

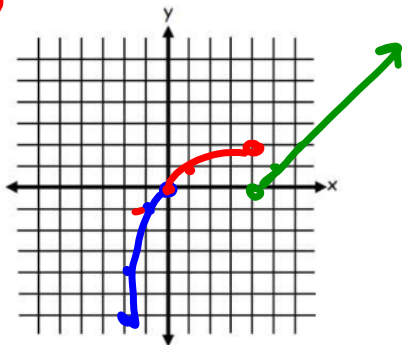
# Bell Ringer

Friday 1/4

1. Graph the piecewise function below.

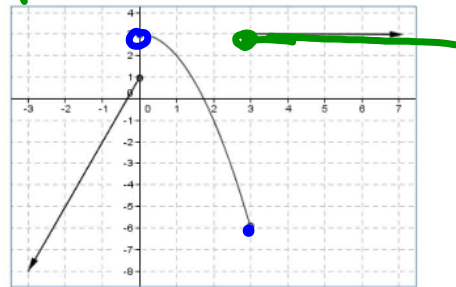
$$f(x) = \begin{cases} -x^2 & x < 0 \\ \sqrt{x} & 0 \leq x < 4 \\ x-4 & x > 4 \end{cases}$$

(1, 1)  
(4, 2)



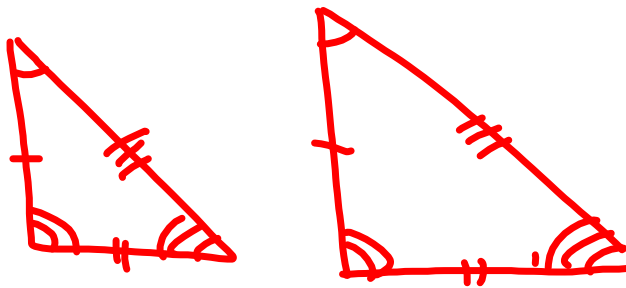
2. Write a piecewise defined function for the graph below.

$x < 0$  ;  $0 < x < 3$  ;  $x > 3$



$$f(x) = \begin{cases} 3x + 1, & x \leq 0 \\ -x^2 + 3, & 0 < x \leq 3 \\ 3, & x > 3 \end{cases}$$

## Congruent Triangles



## Triangle Congruence

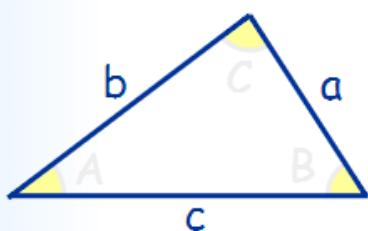
Two triangles are congruent if they have:

- exactly the same three sides and
- exactly the same three angles.

But we don't have to know all three sides and all three angles ...usually **three out of the six** is enough.

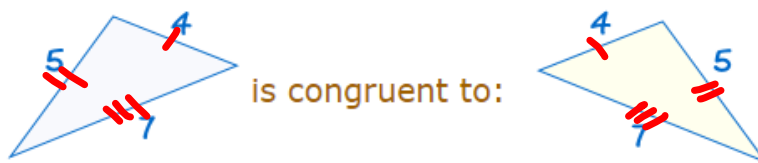
There are five ways to find if two triangles are congruent: **SSS, SAS, ASA, AAS** and **HL**.

1. SSS (*side, side, side*)

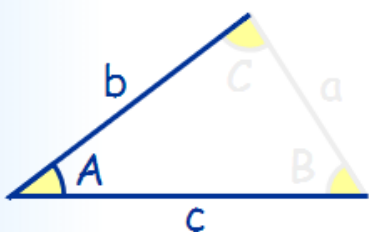


SSS stands for "side, side, side" and means that we have two triangles with all three sides equal.

For example:

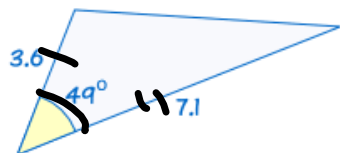


## 2. SAS (side, angle, side)

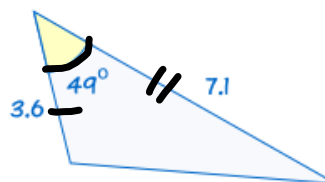


**SAS** stands for "side, angle, side" and means that we have two triangles where we know two sides and the included angle are equal.

