		MATH 2 HONORS
Day	**Date**	**Unit 6 Topics**
1	4/25/18	L1: CPCTC
2	4/26	L2: Congruence Tests
3	4/27	**QUIZ** on Lessons 1-2
4	4/30	L3: Congruence Proofs
5	5/01	L4: Isosceles Triangle Theorem
6	5/02	Review
7	5/03	**Unit 6 TEST**

QUIZ DATE: _____

Math 2 – Honors
Unit 6 –Triangles & Congruence
Lesson 1 → Congruent Triangles & CPCTC

TEST DATE: _____
Name_____
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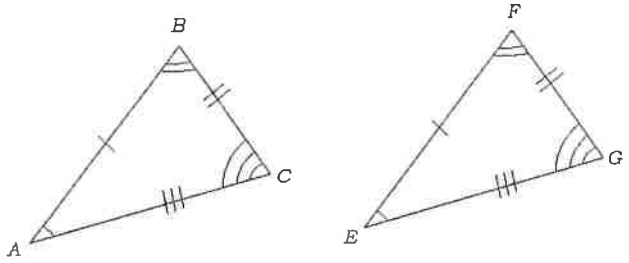
➢ **Review:** Similar triangles are the SAME SHAPE but DIFFERENT SIZES. In order for two triangles to be similar, the **corresponding angles** must be **congruent** and the **corresponding sides** must be **proportional.**

➢ **Congruent Triangles:** Triangles that are the same _____ and the same _____.

- Each triangle has three congruent _____ and three congruent _____.
- If all **SIX** of the corresponding parts of two triangles are _____, then the triangles are _____.



Congruent Triangles:

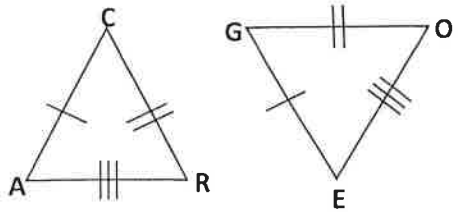
Corresponding Congruent Angles:

Corresponding Congruent Sides:

➢ **Definition of Congruent Triangles (CPCTC):**

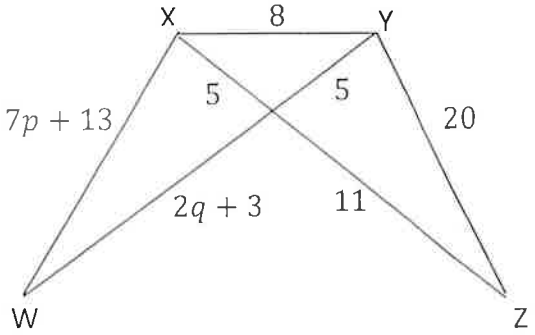
- Two triangles are congruent if and only if their corresponding parts are _____.
- ***CPCTC*** **– Corresponding Parts of Congruent Triangles are Congruent**

1. Write a congruency statement for the two triangles at right.

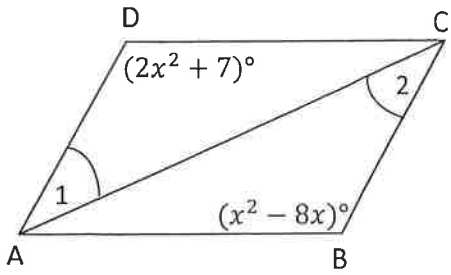


2. List ALL of the congruent parts if $\Delta EFG \cong \Delta HGF$.

3. $\Delta WXY \cong \Delta ZYX$ Solve for p and q.



4. $\Delta ADC \cong \Delta CBA$ Solve for x. Then find the $m\angle B$ & $m\angle D$.



➢ **Draw and label a diagram. Solve for the missing variable(s).**

5. If ΔBAT ≅ ΔDOG, and $m\angle B = 14°$, $m\angle G = 29°$ and $m\angle O = (10x + 7)°$, find x and $m\angle O$.

6. If ΔCOW ≅ ΔPIG, and $CO = 25$, $CW = 18$, $IG = 23$ and $PG = 7x - 17$, find x and **PG**.

7. If ΔDEF ≅ ΔPQR and $DE = 3x - 10$, $QR = 4x - 23$, $PQ = 2x + 7$ and $EF = y$, find x and y.

8. If ΔDEF ≅ ΔJKL and $DE = x^2 - 3x$, $KJ = 28$, $m\angle E = (8y^2 - 6y)°$ and $m\angle K = 5°$, find x and y.

Math 2 – Honors
Unit 6 –Triangles & Congruence
Lesson 1 → Congruent Triangles & CPCTC HOMEWORK

Name_____
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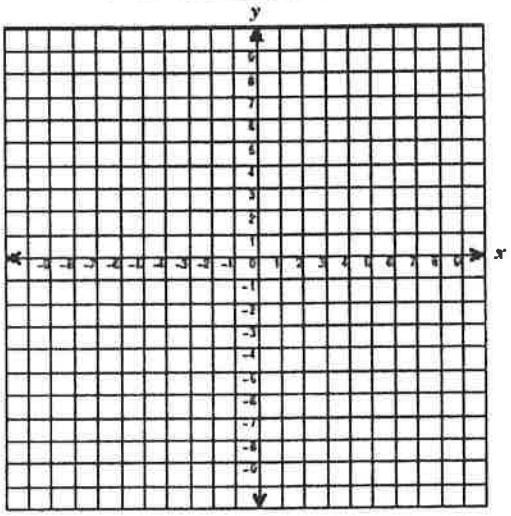
- $\boxed{\Delta PQR \cong \Delta ABC}$
- Find the values of x and y

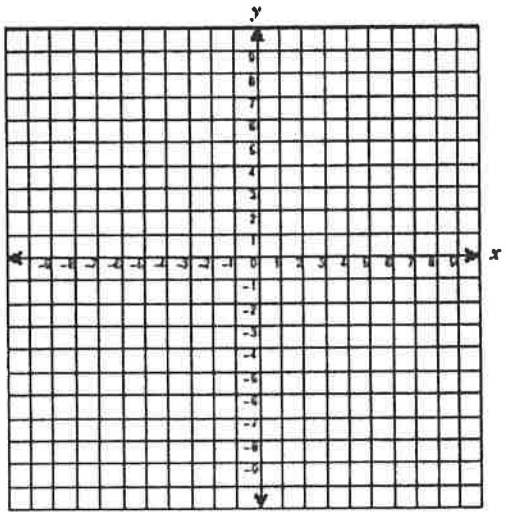
Given: 1. $m\angle R = (5x + 70)^\circ$ $\quad QR = 4y + 2$ $m\angle C = (24x - 25)^\circ$ $\quad BC = x + y$	Given: 2. $m\angle R = (90 - y)^\circ$ $\quad PR = 3x + y - 1$ $m\angle C = 13^\circ$ $\quad AC = 32 - x$
Given: 3. $PQ = 5x - 31$ $\quad AB = x + 1$ $QR = -3y - 1$ $\quad BC = 9 - y$	Given: 4. $m\angle A = (15y - 3)^\circ$ $\quad PQ = 11 - x$ $m\angle P = (43 - x)^\circ$ $\quad AB = 3y + 1$
Given: 5. $AB = 2x + y$ $\quad PQ = 7$ $QR = 4x + y$ $\quad BC = 11$	Given: 6. $m\angle P = (x + 10)^\circ$ $\quad m\angle Q = (3x)^\circ$ $m\angle A = (y + 20)^\circ$ $\quad m\angle B = (x + 3y)^\circ$ Find the $m\angle P$ and the $m\angle Q$.

7. Graph each line.
Identify two congruent triangles formed by the lines.
Label as ΔABC and as ΔDEF.

$x = 0$	$x = 4$
$y = 0$	$y = 2x - 4$

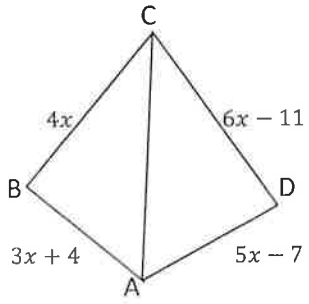


8. Consider 2 triangles, ΔABC and ΔFDE, with vertices
$A: (0,7)\ B: (-4,0)\ C: (0,0)\ D: (2,3)\ E: (2,-1)\ F: (9,-1)$.
Draw a diagram and then state the corresponding congruent parts for the two triangles.



➢ Solve

9. The perimeter of $ABCD$ is 85.
If $\Delta ABC \cong \Delta ADC$, find the value of x.



10. Given: $\Delta NEW \cong \Delta CAR$

$EN = 11$	$AR = 2x - 4y$	$NW = x + y$
$EW = 10$	$CA = 4x + y$	

Draw the triangles and solve for x, y *and* CR.

Math 2 – Honors
Unit 6 –Triangles & Congruence
Lesson 2 → Proving Triangles Congruent

Name_____
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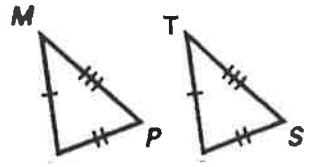
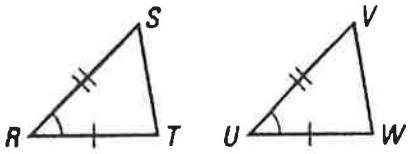
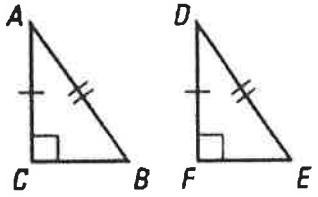
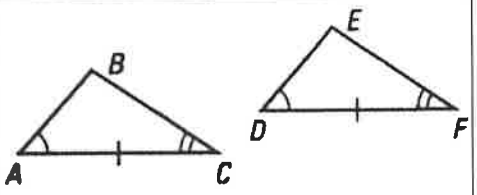
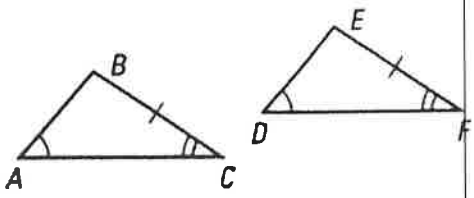
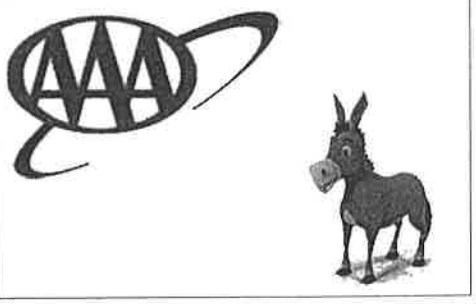
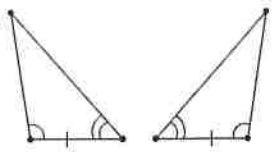
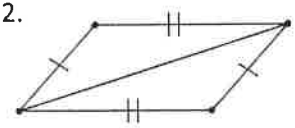
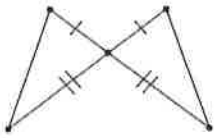
➢ There are 5 statements that will allow us to prove that 2 triangles are congruent:

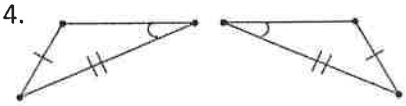
Side Side Side Congruence **SSS**	3 pairs of corresponding congruent sides	
Side Angle Side Congruence **SAS**	2 pairs of corresponding congruent sides and a corresponding *included* congruent angle	
Hypotenuse Leg Congruence **HL**	Only for RIGHT TRIANGLES: Congruent hypotenuses and one pair of corresponding congruent sides	
Angle Side Angle Congruence **ASA**	2 pairs of corresponding congruent angles and the *included* corresponding side congruent	
Angle Angle Side Congruence **AAS**	2 pairs of corresponding congruent angles and 1 pair of corresponding *nonincluded* congruent sides	
FALSE SHORCUTS	Angle Angle Angle Side Side Angle Congruence **AAA or SSA (ASS)**	

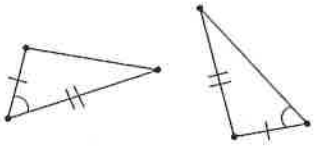
I. If the triangles can be proven congruent, give the reason (SSS, SAS, ASA, AAS or HL). If there is not enough information to prove the triangles congruent, write "none."

