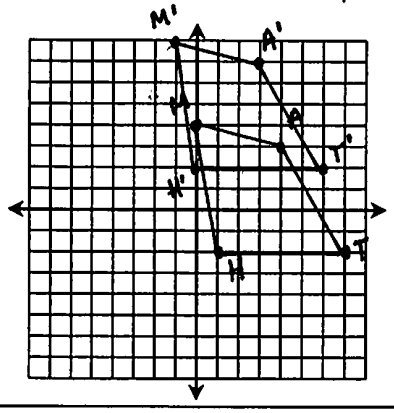
$P'(-6, 2)$
$Q'(-3, 6)$
$R'(0, 0)$
$S'(-4, -2)$

4. Parallelogram $EFGH$ with vertices $E(-6, 6)$, $F(-1, 7)$, $G(-2, -2)$, and $H(-7, -3)$: translated four units right and five units down



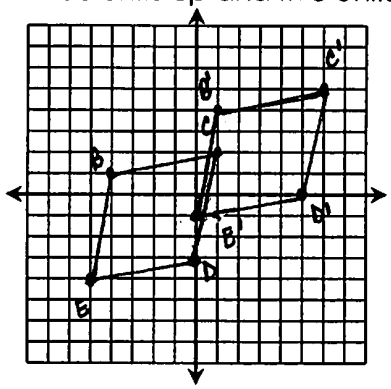
$E'(-2, 1)$
$F'(3, 2)$
$G'(2, -7)$
$H'(-3, -8)$

5. Quadrilateral $MATH$ with vertices $M(0, 4)$, $A(4, 3)$, $T(7, -2)$, and $H(1, -2)$: translated one unit left and four units up



M'(-1 , 8)
A'(3 , 7)
T'(6 , 2)
H'(0 , 2)

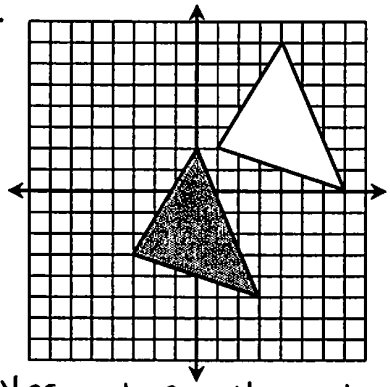
6. Rhombus $BCDE$ with vertices $B(-4, 1)$, $C(1, 2)$, $D(0, -3)$, and $E(-5, -4)$: translated three units up and five units right



B'(1 , 4)
C'(6 , 5)
D'(5 , 0)
E'(0 , -1)

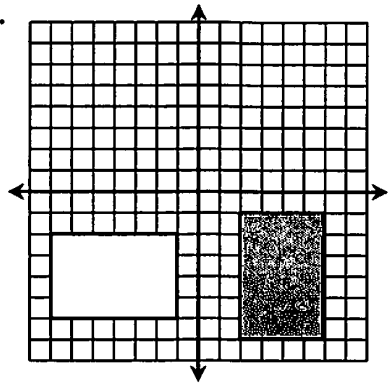
Directions: Determine if the shaded figure is a translation of the white figure. If yes, describe the translation.

7.



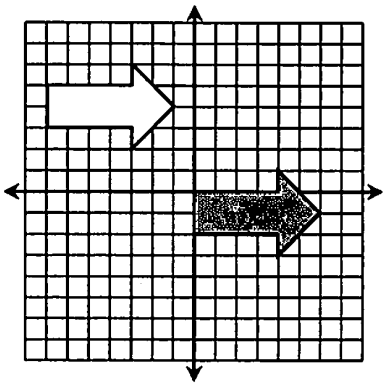
Yes; left 4 and down 5

8.



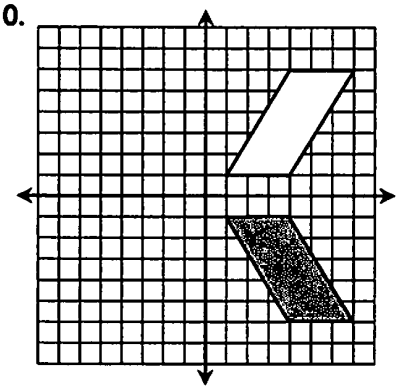
No

9.



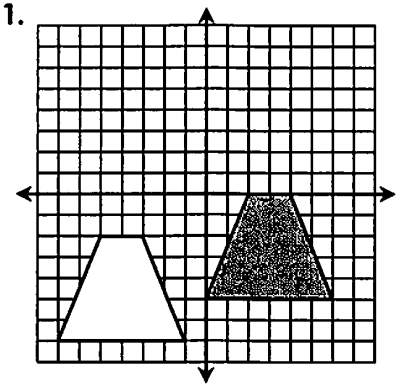
Yes; right 7 and down 5

10.



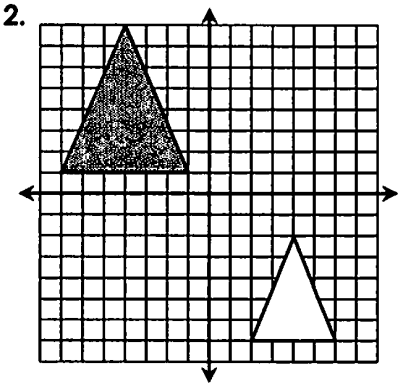
No

11.



Yes; right 7 and up 2

12.



No

Directions: Describe the translation of the point to its image.

13. $A(3, -1) \rightarrow A'(7, 0)$

Right 4, up 1

14. $P(-5, 6) \rightarrow P'(-7, 1)$

Left 2, down 5

15. $K(-8, -4) \rightarrow K'(-1, -7)$

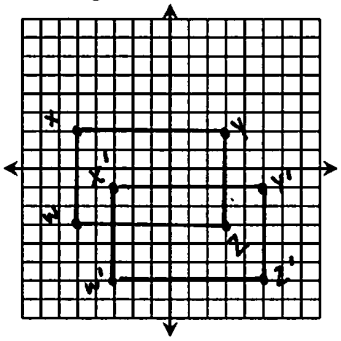
Right 7, down 3

Name: _____ **Unit 6:** Geometry

Date: _____ **Per:** _____ **Homework 9:** Translations

Directions: Graph and label each figure and its image under the given translation. Give the coordinates of the image.

1. Rectangle $WXYZ$ with vertices $W(-5, -3)$, $X(-5, 2)$, $Y(3, 2)$, and $Z(3, -3)$: translated two units right and three units down



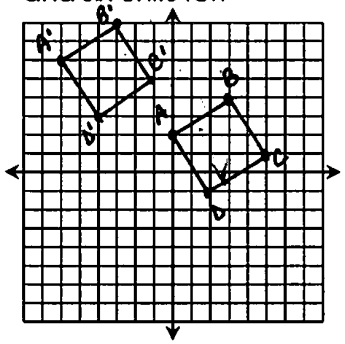
$W'(\underline{-3}, \underline{-6})$

$X'(\underline{-3}, \underline{-1})$

$Y'(\underline{5}, \underline{-1})$

$Z'(\underline{5}, \underline{-6})$

2. Square $ABCD$ with vertices $A(0, 2)$, $B(3, 4)$, $C(5, 1)$, and $D(2, -1)$: translated four units up and six units left



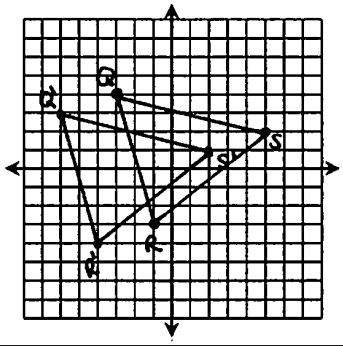
$A'(\underline{-6}, \underline{6})$

$B'(\underline{-3}, \underline{8})$

$C'(\underline{-1}, \underline{5})$

$D'(\underline{-4}, \underline{3})$

3. Triangle QRS with vertices $Q(-3, 4)$, $R(-1, -3)$, and $S(5, 2)$: translated one unit down and three units left

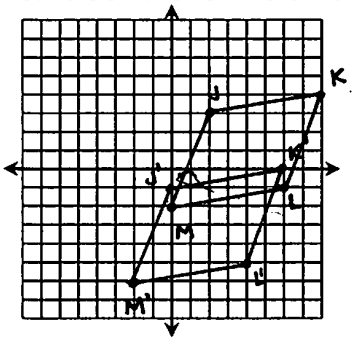


$Q'(\underline{-6}, \underline{3})$

$R'(\underline{-4}, \underline{-4})$

$S'(\underline{2}, \underline{1})$

4. Parallelogram $JKLM$ with vertices $J(2, 3)$, $K(8, 4)$, $L(6, -1)$, and $M(0, -2)$: translated four units down and two units left



$J'(\underline{0}, \underline{-1})$

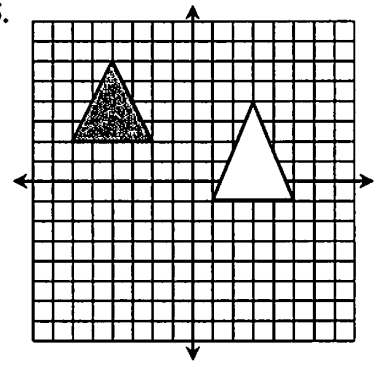
$K'(\underline{6}, \underline{0})$

$L'(\underline{4}, \underline{-5})$

$M'(\underline{-2}, \underline{-6})$

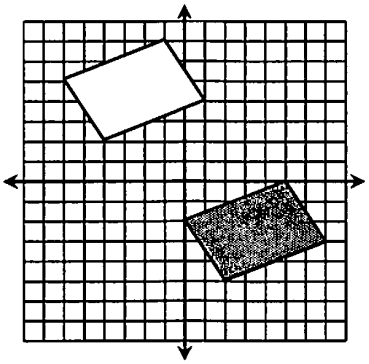
Directions: Determine if the shaded figure is a translation of the white figure. If yes, describe the translation.

5.



