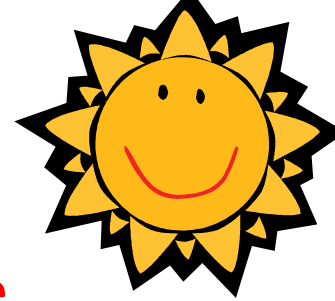


Unit 1 Day 8

Congruence

Borrow a ruler &
protractor
if you forgot yours!

Warm Up



1. Create two figures congruent to the one given using **two different** transformations and describe them.

2. Solve for x .
$$\frac{x}{x+3} = \frac{x+4}{x-1}$$

$$x = -1.5$$

3. If $\triangle CAT \sim \triangle DOG$, find x and y .

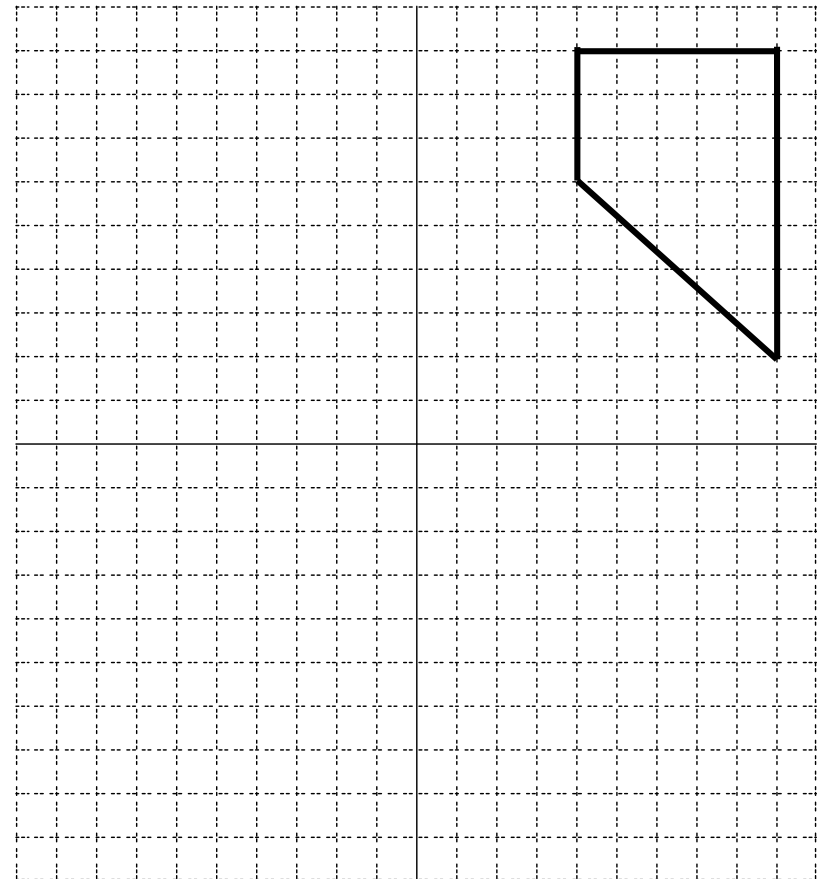
$$m\angle C = 3x - 14,$$

$$m\angle D = 2x + 2y,$$

$$m\angle T = 3y - 2x, \quad (-1, 12)$$

$$m\angle G = 9 - 3x$$

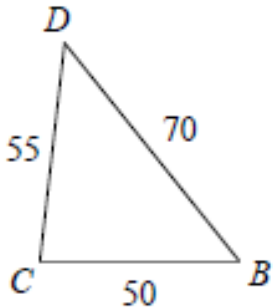
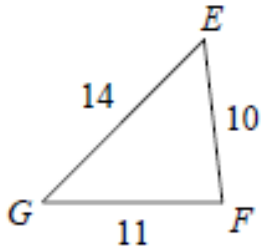
Be prepared to share
with the class! 😊



Day 7 Homework

Are the triangles similar? If so, write a similarity statement. If not, explain why.

