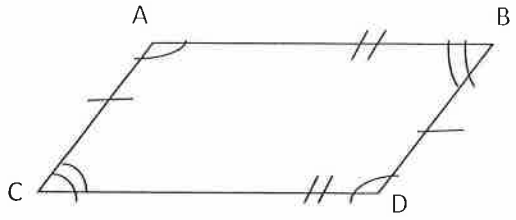
4.1 - 4.2 Congruent Polygons & Triangles

Objectives:

A. I can properly name congruent polygons.
B. I can find congruent angles or sides either from a picture of congruent polygons or from their congruence statement.
C. I can prove that triangles are congruent using the triangle congruence postulates of AAS, SSS, SAS, ASA.

Warm-UP!



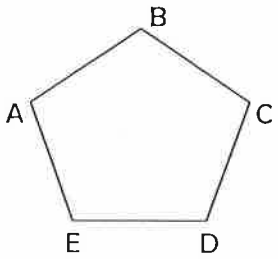
1. Properly name the congruent sides of the figure.

2. Properly name the congruent angles of the figure.

----------STOP----------

Naming Polygons: There are multiple correct ways to name a polygon.

Name the pentagon:



1. _____
2. _____
3. _____
4. _____
5. _____

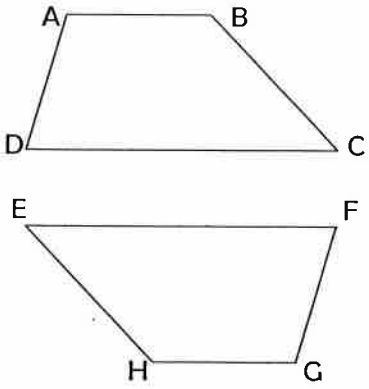
Congruent Polygons

If two polygons are congruent, then they have congruent _____ and congruent _____.

When naming congruent polygons, vertices must be named in the same order so that they correspond.

What does that mean?

Name the congruent quadrilaterals:



1. _____ is congruent to _____
2. _____ is congruent to _____
3. _____ is congruent to _____
4. _____ is congruent to _____

Using CPCTC

Say what?

Since congruent polygons are named by their corresponding parts, we don't need pictures in order to determine congruent angles and sides.

Congruent parts can be named based on their location in the figures' names.

Name the congruent parts if quadrilateral ABCD ≅ quadrilateral WXYZ:

Angles:

1. _____ _____
2. _____ _____
3. _____ _____
4. _____ _____

Sides:

1. _____ _____
2. _____ _____
3. _____ _____
4. _____ _____

****PRACTICE – KUTA CONGRUENCE AND TRIANGLES****

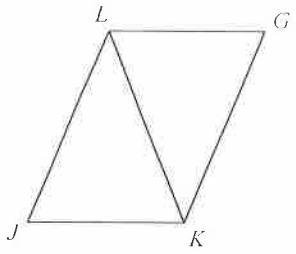
Geometry Name_____

Practice 4.1 - Congruence & Triangles

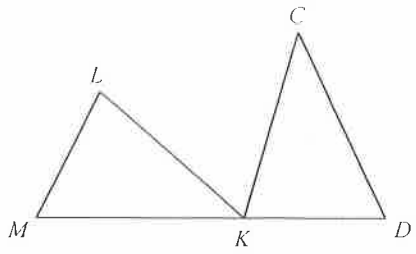
Date_____ Block____

Mark the angles and sides of each pair of triangles to indicate that they are congruent.

1) $\triangle LKJ \cong \triangle KLG$

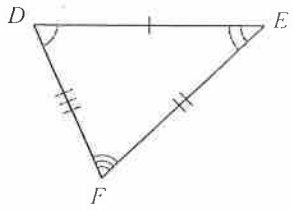


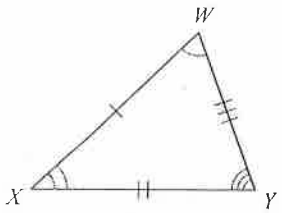
2) $\triangle MLK \cong \triangle DKC$



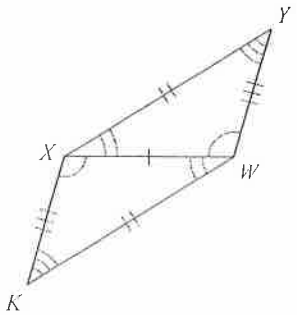
Write a statement that indicates that the triangles in each pair are congruent.