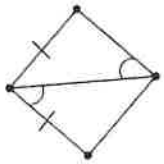
1. 

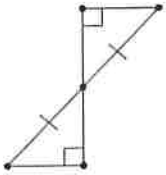
2. 

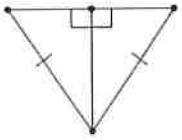
3. 

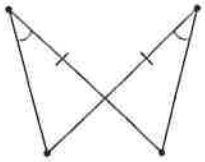
4. 

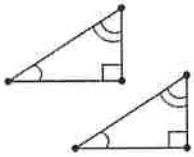
5. 

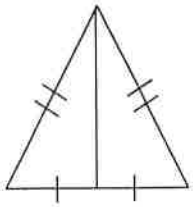
6. 

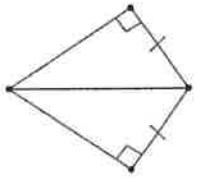
7. 

8. 

9. 

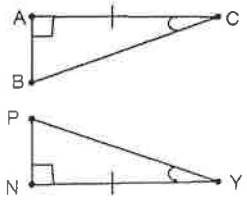
10. 

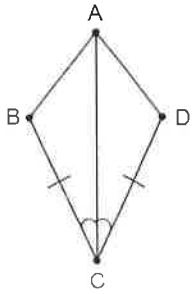
11. 

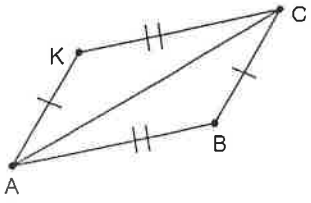
12. 

II. Determine whether you can conclude that another triangle is congruent to ΔABC.

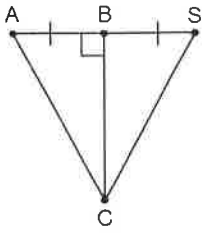
- If so, complete the congruence statement and give the reason (SSS, SAS, ASA, AAS or HL).
- If not, write "none."

1. 

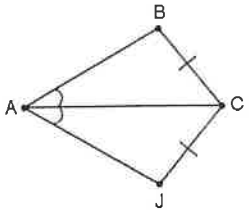
2. 

3. 

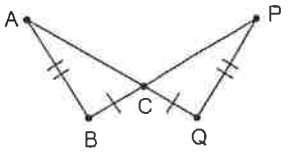
$\Delta ABC \cong \Delta$_____ by _____	$\Delta ABC \cong \Delta$_____ by _____	$\Delta ABC \cong \Delta$_____ by _____

4. 

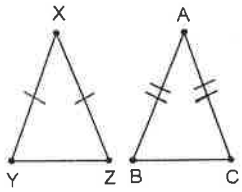
$\Delta ABC \cong \Delta$_____
by _____

5. 

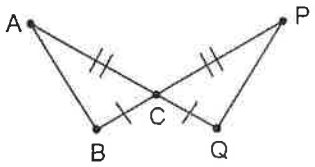
$\Delta ABC \cong \Delta$_____
by _____

6. 

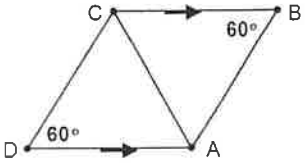
$\Delta ABC \cong \Delta$_____
by _____

7. 

$\Delta ABC \cong \Delta$_____
by _____

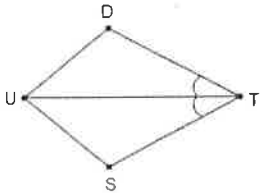
8. 

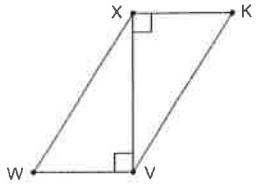
$\Delta ABC \cong \Delta$_____
by _____

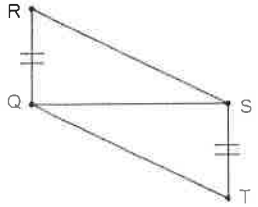
9. 

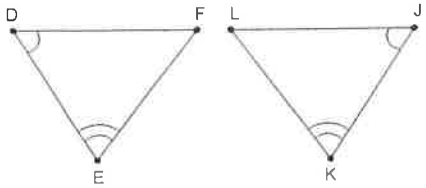
$\Delta ABC \cong \Delta$_____
by _____

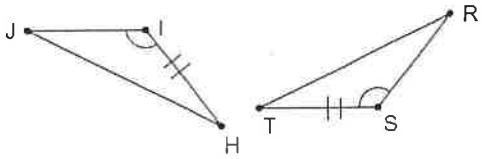
III. Mark any information that can be concluded from the diagram. Then write the additional information that is required in order to know that the triangles are congruent by the given reason.

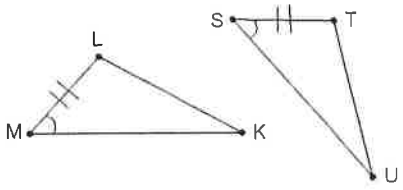
1. **ASA** 

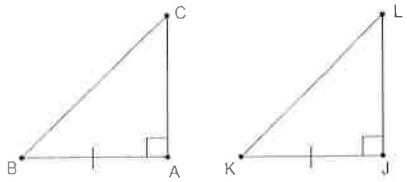
2. **HL** 

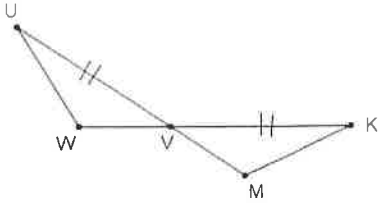
3. **SSS** 

4. **ASA** 

5. **SAS** 

6. **ASA** 

7. **HL** 

8. **SAS** 

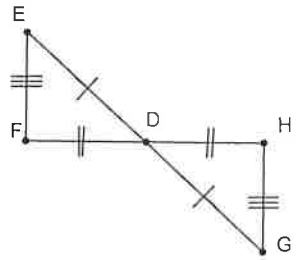
Math 2 – Honors
Unit 6 –Triangles & Congruence
Lesson 2 → Proving Triangles Congruent HOMEWORK

Name_____
Date_____ **Pd**_____

Complete the congruence statement for each pair of congruent triangles. Then state the reason you are able to determine the triangles are congruent. If you cannot conclude that triangles are congruent, write "none .

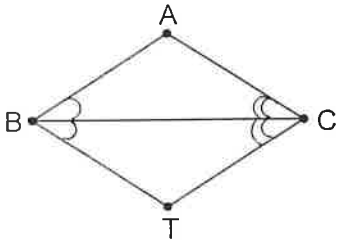
1. $\Delta EFD \cong \Delta$_____

by _____



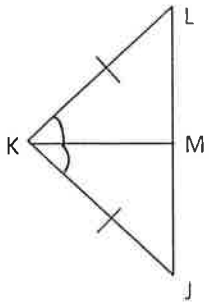
2. $\Delta ABC \cong \Delta$_____

by _____



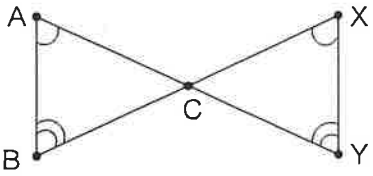
3. $\Delta LKM \cong \Delta$_____

by _____



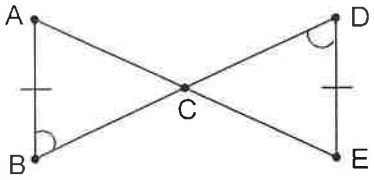
4. $\Delta ABC \cong \Delta$_____

by _____



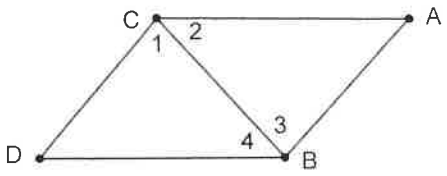
5. $\Delta ABC \cong \Delta$_____

by _____



Use the given information to mark the diagram and any additional congruence you can determine from the diagram. Then complete the triangle congruence statement and give the reason for triangle congruence.

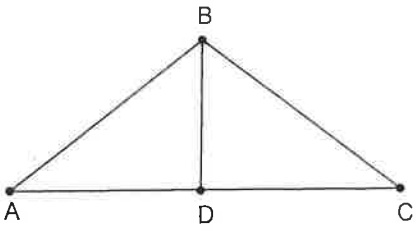
1.



Given: $\angle 1 \cong \angle 3, \quad \angle 2 \cong \angle 4$

$\Delta ABC \cong \Delta$_____ by _____

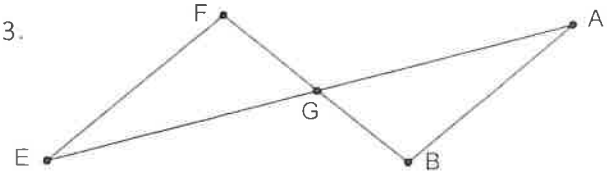
2.



Given: $\angle ABD \cong \angle CBD, \quad \angle ADB \cong \angle CDB$

$\Delta ABD \cong \Delta$_____ by _____

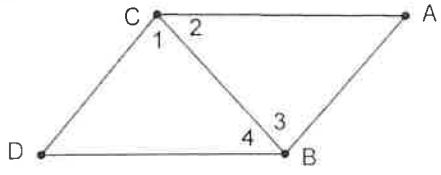
3.



Given: *G is the midpoint of* $\overline{FB}$ *and* $\overline{EA}$

$\Delta ABG \cong \Delta$_____ by _____

4.