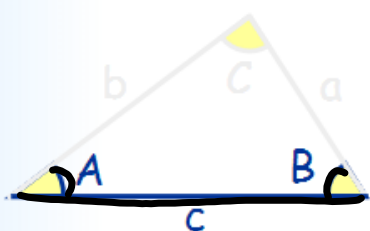
For example:



is congruent to:

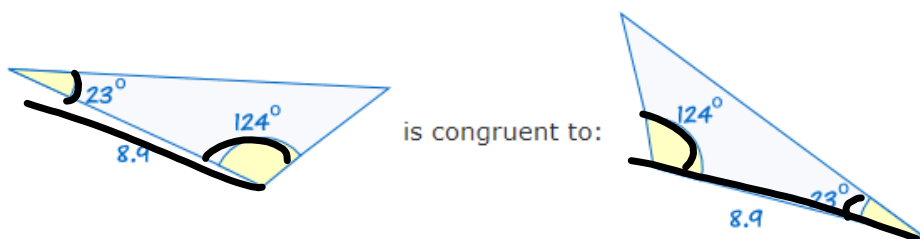


### 3. ASA (angle, side, angle)

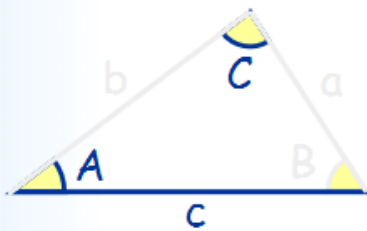


**ASA** stands for "angle, side, angle" and means that we have two triangles where we know two angles and the included side are equal.

For example:



4. AAS (angle, angle, side)



AAS stands for "angle, angle, side" and means that we have two triangles where we know two angles and the non-included side are equal.

For example:

is congruent to:

$\triangle ABF \cong \triangle DCE$

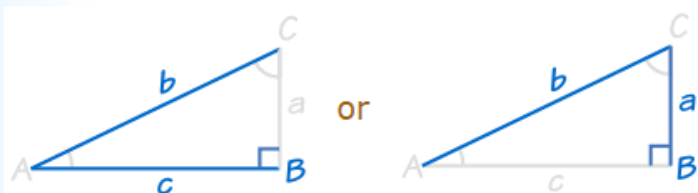
$\overline{AB} \cong \overline{DC}$

AAS Post

CPCTC

### 5. HL (hypotenuse, leg)

This one applies only to right angled-triangles !



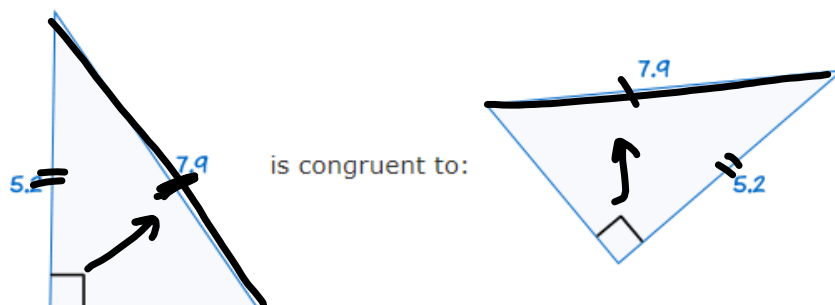
**HL** stands for "**H**ypotenuse, **L**eg" (the longest side of a right-angled triangle is called the "hypotenuse", the other two sides are called "legs")

It means we have two right-angled triangles with

- the **same length of hypotenuse** and
- the **same length for one of the other two legs.**

It doesn't matter which leg since the triangles could be rotated.

For example:

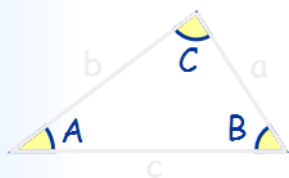




## Don't use AAA

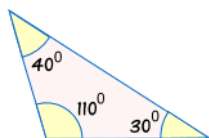
### Caution! Don't Use "AAA"

AAA means we are given all three angles of a triangle, but no sides.

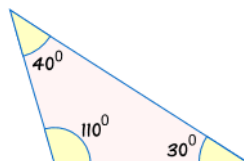


This is not enough information to decide if two triangles are congruent!