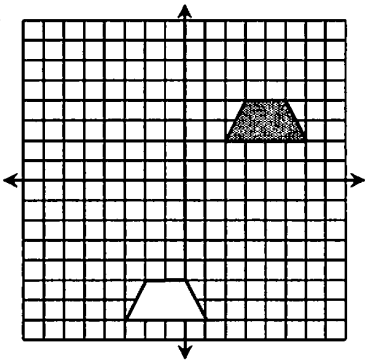
No

6.



Yes; Right 6, down 7

7.



Yes; Right 5, up 9

Directions: Describe the translation of the point to its image.

8. $A(5, 3) \rightarrow A'(-4, -1)$

Left 9, down 4

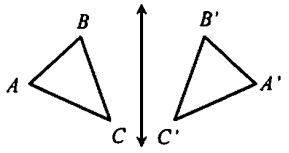
9. $C(-2, 1) \rightarrow C'(5, 3)$

Right 7, up 2

10. $R(-4, -4) \rightarrow R'(-2, 0)$

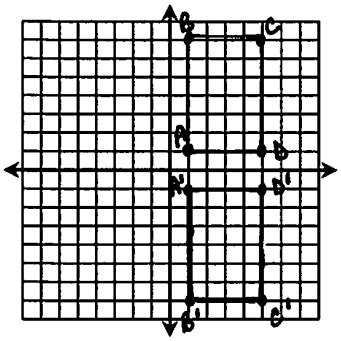
Right 2, up 4

Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
REFLECTION 	• A flip over a line called the line of reflection. • Each point and its image are the same distance from the line of reflection. • The x - axis and y - axis are common lines of reflection. • Reflections also result in congruent polygons.

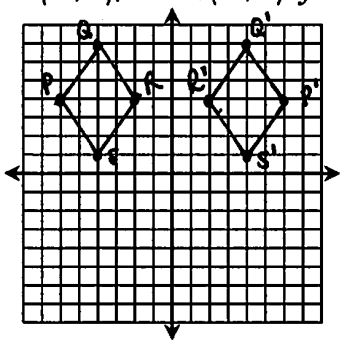
Directions: Graph and label each figure and its image under a reflection in the given axis. Give the coordinates of the image.

1. Rectangle $ABCD$ with vertices $A(1, 1)$, $B(1, 7)$, $C(5, 7)$, and $D(5, 1)$: **x-axis**



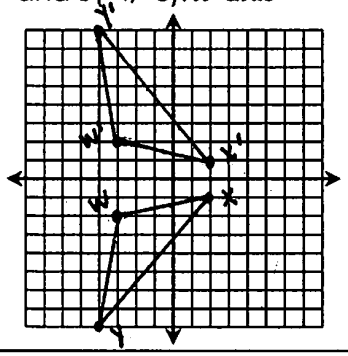
$A'(1, -1)$
$B'(1, -7)$
$C'(5, -7)$
$D'(5, -1)$

2. Rhombus $PQRS$ with vertices $P(-6, 4)$, $Q(-4, 7)$, $R(-2, 4)$, and $S(-4, 1)$: **y-axis**



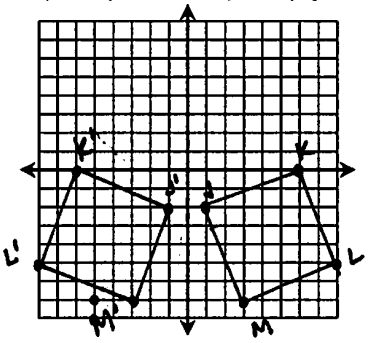
$P'(6, 4)$
$Q'(4, 7)$
$R'(2, 4)$
$S'(4, 1)$

3. Triangle WXY with vertices $W(-3, -2)$, $X(2, -1)$, and $Y(-4, -8)$: **x-axis**



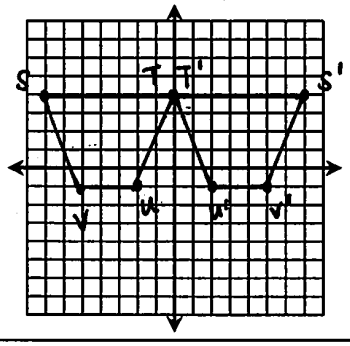
$W'(-3, 2)$
$X'(2, 1)$
$Y'(-4, 8)$

4. Square $JKLM$ with vertices $J(1, -2)$, $K(6, 0)$, $L(8, -5)$, and $M(3, -7)$: **y-axis**



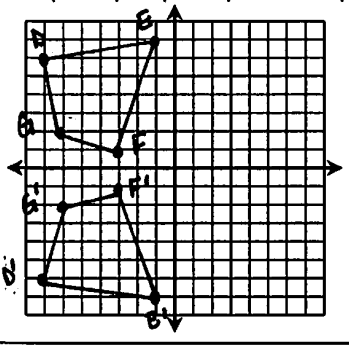
$J'(-1, -2)$
$K'(-6, 0)$
$L'(-8, -5)$
$M'(-3, -7)$

5. Trapezoid $STUV$ with vertices $S(-7, 4)$, $T(0, 4)$, $U(-2, -1)$, and $V(-5, -1)$: **y-axis**



$S'(7, 4)$
$T'(0, 4)$
$U'(2, -1)$
$V'(5, -1)$

6. Quadrilateral $DEFG$ with vertices $D(-7, 6)$, $E(-1, 7)$, $F(-3, 1)$, and $G(-6, 2)$: **x-axis**



$D'(-7, -6)$
$E'(-1, -7)$
$F'(-3, -1)$
$G'(-6, -2)$

NAME THE Line of Reflection

Directions: The coordinates of a point and its image are given. Name the line of reflection.

7. $S(3, -3) \rightarrow S'(-3, -3)$

y-axis

8. $N(-5, 2) \rightarrow N'(-5, -2)$

x-axis

9. $P(-4, -6) \rightarrow P'(-4, 6)$

x-axis

10. $H(1, 7) \rightarrow G'(-1, 7)$

y-axis

COMPOSITE Transformations

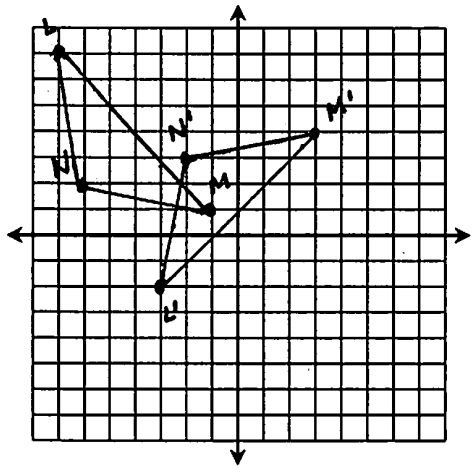
More than one transformation.

Ex: A reflection followed by a translation.

Directions: Graph and label each figure and its image under the given transformations. Give the coordinates of the image.

11. Triangle LMN with vertices $L(-7, 7)$, $M(-1, 1)$, and $N(-6, 2)$:

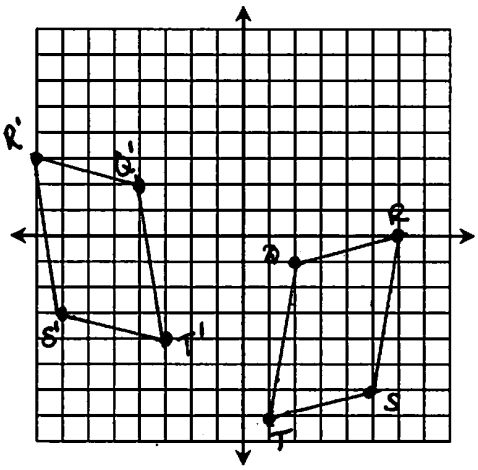
(a) reflected in the x-axis
(b) translated 5 units up and 4 units right



$L'(\underline{-3}, \underline{-2})$
$M'(\underline{3}, \underline{4})$
$N'(\underline{-2}, \underline{3})$

12. Parallelogram $QRST$ with vertices $Q(2, -1)$, $R(6, 0)$, $S(5, -6)$ and $T(1, -7)$:

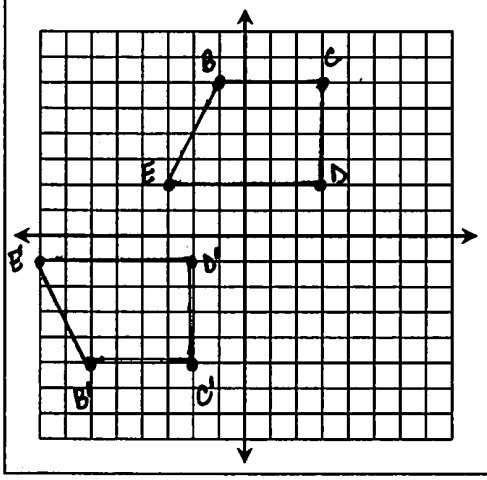
(a) reflected in the y-axis
(b) translated 2 units left and 3 units up



$Q'(\underline{-4}, \underline{2})$
$R'(\underline{-8}, \underline{3})$
$S'(\underline{-7}, \underline{-3})$
$T'(\underline{-3}, \underline{-4})$

13. Trapezoid $BCDE$ with vertices $B(-1, 6)$, $C(3, 6)$, $D(3, 2)$, and $E(-3, 2)$:

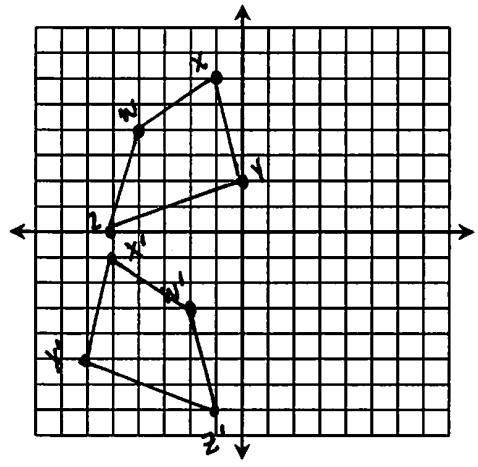
(a) translated 5 units left and 1 unit down
(b) reflected in the x-axis