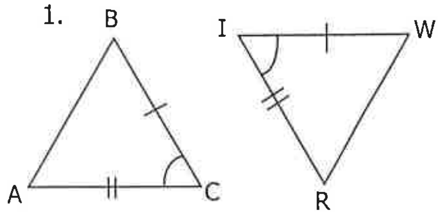
Given: $\angle 1 \cong \angle 3, \quad \overline{CD} \cong \overline{AB}$

$\Delta ABC \cong \Delta$_____ by _____

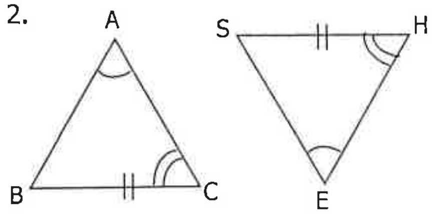
Math 2 – Honors
Unit 6 –Triangles & Congruence
Lesson 2 – Homework

Name___________________________
Date_______________________**Pd**_____

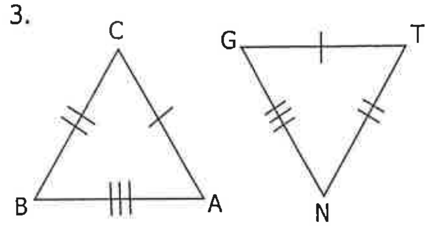
For each problem give the correct naming order of the congruent triangles. Write that name in order on the lines for the problem number (see box at bottom). Also, indicate which postulate or theorem is being used.

1.


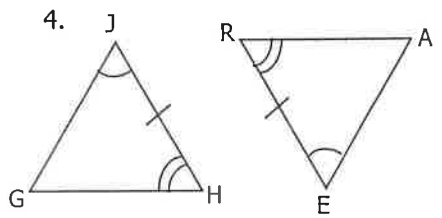
ΔABC ≅ Δ _______ by _________

2.


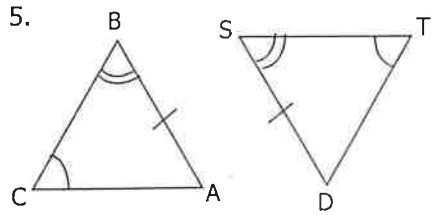
ΔABC ≅ Δ _______ by _________

3.


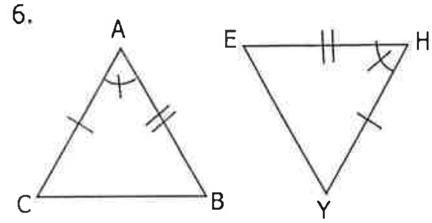
ΔABC ≅ Δ _______ by _________

4.


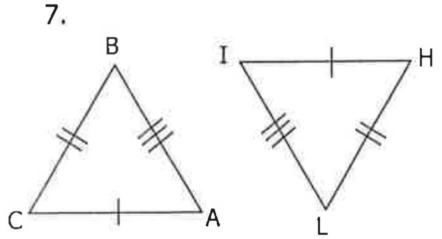
ΔGHJ ≅ Δ _______ by _________

5.


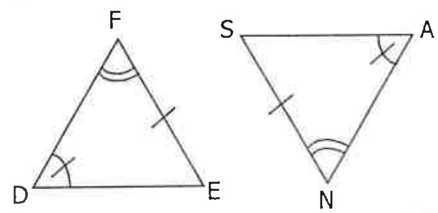
ΔABC ≅ Δ _______ by _________

6.


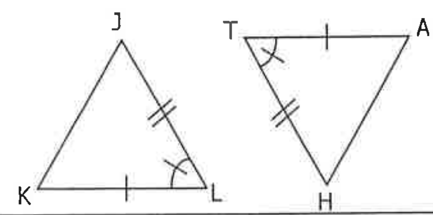
ΔABC ≅ Δ _______ by _________

7.


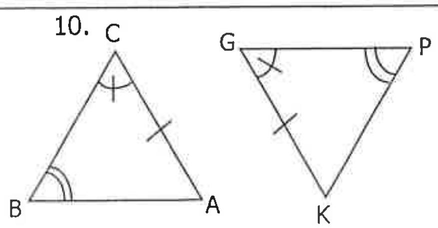
ΔABC ≅ Δ _______ by _________

8.


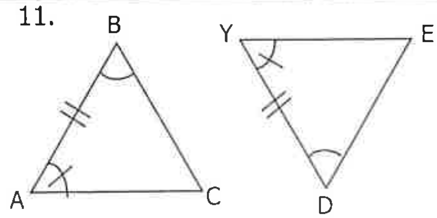
ΔDEF ≅ Δ _______ by _________

9.


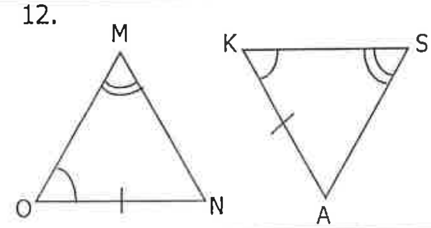
ΔJKL ≅ Δ _______ by _________

10.


ΔABC ≅ Δ _______ by _________

11.


ΔABC ≅ Δ _______ by _________

12.


ΔMNO ≅ Δ _______ by _________

_ _ _ _ _ O _ _ N _ _ _ S _ _ E _ I _ _ _ _ _ T _
4 4 4 8 8 8 12 12 12 2 2 2 5 5 5 9 9 9 6

_ _ _ E _ E _ _ _ O _ _ N _ U _ _ _ _ T _ E _ _ I _ .
6 6 10 10 10 1 1 1 3 3 3 7 7 7 11 11 11

(When you are done with the puzzle, there are: 3 SAS, 5 AAS, 2 ASA, and 2 SSS instances.)

Name _____

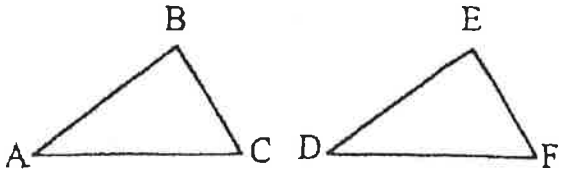
PRACTICE 1– Proofs Triangles - (G.6) – SSS, SAS, ASA, AAS, HL Date _____Period _____

Part I: Mark the triangles based on the given information and what one can mark shown in the diagram. Then complete the statement.

1. *Given:* $\overline{AB} \cong \overline{DE}, \overline{AC} \cong \overline{DF}$, $\overline{BC} \cong \overline{EF}$.

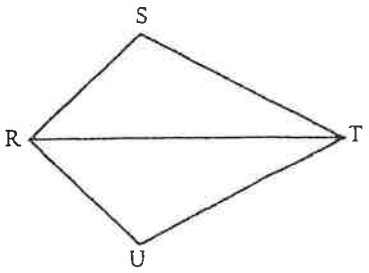
   Complete the statement:

   $\Delta ABC \cong \Delta$____*by*_____.



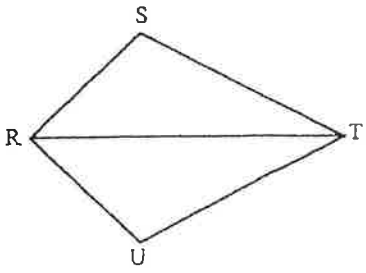
2. *Given:* $\overline{RT}$ *bisects* $< SRU$, $\overline{RS} \cong \overline{RU}$.

   $\Delta STR \cong \Delta$____*by*_____.



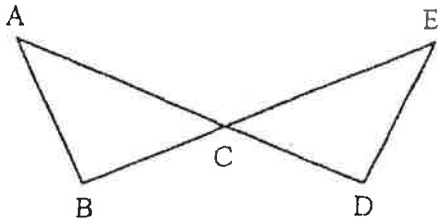
3. *Given:* $\overline{RT}$ *bisects* $< SRU$ *and* $\overline{RT}$ *bisects* $< STU$.

   $\Delta RST \cong \Delta$____*by*_____.



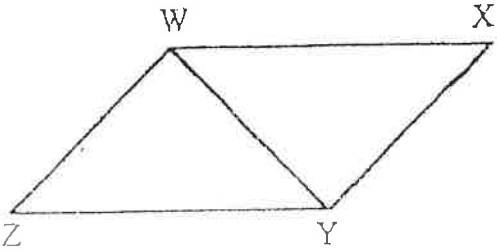
4. *Given:* $\overline{AC} \cong \overline{EC}$ *and* $\overline{BC} \cong \overline{DC}$

   $\Delta ABC \cong \Delta$____*by*_____.



5. *Given:* $\overline{WX} \parallel \overline{YZ}$ *and* $\overline{WX} \cong \overline{YZ}$

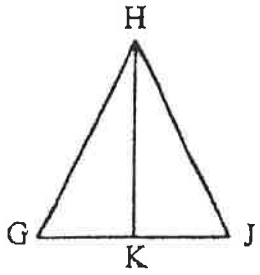
   $\Delta XYW \cong \Delta$____*by*_____.



Name _____

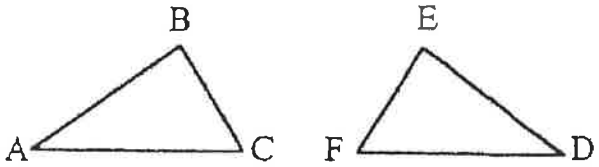
PRACTICE 1– Proofs Triangles - (G.6) – SSS, SAS, ASA, AAS, HL Date _____Period _____

6. *Given:* $\overline{HK}$ *bisects* $\angle GHJ$, $\overline{HK} \perp \overline{GJ}$



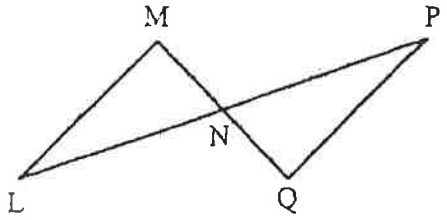
$\Delta GHK \cong \Delta$_____*by*_____.

7. *Given:* $\angle C \cong \angle F, \overline{BC} \cong \overline{EF}$, $\angle A \cong \angle D$



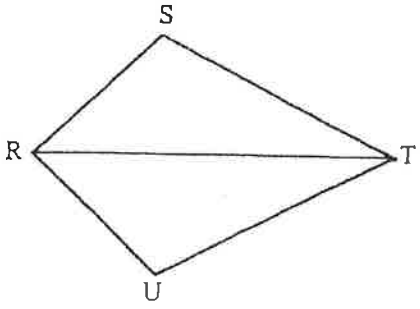
$\Delta BCA \cong \Delta$_____*by*_____.

8. *Given:* $\angle M \cong \angle Q$, *N is the midpoint of* $\overline{MQ}$



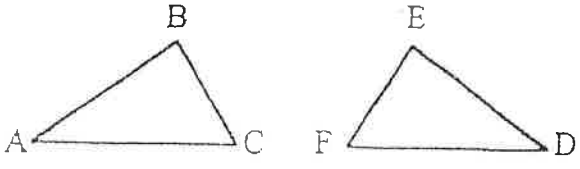
$\Delta LNM \cong \Delta$_____*by*_____.

9. *Given:* $\overline{RS} \cong \overline{RU}, \overline{TS} \cong \overline{TU}$



$\Delta SRT \cong \Delta$_____*by*_____.

