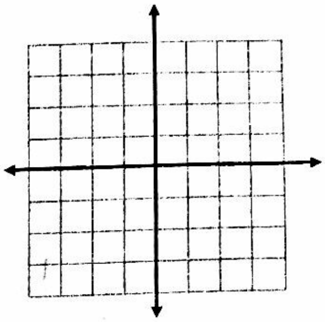
Geometry Fall 2015

Per: ___ Name: Key

Unit 1 Review - Transformations

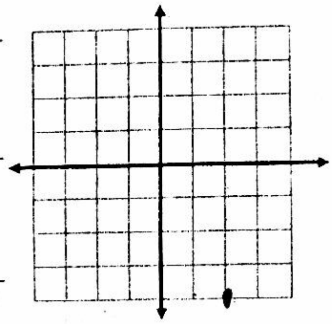
Identify the type of transformation the rule represents. Use the given rule to determine the image of (2, -4) and the pre-image of (0, 3). (Sketching a graph may help you.)



1. $T:(x, y) \rightarrow (x + 5, y - 6)$ Transformation Name: Translation
   Image of (2, -4) is (7, -10). Pre-image of (0, 3) is (-5, 9).

2. $R_x: (x, y) \rightarrow (x, -y)$ Transformation Name: Reflection
   Image of (2, -4) is (2, 4). Pre-image of (0, 3) is (0, -3).

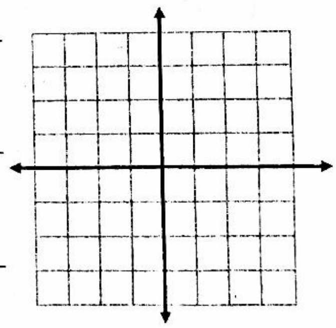
3. $R_y: (x, y) \rightarrow (-x, y)$ Transformation Name: Reflection
   Image of (2, -4) is (-2, -4). Pre-image of (0, 3) is (0, 3).



4. $R_{y=x}: (x, y) \rightarrow (y, x)$ Transformation Name: Reflection
   Image of (2, -4) is (-4, 2). Pre-image of (0, 3) is (3, 0).

5. $\mathcal{R}_{90}: (x, y) \rightarrow (-y, x)$ Transformation Name: Rotation
   Image of (2, -4) is (4, 2). Pre-image of (0, 3) is (3, 0).

6. $\mathcal{R}_{-90}: (x, y) \rightarrow (-y, x)$ (y, -x) Transformation Name: Rotation
   Image of (2, -4) is (-4, -2). Pre-image of (0, 3) is (-3, 0).



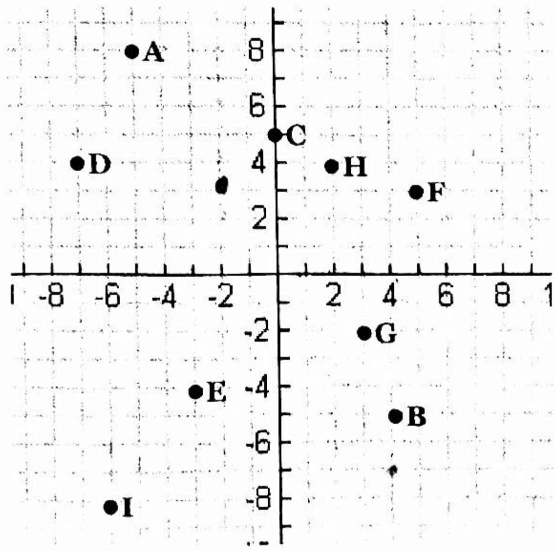
7. $D_{O,\frac{1}{2}}: (x, y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$ Transformation Name: Dilation
   Image of (2, -4) is (1, -2). Pre-image of (0, 3) is (0, 6).

8. $D_{O,2}: (x, y) \rightarrow (2x, 2x)$ Transformation Name: Dilation
   Image of (2, -4) is (4, -8). Pre-image of (0, 3) is (0, 1.5).

9. $D_{O,-1}: (x, y) \rightarrow (-x, -y)$ Transformation Name: Dilation
   Image of (2, -4) is (-2, 4). Pre-image of (0, 3) is (0, -3).