$B'(\underline{-6}, \underline{-5})$
$C'(\underline{-2}, \underline{-5})$
$D'(\underline{-2}, \underline{-1})$
$E'(\underline{-8}, \underline{-1})$

14. Quadrilateral $WXYZ$ with vertices $W(-4, 4)$, $X(-1, 6)$, $Y(0, 2)$ and $Z(-5, 0)$:

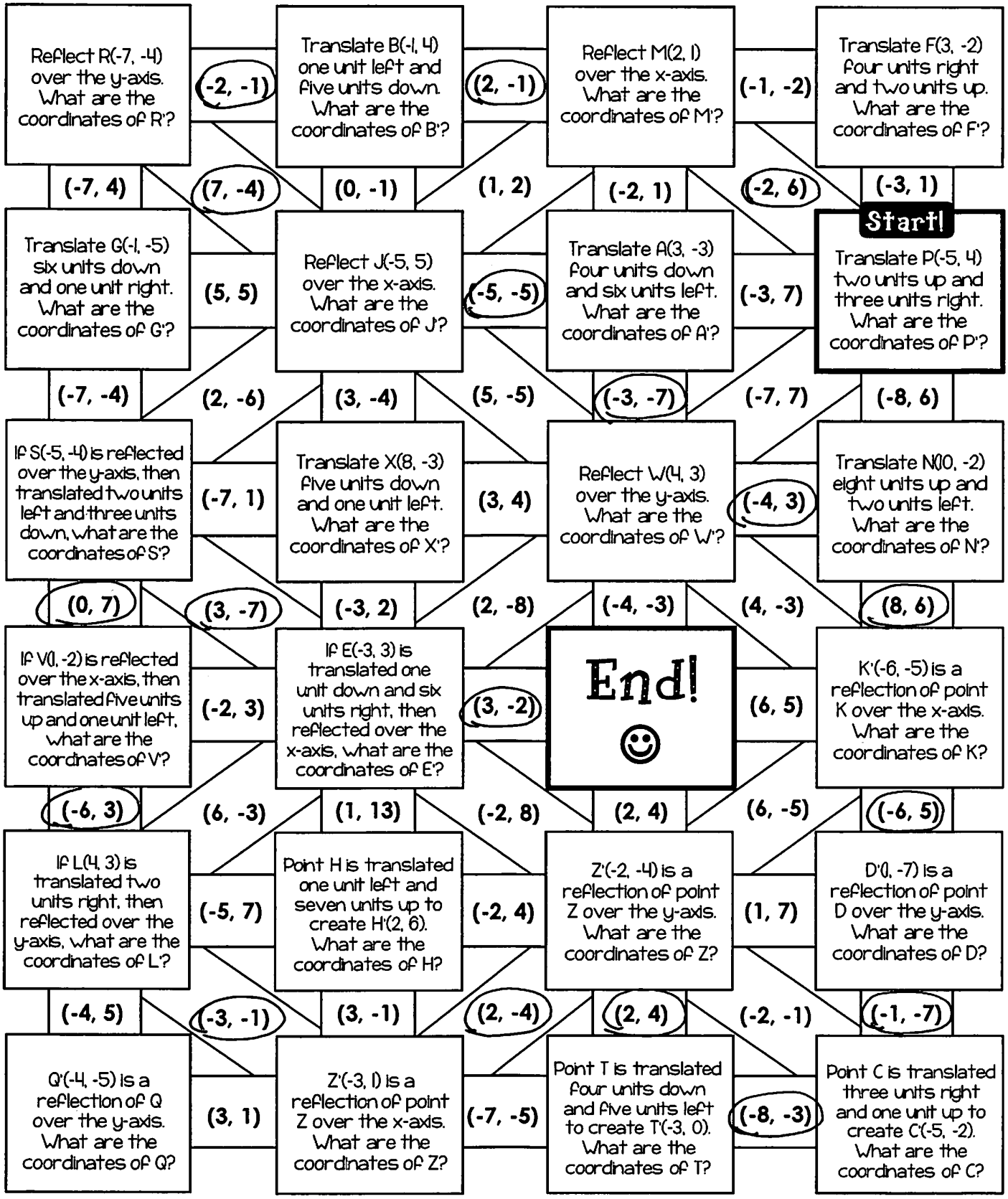
(a) translated 7 units down and 6 units right
(b) reflected in the y-axis



$W'(\underline{-2}, \underline{-3})$
$X'(\underline{-5}, \underline{-1})$
$Y'(\underline{-6}, \underline{-5})$
$Z'(\underline{-1}, \underline{-7})$

Translations & Reflections Maze!

Directions: Begin at the Start box. Read each problem carefully to find the coordinates. Use your solutions to navigate through the maze!



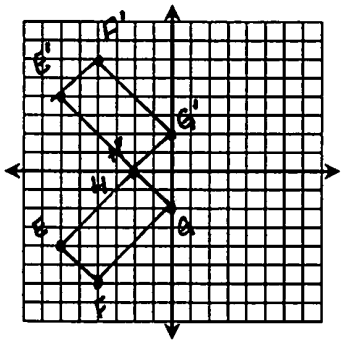
Name: _____ **Unit 6:** Geometry

Date: _____ **Per:** _____ **Homework 10:** Reflections

**** This is a 2-page document! ****

Directions: Graph and label each figure and its image under a reflection in the given axis. Give the coordinates of the image.

1. Rectangle $EFGH$ with vertices $E(-6, -4)$, $F(-4, -6)$, $G(0, -2)$, and $H(-2, 0)$: **x-axis**



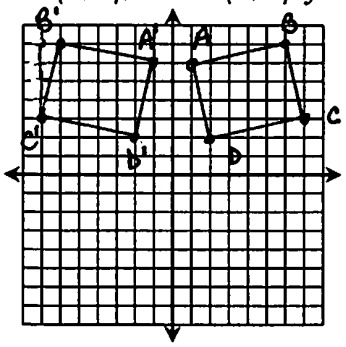
$E'(\underline{-6}, \underline{4})$

$F'(\underline{-4}, \underline{6})$

$G'(\underline{0}, \underline{2})$

$H'(\underline{-2}, \underline{0})$

2. Square $ABCD$ with vertices $A(1, 6)$, $B(6, 7)$, $C(7, 3)$, and $D(2, 2)$: **y-axis**



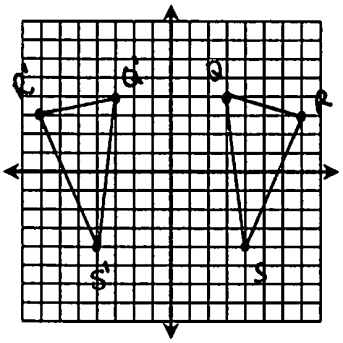
$A'(\underline{-1}, \underline{6})$

$B'(\underline{-6}, \underline{7})$

$C'(\underline{-7}, \underline{3})$

$D'(\underline{-2}, \underline{2})$

3. Triangle QRS with vertices $Q(3, 4)$, $R(7, 3)$, and $S(4, -4)$: **y-axis**

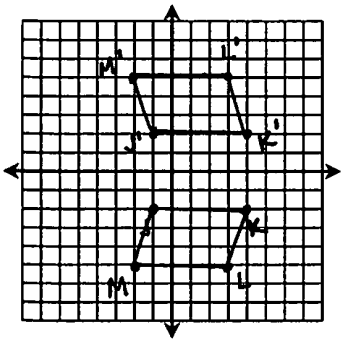


$Q'(\underline{-3}, \underline{4})$

$R'(\underline{-7}, \underline{3})$

$S'(\underline{-4}, \underline{-4})$

4. Parallelogram $JKLM$ with vertices $J(-1, -2)$, $K(4, -2)$, $L(3, -5)$, and $M(-2, -5)$: **x-axis**



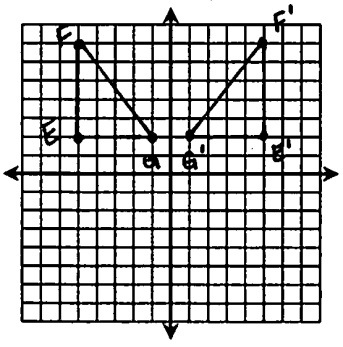
$J'(\underline{-1}, \underline{2})$

$K'(\underline{4}, \underline{2})$

$L'(\underline{3}, \underline{5})$

$M'(\underline{-2}, \underline{5})$

5. Triangle EFG with vertices $E(-5, 2)$, $F(-5, 7)$, and $G(-1, 2)$: **y-axis**

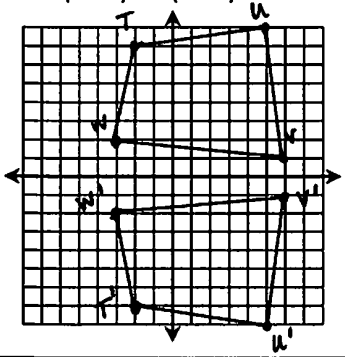


$E'(\underline{5}, \underline{2})$

$F'(\underline{5}, \underline{7})$

$G'(\underline{1}, \underline{2})$

6. Quadrilateral $TUVW$ with vertices $T(-2, 7)$, $U(5, 8)$, $V(6, 1)$, and $W(-3, 2)$: **x-axis**



$T'(\underline{-2}, \underline{-7})$

$U'(\underline{5}, \underline{-8})$

$V'(\underline{6}, \underline{-1})$

$W'(\underline{-3}, \underline{-2})$

Directions: The coordinates of a point and its image are given. Name the line of reflection.