10. *Given:* $\overline{AB} \cong \overline{DE}, \overline{BC} \cong \overline{EF}$ $\angle B \cong \angle E$

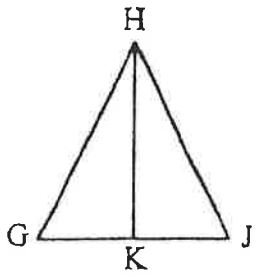


$\Delta ABC \cong \Delta$_____*by*_____.

Name _____

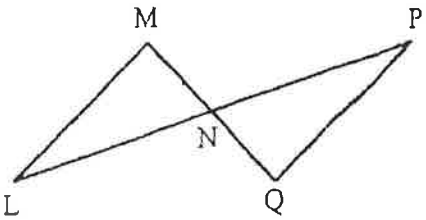
PRACTICE 1– Proofs Triangles - (G.6) – SSS, SAS, ASA, AAS, HL Date _____Period _____

11. *Given:* $\overline{GH} \cong \overline{JH}$
$\overline{HK} \perp \overline{GJ}$



$\Delta GHK \cong \Delta$____by_____.

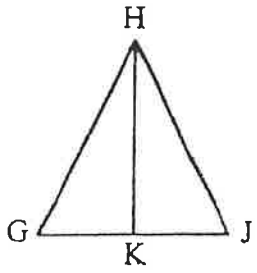
12. *Given:* N *is the midpoint of* $\overline{MQ}$ *and* $\overline{LP}$



$\Delta MNL \cong \Delta$ ____by_____.

Part II: State the THIRD PART needed to prove the following triangles congruent.

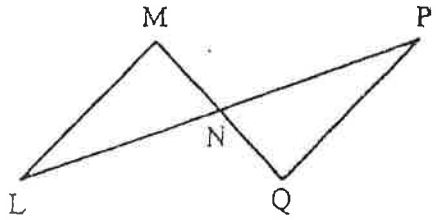
13. *Given:* $\overline{HK}$ *bisects* $\overline{GJ}$



$\Delta GKH \cong \Delta JKH$ *by* SAS if one knows that

_____ $\cong$ _____.

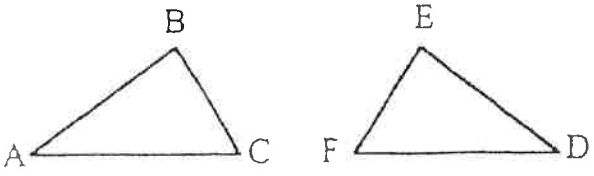
14. *Given:* $\overline{LM} \cong \overline{PQ}$, N *is the midpoint of* $\overline{LP}$



$\Delta NML \cong \Delta NQP$ *by* SSS if one knows that

_____ $\cong$ _____.

15. *Given:* $\overline{AC} \cong \overline{DF}$, $\overline{AB} \cong \overline{DE}$



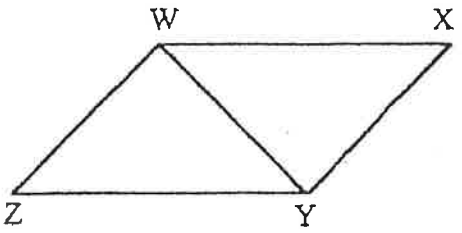
$\Delta ABC \cong \Delta DEF$ *by* SAS if one knows that

_____ $\cong$ _____.

Name _____

PRACTICE 1– Proofs Triangles - (G.6) – SSS, SAS, ASA, AAS, HL Date _____Period _____

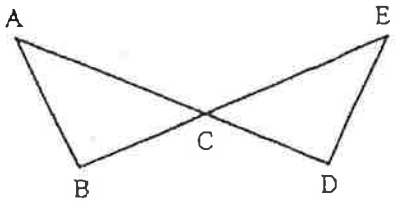
16. *Given:* $\overline{WX} \cong \overline{YZ}$



$\Delta WXY \cong \Delta YZW$ *by* SSS if one knows that

_____ ≅ _____.

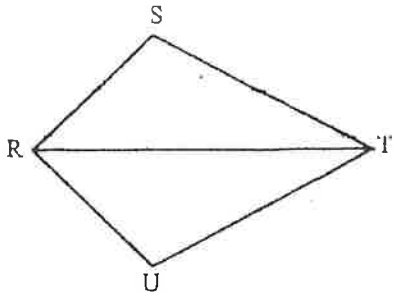
17. *Given:* $\overline{BC} \cong \overline{DC}$



$\Delta ABC \cong \Delta EDC$ *by* AAS if one knows that

_____ ≅ _____.

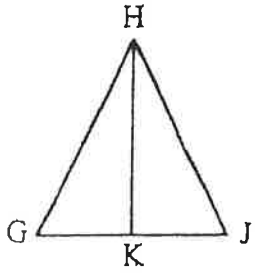
18. *Given:* $\angle S \cong \angle U$



$\Delta TRS \cong \Delta TRU$ *by* AAS if one knows that

_____ ≅ _____.

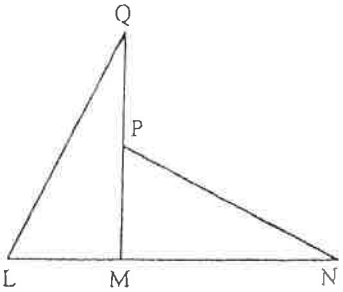
19. *Given:* $\overline{HK}$ *bisects* $\angle GHJ$



$\Delta HKG \cong \Delta HKJ$ *by* ASA if one knows that

_____ ≅ _____.

20. *Given:* $\overline{LM} \cong \overline{PM}$, $\overline{MQ} \cong \overline{MN}$



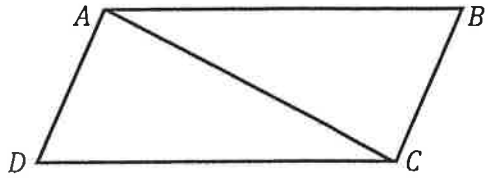
$\Delta LQM \cong \Delta PNM$ *by* SSS if one knows that

_____ ≅ _____.

Math 2 – Honors
Unit 6 –Triangles & Congruence
After Quiz → Triangle Congruence Proofs

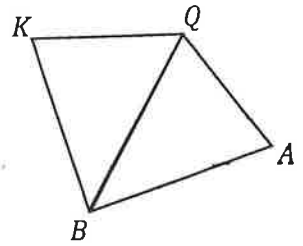
Name_____
Date_____ **Pd**_____

Fill in the missing statements and reasons.



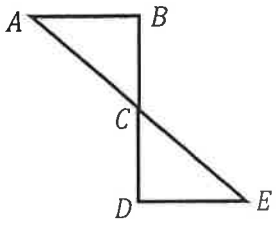
1. **Given:** $\overline{AB} \parallel \overline{DC}$, $\angle B \cong \angle D$
Prove: $\overline{BC} \cong \overline{DA}$

Statements	Reasons
1. _____	1. Given
2. $\angle BAC \cong \angle DCA$	2. _____
3. _____	3. Given
4. $\overline{AC} \cong \overline{AC}$	4. _____
5. $\Delta ABC \cong \Delta CDA$	5. _____ Congruence
6. _____	6. CPCTC



2. **Given:** $\overline{QK} \cong \overline{QA}$, $\overline{QB}$ bisects $\angle KQA$
Prove: $\overline{KB} \cong \overline{AB}$

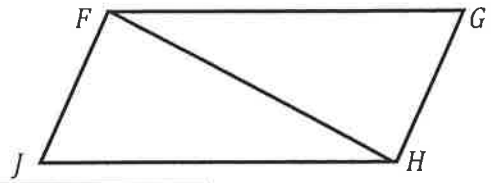
Statements	Reasons
1. _____	1. Given
2. $\overline{QB}$ bisects $\angle KQA$	2. _____
3. _____	3. Definition of Angle Bisector
4. _____	4. Reflexive Property of Congruence
5. $\Delta KBQ \cong \Delta$ _____	5. _____ Congruence
6. _____	6. _____



3. **Given:** $\overline{BD} \perp \overline{AB}$, $\overline{BD} \perp \overline{DE}$, $\overline{AB} \cong \overline{DE}$
Prove: $\angle A \cong \angle E$

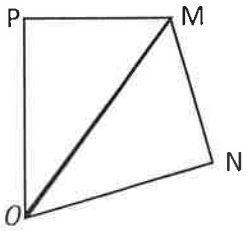
Statements	Reasons
1. _____	1. _____
2. $\angle B$ & $\angle D$ are right angles	2. Definition of _____
3. _____	3. All _____ angles are congruent
4. $\angle BCA \cong \angle ECD$	4. _____
5. $\overline{AB} \cong \overline{DE}$	5. _____
6. $\Delta ABC \cong \Delta$ _____	6. _____ Congruence
7. _____	7. _____

4. **Given:** $\overline{FJ} \cong \overline{GH}$, $\angle JFH \cong \angle GHF$
Prove: $\overline{FG} \cong \overline{JH}$



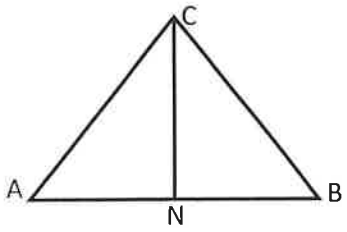
Statements	Reason
1. _____	1. _____
2. $\angle JFH \cong \angle GHF$	2. Given
3. $\overline{FH} \cong \overline{HF}$	3. _____
4. Δ_____ $\cong \Delta$ _____	4. _____ Congruence
5. _____	5. _____

5. **Given:** $\overline{MN} \cong \overline{MP}$, $\overline{MP} \perp \overline{PO}$, $\overline{MN} \perp \overline{NO}$
Prove: $\angle NOM \cong \angle POM$



Statements	Reasons
1. $\overline{MP} \perp \overline{PO}$, $\overline{MN} \perp \overline{NO}$	1. _____
2. _____	2. Definition of Perpendicular Lines
3. _____	3. Definition of Right Triangle
4. _____	4. Given
5. _____	5. _____
6. Δ_____ $\cong \Delta$_____	6. _____ Congruence
7. _____	7. _____

6. **Given:** $\overline{CN} \perp \overline{AB}$, $\overline{CN}$ bisects $\angle ACB$
Prove: ΔABC is an isosceles triangle