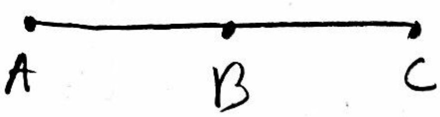
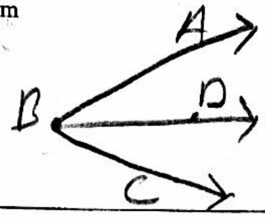
You may use the coordinate plane to determine each of the following. Identify the type of transformation and determine the image. Give your answer for the image as a coordinate point.

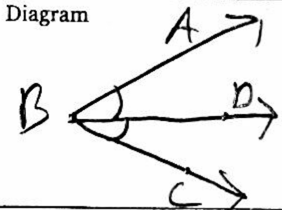
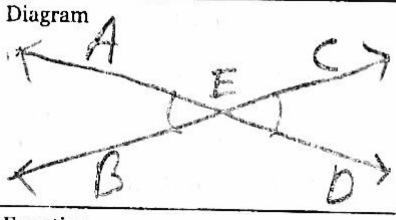
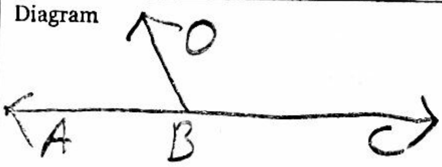
	Transformation Type	Image
10. $T: A \rightarrow (x + 3, y - 5)$	Translation	(-2, 3)
11. $R_x: B \rightarrow$ (_,_)	Reflection	(4, 5)
12. $R_y: C \rightarrow$ (_,_)	Reflection	(0, 5)
13. $R_{y=x}: D \rightarrow$ (_,_)	Reflection	(4, -7)
14. $\mathcal{R}_{90}: E \rightarrow$ (-3, -4)	Rotation	(4, -3)
15. $\mathcal{R}_{90}: F \rightarrow$ (5, 3)	Rotation	(3, -5)
16. $D_{O,3}: G \rightarrow$ (3, -2)	Dilation	(9, -6)
17. $D_{O,-2}: H \rightarrow$ (2, 4)	Dilation	(-4, -8)
18. $D_{O,\frac{1}{2}}: I \rightarrow$ (-6, -8)	Dilation	(-3, -4)



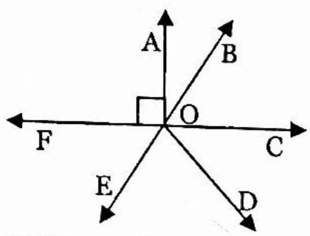
Unit 2 Review - Vocabulary

Describe each theorem, definition or postulate. Draw a diagram to represent each, and write an equation that is used to solve for values using that theorem, definition or postulate.

Segment Addition Postulate	Angle Addition Postulate	Definition of Midpoint
Description	Description	Description
Diagram 	Diagram 	Diagram 
Equation $AB+BC=AC$	Equation $m\angle ABD+m\angle DBC=m\angle ABC$	Equation $AB=BC$

Definition of Angle Bisector	Vertical Angle Theorem	Definition of Supplementary ∠s
Description	Description	Description
Diagram 	Diagram 	Diagram 
Equation $m\angle ABD=m\angle DBC$	Equation $m\angle AEB=m\angle CED$	Equation $m\angle ABO+m\angle OBC=180$

Use the given diagram to write an equation and solve for the value of x.



1. $\overrightarrow{OC}$ is the bisector of ∠BOD.
   m∠BOC = 9x + 3 and m∠DOC = 8x + 7

   $9x+3=8x+7$

   $x=4$

2. O is the midpoint of FC
   FO = 3x + 6 and OC = 5x - 4

   $3x+6=5x-4$

   $2x=10$

   $x=5$

3. m∠FOE = 3x - 1, m∠EOD = 72°
   and m∠FOD = 6x + 11

   $3x-1+72=6x+11$

   $3x+71=6x+11$

   $3x=60$

   $x=20$

4. EB = 6x - 8, OB = 12 and OE = 4x - 2

   $4x-2+12=6x-8$

   $4x+10=6x-8$

   $2x=18$

   $x=9$

5. m∠EOA = 13x and m∠AOB = x + 12

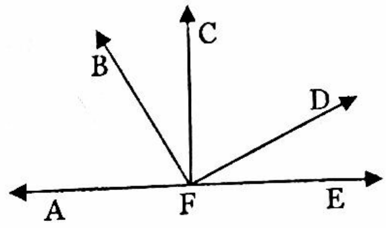
   $13x+x+12=180$

   $14x=168$

   $x=12$

Per: ____ Name: ______________________

Unit 3 Review – Proofs & Reasons



Use the diagram to identify a reason that justifies each statement.