7. $E(-4, -2) \rightarrow E'(-4, 2)$

X-axis

8. $N(3, 7) \rightarrow N'(-3, 7)$

y-axis

9. $P(6, -1) \rightarrow P'(-6, -1)$

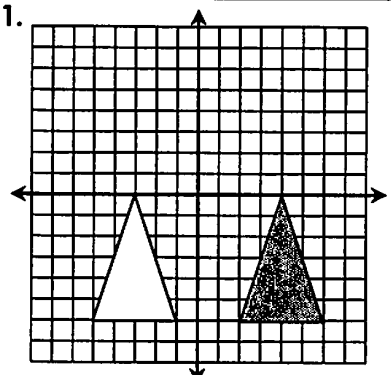
y-axis

10. $K(-2, 5) \rightarrow K'(2, 5)$

y-axis

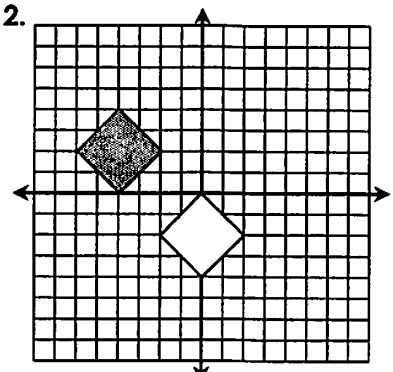
Directions: Determine if the shaded figure is a translation or reflection of the white figure. Describe the transformation.

11.



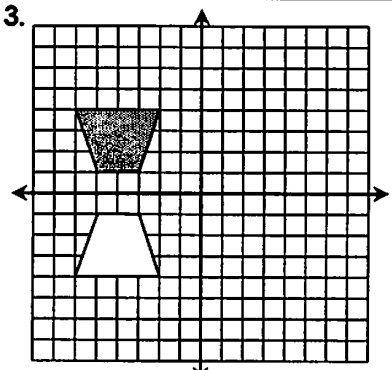
Translation; right 8

12.



Translation; left 4, up 4

13.

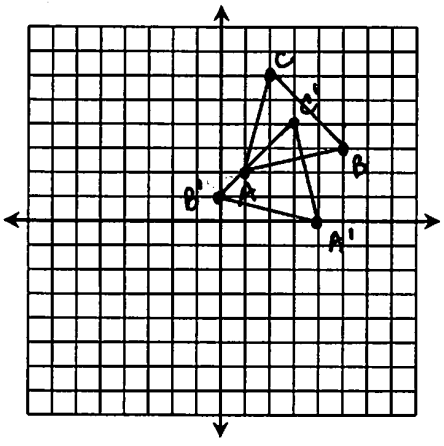


Reflection; X-axis

Directions: Graph and label each figure and its image under the given transformations. Give the coordinates of the image.

14. Triangle ABC with vertices $A(1, 2)$, $B(5, 3)$, and $C(2, 6)$:

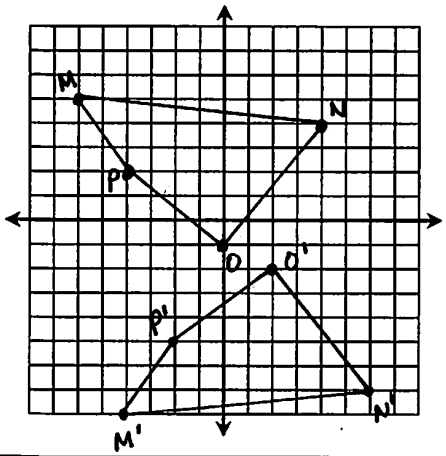
(a) reflected in the y-axis
(b) translated 5 units right and 2 units down



$A'(\underline{4}, \underline{0})$
$B'(\underline{0}, \underline{1})$
$C'(\underline{3}, \underline{4})$

15. Quadrilateral $MNOP$ with vertices $M(-6, 5)$, $N(4, 4)$, $O(0, -1)$ and $P(-4, 2)$:

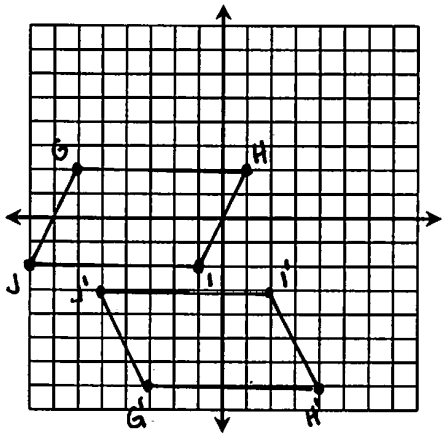
(a) translated 3 units up and 2 units right
(b) reflected in the x-axis



$M'(\underline{-4}, \underline{-8})$
$N'(\underline{6}, \underline{-7})$
$O'(\underline{2}, \underline{-2})$
$P'(\underline{-2}, \underline{-5})$

16. Parallelogram $GHIJ$ with vertices $G(-6, 2)$, $H(1, 2)$, $I(-1, -2)$, and $J(-8, -2)$:

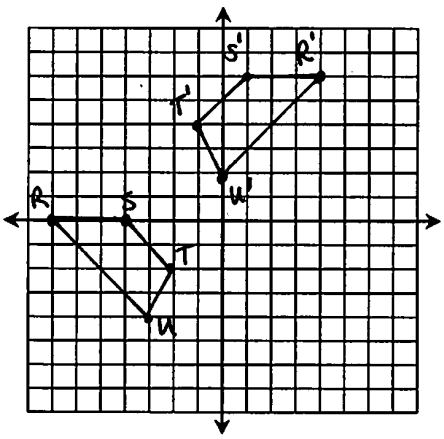
(a) translated 5 units up and 3 units right
(b) reflected in the x-axis



$G'(\underline{-3}, \underline{-7})$
$H'(\underline{4}, \underline{-7})$
$I'(\underline{2}, \underline{-3})$
$J'(\underline{-5}, \underline{-3})$

17. Trapezoid $RSTU$ with vertices $R(-7, 0)$, $S(-4, 0)$, $T(-2, -2)$ and $U(-3, -4)$:

(a) reflected in the y-axis
(b) translated 3 units left and 6 units up



$R'(\underline{4}, \underline{6})$
$S'(\underline{1}, \underline{6})$
$T'(\underline{-1}, \underline{4})$
$U'(\underline{0}, \underline{2})$

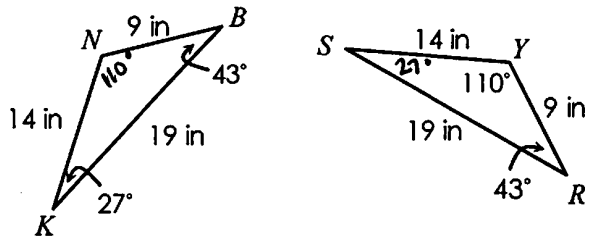
Name: _____ **Math 7**

Date: _____ **Per:** _____ **Unit 6:** Geometry

Quiz 6-3: Congruent Polygons & Transformations

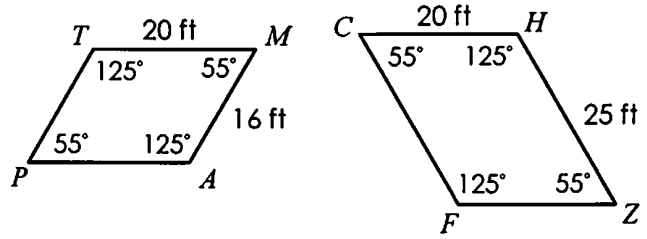
Determine if the polygons are congruent. If yes, write a congruency statement.

1.

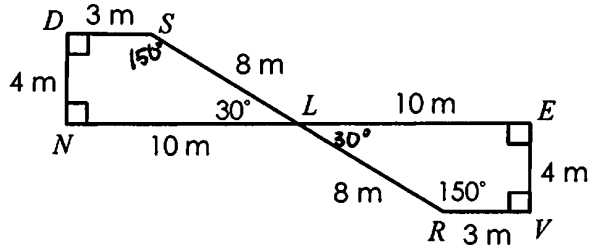


1. Yes; $\triangle KNB \cong \triangle SYR$
2. Not congruent
3. Yes; Trap. DSLN ≅ Trap. VRLE

2.



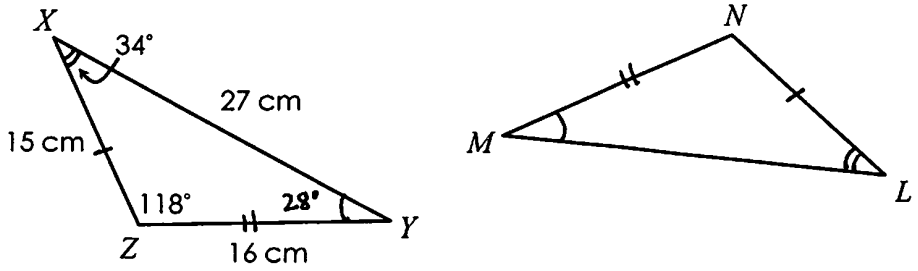
3.



4. If quadrilateral $PTLY \cong$ quadrilateral $DHMK$, identify the congruent parts.

4. $\angle P \cong$ $\angle D$
   $\angle K \cong$ $\angle Y$
   $\overline{TL} \cong$ $\overline{HM}$
   $\overline{DK} \cong$ $\overline{PY}$

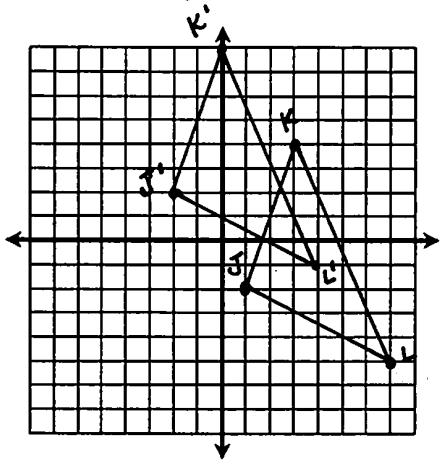
5. If $\Delta XYZ \cong \Delta LMN$, find each measure.



5. $m\angle N =$ 118°
   $m\angle M =$ 28°
   $MN =$ 16 cm
   $NL =$ 15 cm

Graph each figure and its image under the given transformation(s). Give the new coordinates.