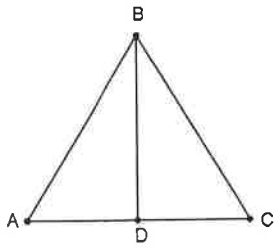


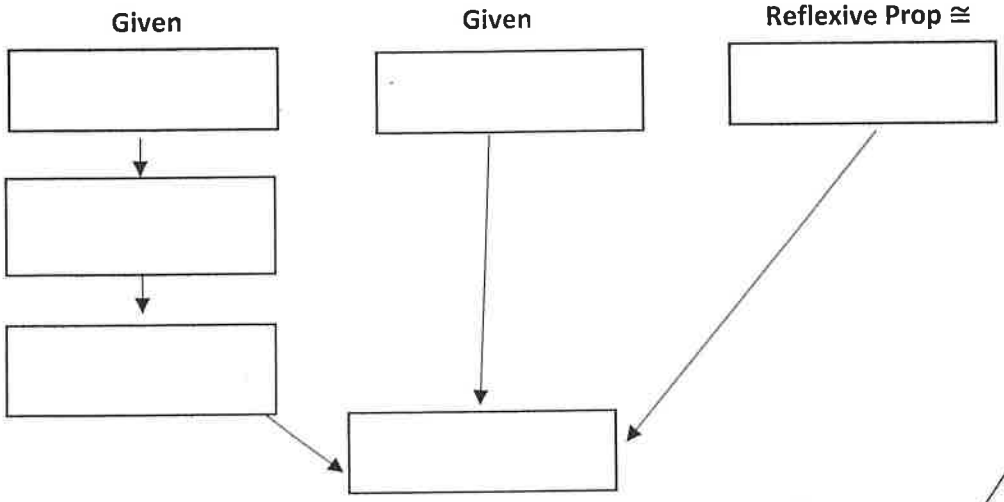
Statements	Reasons
1. _____	1. _____
2. $\angle ANC$ & $\angle BNC$ are right angles	2. Definition of _____
3. _____	3. All right angles are _____
4. _____	4. Given
5. _____	5. Definition of _____
6. _____	6. _____
7. $\Delta ANC \cong \Delta$_____	7. _____ Congruence
8. $\overline{AC} \cong$ _____	8. _____
9. _____	9. Definition of _____ Triangle

Math 2 – Honors
Unit 6 –Triangles & Congruence
Lesson 3 → Triangle Congruence Proofs

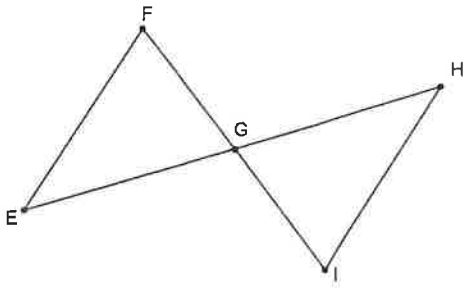
Name_____
Date_____ Pd_____

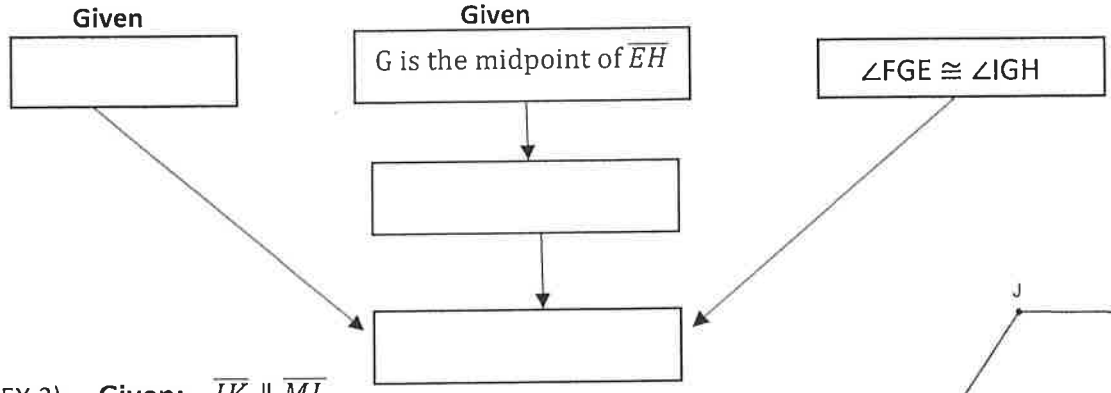
EX 1) **Given:** $\overline{AC} \perp \overline{BD}$
$\overline{AD} \cong \overline{DC}$
Prove: $\Delta ABD \cong \Delta CBD$



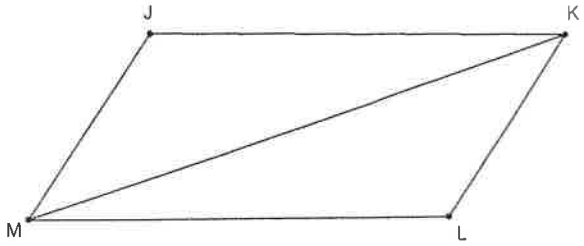


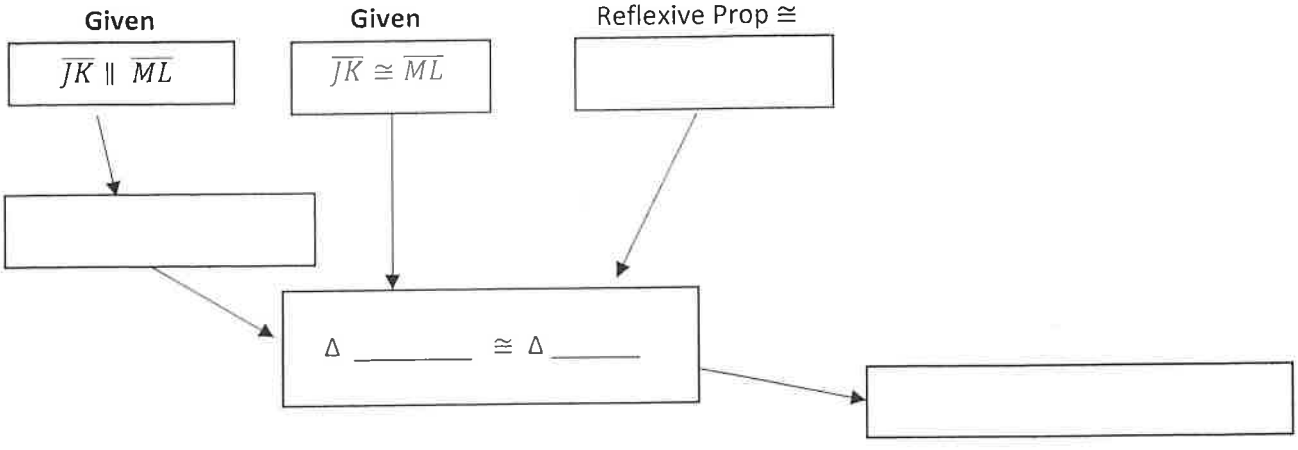
EX 2) **Given:** $\angle E \cong \angle H$
G is the midpoint of $\overline{EH}$
Prove: $\Delta GFE \cong \Delta GIH$



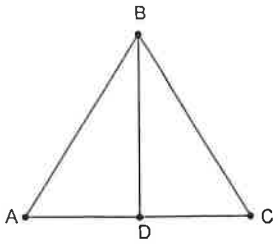


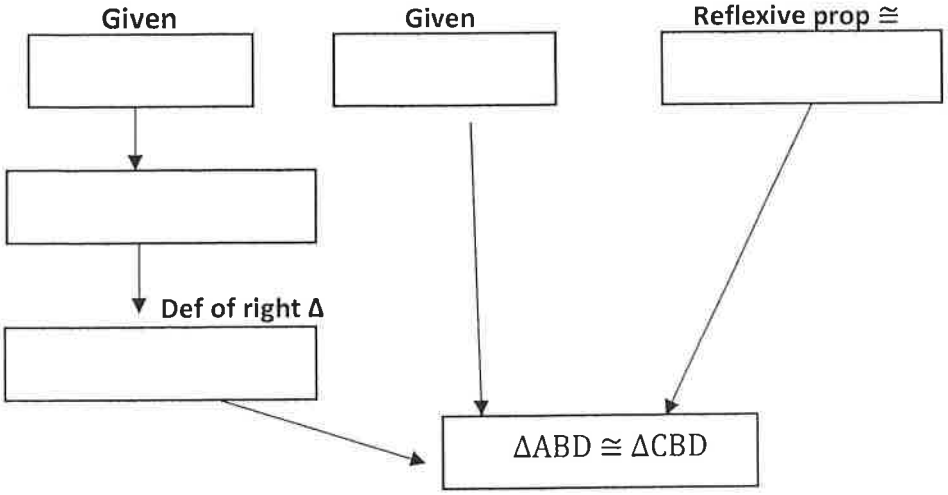
EX 3) **Given:** $\overline{JK} \parallel \overline{ML}$
$\overline{JK} \cong \overline{ML}$
Prove: $\angle J \cong \angle L$





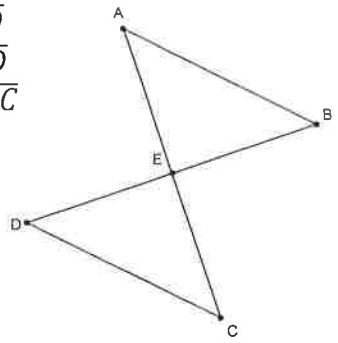
EX 4) **Given:** $\overline{AC} \perp \overline{BD}$
$\overline{AB} \cong \overline{BC}$
Prove: $\Delta ABD \cong \Delta CBD$





Make a two-column proof to complete the following.

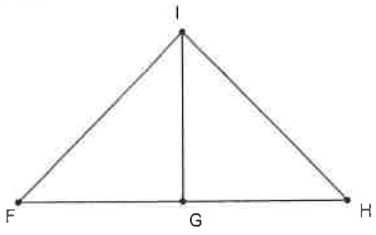
EX 5) **Given:** $\overline{AB} \parallel \overline{CD}$
$\overline{AB} \cong \overline{CD}$
Prove: $\overline{AE} \cong \overline{EC}$



Statement	Reason
1.	
2.	
3.	
4.	
5.	

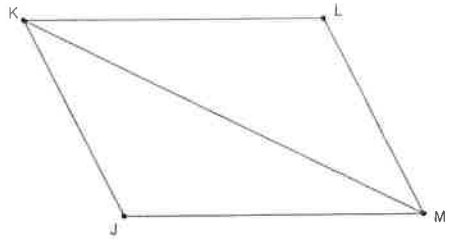
Statement	Reason
1.	
2.	
3.	
4.	
5.	

EX 6) **Given:** $\overline{IG}$ *bisects* $\angle FIH$
$\overline{IF} \cong \overline{IH}$
Prove: $\angle F \cong \angle H$



Statement	Reason
1.	
2.	
3.	
4.	
5.	
6.	

EX 7) **Given:** $\overline{KL} \parallel \overline{JM}$
$\overline{KJ} \parallel \overline{LM}$
Prove: $\overline{KJ} \cong \overline{LM}$

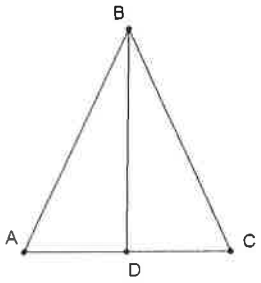


Math 2 – Honors
Unit 6 –Triangles & Congruence
Lesson 3 → Triangle Congruence Proofs HOMEWORK

Name_____
Date_____ **Pd**_____

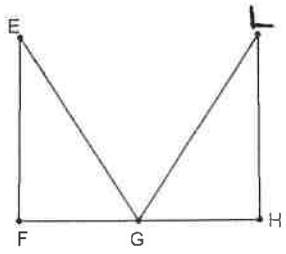
➢ Complete the following proofs. Draw and mark each picture before writing the proof.