1. AF + FE = AE Seg. Add. Post.
2. m∠BFC + m∠CFE = m∠BFE Angle Add. Post.
3. m∠AFB + m∠BFE = 180° Def. of Supp. ∠'s
4. If F is the midpoint of $\overline{AE}$, then AF = EF. Def. of midpoint
5. If $\overrightarrow{FD}$ bisects ∠CFE, then m∠CFD = m∠DFE. Def. of ∠ bisector
6. If ∠BFC and ∠CFD are complementary, then m∠BFC + m∠CFD = 90°. Def. of comp. ∠'s

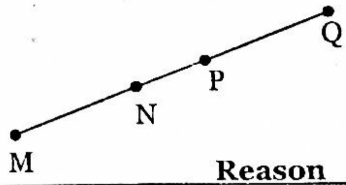
Identify the property, postulate, definition, or theorem that justifies each statement.

7. If m∠A + m∠B = 180° and m∠C + m∠D = 180°. Then m∠A + m∠B = m∠C + m∠D. Subst. Prop.
8. If AB = CD and EF = GH, then AB + EF = CD + GH. Addition Prop.
9. If m∠A + m∠B = m∠C + m∠B, then m∠A = m∠C. Subtr. Prop.
10. If MQ = MP + PQ and MP + PQ = RS, then MQ = RS. Transitive Prop.

Proof 1:

Given: MP = NQ

Prove: MN = PQ

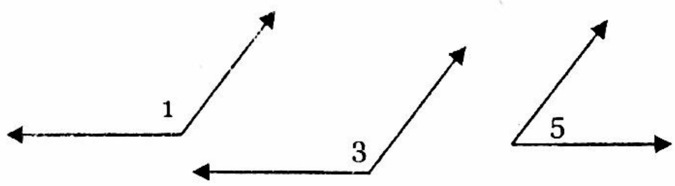


Statement	Reason
1. MP = NQ	1. Given
2. NP = NP	2. Reflexive
3. MP = MN + NP NQ = NP + PQ	3. Seg. Add. Post.
4. MN + NP = NP + PQ	4. Subst.
5. MN = PQ	5. Subtraction

Proof 2:

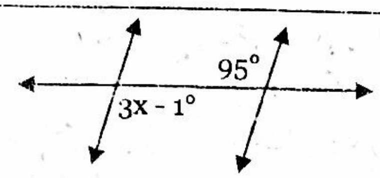
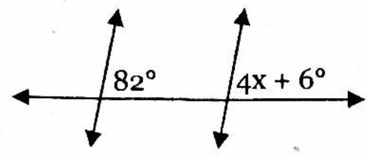
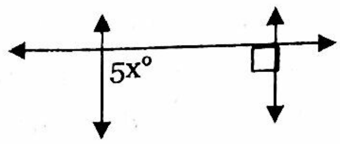
Given: ∠1 and ∠5 are supplementary;
∠3 and ∠5 are supplementary;

Prove: m∠1 = m∠3

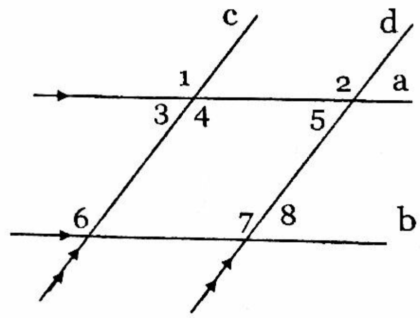


Statement	Reason
1. ∠1 and ∠5 are supplementary; ∠3 and ∠5 are supplementary	1. Given
2. m∠1 + m∠5 = 180 m∠3 + m∠5 = 180	2. Def. of Supp. ∠'s
3. m∠1 + m∠5 = m∠3 + m∠5	3. Substitution Prop.
4. m∠5 = m∠5	4. Reflexive
5. m∠1 = m∠3	5. Subtraction Prop.

Unit 4 Review – Parallel Lines

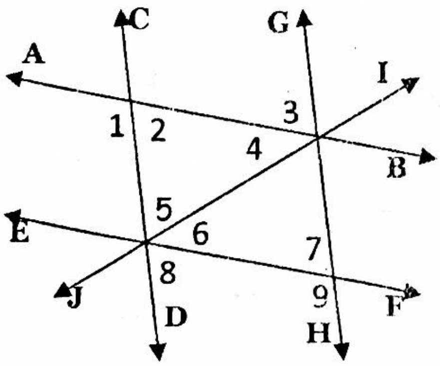
Alternate Interior ∠s	**Corresponding ∠s**	**Same-Side Interior ∠s**
When parallel lines are cut by a transversal, alternate interior angles are $\cong$.	When parallel lines are cut by a transversal, corresponding angles are $\cong$.	When parallel lines are cut by a transversal, same-side interior angles are supplementary.
		