3)



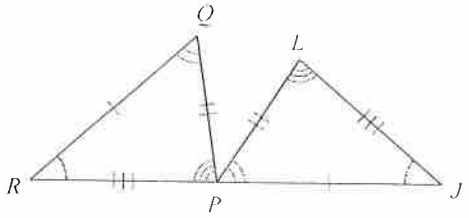


4)



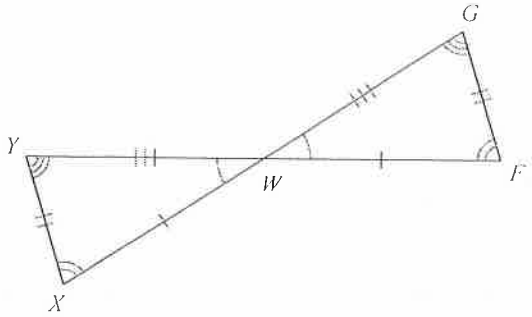
Complete each congruence statement by naming the corresponding angle or side.

5) $\triangle RQP \cong \triangle JPL$



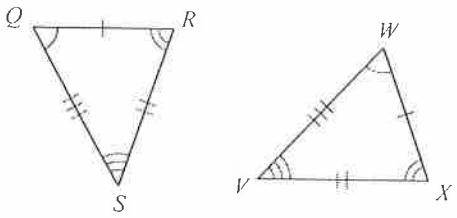
$\overline{RQ} \cong ?$

6) $\triangle WXY \cong \triangle WFG$



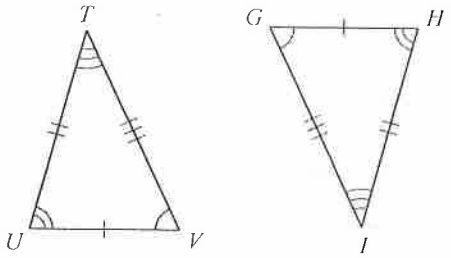
$\overline{WX} \cong ?$

7) $\triangle QRS \cong \triangle WXV$



$\overline{QR} \cong ?$

8) $\triangle VUT \cong \triangle GHI$



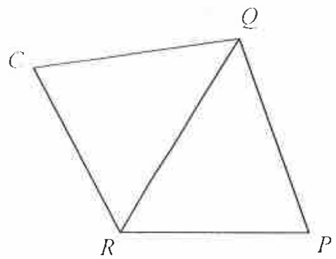
$\angle U \cong ?$

Geometry — Schirling Name____________________

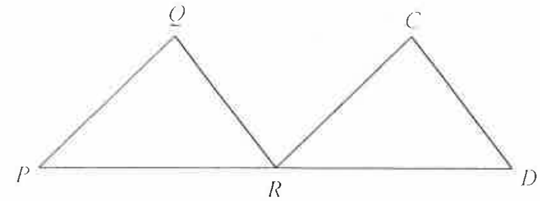
4.1 - Congruence & Triangles – Homework Block____

Mark the angles and sides of each pair of triangles to indicate that they are congruent.

1) $\triangle RQP \cong \triangle RQC$

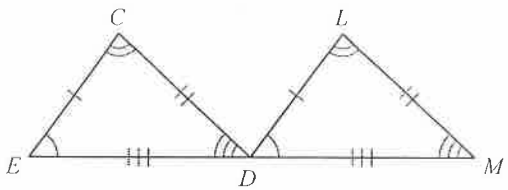


2) $\triangle PQR \cong \triangle RCD$

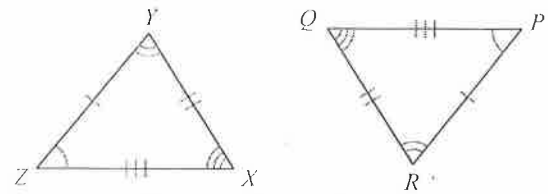


Write a statement that indicates that the triangles in each pair are congruent.