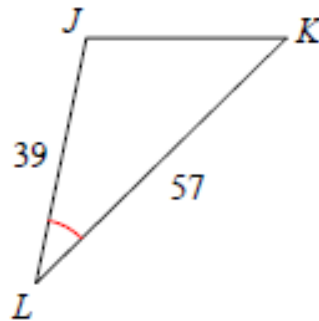
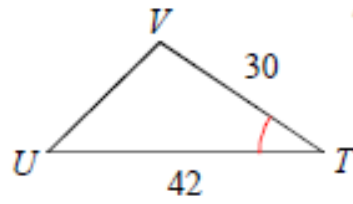
5)



$$\triangle DCB \sim \triangle EFG$$

because SSS~
(all sides are
proportional).

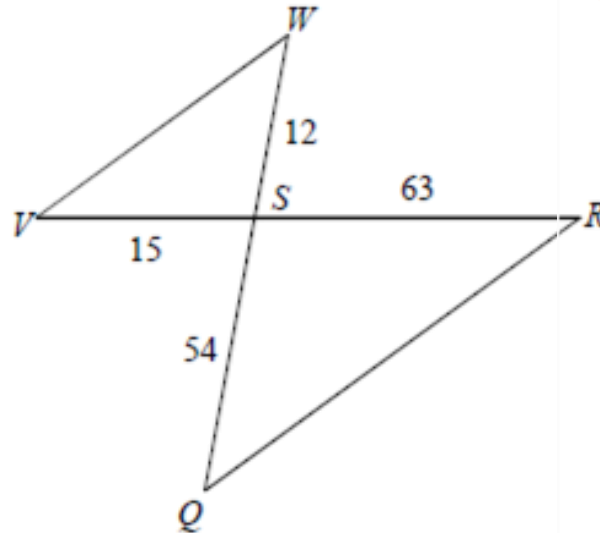
6)



$$\triangle LKJ \not\sim \triangle UVW$$

because sides
are not
proportional.

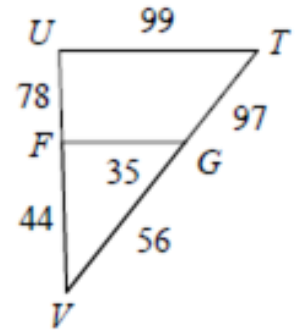
7)



$$\triangle SRQ \not\sim \triangle SVW$$

because sides
are not
proportional.

8)



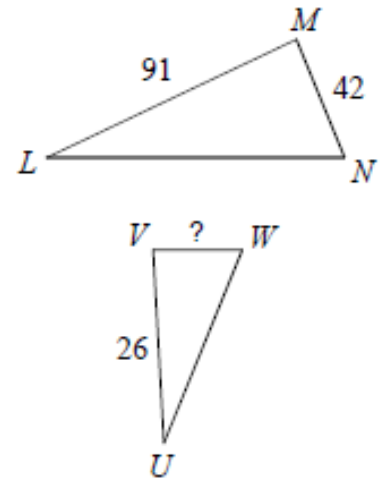
$$\triangle VUT \not\sim \triangle VFG$$

because sides
are not
proportional.

Day 7 Homework

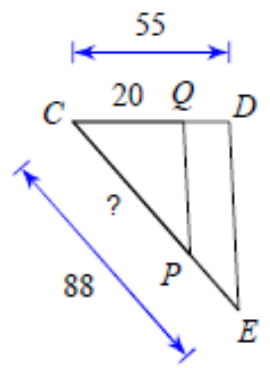
Solve for the length of the missing segment in the similar triangles

13)



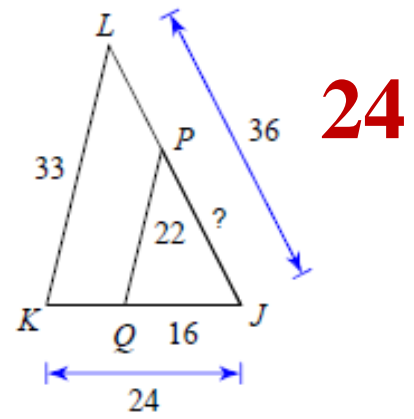
12

14)



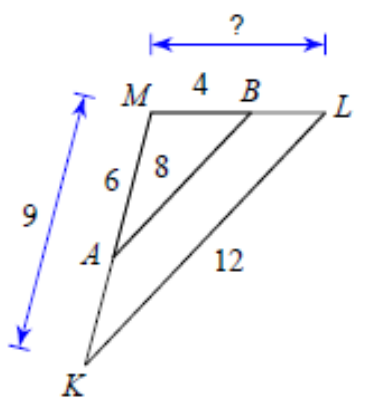
32

15)