1. Given: $\overline{BD} \perp \overline{AC}$
   $\overline{AD} \cong \overline{DC}$
   Prove: $\angle ABD \cong \angle CBD$



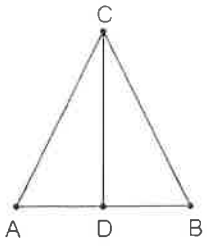
Statement	Reason
1.	
2.	
3.	
4.	
5.	
6.	

2. Given: $G \text{ is the midpoint of } \overline{FH}$
   $\overline{EF} \cong \overline{LH}$
   $\angle F \cong \angle H$
   Prove: $\overline{EG} \cong \overline{LG}$



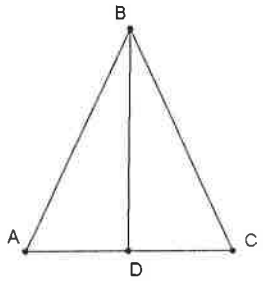
Statement	Reason
1.	
2.	
3.	
4.	

3. Given: $\overline{CD} \text{ bisects } \angle ACB$
   $\angle A \cong \angle B$
   Prove: $\overline{AD} \cong \overline{DB}$



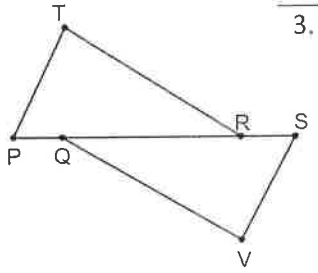
Statement	Reason
1.	
2.	
3.	
4.	
5.	

4. Given: $\overline{BD} \perp \overline{AC}$
   $\overline{AB} \cong \overline{BC}$
   Prove: $\angle ABD \cong \angle CBD$



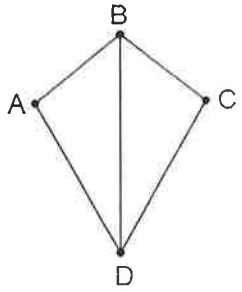
Statement	Reason
1.	
2.	
3.	
4.	
5.	
6.	

5. Given: $\overline{PR} \cong \overline{QS}$
   $\angle P \cong \angle S$
   $\angle T \cong \angle V$
   Prove: $\overline{TR} \cong \overline{QV}$



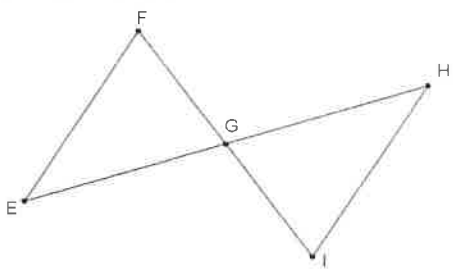
Statement	Reason
1.	
2.	
3.	

6. Given: $\overline{BD}$ *bisects* $\angle ABC$
   $\overline{BA} \cong \overline{CB}$
   Prove: $\angle ADB \cong \angle CDB$



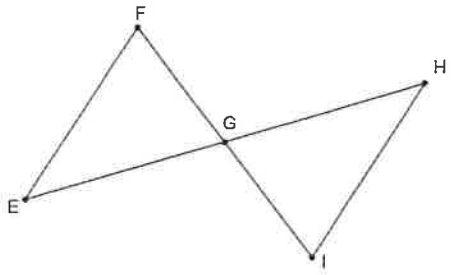
Statement	Reason
1.	
2.	
3.	
4.	
5.	

7. **Given:** G *is the midpoint of* $\overline{FI}$
   $\angle F \cong \angle I$
   Prove: $\overline{EF} \cong \overline{IH}$



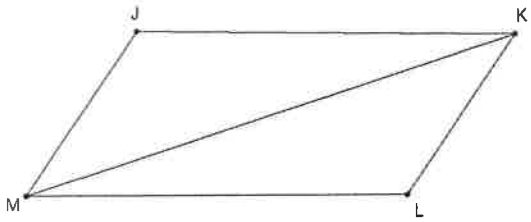
Statement	Reason
1.	
2.	
3.	
4.	
5.	

8. **Given:** $\overline{EF} \parallel \overline{HI}$
G *is the midpoint of* $\overline{EH}$
Prove: $\overline{FG} \cong \overline{GI}$



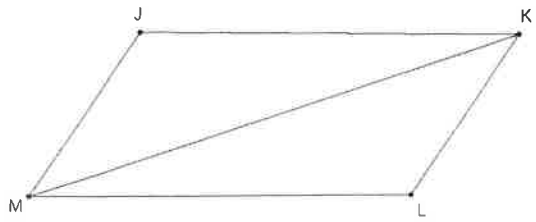
Statement	Reason
1.	
2.	
3.	
4.	
5.	
6.	

9. **Given:** $\overline{JM} \parallel \overline{LK}$
$\angle J \cong \angle L$
Prove: $\overline{JK} \cong \overline{ML}$



Statement	Reason
1.	
2.	
3.	
4.	
5.	

10. **Given:** $\overline{JM} \parallel \overline{LK}$
$\overline{JK} \parallel \overline{LM}$
Prove: $\angle J \cong \angle L$



Statement	Reason
1.	
2.	
3.	
4.	
5.	
6.	

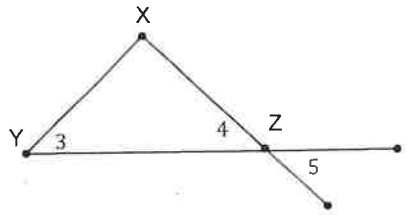
Math 2 – Honors
Unit 6 –Triangles & Congruence
Lesson 4 → More Triangle Congruence Proofs

Name_____
Date_____ **Pd**_____

Isosceles Triangle Theorem: If 2 sides of a triangle are congruent, then the angles opposite those sides are congruent.

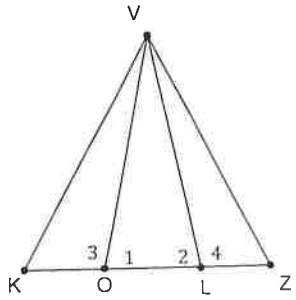
ITT Converse: If 2 angles of a triangle are congruent, then the sides opposite those angles are congruent.

1. **Given:** $\overline{YX} \cong \overline{XZ}$
   Prove: $\angle 3 \cong \angle 5$



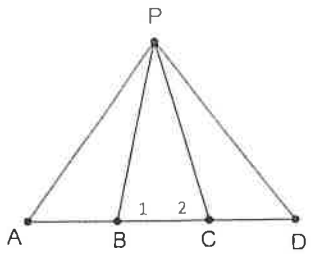
Statement	Reason
1.	
2.	
3.	
4.	

2. **Given:** $\overline{KV} \cong \overline{VZ}$
   $\overline{KO} \cong \overline{LZ}$
   Prove: $\Delta KVO \cong \Delta ZVL$



Statement	Reason
1.	
2.	
3.	

3. **Given:** $\angle 1 \cong \angle 2$
   $\overline{AB} \cong \overline{CD}$
   $\overline{AP} \cong \overline{PD}$
   Prove: $\Delta ABP \cong \Delta DCP$

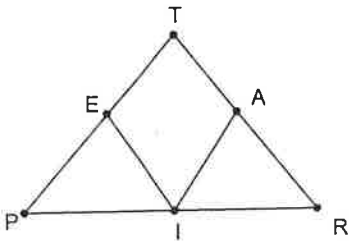


Statement	Reason
1.	
2.	ITT
3.	

OR

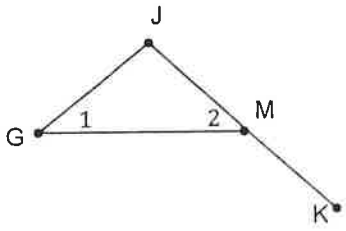
Statement	Reason
1.	
2.	ITT Converse
3.	

4. **Given:** $\overline{PT} \cong \overline{TR}$
$\overline{EP} \cong \overline{AR}$
I *is the midpoint of* $\overline{PR}$
Prove: $\overline{EI} \cong \overline{AI}$



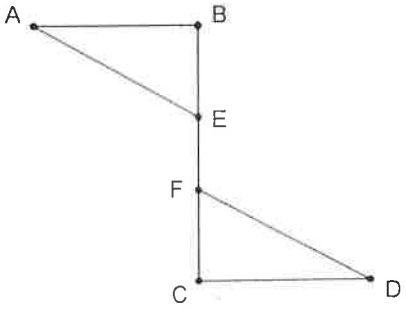
Statement	Reason
1.	
2.	
3.	
4.	
5.	

5. **Given:** M *is the midpoint of* $\overline{JK}$
$\angle 1 \cong \angle 2$
Prove: $\overline{JG} \cong \overline{MK}$



Statement	Reason
1.	
2.	
3.	
4.	

6. **Given:** $\overline{AB} \cong \overline{CD}$
$\overline{AB} \perp \overline{BC}$
$\overline{CD} \perp \overline{BC}$
$\overline{AE} \cong \overline{FD}$
Prove: $\angle A \cong \angle D$

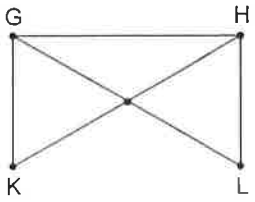


Statement	Reason
1.	GIVEN
	GIVEN
2.	
3.	
4.	
5.	

Math 2 – Honors
Unit 6 –Triangles & Congruence
Lesson 4 → More Triangle Congruence Proofs HOMEWORK

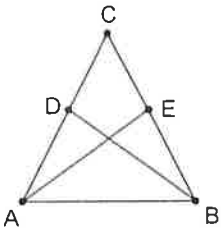
Name_____
Date_____ Pd_____

1. **Given:** $\overline{GK} \cong \overline{HL}$
   $\overline{GL} \cong \overline{HK}$
   Prove: $\angle K \cong \angle L$



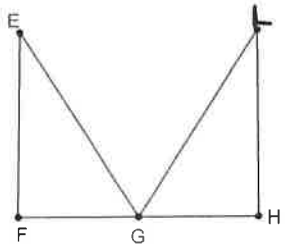
Statement	Reason
1.	
2.	
3.	
4.	

2. **Given:** $\overline{AC} \cong \overline{BC}$
   $\overline{CE} \cong \overline{CD}$
   Prove: $\overline{AE} \cong \overline{BD}$



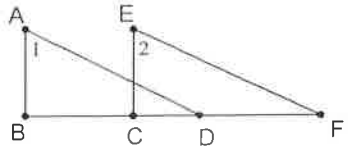
Statement	Reason
1.	
2.	
3.	
4.	

3. **Given:** $\angle F$ *and* $\angle H$ *are right angles*
   G is the midpoint of $\overline{FH}$
   $\overline{EG} \cong \overline{LG}$
   Prove: $\angle E \cong \angle L$



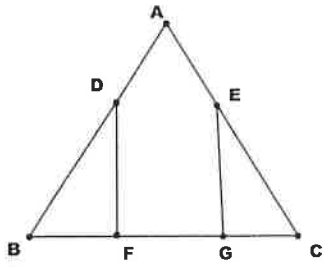
Statement	Reason
1.	
2.	
3.	
4.	
5.	