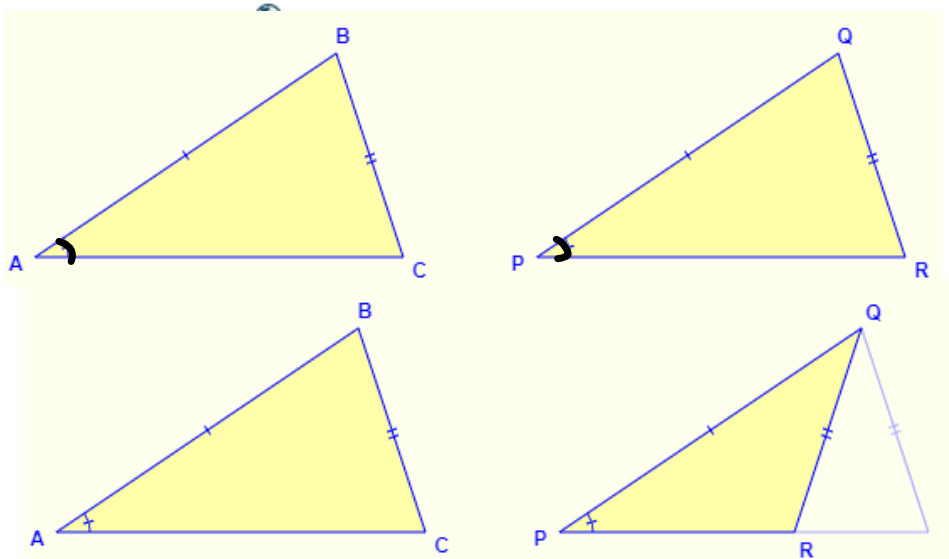
Because the triangles can have the same angles but be **different sizes**:



is **not** congruent to:

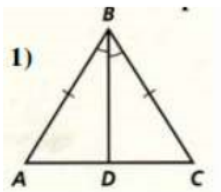


# Don't use SSA



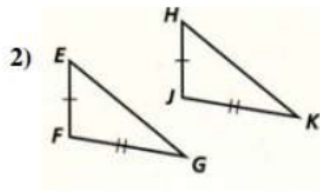
Name: \_\_\_\_\_ Hr: \_\_\_\_\_ 8.1A Congruent Triangles

- A) Determine whether the following triangles are congruent.
- B) If they are, name the triangle congruence (Pay attention to proper correspondence when naming the triangles) and then identify the theorem or postulate (SSS, SAS, ASA, AAS, HL) that supports your conclusion.
- C) Be sure to show any additional congruence markings you used in your reasoning.
- D) If the triangles cannot be proven congruent, state "not possible." Then give the reason it is not possible.



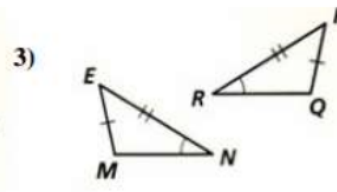
Congruence:  
 $\triangle ABD \cong \triangle$  \_\_\_\_\_

Reason:



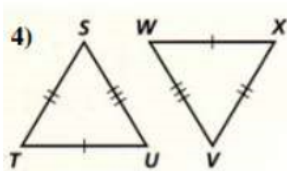
Congruence:  
 $\triangle EFG \cong \triangle$  \_\_\_\_\_

Reason:



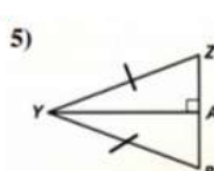
Congruence:  
 $\triangle EMN \cong \triangle$  \_\_\_\_\_

Reason:



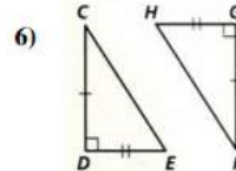
Congruence:  
 $\triangle STU \cong \triangle$  \_\_\_\_\_

Reason:



Congruence:  
 $\triangle YZA \cong \triangle$  \_\_\_\_\_

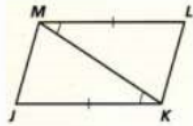
Reason:



Congruence:  
 $\triangle CDE \cong \triangle$  \_\_\_\_\_

Reason:

7)

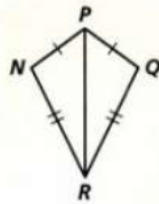


Congruence:

$\Delta KJM \cong \Delta$  \_\_\_\_\_

Reason:

8)

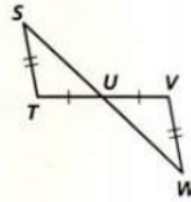


Congruence:

$\Delta NPR \cong \Delta$  \_\_\_\_\_

Reason:

9)

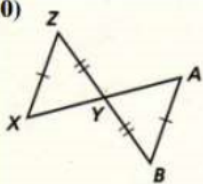


Congruence:

$\Delta STU \cong \Delta$  \_\_\_\_\_

Reason:

10)

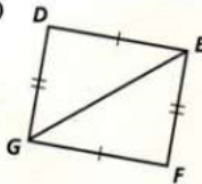


Congruence:

$\Delta XYZ \cong \Delta$  \_\_\_\_\_

Reason:

11)

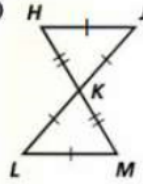


Congruence:

$\Delta DEG \cong \Delta$  \_\_\_\_\_

Reason:

12)

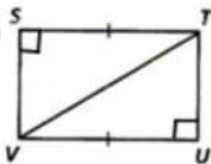


Congruence:

$\Delta HJK \cong \Delta$  \_\_\_\_\_

Reason:

13)

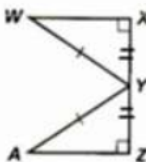


Congruence:

$\Delta STV \cong \Delta$  \_\_\_\_\_

Reason:

14)

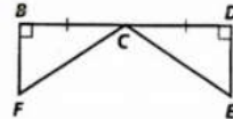


Congruence:

$\Delta WXY \cong \Delta$  \_\_\_\_\_

Reason:

15)

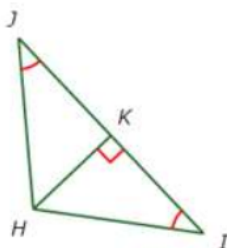


Congruence:

$\Delta BCF \cong \Delta$  \_\_\_\_\_

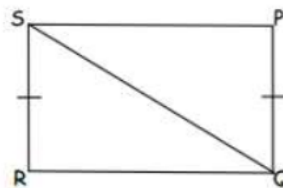
Reason:

16. Given:  $\angle I \cong \angle J$   
 $\overline{HK} \perp \overline{IJ}$   
 Prove:  $\overline{JK} \cong \overline{IK}$



Statement	Reason
1. $\angle I \cong \angle J$	1.
2. $\overline{HK} \perp \overline{IJ}$	2.
3. $\angle HKI$ and $\angle HKJ$ are right angles	3.
4. $\angle HKI \cong \angle HKJ$	4.
5. $\overline{HK} \cong \overline{HK}$	5.
6. $\triangle HKI \cong \triangle HKJ$	6.
7. $\overline{JK} \cong \overline{IK}$	7.

17. Given:  $\overline{RS} \cong \overline{PQ}$   
 $\angle P$  and  $\angle R$  are right angles  
 Prove:  $\triangle PQS \cong \triangle RSQ$



Statement	Reason
1. $\overline{RS} \cong \overline{PQ}$	1.
2. $\angle P$ and $\angle R$ are right angles	2.
3. $\triangle PQS$ and $\triangle RSQ$ are right triangles	3.
4. $\overline{SQ} \cong \overline{SQ}$	4.
5. $\triangle PQS \cong \triangle RSQ$	5.

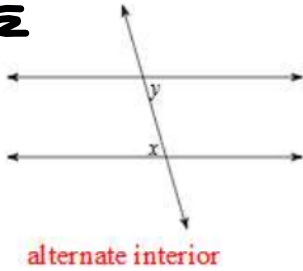
Correct 6.4-6.5A ws

6.4-6.5A Parallel Lines and Transversals Proofs

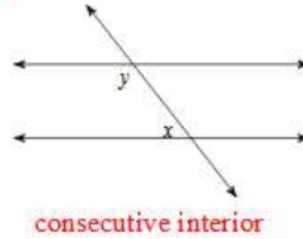
Key

1/2 pt each

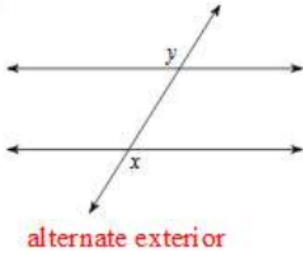
😊 1)  $\frac{1}{2}$



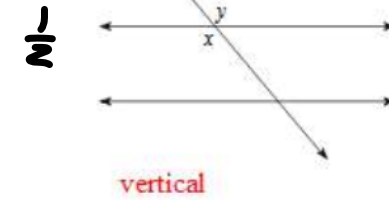
2)



3)

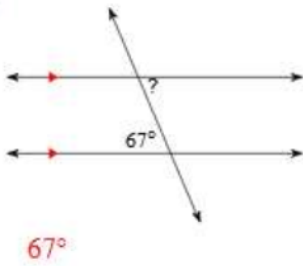


😊 4)

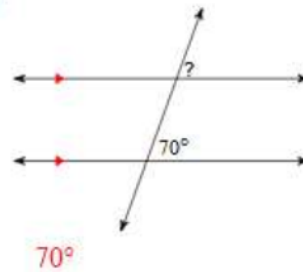


Find the measure of each angle indicated.