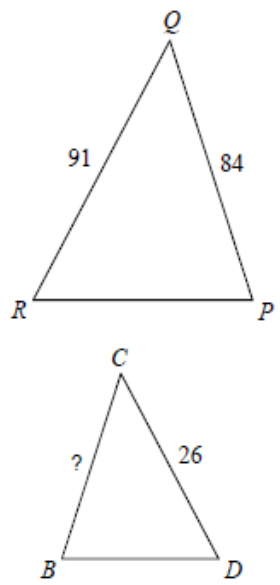
24

16)



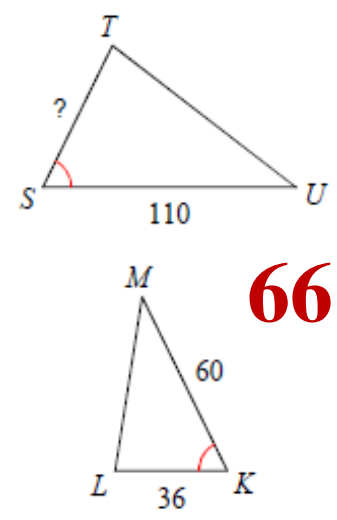
6

17)



24

18)



66

Day 7 Homework

Solve each extended proportion for x and y with $x > 0$ and $y > 0$.

$$19) \frac{x}{5} = \frac{9}{y} = \frac{y}{25} \quad \begin{array}{l} x = 3 \\ y = 15 \end{array}$$

$$20) \frac{x}{6} = \frac{x+10}{18} = \frac{4x}{y} \quad \begin{array}{l} x = 5 \\ y = 24 \end{array}$$

21) The two parallelograms below are similar. Find x , y , and the measure of each angle.

$$\text{Angle } B = 10$$

$$\text{Angle } F = 4x + 2y \quad x = 6$$

$$\text{Angle } C = 10x - 10y \quad y = -7$$

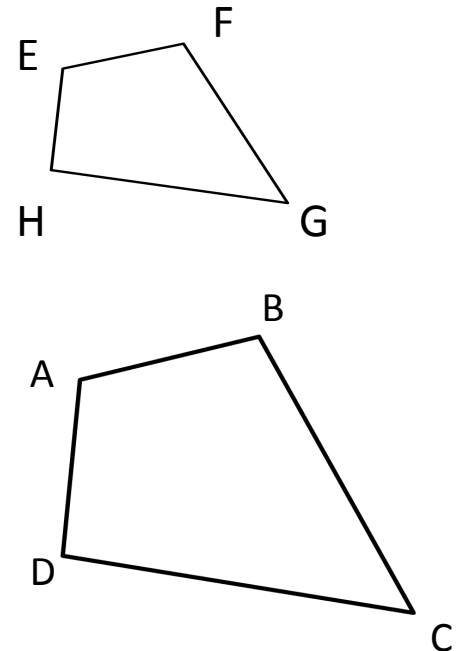
$$\text{Angle } G = 130$$

$$m\angle B = m\angle F = 10^\circ$$

$$m\angle D = m\angle H = 10^\circ$$

$$m\angle C = m\angle G = 130^\circ$$

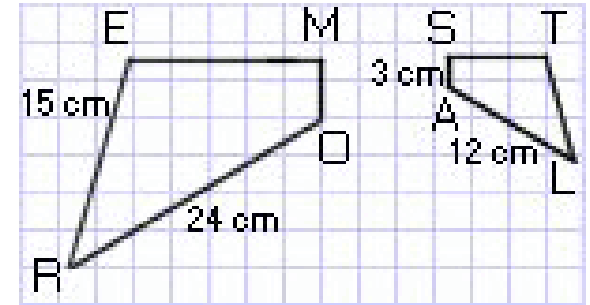
$$m\angle A = m\angle E = 130^\circ$$



Day 7 Homework

22) Quadrilateral "MORE" is similar to Quadrilateral "SALT". Match the descriptions below with a value given in the list on the right by typing its letter in the box provided.

