

August 27, 2018

What does triangle congruency mean?

Find an explanation and a picture, using technology.

Aug 24-10:10 AM

Let's look at the triangle sum theorem...


Geogebra, interior triangle sum

Geogebra, triangle sum theorem

What is the triangle sum theorem?

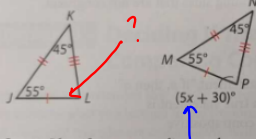
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Now the triangle sum theorem using paper.....



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**Example 2** Find the value of the variable that results in congruent triangles.



**Congruent**  
 $\angle K \cong \angle N \cong 45^\circ$   
 $\angle J \cong \angle M = 55^\circ$   
 $\angle L \cong \angle P$

Step 1 Identify corresponding angles.

$\angle M$  corresponds to  $\angle J$ , because they have the same measure and they are formed by congruent corresponding sides. Similarly,  $\angle N$  corresponds to  $\angle K$ . So,  $\angle P$  corresponds to  $\angle L$ .

$$55 + 45 + \angle L = 180$$

$$100 + \angle L = 180$$

$$-100 \quad -100$$

$$\angle L = 80^\circ$$

$$80 = 5x + 30$$

$$-30 \quad -30$$

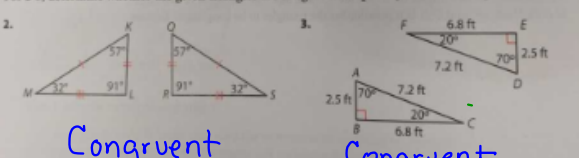
$$50 = 5x$$

$$\frac{50}{5} = \frac{5x}{5}$$

$$10 = x$$

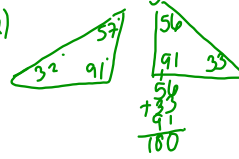
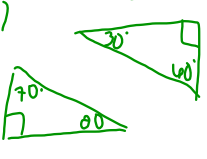
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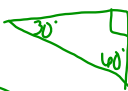
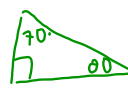
For 2-5, determine whether the given triangles are congruent. Explain your reasoning.



**Congruent** look @ sides →  
 look @ angles →

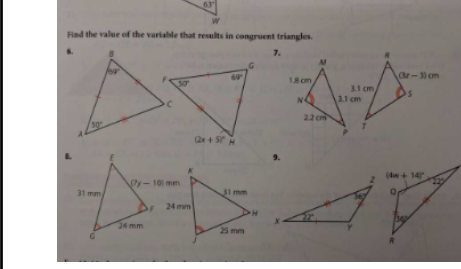
**Not Congruent** Not Congruent

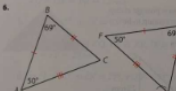
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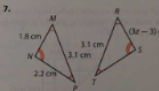
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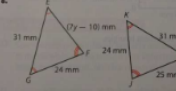
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Find the value of the variable that results in congruent triangles.



6. 

7. 

8. 

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Triangle Sum Theorem  
 Practice Problems  
 Find the measure of each angle indicated.

1)  $\angle = 55 + 70 = 180^\circ$

2)  $\angle = 35 + 85 = 120^\circ$

3)  $\angle = 30 + 90 = 120^\circ$

4)  $\angle = 45 + 35 = 80^\circ$

Solve for x.

5)  $66 + x + 30 + 90 = 180$

6)  $60 + 30x + 90 = 180$

7)  $\angle = 44 + 55 = 99^\circ$

8)  $\angle = 10 + 54 = 64^\circ$

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Find the measure of angle A

9)  $\angle A = 20(1) = 20^\circ$

10)  $71x - 1 + 20x + 90 = 180$   
 $91x + 89 = 180$   
 $91x = 91$   
 $x = 1$

11)  $\angle = x + 81 + 80 = 161 + x$

12)  $x + 52 + 67 + x + 75 = 180$

13)  $\angle = 74 + 40 + x = 114 + x$

14)  $\angle = 124 + 61 + 3x + 2 = 187 + 3x$

15)  $\angle = 10x + 6x + 5 + x = 17x + 5$

16)  $\angle = 40 + 111 + x = 151 + x$

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Choose 2 from #1-4  
 Choose 2 from #5-8  
 Choose 3 from #10-16

Circle these in red pen, please!