6. Triangle JKL with vertices $J(1, -2)$, $K(3, 4)$, and $L(7, -5)$; translated four units up and three units left

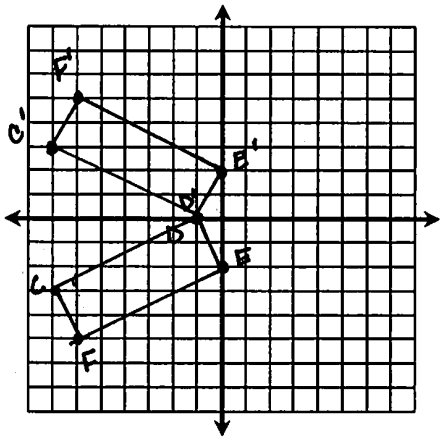


$J'(\underline{-2}, \underline{2})$

$K'(\underline{0}, \underline{8})$

$L'(\underline{4}, \underline{-1})$

7. Rectangle $CDEF$ with vertices $C(-7, -3)$, $D(-1, 0)$, $E(0, -2)$, and $F(-6, -5)$; reflected in the x-axis



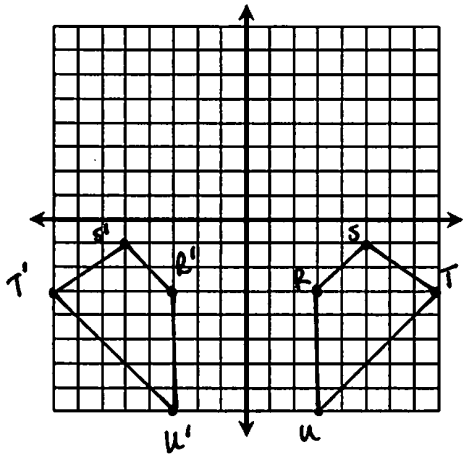
$C'(\underline{-7}, \underline{3})$

$D'(\underline{-1}, \underline{0})$

$E'(\underline{0}, \underline{2})$

$F'(\underline{-6}, \underline{5})$

8. Trapezoid $RSTU$ with vertices $R(3, -3)$, $S(5, -1)$, $T(8, -3)$, and $U(3, -8)$; reflected in the y-axis



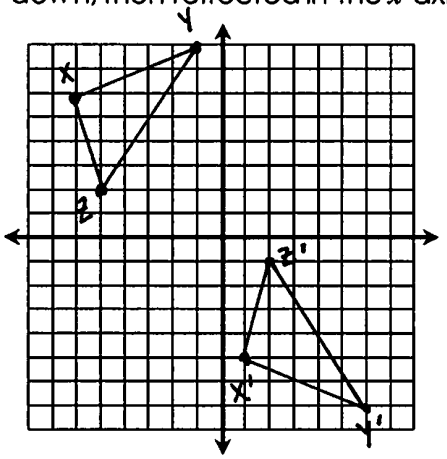
$R'(\underline{-3}, \underline{-3})$

$S'(\underline{-5}, \underline{-1})$

$T'(\underline{-8}, \underline{-3})$

$U'(\underline{-3}, \underline{-8})$

9. Triangle XYZ with vertices $X(-6, 6)$, $Y(-1, 8)$, and $Z(-5, 2)$; translated seven units right and one unit down, then reflected in the x-axis



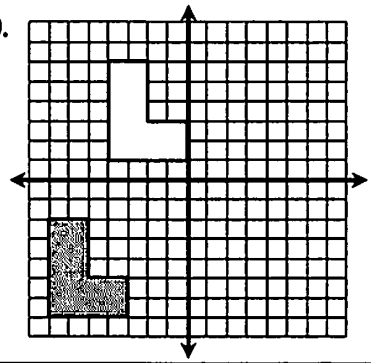
$X'(\underline{1}, \underline{-5})$

$Y'(\underline{6}, \underline{-7})$

$Z'(\underline{2}, \underline{-1})$

Determine whether the transformation of the white figure to the shaded figure is a translation or a reflection. Write a rule to describe the transformation.

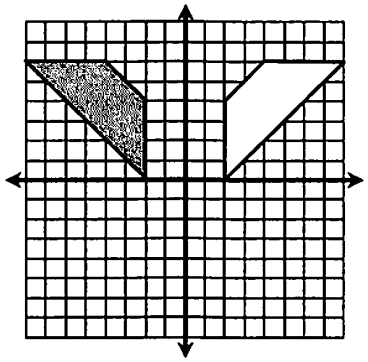
10.



☑ Translation ☐ Reflection

Rule: left 3, up 8

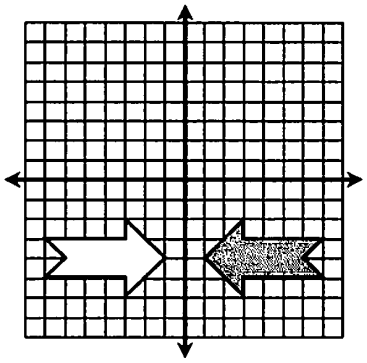
11.



☐ Translation ☑ Reflection

Rule: y-axis

12.



☐ Translation ☑ Reflection

Rule: y-axis

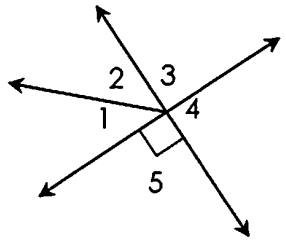
Unit 6 Test Study Guide
(Geometry)

Name: _____

Date: _____ Per: _____

Topic 1: Angle Relationships

1. Using the diagram below, classify the angle pair as vertical, adjacent, complementary, supplementary, or congruent angles. Use all names that apply.



a) ∠3 and ∠4
Adjacent, congruent, Supplementary

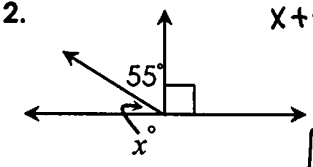
b) ∠1 and ∠2
Adjacent, Complementary

c) ∠3 and ∠5
Vertical, congruent, Supplementary

d) ∠1 and ∠5
Adjacent

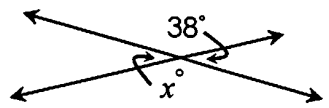
Find each measure.

2.



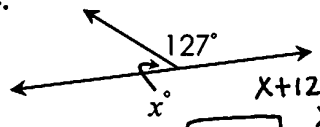
$x+55=90$
$x=35$
35°

3.



38°

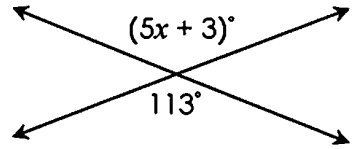
4.



$x+127=180$
$x=53$
53°

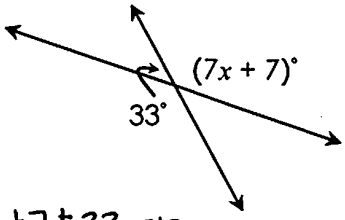
Find the value of x.

5.



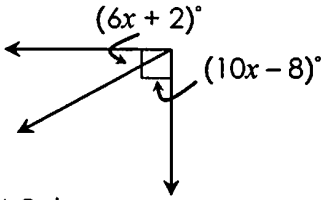
$5x+3=113$
$5x=110$
$x=22$

6.



$7x+7+33=180$
$7x+40=180$
$7x=140$
$x=20$

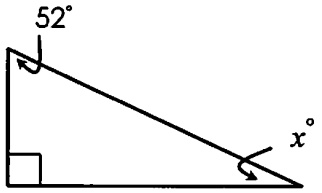
7.



$6x+2+10x-8=90$
$16x-6=90$
$16x=96$
$x=6$

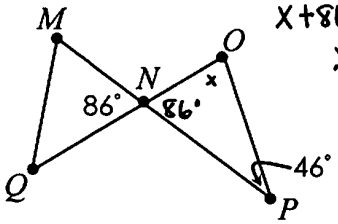
Topic 2: Triangles

8. Find the value of x.



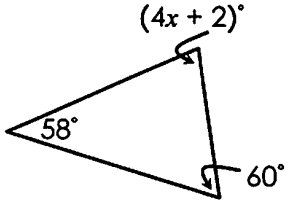
$52+x+90=180$
$x+142=180$
$x=38$

9. Given the diagram below, find $m\angle NOP$.



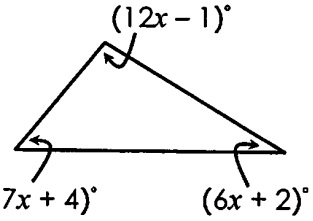
$x+86+46=180$
$x+132=180$
$x=48$

10. Find the value of x.



$58+60+4x+2=180$
$4x+120=180$
$4x=60$
$x=15$

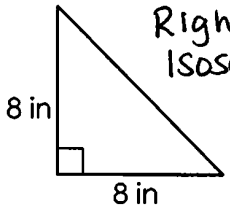
11. Find the value of x.



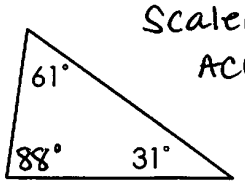
$12x-1+6x+2+7x+4=180$
$25x+5=180$
$25x=175$
$x=7$

Classify each triangle by its angles and sides.

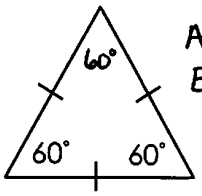
12. Right, Isosceles



13. Scalene, Acute

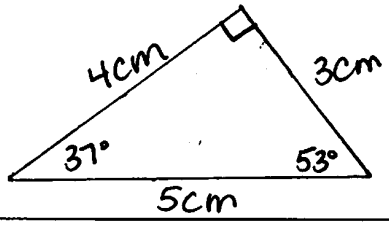


14. Acute, Equilateral

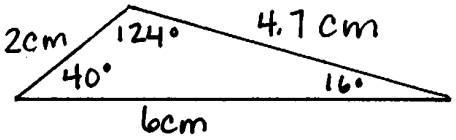


Construct each triangle using the given measures.

15. side lengths of 4 cm and 5 cm



16. side lengths of 2 cm and 6 cm with an included angle of 40°



Determine if the following side lengths could form a triangle. Prove your answer with an inequality.