4. **Given:** $\angle 1 \cong \angle 2$
   $\angle B \cong \angle ECF$
   $\overline{BD} \cong \overline{CF}$
   Prove: $\overline{AD} \cong \overline{EF}$



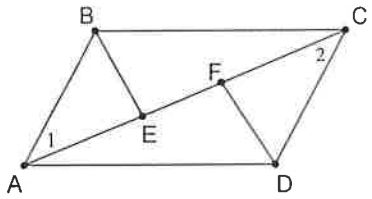
Statement	Reason
1.	
2.	
3.	

5. **Given:** $\angle B \cong \angle C$
$\overline{BF} \cong \overline{GC}$
$\overline{BD} \cong \overline{EC}$
Prove: $\angle BDF \cong \angle CEG$



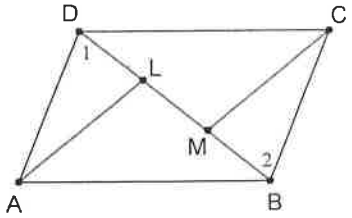
Statement	Reason
1.	
2.	
3	

6. Given: $\overline{AB} \cong \overline{CD}$
$\overline{AB} \parallel \overline{CD}$
$\overline{AE} \cong \overline{CF}$
Prove: $\overline{BE} \cong \overline{DF}$



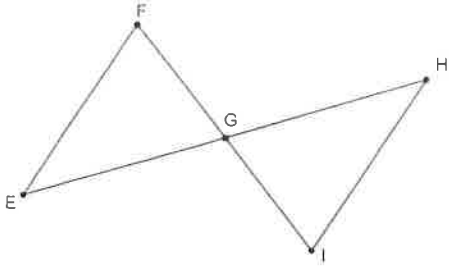
Statement	Reason
1.	
2.	
3.	
4.	

7. Given: $\angle DAL \cong \angle BCM$
$\overline{DL} \cong \overline{MB}$
$\angle ALD$ and $\angle CMB$ are right angles
Prove: $\overline{AL} \cong \overline{CM}$



Statement	Reason
1.	
2.	
3.	
4.	

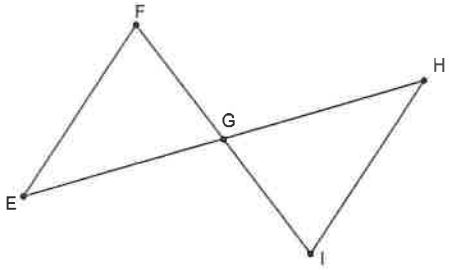
8. **Given:** $\overline{FI}$ bisects $\overline{EH}$
$\angle E \cong \angle H$
Prove: $\overline{EF} \cong \overline{HI}$



Statement	Reason
1.	
2.	
3.	
4.	
5.	
6.	

9. **Given:** $\overline{FI}$ *and* $\overline{HE}$ *bisect each other*

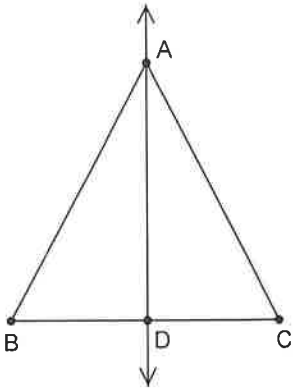
Prove: $\angle E \cong \angle H$



Statement	Reason
1.	
2.	
3.	
4.	
5.	
6.	

10. **Given:** $\overleftrightarrow{AD}$ *is the* $\perp$ *bisector of* $\overline{BC}$

Prove: $AB = AC$



$\overleftrightarrow{AD}$ *is the* $\perp$ *bisector of* $\overline{BC}$

$\overleftrightarrow{AD} \perp \overline{BC}$

D *is the midpoint of* $\overline{BC}$

Reflexive Prop of $\cong$

$\angle ADB \cong \angle ADC$

$\Delta ABD \cong \Delta ACD$

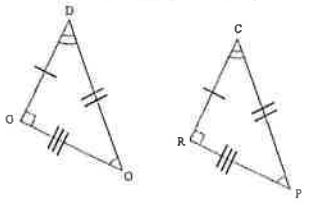
$AB = AC$

Math 2 – Honors
Unit 6 – Triangles & Congruence
Test REVIEW

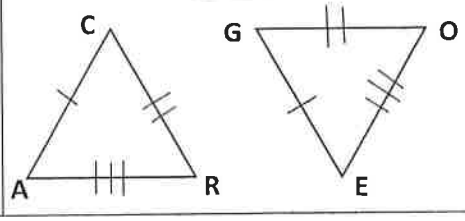
Name_____
Date_____ Pd____

➢ Name the congruent triangles.

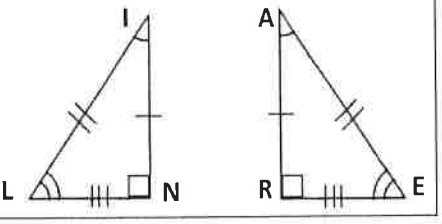
1. $\Delta OGD \cong$ _____



2. $\Delta RAC \cong$ _____

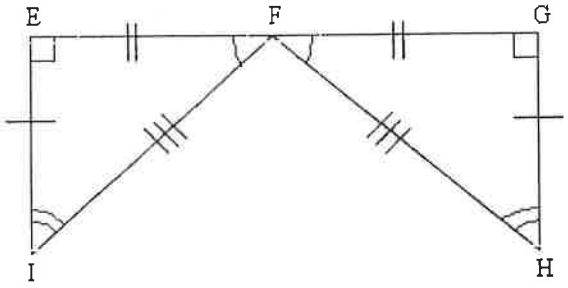


3. $\Delta LIN \cong$ _____



➢ Name the congruent triangle and the congruent parts.

4.



$\Delta FGH \cong$ _____

$\angle EFI \cong$ _____ $\overline{FG} \cong$ _____

$\angle G \cong$ _____ $\overline{GH} \cong$ _____

$\angle H \cong$ _____ $\overline{FH} \cong$ _____

➢ Use the congruency statement to fill in the corresponding congruent parts.

5. $\Delta EFI \cong \Delta HGI$ $\angle E \cong$ _____ $\overline{FE} \cong$ _____ $\angle EFI \cong$ _____

$\overline{FI} \cong$ _____ $\angle FIE \cong$ _____ $\overline{IE} \cong$ _____

➢ Solve each set of **congruent triangles** for the information indicated.

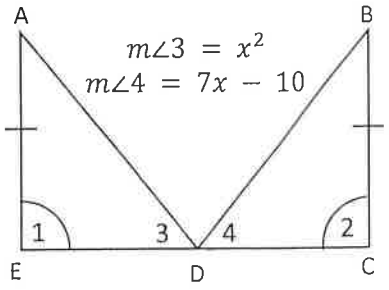
6. $\Delta ABC \cong \Delta PQR$. $PQ =$ _____

$AB = x + y$
$PQ = 2x + 4$
$AC = 4y - 13$
$PR = 2y + x$

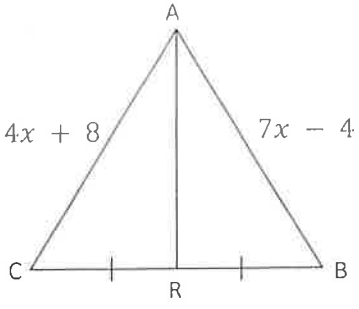
7. $\Delta LMN \cong \Delta XYZ$.
$m\angle X =$ _____

$m\angle L = x^2 + 50$
$m\angle N = 40$
$m\angle Y = -2x + 10$

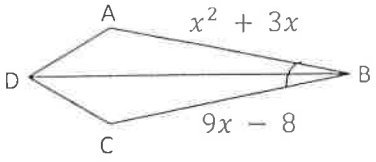
8. $x =$ _____



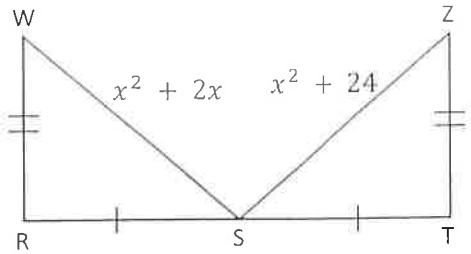
9. $x =$ _____



10. $x =$ _____

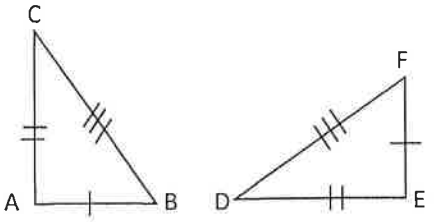


11. $x =$ _____

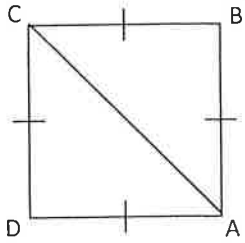


➢ For each pair of triangle, tell which congruence rule, if any, make the triangles congruent.