3)

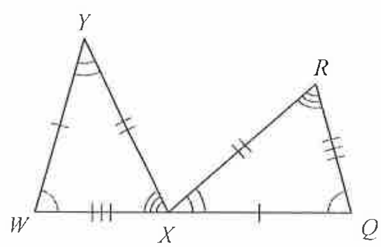


4)



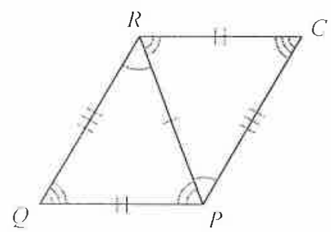
Complete each congruence statement by naming the corresponding angle or side.

5) $\triangle WYX \cong \triangle QXR$



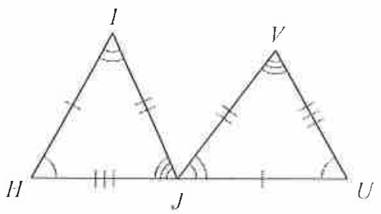
$\angle Y \cong ?$

6) $\triangle RPQ \cong \triangle PRC$



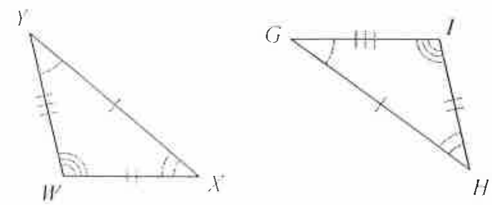
$\overline{QR} \cong ?$

7) $\triangle HIJ \cong \triangle UJV$



$\overline{JH} \cong ?$

8) $\triangle YXW \cong \triangle GHI$

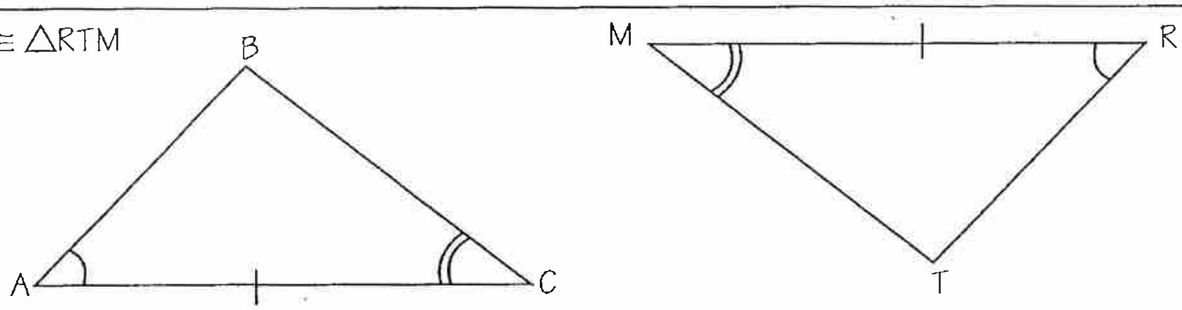


$\angle Y \cong ?$

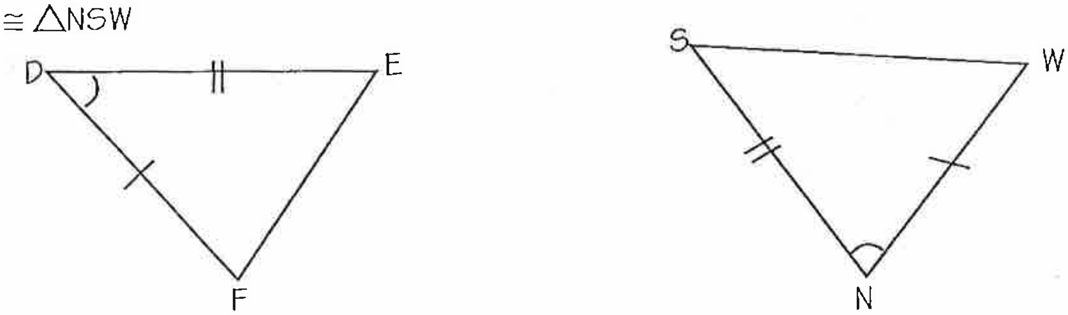
Play on Words: "How are ducks supposed to fly?"