Equation and Solution $3x-1=95$ $3x=96,\ x=32$	Equation and Solution $82=4x+6$ $76=4x$ $19=x$	Equation and Solution $5x+90=180$ $5x=90$ $x=18$

Determine the missing angle measure for each of the following angles. Justify your answer.



1. If m∠1 = 115°, then m∠2 = 115 because if c ∥ d, corr. angles are $\cong$.
2. If m∠5 = 70°, then m∠8 = 70° because if a ∥ b, alt. int. angles are $\cong$.
3. If m∠4 = 120°, then m∠5 = 60 because if c ∥ d, s-s Int. angles are supp.

Using the diagram and the given information, decide if there are parallel lines. If there are, state the lines/segments that must be parallel and explain the reason why. If there are no parallel lines, write 'no parallel lines' and explain the reason why.



4. m∠3 = m∠7 Yes; $\overline{AB} \parallel \overline{EF}$
Explain: because ∠3 and ∠7 are corr. ∠'s that are given as $\cong$.

5. m∠4 = m∠6 Yes; $\overline{AB} \parallel \overline{EF}$
Explain: If 2 lines ACBAT and Alt. Int. ∠'s are $\cong$, then the lines are //.

6. m∠2 = m∠5 + m∠6 No
Explain: They are s-s Int. ∠'s, so they must be supp., not $\cong$.

7. m∠8 = 90°; m∠9 = 90° Yes; $\overline{CD} \parallel \overline{GH}$
Explain: 2 lines ⊥ to the same line are //.

Geometry Fall 2015 Per: ____ Name: ______________________________

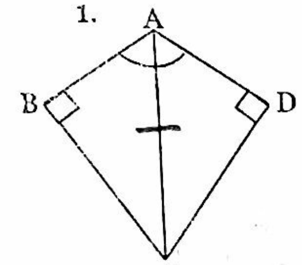
Unit 5 Review – Congruent Triangles

Mark your diagram with any other known congruent pair(s). Identify the postulate or theorem that proves triangles congruent by writing the letters in the boxes on the left (i.e. S, A, S).

State the three congruent pairs of sides or angles that justify the triangles are congruent.

State the triangle congruence.

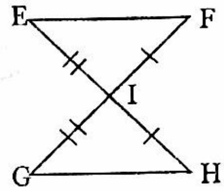
1.



A	∠B ≅ ∠D
A	∠BAC ≅ ∠DAC
S	$\overline{AC} \cong \overline{AC}$

Δ ABC ≅ Δ ADC

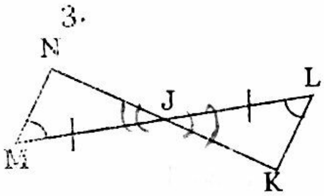
2.



S	$\overline{IF} \cong \overline{IH}$
A	∠FIE ≅ ∠HIG
S	$\overline{IE} \cong \overline{IG}$

Δ EFI ≅ Δ GHI

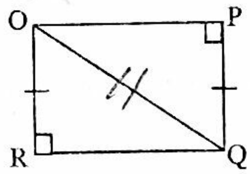
3.



A	∠M ≅ ∠K
S	$\overline{MJ} \cong \overline{LJ}$
A	∠NJM ≅ ∠KJL

Δ NMJ ≅ Δ KLJ

4.



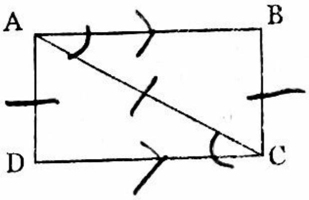
R	∠R ≅ ∠P
H	$\overline{OQ} \cong \overline{OQ}$
L	$\overline{OR} \cong \overline{QP}$

Δ ORQ ≅ Δ QPO

Mark all given and known congruent parts.

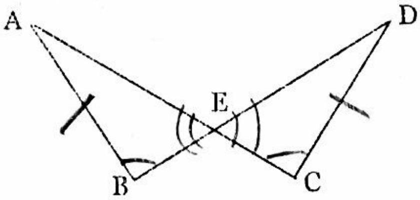
If the triangles are congruent, state the postulate or theorem that proves congruence.