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p278-279 #11-15

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Unit 2 - Similarity Congruence & Proofs  
 Name \_\_\_\_\_

Isosceles triangle - label all parts

Isosceles vocabulary, please define.  
 Isosceles triangle:  
 Leg -  
 Vertex angle -  
 Base -  
 Base angle -

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Unit 2 - Similarity Congruence & Proofs  
 Name \_\_\_\_\_

Equilateral Triangle

Find a minimum of three facts about equilateral triangles.

1)  
 2)  
 3)

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

p 286



Copy Equilateral Triangle Theorem & Converse of the Equilateral Triangle Theorem.

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

p289 #4-9

Find the measure of the indicated angle.

4.  $m\angle A$   5.  $m\angle R$  

6.  $m\angle O$   7.  $m\angle F$  

For 8-11, find the length of the indicated side.



8.  $\overline{DE}$   9.  $\overline{KL}$  



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
Geometry Name: \_\_\_\_\_ ID: 1



Finding side & angles of isosceles and equilateral triangles Period: \_\_\_\_\_



Find the value of x.

1)  2) 



3)  4) 



5)  6) 



7)  8) 



9)  10) 



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11)  12) 

13)  14) 

15)  16) 

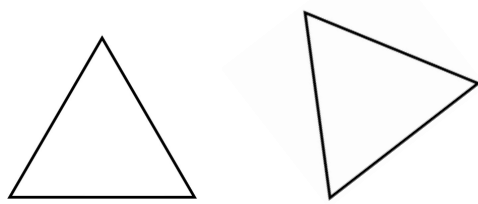
17)  18) 

19)  20) 

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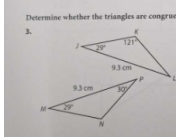
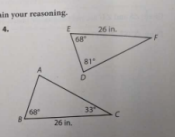
copy ASA triangle congruence theorem

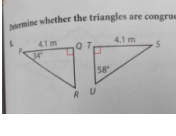
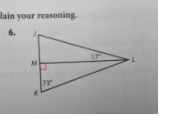


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p206 #3-6

Determine whether the triangles are congruent. Explain your reasoning.

3.  4. 

5.  6. 

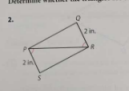
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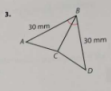
p213 copy the SAS triangle congruence theorem

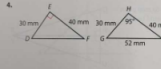
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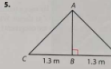
p216 #2-7

Determine whether the triangles are congruent. Explain your reasoning.

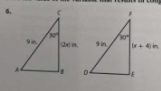
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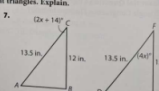
3. 

4. 

5. 

Find the value of the variable that results in congruent triangles. Explain.

6. 

7. 

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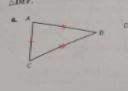
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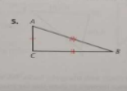
copy SSS triangle congruence

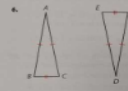
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p227 #4-11

Identify a sequence of rigid motions that maps one side of  $\triangle ABC$  onto one side of  $\triangle DEF$ .

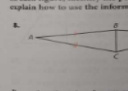
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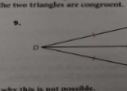
5. 

6. 

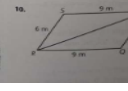
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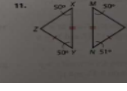
In each figure, identify the perpendicular bisector and the line segment it bisects, and explain how to use the information to show that the two triangles are congruent.

8. 

9. 

Prove that the triangles are congruent or explain why this is not possible.

10. 

11. 

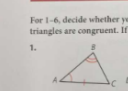
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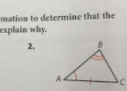
p246 copy the AAS congruence statement

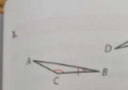
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p 250 #1-6

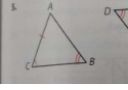
For 1-6, decide whether you have enough information to determine that the triangles are congruent. If they are congruent, explain why.

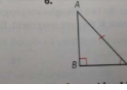
1. 

2. 