Match congruent parts or shapes. Draw a line from the dot behind your answer in the first column to the dot in front of your answer in the second column. The line will contain a letter and a number Use the letter/number combinations to fill the blanks at the bottom.

$\triangle ABC \cong \triangle RTM$



$\triangle DEF \cong \triangle NSW$



$\angle A$ •	• $\angle D$
$\overline{BC}$ •	• $\angle R$
$\angle N$ •	• $\angle T$
$\overline{FE}$ •	• $\overline{TM}$
$\angle B$ •	• $\overline{WS}$
$\overline{CA}$ •	• $\angle F$
$\triangle BAC$ •	• $\overline{MR}$
$\triangle DFE$ •	• $\triangle MTR$
$\angle W$ •	• $\triangle TRM$
$\triangle CBA$ •	• $\triangle SNW$
$\triangle EDF$ •	• $\triangle NWS$

4 A 0 7 2 T N 8 10 0 5 F R 11 3 N M 9 6 I I 1

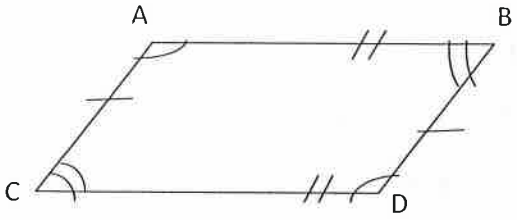
___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
1 2 3 4 5 6 7 8 9 10 11

4.1 - 4.2 Congruent Polygons & Triangles

Objectives:

A. I can properly name congruent polygons.
B. I can find congruent angles or sides either from a picture of congruent polygons or from their congruence statement.
C. I can prove that triangles are congruent using the triangle congruence postulates of AAS, SSS, SAS, ASA.

Warm-UP!



1. Properly name the congruent sides of the figure.

$\overline{AC} \cong \overline{DB}$ and $\overline{CD} \cong \overline{BA}$

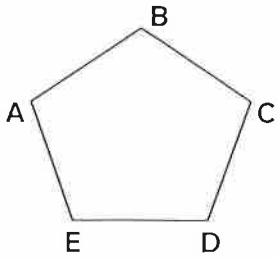
2. Properly name the congruent angles of the figure.

$\angle A \cong \angle D$
$\angle B \cong \angle C$

----------STOP----------

Naming Polygons: There are multiple correct ways to name a polygon.

Name the pentagon:



1. ABCDE
2. BCDEA
3. CDEAB
4. DEABC
5. EABCD

Congruent Polygons

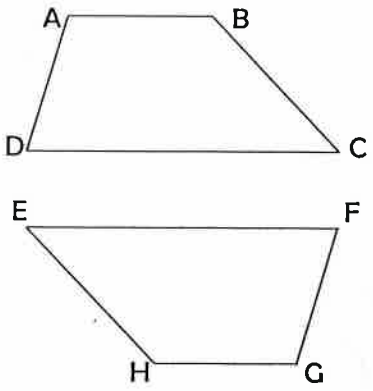
If two polygons are congruent, then they have congruent Sides and congruent angles.

When naming congruent polygons, vertices must be named in the same order so that they correspond.