17. 17 cm, 18 cm, 35 cm

$17+18 > 35$

$35 > 35$

No

18. 9 in, 9 in, 18 in

$9+9 > 18$

$18 > 18$

No

19. 22 mm, 24 mm, 45 mm

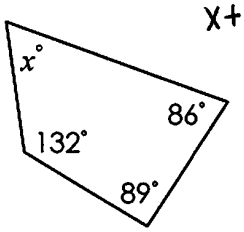
$22+24 > 45$

$46 > 45$

Yes

Topic 3: Quadrilaterals

20. Find the missing angle measure.

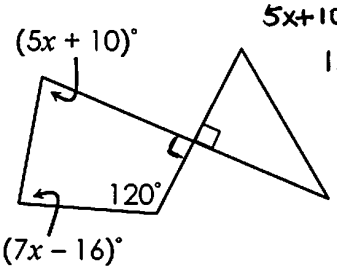


$x+132+86+89 = 360$

$x+307 = 360$

$x = 53$

21. Find the value of x.



$5x+10+7x-16+120+90 = 360$

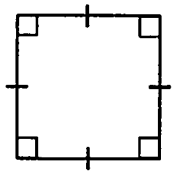
$12x+204 = 360$

$12x = 156$

$x = 13$

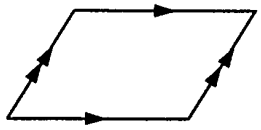
Classify each figure using all names that apply.

22.



- [x] Quadrilateral
- [ ] Trapezoid
- [ ] Isosceles Trapezoid
- [x] Parallelogram
- [x] Rectangle
- [x] Rhombus
- [x] Square

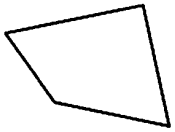
23.



- [x] Quadrilateral
- [ ] Trapezoid
- [x] Isosceles Trapezoid
- [x] Parallelogram
- [ ] Rectangle
- [ ] Rhombus
- [ ] Square

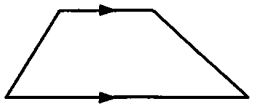
Classify each figure using the name that best describes it.

24.



Quadrilateral

25.



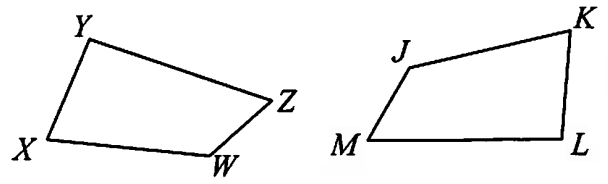
Trapezoid

26.

Rectangle

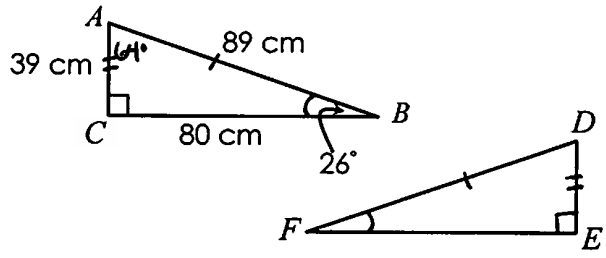
Topic 4: Congruent Polygons

27. If quadrilateral $WXYZ \cong$ quadrilateral $JKLM$, identify the congruent parts.



$\angle W \cong$ $\angle J$	$\overline{JK} \cong$ $\overline{WX}$
$\angle X \cong$ $\angle K$	$\overline{KL} \cong$ $\overline{XY}$
$\angle Y \cong$ $\angle L$	$\overline{LM} \cong$ $\overline{YZ}$
$\angle Z \cong$ $\angle M$	$\overline{JM} \cong$ $\overline{WZ}$

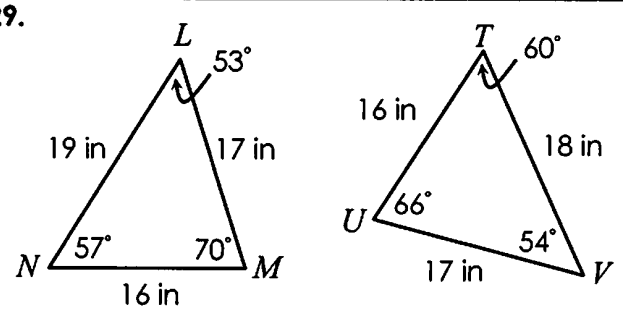
28. If $\Delta ABC \cong \Delta DFE$, find each measure.



$m\angle D =$ 64°	$DE =$ 39 cm
$m\angle E =$ 90°	$DF =$ 89 cm
$m\angle F =$ 26°	$EF =$ 80 cm

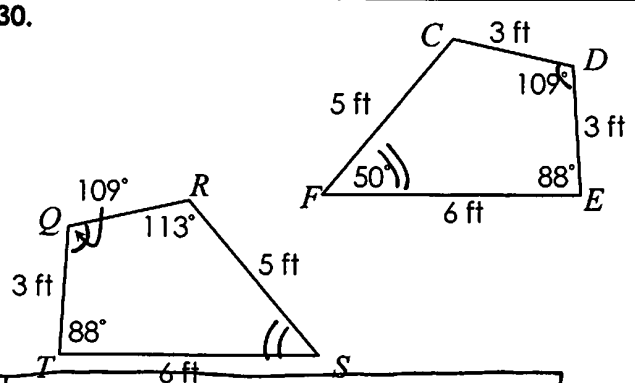
Determine if the polygons are congruent. If yes, write a congruency statement.

29.



No

30.

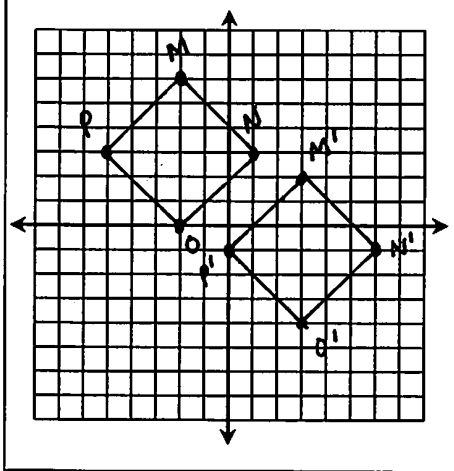


Yes; Quad QRST ≅ Quad DCFE

Topic 5: Transformations

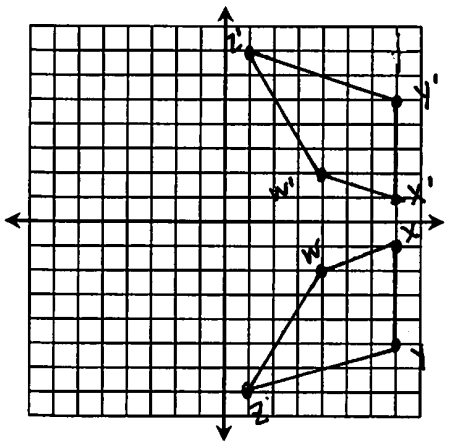
Graph and label each figure and its image under the given transformation. Then, give the new coordinates.

31. Square $MNOP$ with vertices $M(-2, 6)$, $N(1, 3)$, $O(-2, 0)$, and $P(-5, 3)$: translated 4 units down and 5 units right



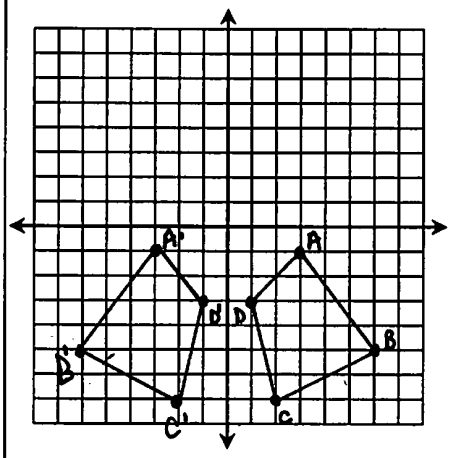
M' (3 , 2)
N' (6 , -1)
O' (3 , -4)
P' (0 , -1)

32. Trapezoid $WXYZ$ with vertices $W(4, -2)$, $X(7, -1)$, $Y(7, -5)$, and $Z(1, -7)$: reflected in the x-axis.



W' (4 , 2)
X' (7 , 1)
Y' (7 , 5)
Z' (1 , 7)

33. Quadrilateral $ABCD$ with vertices $A(3, -1)$, $B(6, -5)$, $C(2, -7)$, and $D(1, -3)$; translated 6 units up and reflected in the y-axis.



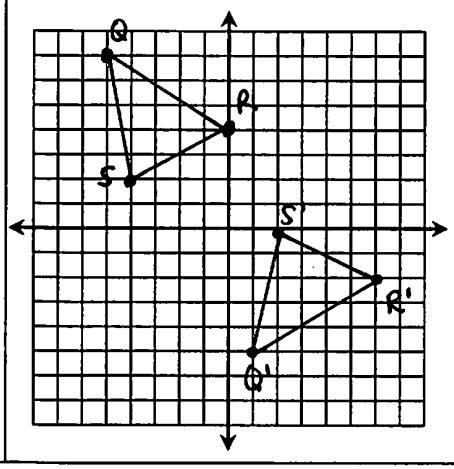
A'(-3 , 5)

B'(-6 , 1)

C'(-2 , -1)

D'(-1 , 3)

34. Triangle QRS with vertices $Q(-5, 7)$, $R(0, 4)$, and $S(-4, 2)$: reflected in the x-axis, then translated six units right and two units up



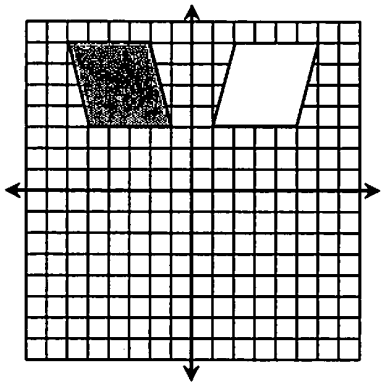
Q'(1 , -5)

R'(6 , -2)

S'(2 , 0)

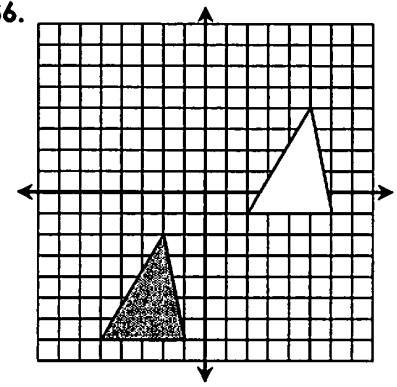
Determine if the shaded figure is a translation and/or reflection of the white figure. If yes, describe the transformation.