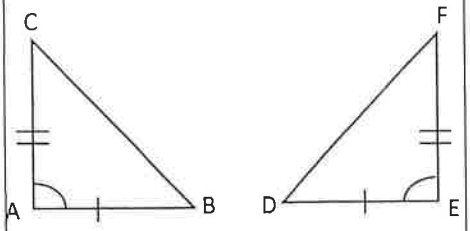
12. $\Delta ABC \cong \Delta EFD$ _____



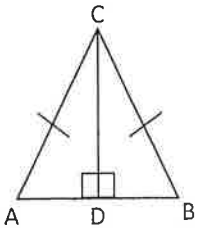
13. $\Delta ABC \cong \Delta CDA$ _____



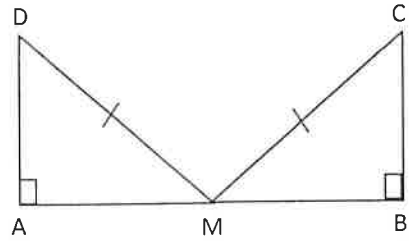
14. $\Delta ABC \cong \Delta EDF$ _____



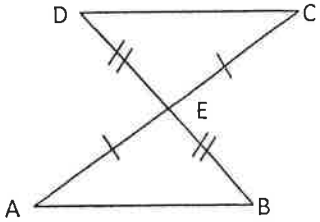
15. $\Delta ADC \cong \Delta BDC$ _____



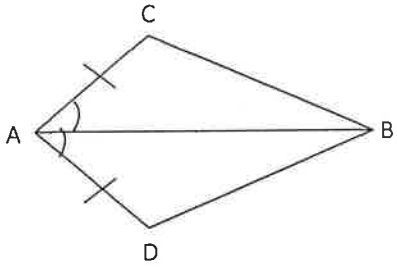
16. $\Delta MAD \cong \Delta MBC$ _____



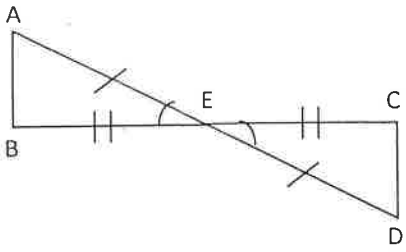
17. $\Delta ABE \cong \Delta CDE$ _____



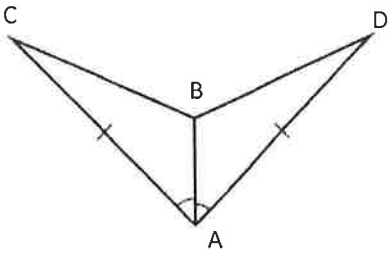
18. $\Delta ACB \cong \Delta ADB$ _____



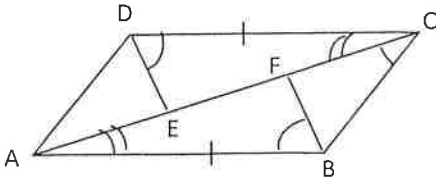
19. $\Delta AEB \cong \Delta DEC$ _____



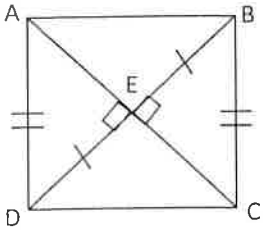
20. $\Delta ACB \cong \Delta ADB$ _____



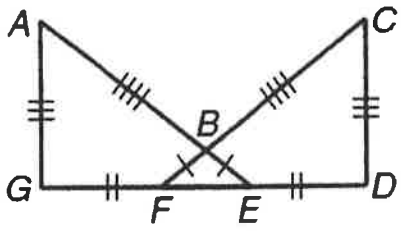
21. $\Delta CDE \cong \Delta ABF$ _____



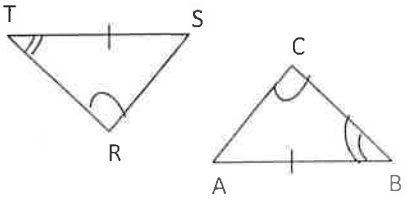
22. $\Delta DEA \cong \Delta BEC$ _____



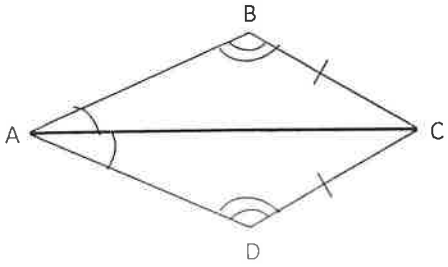
23. $\Delta AGE \cong \Delta CDF$ _____



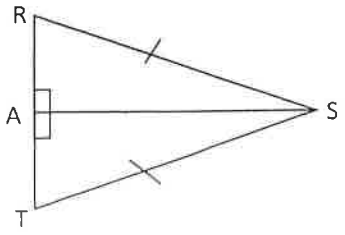
24. $\Delta RTS \cong \Delta CBA$ _____



25. $\Delta ABC \cong \Delta ADC$ _____

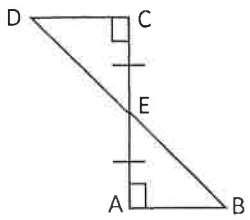


26. $\Delta SAT \cong \Delta SAR$ _____



➢ For each pair of triangles, **(a)** State the congruence rule that makes them congruent **(b)** Write the triangle congruency statement. If the triangles are not congruent, leave the statement blank.

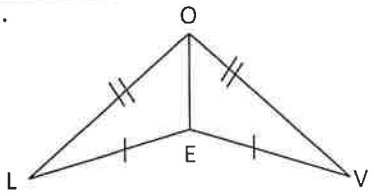
27.



a. _____

b. $\Delta ABE \cong \Delta$ _____

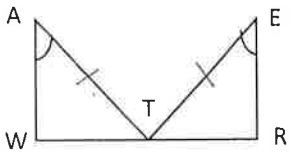
28.



a. _____

b. $\Delta LEO \cong \Delta$ _____

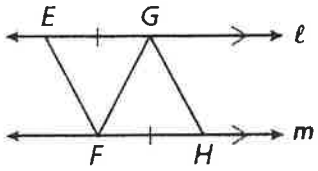
29. Given: T *is the midpoint of* $\overline{WR}$



a. _____

b. $\Delta TAW \cong \Delta$ _____

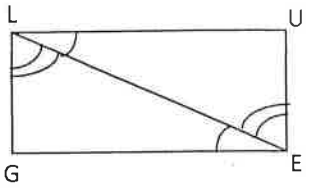
30.



a. _____

b. $\Delta EGF \cong \Delta$ _____

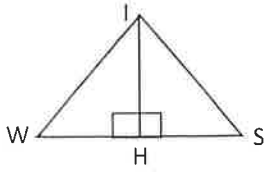
31.



a. _____

b. $\Delta LEG \cong \Delta$ _____

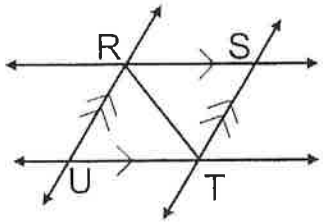
32. Given: $\overline{IH}$ *bisects* $\angle WIS$



a. _____

b. $\Delta WIH \cong \Delta$ _____

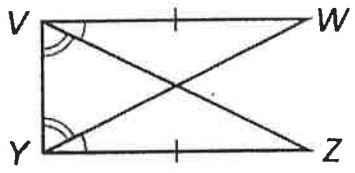
33.



a. _____

b. $\Delta RUT \cong \Delta$ _____

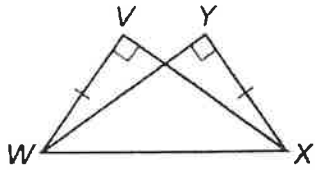
34.



a. _____

b. $\Delta WVY \cong \Delta$ _____

35.

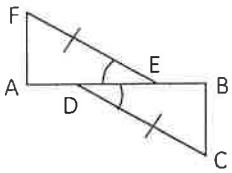


a. _____

b. $\Delta WVX \cong \Delta$ _____

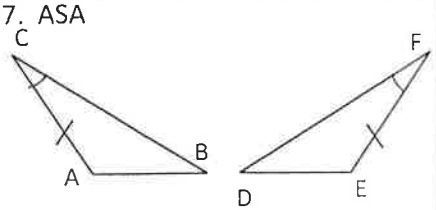
➢ Using the given congruence rule, tell which parts of the pair of triangles should be shown congruent.

36. SAS



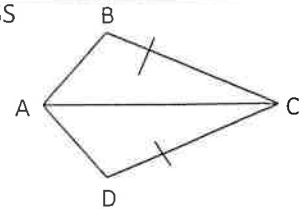
_____ ≅ _____

37. ASA



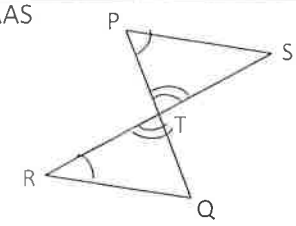
_____ ≅ _____

38. SSS



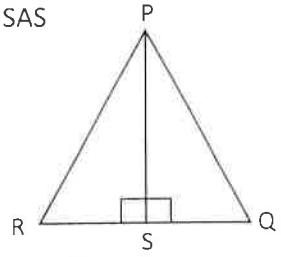
_____ ≅ _____

39. AAS



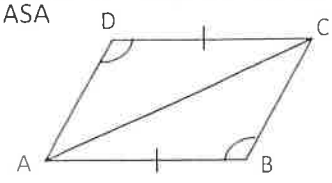
_____ ≅ _____

40. SAS



_____ ≅ _____

41. ASA

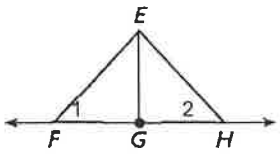


_____ ≅ _____

➢ For each problem below, write a two-column proof .

42. **Given:** G is the midpoint of $\overline{FH}$.
$\overline{EF} \cong \overline{EH}$

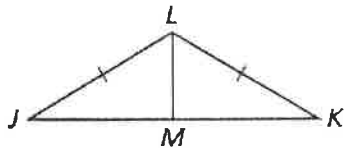
Prove: $\angle 1 \cong \angle 2$



Statement	Reason
1.	
2.	
3.	
4.	
5.	

43. **Given:** $\overline{LM}$ bisects $\angle JLK$. $\overline{JL} \cong \overline{KL}$

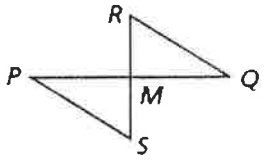
Prove: M is the midpoint of $\overline{JK}$.



Statement	Reason
1.	
2.	
3.	
4.	
5.	
6.	

44. **Given:** M is the midpoint of
$\overline{PQ}$ and $\overline{RS}$.

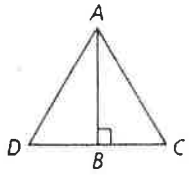
Prove: $\overline{QR} \cong \overline{PS}$



Statement	Reason
1.	
2.	
3.	
4.	
5.	
6.	

45. **Given:** B is the midpoint of $\overline{DC}$. $\overline{AB} \perp \overline{DC}$

Prove: $\triangle ABD \cong \triangle ABC$



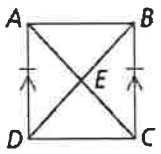
Statement	Reason
1.	
2.	
3.	
4.	
5.	
6.	

➢ For each problem below, write a two-column proof .

46. Use AAS to prove the triangles congruent.

Given: $\overline{AD} \parallel \overline{BC}, \overline{AD} \cong \overline{CB}$

Prove: $\triangle AED \cong \triangle CEB$

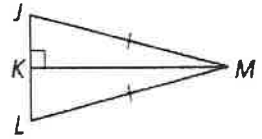


Statement	Reason
1.	
2.	
3.	
4.	

47.

Given: $\overline{KM} \perp \overline{JL}, \overline{JM} \cong \overline{LM}$, .

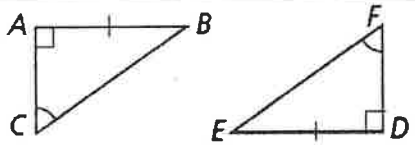
Prove: $\triangle JKM \cong \triangle LKM$



Statement	Reason
1.	
2.	
3.	
4.	
5.	

48. Given: $\overline{AB} \cong \overline{DE}, \angle C \cong \angle F$

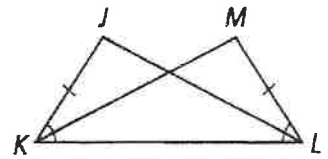
Prove: $\triangle ABC \cong \triangle DEF$



Statement	Reason
1.	
2.	
3.	

49. Given: $\overline{JK} \cong \overline{ML}, \angle JKL \cong \angle MLK$

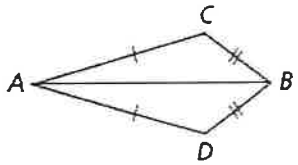
Prove: $\triangle JKL \cong \triangle MLK$



Statement	Reason
1.	
2.	
3.	

50. Given: $\overline{AC} \cong \overline{AD}, \overline{CB} \cong \overline{DB}$

Prove: $\overline{AB}$ bisects $\angle CAD$.



Statement	Reason
1.	
2.	
3.	
4.	
5.	