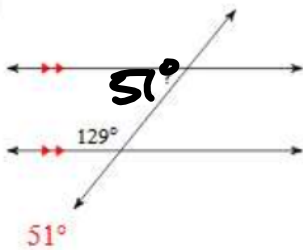
5)



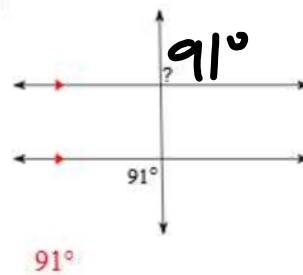
6)



😊 7)

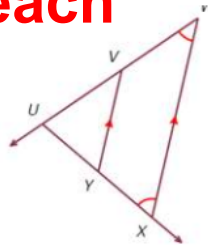


😊 8)



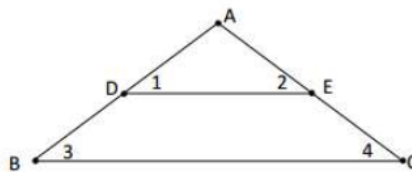
1/2 pt each

- 9) Given:  $\angle WXY \cong \angle W$   
 $\overrightarrow{VY} \parallel \overrightarrow{WX}$   
 Prove:  $\angle UYV \cong \angle UVY$



Statement	Reason
1. $\angle WXY \cong \angle W$	1. Given
2. $\overrightarrow{VY} \parallel \overrightarrow{WX}$	2. Given
3. $\angle WXY \cong \angle UYV$	☺ 3. Corresponding Angles are Congruent
4. $\angle W \cong \angle UVY$	☺ 4. Corresponding Angles are Congruent
5. $\angle W \cong \angle UYV$	5. Transitive Property of Congruence
6. $\angle UYV \cong \angle UVY$	6. Transitive Property of Congruence

- 10) Given:  $m\angle 1 = m\angle 3$   
 $m\angle 1 = m\angle 2$   
 Prove:  $m\angle 3 = m\angle 4$



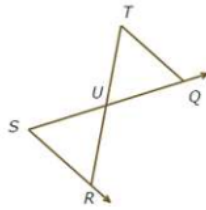
Statement	Reason
1. $m\angle 1 = m\angle 3$	1. Given
2. $m\angle 1 = m\angle 2$	2. Given
3. $m\angle 2 = m\angle 3$	3. Transitive Property of Equality
4. $m\angle 1$ and $m\angle 3$ are corresponding angles	4. Definition of Corresponding Angles
5. $DE \parallel BC$	☺ 5. Converse of the Corresponding angle theorem
6. $m\angle 2 = m\angle 4$	☺ 6. Corresponding angles are congruent
7. $m\angle 3 = m\angle 4$	7. Transitive Property of Equality

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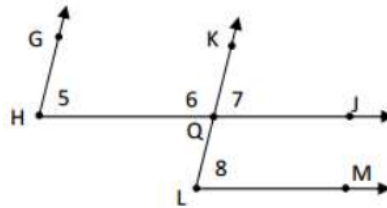
1/2 pt each

- 11) Given:  $\angle TQU \cong \angle T$   
 $\overline{RS} \parallel \overline{QT}$   
 Prove:  $\angle S \cong \angle SRU$



Statement	Reason
1. $\angle TQU \cong \angle T$	1. Given
2. $\overline{RS} \parallel \overline{QT}$	2. Given
3. $\angle TQU \cong \angle S$	3. Alternate Interior angles are congruent 😊
4. $\angle SRU \cong \angle T$	4. Alternate Interior angles are congruent
5. $\angle TQU \cong \angle SRU$	5. Transitive Property of Congruence 😊
6. $\angle S \cong \angle SRU$	6. Transitive Property of Congruence

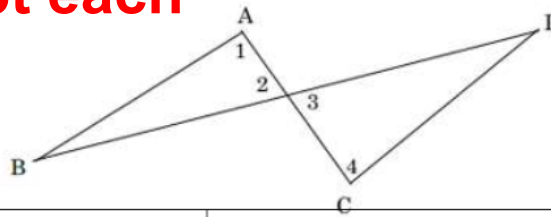
- 12) Given:  $\overline{HJ} \parallel \overline{LM}$   
 $\overline{HG} \parallel \overline{LK}$   
 Prove:  $m\angle 5 = m\angle 8$