What does that mean? ORDER MATTERS

$\triangle ABC \cong \triangle DEF$ → then $\angle A \cong \angle D$ and $\overline{AB} \cong \overline{DE}$
$\angle B \cong \angle E$ $\overline{BC} \cong \overline{EF}$
$\angle C \cong \angle F$ $\overline{AC} \cong \overline{DF}$

Name the congruent quadrilaterals: $ABCD \cong GHEF$



1. ABCD is congruent to GHEF
2. BCDA is congruent to HEFG
3. CDAB is congruent to EFGH
4. DABC is congruent to FGHE

Using CPCTC

Say what? Corresponding parts of congruent triangles are congruent.

Since congruent polygons are named by their corresponding parts, we don't need pictures in order to determine congruent angles and sides.

Congruent parts can be named based on their location in the figures' names.

Name the congruent parts if quadrilateral ABCD ≅ quadrilateral WXYZ:

Angles:
1. $\angle A \cong \angle W$
2. $\angle B \cong \angle X$
3. $\angle C \cong \angle Y$
4. $\angle D \cong \angle Z$

Sides:
1. $\overline{AB} \cong \overline{WX}$
2. $\overline{BC} \cong \overline{XY}$
3. $\overline{CD} \cong \overline{YZ}$
4. $\overline{AD} \cong \overline{WZ}$

****PRACTICE – KUTA CONGRUENCE AND TRIANGLES****

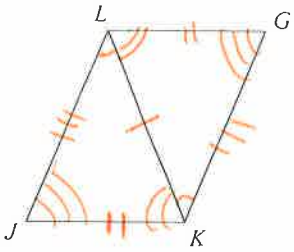
Geometry Name _____

Practice 4.1 - Congruence & Triangles

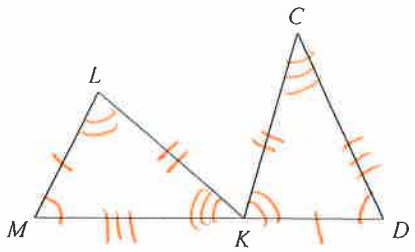
Date _____ Block ____

Mark the angles and sides of each pair of triangles to indicate that they are congruent.

1) $\triangle LKJ \cong \triangle KLG$

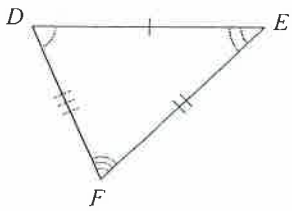


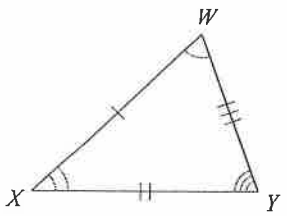
2) $\triangle MLK \cong \triangle DKC$



Write a statement that indicates that the triangles in each pair are congruent.

3)



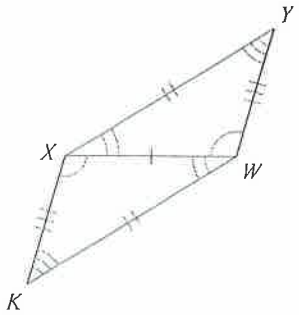


$\angle D \cong \angle W$
$\angle E \cong \angle X$
$\angle F \cong \angle Y$

$\overline{DE} \cong \overline{WX}$
$\overline{FE} \cong \overline{YX}$
$\overline{DF} \cong \overline{WY}$

$\triangle DEF \cong \triangle WXY$

4)



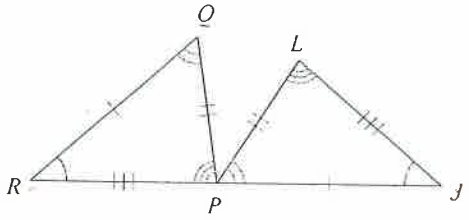
$\angle W \cong \angle X$
$\angle X \cong \angle W$
$\angle Y \cong \angle K$

$\overline{XW} \cong \overline{WX}$
$\overline{XY} \cong \overline{WK}$
$\overline{XK} \cong \overline{WY}$

$\triangle WXY \cong \triangle XWK$

Complete each congruence statement by naming the corresponding angle or side.