- | | | |
|--------------------------------|----------|-----------|
| The length of segment TL | D | a. TS |
| ER corresponds to this segment | B | b. TL |
| MO corresponds to this segment | E | c. 6 cm |
| EM corresponds to this segment | A | d. 7.5 cm |
| The length of segment MO | C | e. SA |
| RO corresponds to this segment | F | f. LA |



Day 7 Homework

Pg. 13-14 odds

1. $5/3$

3. $1/3$

5. $1/2x$

7. $22x/35$

9. $r/24$

11. $(x-3)/(3x-2)$

13. $5/12$

15. $5/13$

17. $12/5$

19. $12/5$

21. $14/15$

23. $x = -3$

25. $x = 2$

27. $x = 11$

Pg. 13-14 evens

2. $2:3$

4. $2/3$

6. $6/7$

8. $1:16$

10. $x + 1$ to 2

12. 9 to 1

14. 13 to 5

16. 13 to 12

18. 12 to 13

20. $x = 10$

22. $x = 20$

24. $x = -1/3$

26. $x = 5/2$

We have already
checked the
evens!

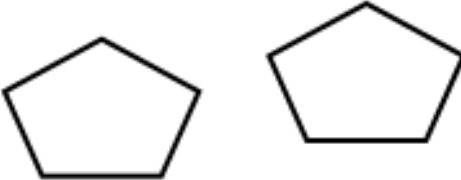



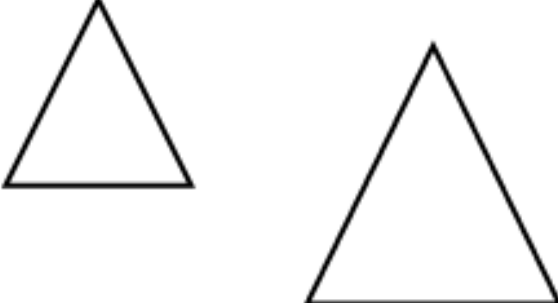


Homework

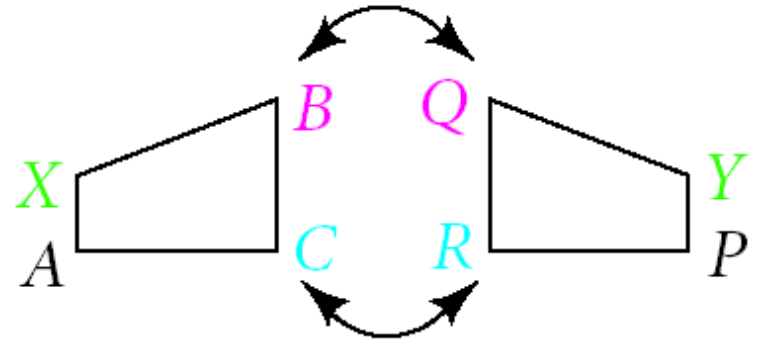
**Packet p. 25-26 all
and p. 27-29 odds**



Congruence Notes

Definition	Characteristics
<p data-bbox="131 278 813 406">Figures with the same shape, <u>and</u> the same size.</p> <p data-bbox="840 496 1103 611">Congruent Figures</p> <p data-bbox="86 564 251 592">Examples</p> <p data-bbox="86 721 115 749">1.</p>  <p data-bbox="86 963 115 992">2.</p>  <p data-bbox="86 1206 115 1235">3.</p> 	<p data-bbox="1043 278 1812 406">All angle pairs are congruent All side pairs are congruent</p> <p data-bbox="1632 564 1864 592">Non-Examples</p> <p data-bbox="975 721 1004 749">1.</p>  <p data-bbox="975 1049 1004 1078">2.</p> 

Congruent Polygons have congruent corresponding (“matching”) parts – their matching sides and angles.



C corresponds to R .

$\angle B$ corresponds to $\angle Q$.

\overline{AX} corresponds to \overline{PY} .