Statement	Reason
1. $\overline{HG} \parallel \overline{LK}$	1. Given
2. $m\angle 5 = m\angle 7$	2. Corresponding Angles are Congruent 😊
3. $\overline{HJ} \parallel \overline{LM}$	3. Given
4. $m\angle 7 = m\angle 8$	4. Corresponding Angles are Congruent
5. $m\angle 5 = m\angle 8$	5. Transitive Property of Equality 😊

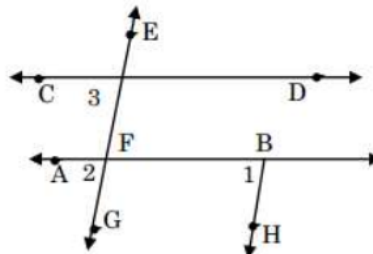
1/2 pt each

- 13) Given:  $\angle 1 \cong \angle 2$   
 $\angle 3 \cong \angle 4$   
 Prove:  $\overline{AB} \parallel \overline{CD}$



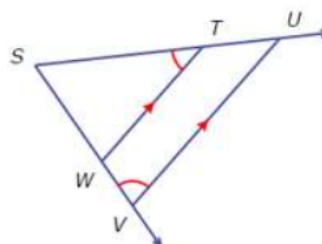
Statement	Reason
1. $\angle 1 \cong \angle 2$	1. Given
2. $\angle 2 \cong \angle 3$	2. Vertical Angles are Congruent
3. $\angle 1 \cong \angle 3$	3. Transitive Property of Congruence
4. $\angle 3 \cong \angle 4$	4. Given
5. $\angle 1 \cong \angle 4$	5. Transitive Property of Congruence
6. $\overline{AB} \parallel \overline{CD}$	6. Converse of Alternate Interior Angles

- 14) Given:  $\angle 3 \cong \angle 1, \angle 2 \cong \angle 3$   
 Prove:  $\overline{EG} \parallel \overline{BH}$



Statement	Reason
1. $\angle 3 \cong \angle 1, \angle 2 \cong \angle 3$	1. Given
2. $\angle 1 \cong \angle 2$	2. Transitive Property of Congruence
3. $\angle 1$ and $\angle 2$ are Corresponding Angles	3. Definition of Corresponding Angles
4. $\overline{EG} \parallel \overline{BH}$	4. Converse of Corresponding Angles Theorem

- 15) Given:  $\angle STW \cong \angle UVW$   
 $\overline{TW} \parallel \overline{UV}$   
 Prove:  $\angle TUV \cong \angle UVW$



Statement	Reason
1. $\angle STW \cong \angle UVW$	1. Given
2. $\overline{TW} \parallel \overline{UV}$	2. Given
3. $\angle TUV \cong \angle STW$	3. Corresponding Angles are Congruent
4. $\angle TUV \cong \angle UVW$	4. Transitive Property of Congruence

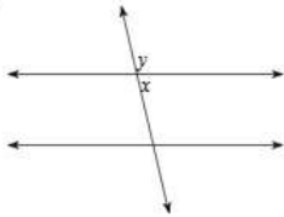
Questions on 6.4-6.5B ws??

Name: \_\_\_\_\_ Hour: \_\_\_\_\_

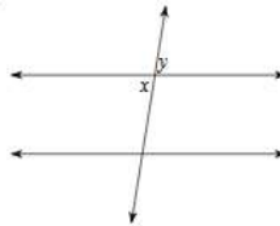
**6.4-6.5B Parallel Lines and Transversals Proofs**

Identify each pair of angles as corresponding, alternate interior, alternate exterior, consecutive interior, vertical, or linear pair.

1)

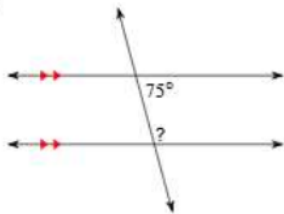


2)

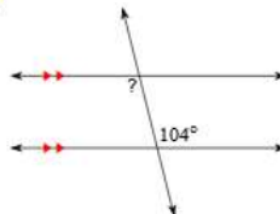


Find the measure of each angle indicated.

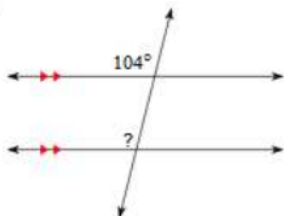
3)



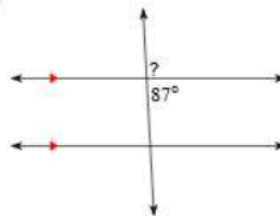
4)



5)

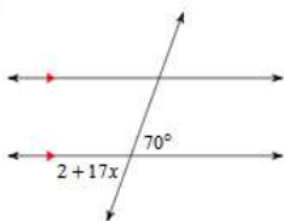


6)

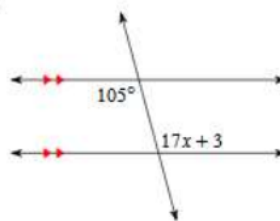


Solve for x.