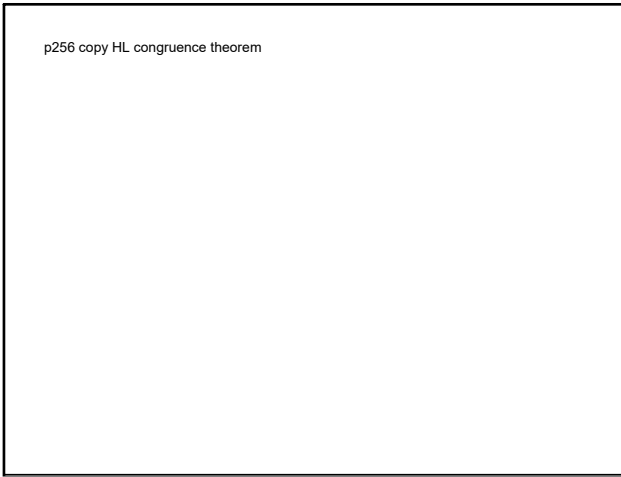
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4. 

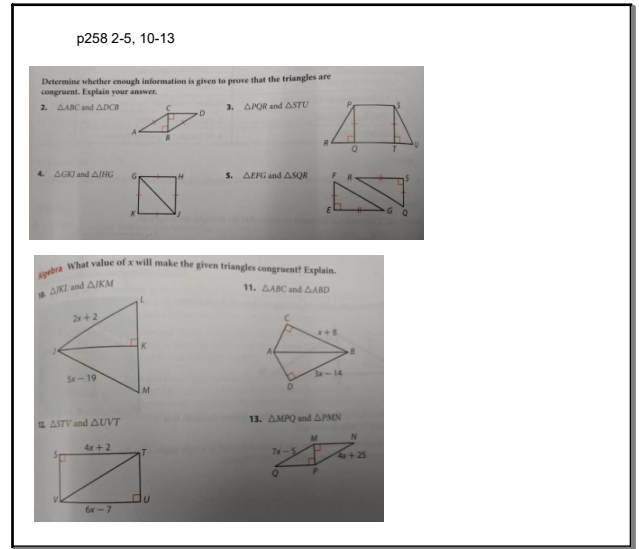
5. 

6. 