$ACBX \cong PRQY$

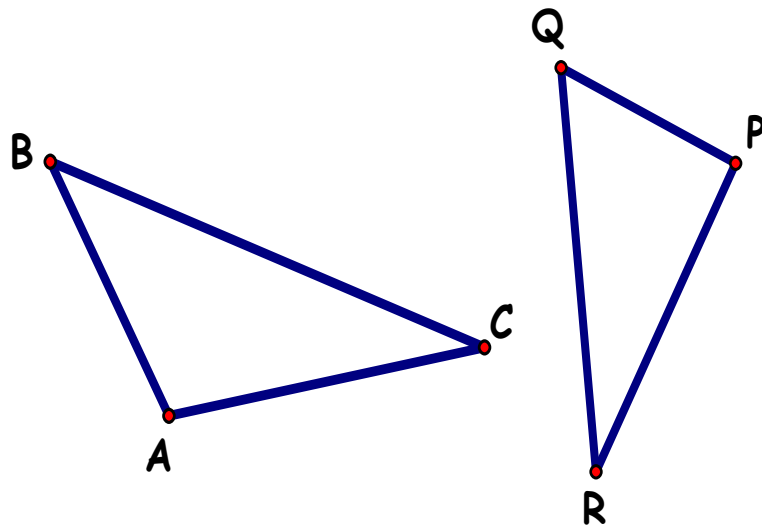
Naming Congruent Figures

- Points can be named in any **consecutive** order.
- Each corresponding vertex must be in the same order for each figure.

Ex. Figure BCAX is congruent to **QRPY**.

Example: $\triangle ABC \cong \triangle PQR$. List the congruent corresponding parts.

(List the corresponding vertices in the same order.
List the corresponding sides in the same order.)



Be careful! The pictures don't always line up corresponding parts! The congruence statement **MUST** have them in order! 😊

Congruent Angles	Congruent Sides
$\angle A \cong \angle P$	$\overline{BC} \cong \overline{QR}$
$\angle B \cong \angle Q$	$\overline{AB} \cong \overline{PQ}$
$\angle C \cong \angle R$	$\overline{AC} \cong \overline{PR}$

You Try!

$\triangle LMC \cong \triangle BJK$ Complete the congruence statements.
(Name all congruent angles. Name all congruent sides.)

3. $\overline{LC} \cong \overline{BK}$

4. $\overline{KJ} \cong \overline{CM}$

5. $\overline{JB} \cong \overline{ML}$

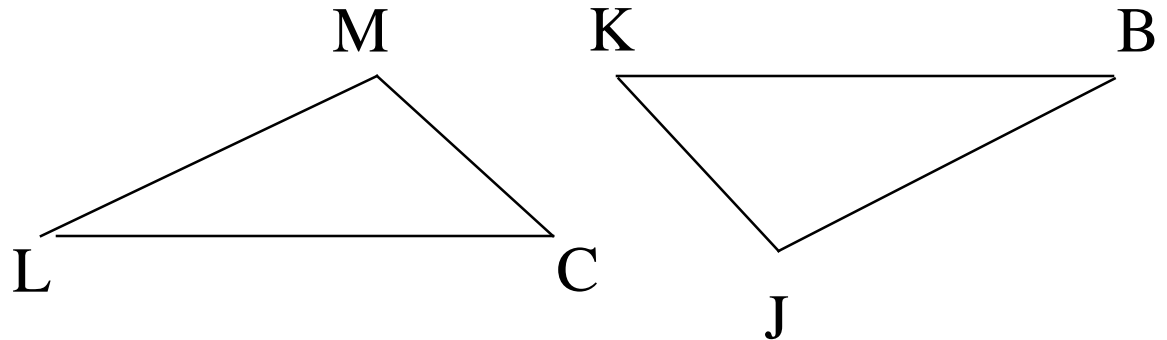
6. $\angle L \cong \angle B$

7. $\angle K \cong \angle C$

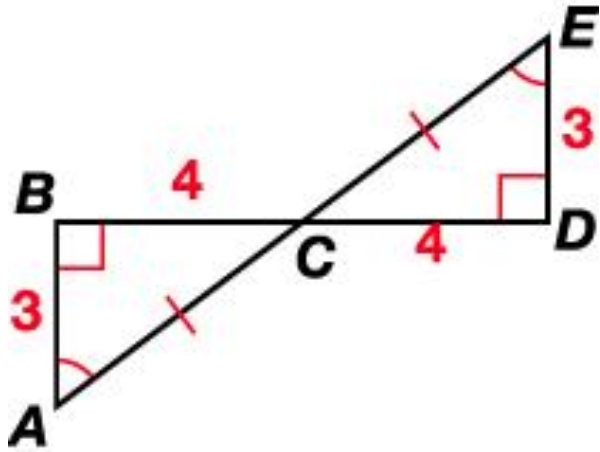
8. $\angle M \cong \angle J$

9. $\triangle CML \cong \triangle KJB$

10. $\triangle KBJ \cong \triangle CLM$



Can you conclude that $\triangle ABC \cong \triangle CDE$ in the figure below?