35.



Reflection; y-axis

36.



Translation; Left 7, Down 5

Describe the translation of the point to its image.

37. $A(-2, 5) \rightarrow A'(-2, -6)$

Down 11

38. $C(6, -1) \rightarrow C'(5, 1)$

Left 1, up 2

39. $R(-4, -3) \rightarrow R'(4, 3)$

Right 8, up 6

40. $M'(4, -6)$ is the image of M after a translation of 3 units down and 2 units left. Give the coordinates of M.

M (6, -3)

41. $P'(1, -3)$ is the image of P after a translation of 6 units right and 4 units up. Give the coordinates of P.

P (-5, -7)

Describe the reflection of the point to its image.

42. $T(1, 7) \rightarrow T'(-1, 7)$

y-axis

43. $Q(-2, -2) \rightarrow Q'(-2, 2)$

X-axis

44. $W(-3, 5) \rightarrow W'(3, 5)$

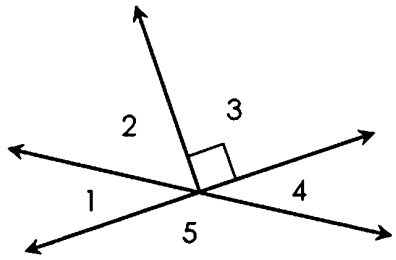
y-axis

Name: _____

Date: _____ Per: _____

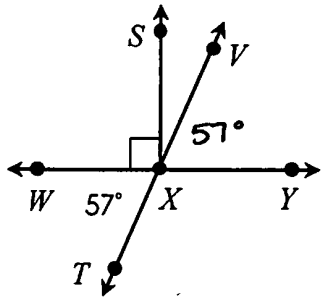
Unit 6 Test
Geometry

1. Given the diagram below, which statements are true? Check all that apply.



- [x] ∠1 and ∠4 are vertical and congruent angles.
- [ ] ∠1 and ∠5 are adjacent and complementary angles.
- [ ] ∠2 and ∠4 are vertical and complementary angles.
- [x] ∠4 and ∠5 are adjacent and supplementary angles.

For questions 2-4, find each angle measure using the diagram below.



2. $m\angle TXY$

$57 + x = 180$
$-57 \quad -57$
$x = 123$

$m\angle TXY = 123°$

3. $m\angle VXY$

$m\angle VXY = 57°$

4. $m\angle SXV$

$57 + y = 90$
$-57 \quad -57$
$y = 33$

$m\angle SXV = 33°$

5. If ∠1 and ∠2 are vertical angles and $m\angle 1 = 108°$, find $m\angle 2$.

$m\angle 2 = 108°$

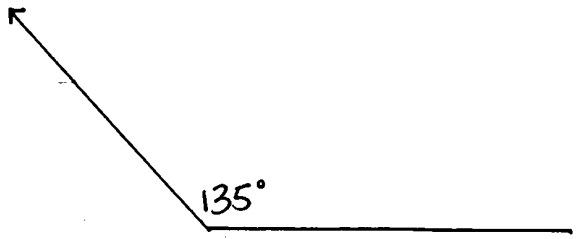
6. If $\angle A$ and $\angle B$ are complementary angles and $m\angle B = 68°$, find $m\angle A$.

$68 + x = 90$
$-68 \quad -68$
$x = 22$

$m\angle A = 22°$

7. If $\angle P$ and $\angle Q$ are supplementary angles and $m\angle P = 45°$, construct $\angle Q$, give its measure, and classify it as acute, right, obtuse, or straight.

$45 + x = 180$
$x = 135$



$m\angle Q = 135°$

Classify: obtuse

8. Which statement is always true?

A. Two right angles are complementary.

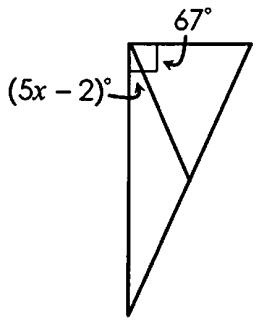
B. Given two vertical in which one is acute, the other must be obtuse.

C. If two angles are complementary, then they are both acute.

D. If two angles are supplementary, then they are adjacent.

C

9. Solve for x.



$5x-2+67=90$

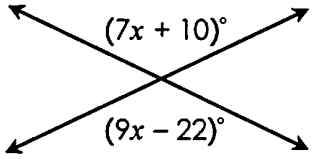
$5x+65=90$

$5x=25$

$x=5$

$x = 5$

10. Solve for x.



$7x+10=9x-22$

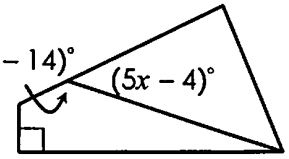
$10=2x-22$

$32=2x$

$x=16$

$x = 16$

11. Solve for x.



$17x-14+5x-4=180$

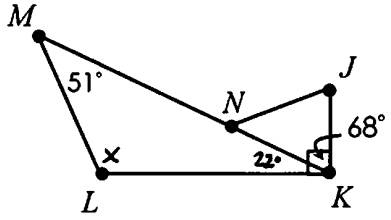
$22x-18=180$

$22x=198$

$x=9$

$x = 9$

12. Given the diagram below, find $m\angle MLK$.



A. 107°

B. 109°

C. 112°

D. 115°

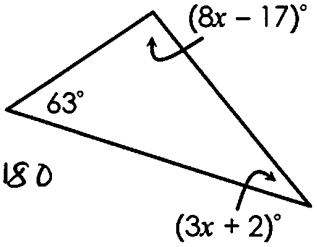
$51+22+x=180$

$73+x=180$

$x=107$

A

13. Solve for x.



$63+8x-17+3x+2=180$

$11x+48=180$

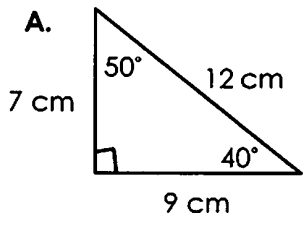
$11x=132$

$x=12$

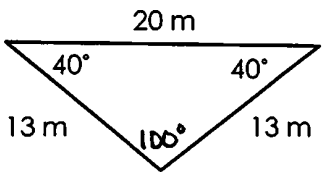
$x = 12$

14. Which diagram shows an acute isosceles triangle?

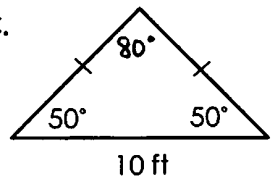
A.



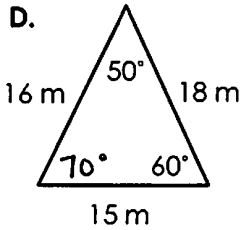
B.



C.



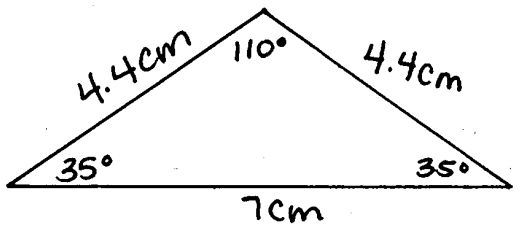
D.



C

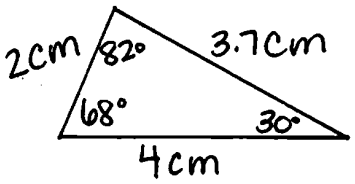
For questions 15-16, construct a triangle with the given measurement. Label all side and angle measures, then classify the triangle by its angles and sides.

15. A triangle with two 35° angles.



Classify:
Obtuse, Isosceles

16. A triangle with two side lengths measuring 2 cm and 4 cm, with a 68° angle between them.



Classify:
Acute, Scalene

17. Which side lengths could form a triangle? Check all that apply.

- ☐ 5 cm, 8 cm, 14 cm
- ☑ 3 m, 3 m, 5 m
- ☑ 14 in, 17 in, 28 in
- ☐ 10 ft, 14 ft, 24 ft
- ☑ 4.5 m, 4.5 m, 8 m

18. Which given measures create a unique triangle?

A. A triangle with two 70° angles.

B. A triangle with sides measuring 6 feet and 8 feet.

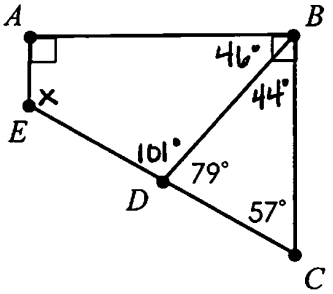
C. A right triangle with one side that measures 4 inches.

D. A triangle with two sides measuring 3 meters and a 150° degree between them.

D

19. Given the diagram below, find $m\angle AED$.

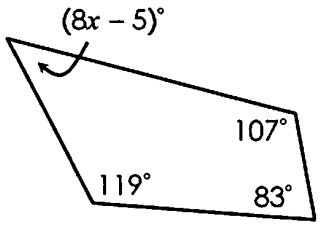
$101+46+90+x=360$
$237+x=360$
$x=123$



A. 110°
B. 116°
C. 118°
D. 123°

D

20. Solve for x.

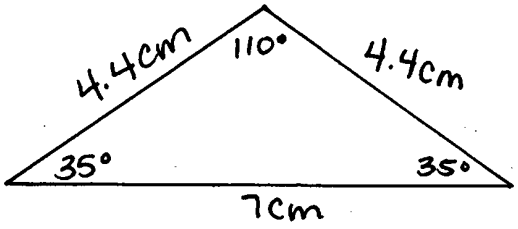


$8x-5+119+107+83=360$
$8x+304=360$
$8x=56$
$x=7$

$x = 7$

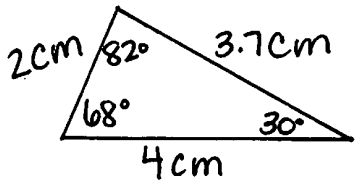
For questions 15-16, construct a triangle with the given measurement. Label all side and angle measures, then classify the triangle by its angles and sides.