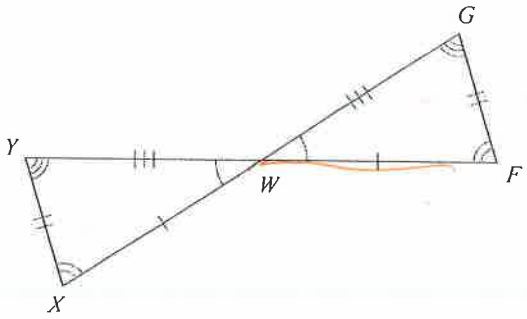
5) $\triangle RQP \cong \triangle JPL$



$\overline{RQ} \cong ?$

$\overline{RQ} \cong \overline{JL}$

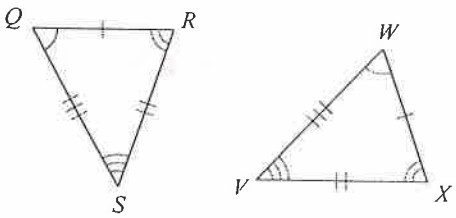
6) $\triangle WXY \cong \triangle WFG$



$\overline{WX} \cong ?$

$\overline{WX} \cong \overline{WF}$

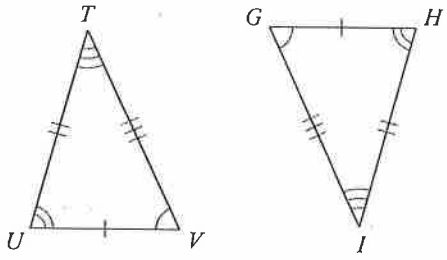
7) $\triangle QRS \cong \triangle WXV$



$\overline{QR} \cong ?$

$\overline{QR} \cong \overline{WX}$

8) $\triangle VUT \cong \triangle GHI$



$\angle U \cong ?$

$\angle U \cong \angle H$

Side-Side-Side Postulate: SSS

If each side of a triangle is congruent to a side of another triangle, then the two triangles are congruent.

Sketch:

Side-Angle-Side Postulate: SAS

If two consecutive sides and their *included* angle in a triangle are congruent to two consecutive sides and their *included* angle in another triangle, then the two triangles are congruent.

sandwiched

Sketch:

Angle-Side-Angle Postulate: ASA

If two consecutive angles and their *included* side in a triangle are congruent to two consecutive angles and their *included* side in another triangle, then the two triangles are congruent.

Sketch:

Angle-Angle-Side Postulate: AAS

If two angles and a *non-included* side of a triangle are congruent to two angles and a *non-included* side of another triangle, then the two triangles are congruent.

Sketch:

Hypotenuse-Leg Postulate: HL

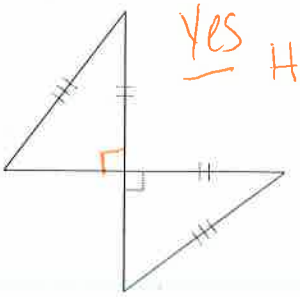
If the hypotenuse and leg of a right triangle are congruent to the hypotenuse and leg of another right triangle, then the two triangles are congruent.

Sketch:

4.2 Examples - Triangle Congruence

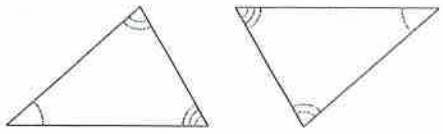
State if the two triangles are congruent. If they are, state how you know.

1)



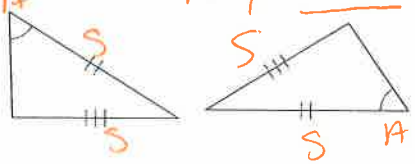
Yes HL

2)



NO, AAA

3)

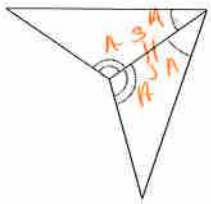


No, Swear

4)

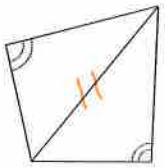
Yes, ASA

5)



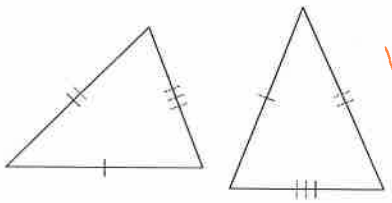
Yes
ASA

6)



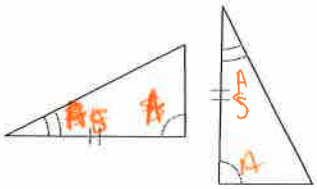
No, not enough.