Be careful!
In the congruence statement,
letters must be in the
correct order!!

List corresponding vertices in the same order.

If $\triangle ABC \cong \triangle CDE$, then $\angle BAC \cong \angle DCE$.

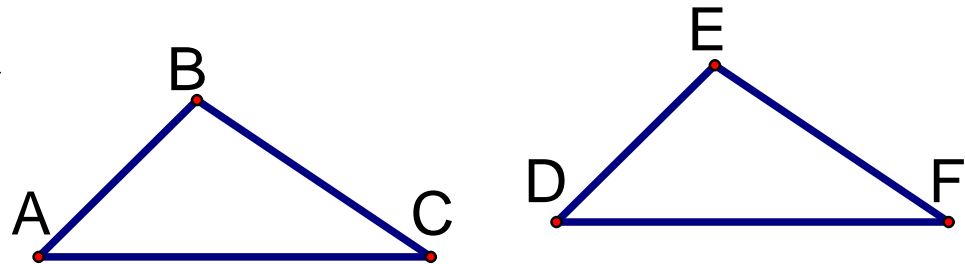
The diagram above shows $\angle BAC \cong \angle DEC$, not $\angle DCE$.

Corresponding angles are not necessarily congruent,
therefore you *cannot* conclude that $\triangle ABC \cong \triangle CDE$.

Side – Side – Side Postulate (or SSS Postulate)

If 3 sides of one triangle are congruent to 3 sides of another triangle, then the 2 triangles are congruent.

If $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$,
 $\overline{AC} \cong \overline{DF}$

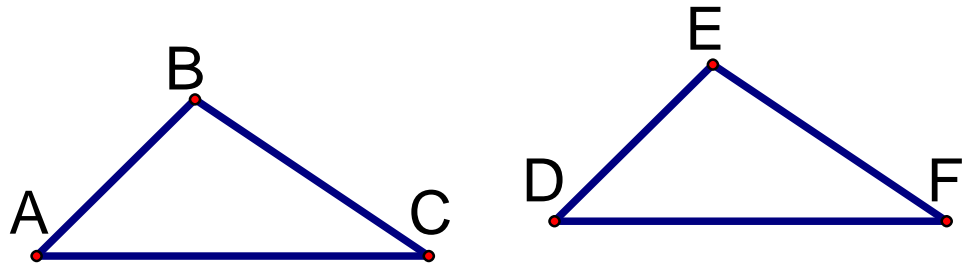


then $\triangle ABC \cong \triangle DEF$

Side – Angle – Side Postulate (or SAS Postulate)

If 2 sides and the included angle of one triangle are congruent to 2 sides and the included angle of another triangle, then the 2 triangles are congruent.

If $\overline{AB} \cong \overline{DE}$, $\angle A \cong \angle D$,
 $\overline{AC} \cong \overline{DF}$
then $\triangle BAC \cong \triangle EDF$

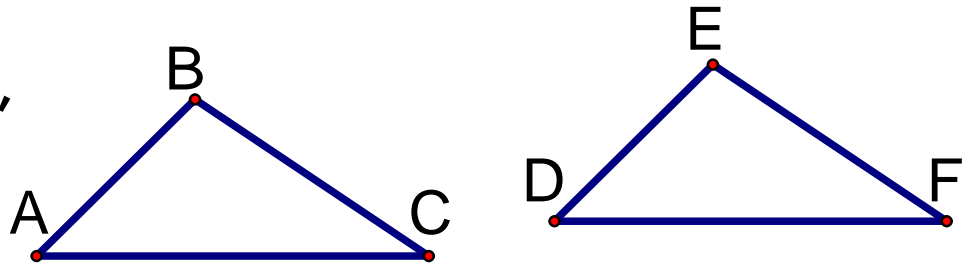


Angle – Side - Angle Postulate (or ASA Postulate)

If 2 angles and the included side of one triangle are congruent to 2 angles and the included side of another triangle, then the 2 triangles are congruent.