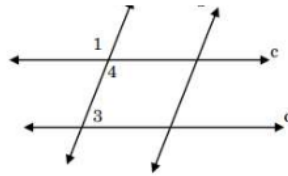
7)



8)

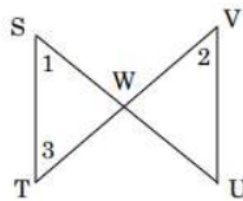


- 9) Given:  $\angle 1$  and  $\angle 3$  are supplementary  
 Prove:  $c \parallel d$



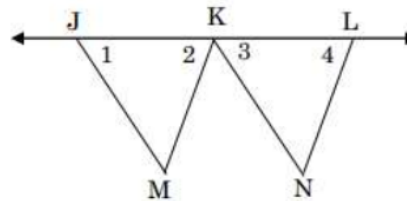
Statement	Reason
1. $\angle 1$ and $\angle 3$ are supplementary	1.
2. $\angle 1 \cong \angle 4$	2.
3. $\angle 4$ and $\angle 3$ are supplementary	3.
4. $c \parallel d$	4.

- 10) Given:  $\angle 2 \cong \angle 1$   
 $\angle 1 \cong \angle 3$   
 Prove:  $\overline{ST} \parallel \overline{UV}$



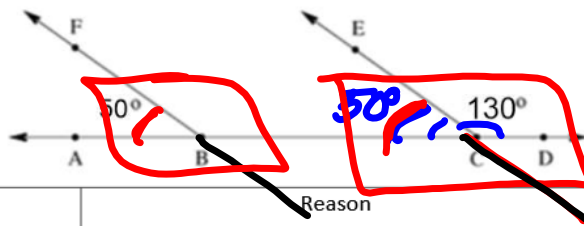
Statement	Reason
1. $\angle 2 \cong \angle 1$	1.
2. $\angle 1 \cong \angle 3$	2.
3. $\angle 2 \cong \angle 3$	3.
4. $\overline{ST} \parallel \overline{UV}$	4.

- 11) Given:  $\overline{JM} \parallel \overline{KN}$   
 $\angle 1 \cong \angle 2$  and  $\angle 3 \cong \angle 4$   
 Prove:  $\overline{KM} \parallel \overline{LN}$



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

- 12) Given: Line ABCD  
 $m\angle ECD = 130^\circ$   
 $m\angle ABF = 50^\circ$   
 Prove:  $BF \parallel CE$   
 p



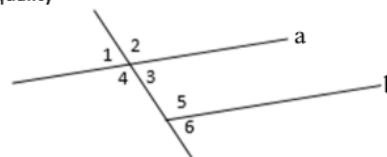
Statement	Reason
Line ABCD, $m\angle ECD = 130^\circ$ , $m\angle ABF = 50^\circ$	1. <b>Given</b>
$\angle ECD$ and $\angle ECB$ are supplementary	2. <b>Def of linear pair</b>
3. $m\angle ECD + m\angle ECB = 180$	Definition of supplementary
4. $130 + m\angle ECB = 180$	Substitution property of equality
$m\angle ECB = 50^\circ$	5. <b>Subtraction P.O.E.</b>
$m\angle ECB = m\angle ABF$	6. <b>Transitive / Substitution</b>
$BF \parallel CE$	7. <b>Converse of Corr <math>\angle</math>s Thm</b>

**Statements:**

**Reasons:**

- |  |   |  |
|--|---|--|
| a. $m\angle ECD + m\angle ABF = 180^\circ$       | a. Definition of supplementary              | b. Definition of Linear Pair                                     |
| b. $m\angle ECD + m\angle ECB = 180^\circ$       | c. Converse of corresponding angles theorem | d. Addition property of equality                                 |
| c. $50^\circ + m\angle ECB = 180^\circ$          | e. Given                                    | f. if $\parallel$ lines, Same side interior angles are congruent |
| d. $130^\circ + m\angle ECB = 180^\circ$         | g. Subtraction property of equality         | h. Converse of same side int. angles theorem                     |
| e. $\angle ECD$ & $\angle ECB$ are supplementary | i. Substitution property of equality        |  |