7)



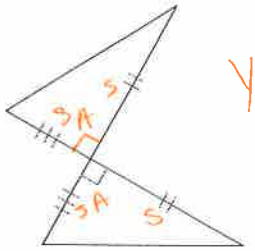
Yes, SSS

8)



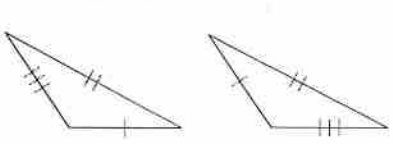
Yes, ASA

9)



Yes, SAS

10)



Yes, SSS

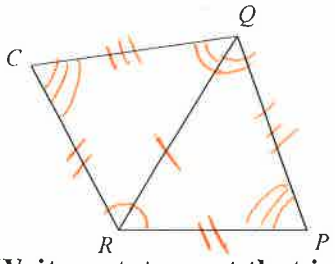
Geometry – Schurling Name _____

4.1 - Congruence & Triangles – Homework

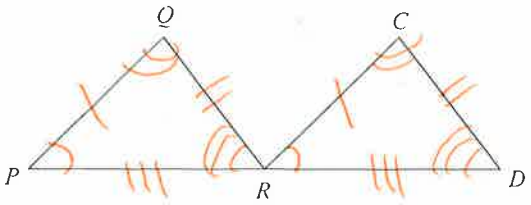
Block____

Mark the angles and sides of each pair of triangles to indicate that they are congruent.

1) $\Delta RQP \cong \Delta RQC$

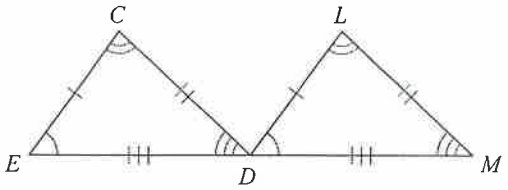


2) $\Delta PQR \cong \Delta RCD$

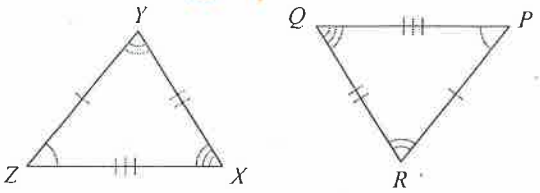


Write a statement that indicates that the triangles in each pair are congruent.

3) $\Delta ECD \cong \Delta DLM$

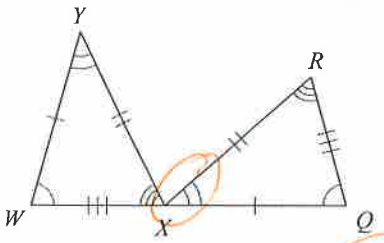


4) $\Delta ZYX \cong \Delta PRQ$



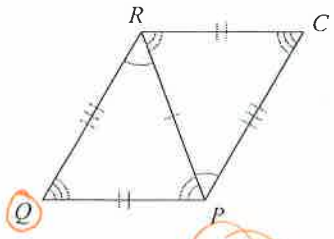
Complete each congruence statement by naming the corresponding angle or side.