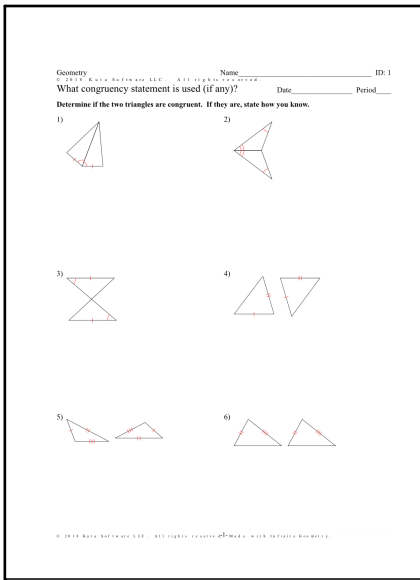
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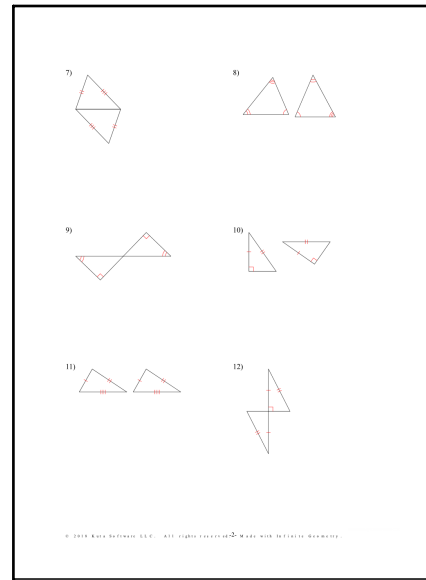
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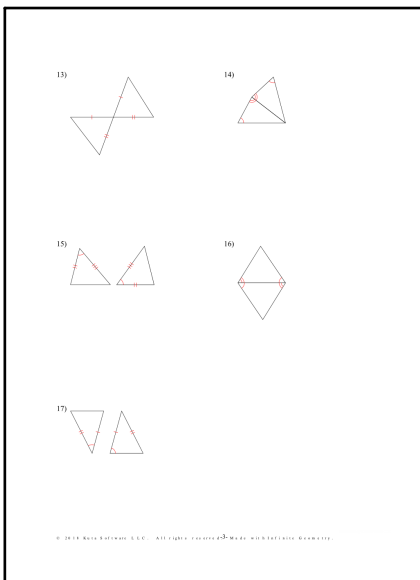
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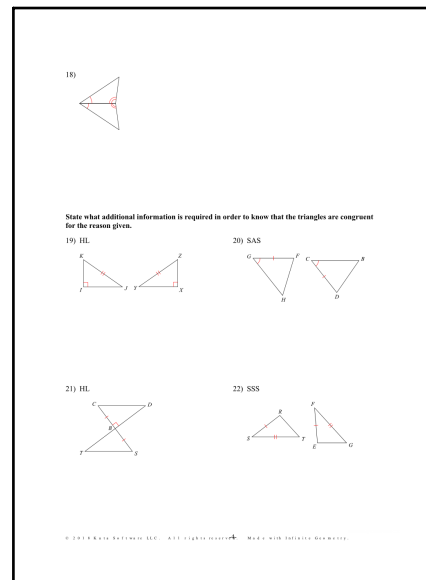
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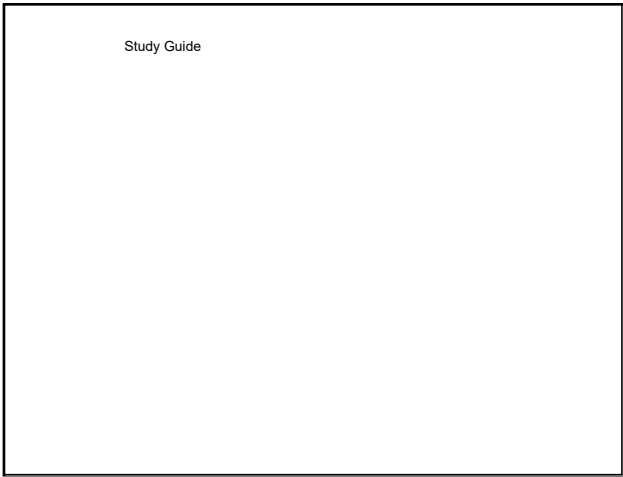
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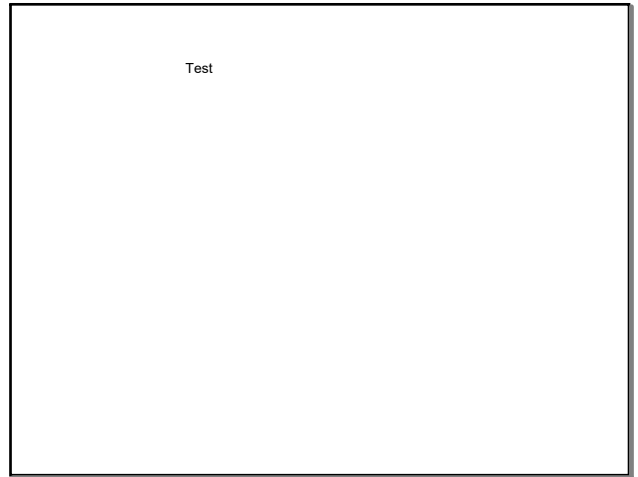
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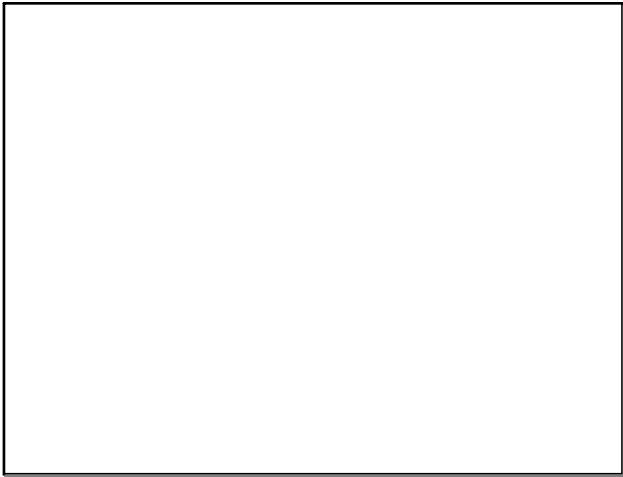
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