- 13) Given:  $m\angle 3 = 60^\circ$ ,  $m\angle 5 = 2x - 8$ ,  $a \parallel b$   
 Prove:  $x = 64$



Statement	Reason
$m\angle 3 = 60^\circ$ , $m\angle 5 = 2x - 8$ , $a \parallel b$	1.
$180 = m\angle 3 + \angle 5$	2.
3.	Substitution property of equality
$180 = 60 + 2x$	4.
5.	Subtraction property of equality
6.	Division property of equality
7.	Symmetric property of equality

**Statements:**

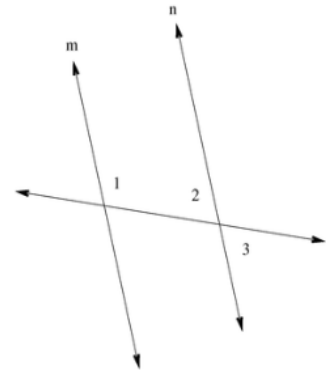
**Reasons:**

- |                              |  |
|------------------------------|--|
| a. $64 = x$                  | a. Vertical angles are congruent                                     |
| b. $180^\circ = 60 + 2x - 8$ | b. Substitution property of equality                                 |
| c. $64 = x$                  | c. Given   |
| d. $x = 64$                  | d. Addition property of equality                                     |
| e. $128 = 2x$                | e. If $\parallel$ lines, Same Side Interior Angles are Supplementary |
|                              | f. Subtraction property of equality                                  |

14) Given:  $\angle 1 = 115^\circ$ ,  $\angle 1$  and  $\angle 3$  are supplementary

Prove:  $m \parallel n$

Statement	Reason
1.	Given
2.	Definition of Supplementary
$115 + \angle 3 = 180^\circ$	3.
4.	Subtraction Property of Equality
$\angle 2 = \angle 3$	5.
6.	Substitution Property of Equality
$\angle 1$ and $\angle 2$ are supplementary	7.
$m \parallel n$	8.



**Statements:**

- a.  $\angle 2 = 65^\circ$
- b.  $\angle 1 = 115^\circ$ ,  $\angle 1$  and  $\angle 3$  are supplementary
- c.  $m\angle 1 + m\angle 3 = 180^\circ$
- d.  $\angle 1 + \angle 2 = 180^\circ$
- e.  $\angle 2 + \angle 3 = 180^\circ$
- f.  $\angle 2 = \angle 1$
- g.  $\angle 3 = 65^\circ$

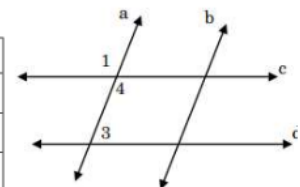
**Reasons:**

- a. Definition of supplementary
- b. Vertical angles are equal in measure
- c. Converse of corresponding angles
- d. Addition property of equality
- e. Converse of same side interior angles
- f. Same side interior angles are congruent
- g. Substitution property of equality

15) Given:  $\angle 1$  and  $\angle 3$  are supplementary,  $m\angle 3 = 120^\circ$

Prove:  $c \parallel d$

Statement	Reason
$\angle 1$ and $\angle 3$ are supplementary	1.
$m\angle 3 + m\angle 1 = 180^\circ$	2.
3.	Given
$120^\circ + m\angle 1 = 180^\circ$	4.
5.	Subtraction property of equality
6.	Vertical Angles are equal in measure
$\angle 4 = 60^\circ$	7.
8.	Definition of supplementary
$c \parallel d$	9.



**Statements:**

- a.  $\angle 1 = \angle 4$
- b.  $\angle 3 + 140^\circ = 180^\circ$
- c.  $60^\circ + \angle 4 = 180^\circ$
- d.  $m\angle 3 = 120^\circ$
- e.  $\angle 1$  and  $\angle 4$  are supplementary
- f.  $\angle 3$  and  $\angle 4$  are supplementary
- g.  $m\angle 1 = 60^\circ$

**Reasons:**

- a. Definition of supplementary
- b. Converse of same side interior angles
- c. Converse of corresponding angles
- d. Addition property of equality
- e. Substitution property of equality
- i. Given
- g. Subtraction property of equality

## QUIZ 6C

Login to Canvas  
Standard Quizzes  
Standard 6C Quiz - **6cquiz**

**When finished:**

**Watch the 3 videos on Canvas**

Finish hw 6.4-6.5 B / Start hw 8.1A

Retake quiz 4A, 4B, 4C, 6A or 6B if needed

Retake Ch 4 Test if needed