5) $\Delta WYX \cong \Delta QXR$



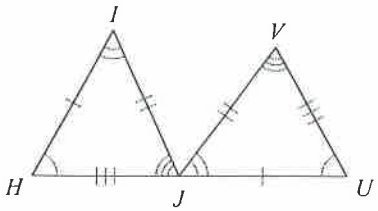
$\angle Y \cong$? $\angle Y \cong \angle RXQ$

6) $\Delta RPQ \cong \Delta PRC$



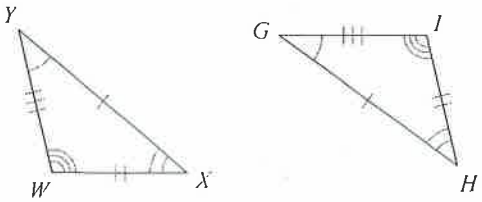
$\overline{QR} \cong$? $\overline{CP}$

7) $\Delta HIJ \cong \Delta UJV$



$\overline{JH} \cong$? $\overline{VU}$

8) $\Delta YXW \cong \Delta GHI$

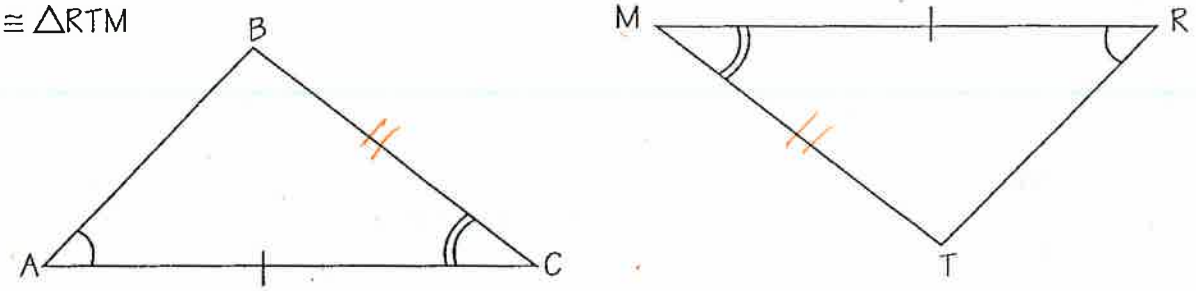


$\angle Y \cong$? $\angle G$

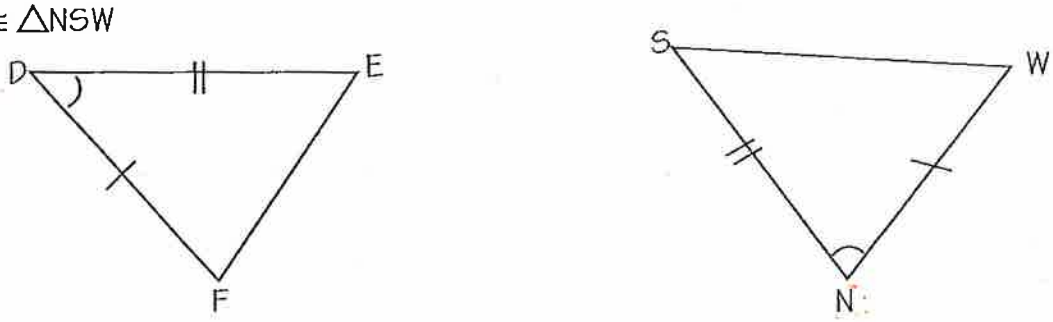
Play on Words: "How are ducks supposed to fly?"

Match congruent parts or shapes. Draw a line from the dot behind your answer in the first column to the dot in front of your answer in the second column. The line will contain a letter and a number Use the letter/number combinations to fill the blanks at the bottom.

△ABC ≅ △RTM



△DEF ≅ △NSW



∠A	4									∠D
$\overline{BC}$										∠R
∠N										∠T
$\overline{FE}$										$\overline{TM}$
∠B										$\overline{WS}$
$\overline{CA}$										∠F
△BAC										$\overline{MR}$
△DFE										△MTR
∠W										△TRM
△CBA										△SNW
△EDF										△NWS

7	0	A	2	T	N	8	10	0	5	F	R	11	3	N	M	9	6	I	1	I

I	N	F	O	R	M	A	T	I	O	N
1	2	3	4	5	6	7	8	9	10	11