15. A triangle with two 35° angles.



Classify:
Obtuse, Isosceles

16. A triangle with two side lengths measuring 2 cm and 4 cm, with a 68° angle between them.



Classify:
Acute, Scalene

17. Which side lengths could form a triangle? Check all that apply.

- ☐ 5 cm, 8 cm, 14 cm
- ☑ 3 m, 3 m, 5 m
- ☑ 14 in, 17 in, 28 in
- ☐ 10 ft, 14 ft, 24 ft
- ☑ 4.5 m, 4.5 m, 8 m

18. Which given measures create a unique triangle?

A. A triangle with two 70° angles.

B. A triangle with sides measuring 6 feet and 8 feet.

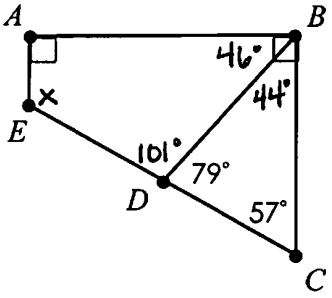
C. A triangle with sides measuring 4 inches, and 9 inches.

D. A triangle with two sides measuring 3 meters and a 150° degree between them.

D

19. Given the diagram below, find $m\angle AED$.

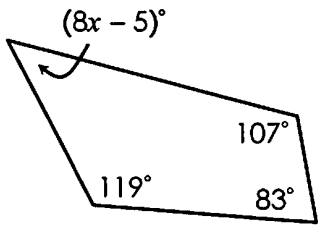
$101+46+90+x=360$
$237+x=360$
$x=123$



A. 110°
B. 116°
C. 118°
D. 123°

D

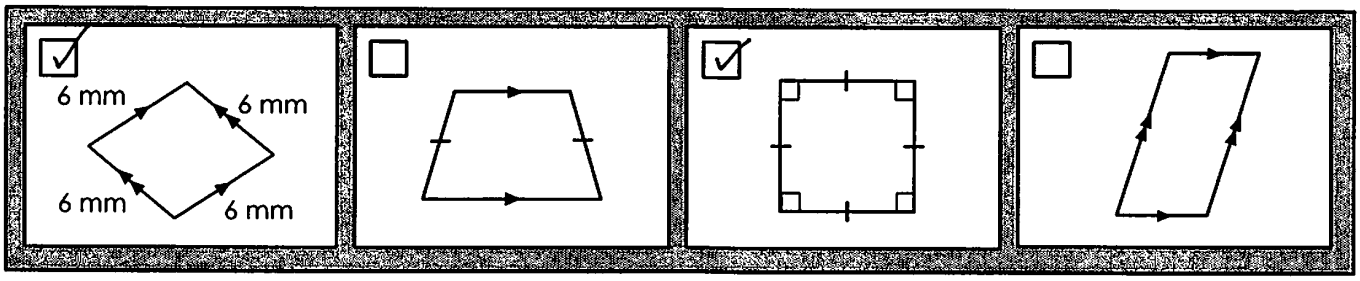
20. Solve for x.



$8x-5+119+107+83=360$
$8x+304=360$
$8x=56$
$x=7$

$x = 7$

21. Which shape is both a parallelogram and rhombus? Check all that apply.



22. Alex drew a shape with four sides and four right angles. Which figure best describes the shape that Alex drew?

A. Quadrilateral
B. Parallelogram
C. Rectangle
D. Square

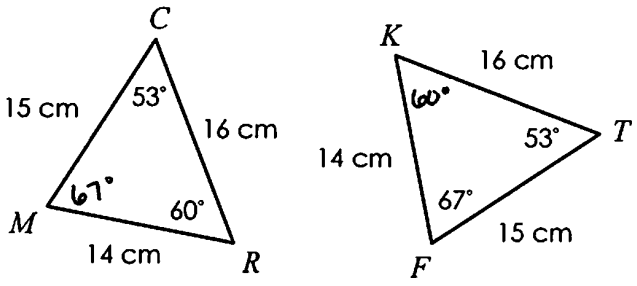
C

23. Which shape is not possible?

A. A parallelogram with four right angles.
B. A rectangle with four congruent sides.
C. A rhombus that is not a square.
D. A square that is not a rectangle.

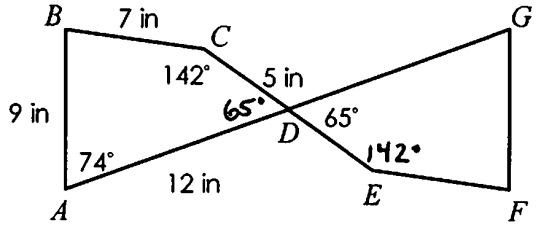
D

24. Complete the congruency statement below.



$\Delta MCR \cong \Delta FTK$

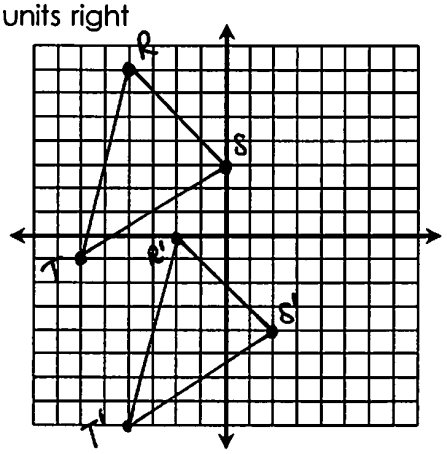
25. If quadrilateral $ABCD \cong$ quadrilateral $GFED$, find each measure.



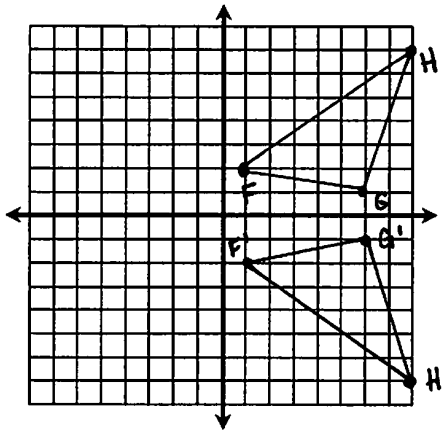
$m\angle F = 79°$ $EF = 7in$

For questions 26-28, graph and label each figure and its image under the given transformation(s). Then, give the new coordinates.

26. ΔRST with vertices $R(-4, 7)$, $S(0, 3)$, and $T(-6, -1)$: translated seven units down and two units right

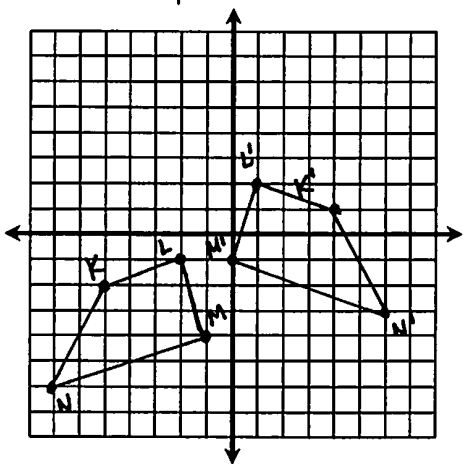


27. ΔFGH with vertices $F(1, 2)$, $G(6, 1)$, and $H(8, 7)$: reflected over the x-axis



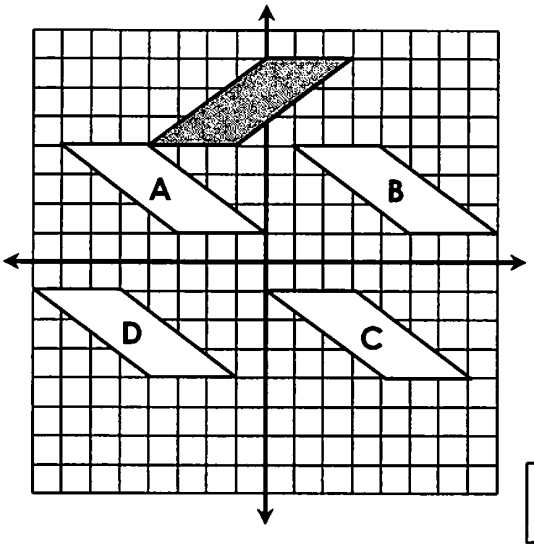
R': (-2, 0)	S': (2, -4)	T': (-4, -8)	F': (1, -2)	G': (6, -1)	H': (8, -7)

28. Trapezoid $KLMN$ with vertices $K(-5, -2)$, $L(-2, -1)$, $M(-1, -4)$, and $N(-7, -6)$: reflected over the y-axis, then translated one unit left and three units up



K': (4, 1)	L': (1, 2)
M': (0, -1)	N': (6, -3)

29. If the shaded parallelogram is translated three units down and four units left, then reflected over the x-axis, which parallelogram represents the image? Write the letter in the box.



D

30. Point $N'(-3, 1)$ is the image of point $N(3, -1)$. Which of the following transformations occurred?

A. Point N was reflected over the x-axis.

B. Point N was reflected over the y-axis.

C. Point N was translated six units up and two units left.

D. Point N was translated two units up and six units left.

D

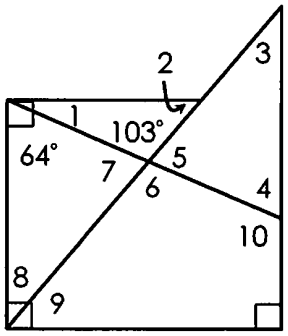
31. Point $B'(-5, -2)$ is the image of point $B(5, -2)$ after a reflection. Name the line of reflection.

y-axis

32. Point $K'(-3, 6)$ is the image of point K after a translation of five units up and seven units left. Give the coordinates of point K.

(4 , 1)

BONUS: Find each angle measure.



$m\angle 1 =$ 26°	$m\angle 6 =$ 103°
$m\angle 2 =$ 51°	$m\angle 7 =$ 77°
$m\angle 3 =$ 39°	$m\angle 8 =$ 39°
$m\angle 4 =$ 64°	$m\angle 9 =$ 51°
$m\angle 5 =$ 77°	$m\angle 10 =$ 116°

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