If $\overline{AC} \cong \overline{DF}$, $\angle A \cong \angle D$,
 $\angle C \cong \angle F$

then $\triangle ACB \cong \triangle DFE$

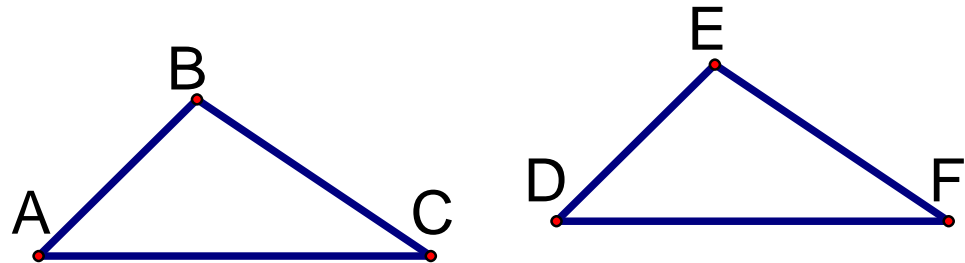


Angle – Angle - Side Theorem (or AAS Theorem)

If 2 angles and a non-included side of one triangle are congruent to 2 angles and a corresponding non-included side of another triangle, then the 2 triangles are congruent.

If $\overline{BC} \cong \overline{EF}$, $\angle A \cong \angle D$,
 $\angle C \cong \angle F$

then $\triangle CAB \cong \triangle FDE$

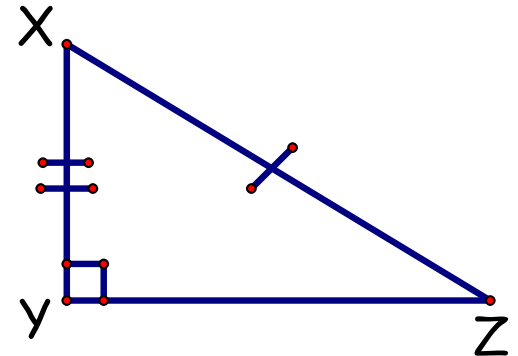
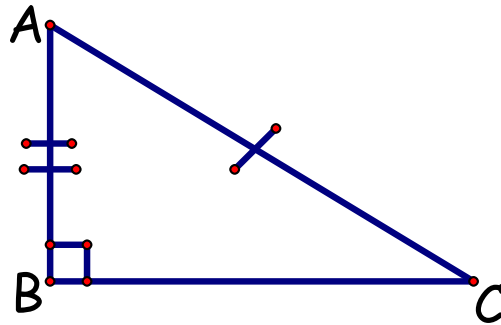


Hypotenuse - Leg Theorem: (or HL Theorem)

If the **hypotenuse** and **1 leg** of one right triangle are congruent to the **hypotenuse** and **1 leg** of another right triangle, then the triangles are congruent.

If $\overline{AB} \cong \overline{XY}$,
 $\overline{AC} \cong \overline{XZ}$,
and $\angle B$ and $\angle Y$
are right angles,

then $\triangle ABC \cong \triangle XYZ$



HM2 Unit 1: Triangle Congruence Day 8

- <https://play.kahoot.it/#/?quizId=250115bb-9355-4e7b-aca4-3ed60fdeddfdf>





Practice: Washington Puzzle



Exit Ticket

- 1) Draw a pair of congruent triangles and place markings on the triangles in such a way that would allow you to establish that the triangles were congruent by SSS.
- 2) Draw a pair of congruent triangles and place markings on the triangles in such a way that would allow you to establish that the triangles were congruent by SAS.
- 3) Draw a pair of congruent triangles and place markings on the triangles in such a way that would allow you to establish that the triangles were congruent by ASA.
- 4) Draw a pair of congruent triangles and place markings on the triangles in such a way that would NOT allow you to establish that the triangles were congruent.

Homework

**Packet p. 25-26 all
and p. 27-29 odds**