5. $\overline{AB} \parallel \overline{CD}$
$\overline{AD} \cong \overline{BC}$



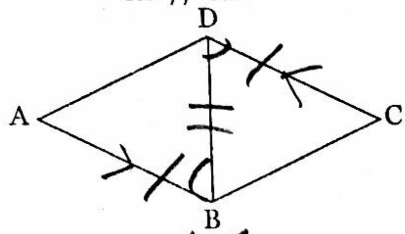
Not

6. ∠B ≅ ∠C
$\overline{AB} \cong \overline{CD}$



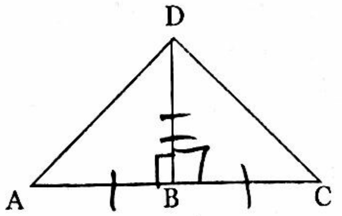
AAS

7. $\overline{AB} \cong \overline{CD}$
$\overline{AB} \parallel \overline{CD}$



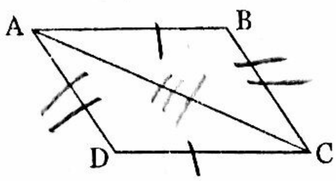
SAS

8. B is the midpoint of $\overline{AC}$
$\overline{AC} \perp \overline{DB}$



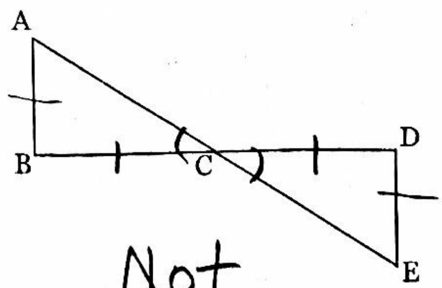
SAS

9. $\overline{AB} \cong \overline{CD}$
$\overline{AD} \cong \overline{BC}$



SSS

10. $\overline{AE}$ bisects $\overline{BD}$
$\overline{AB} \cong \overline{DE}$



Not

Unit 6 Review – Quadrilaterals

Fill in the following flow chart by stating the properties of each.

Quadrilateral
4-sided Figure

Parallelogram
2 pairs of // opp. sides
2 pairs of ≅ opp. sides
2 pairs of ≅ opp. <'s
Diagonals bisect

Trapezoid
1 pair of // sides

Rectangle
4 right angles
Diagonals ≅

Rhombus
4 ≅ sides
Diagonals are ⊥
Diagonal bisect <'s

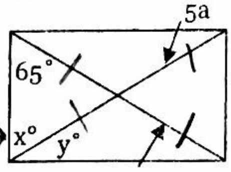
Square
4 ≅ sides / 4 right <'s

Match each shape name to the properties it has. Answers will be repeated.

[A] parallelogram [B] rectangle [C] rhombus [D] square [E] trapezoid

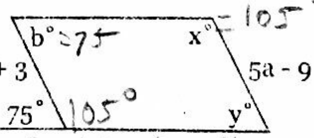
1. A opposite sides are congruent
2. A opposite angles are congruent
3. B diagonals are congruent
4. D all sides and angles are congruent
5. C diagonals are perpendicular
6. A diagonals are bisected
7. C angles are bisected
8. B all angles are right angles
9. A opposite sides are parallel
10. E not a parallelogram

Solve for the missing lengths or angle measures. Explain where your answers came from.

11.


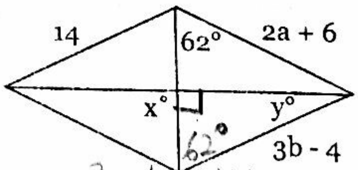
65
65+Y=90
Y=25
20=5a, a=4
4b-3=17
4b=20, b=5

a = 4 because diagonals are ≅
b = 5 because opp. sides are ≅
x = 65° because Base <'s are ≅
y = 25 because we have complementary <'s

12.


3a+3=5a-9
2a=12
a=6
105+b=180
b=75

a = 6 because opp. sides are ≅
b = 75 because consec. <'s are supp.
x = 105° because opp. <'s are ≅
y = 75° because opp. <'s are ≅

13.


62+Y=90
Y=28
2a+6=14
2a=8, a=4
3b-4=14
3b=18, b=6

a = 4 because all sides are ≅
b = 6 because all sides are ≅
x = 90 because diagonals are ⊥
y = 28 because diagonals are ⊥ and bisect <'s