


January 22, 2019 Tuesday

Write all the facts you know about triangles...

3 SIDES & 3 angle 

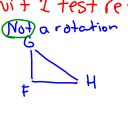
The <sup>angles</sup> all equal 180°

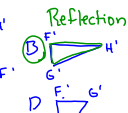
Make up many different angles 30 + 60 + 90 = 180  
31 + 61 + 88 = 180

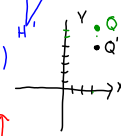
Some of them rotate 90° CCW  
90° CW  
180°  
270°


Jan 15-2:24 PM

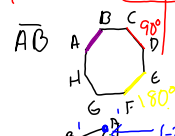
Unit 2 test review:

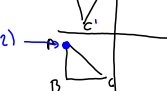
6) (No) a rotation 

Reflection 

7)  $(x, y) \rightarrow (x, y+2)$  what is the preimage of  $Q'(3, 5)$   
(B) (3, 7) 


10) 5 units ←, 3 units ↑  
(B)  $(x-5, y+3)$  

11) 90° CW  $\overline{AB}$    
(A)  $\overline{CD}$

12)  $(x, y) \rightarrow (y-x, 2)$   
 $(6, 2) \rightarrow (2, 2)$  

Jan 22-12:02 PM

Triangle Congruence Theorems



hummm...what is congruence...

Let's figure out how to tell if two triangles are congruent...

Mashup Math, Triangle Congruence, video


Let's discover how to write triangle congruence statements...

TerryW, How to write triangle congruence statements ...write his example in your notebook!

Jan 18-2:15 PM

More from Terry V...

Congruence Statements

$\triangle GHI \cong \triangle JKL$  

Angles:  $\angle G \cong \angle J$ ,  $\angle H \cong \angle K$ ,  $\angle I \cong \angle L$

Segments:  $\overline{GH} \cong \overline{JK}$ ,  $\overline{HI} \cong \overline{KL}$ ,  $\overline{GI} \cong \overline{JL}$

$\triangle GHI \cong \triangle LKJ$

$\triangle KIJ \cong \triangle IHG$

$\angle K \cong \angle I$ ,  $\angle J \cong \angle H$ ,  $\angle I \cong \angle G$


$\overline{KI} \cong \overline{IH}$ ,  $\overline{IJ} \cong \overline{HG}$ ,  $\overline{JK} \cong \overline{GI}$


Jan 22-12:41 PM


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


Triangle Congruence Date \_\_\_\_\_ Period \_\_\_\_\_


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


1)  SSS


2)  SSS


3)  HL? Not Cong


4)  Not Cong


5)  SAS

6)  ASA

7)  AAS

8)  AAS

9)  HL!


10)  SSS


Jan 18-2:20 PM


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


Unit 2 Quiz 2 Triangle Congruency - SG Date \_\_\_\_\_ Period \_\_\_\_\_


Determine if the two triangles are congruent using SSS, SAS, ASA, AAS, or HL.


1)  SAS

2)  AAS

3)  ASA

4)  Not cong

5)  SSS

6)  HL

Jan 22-1:37 PM

Determine if the two triangles are congruent using SSS, SAS, ASA, AAS, or HL. Write the congruency statement if possible.

$\triangle ABC \cong \triangle DCB$  (SAS) ✓  
 $\triangle IOD \cong \triangle OIK$  (ASA) ✓  
 $\triangle LME \cong \triangle MNW$  (AAS) ✓  
 $\triangle MLC \cong \triangle CEP$  (SSS) ✓  
 $\triangle NOT$  NOT congruent (BK) ✗  
 $\triangle GLO \cong \triangle KMW$  (HL) ✓

Scanned by CamScanner

Jan 22-1:37 PM

January 23, 2019, Wednesday

Give an example of congruent triangles using AAS and another set of triangles using HL.

...quiz after review

Jan 15-2:27 PM

https://www.softschools.com/math/geometry/triangles/congruent\_triangles/

Topics: Pre-K, Kindergarten, 1st Grade, 2nd Grade, 3rd Grade, 4th Grade, 5th Grade

Math: Math Games, Math Worksheets, Algebra, Language Arts, Science, Social Studies, Literature

home > Math > Geometry > Triangles > Congruent Triangles

mscoolelovesmath.weebly.com

softschools.com triangle congruence practice on 10 problems

### Congruent Triangles

There are five different ways to find triangles are congruent: SSS, SAS, ASA, AAS and HL. For each pair of triangles, select the correct rule.

start

Jan 18-2:23 PM

scratchpad, writing congruency statements, practice

Example...

$\triangle XYZ \cong \triangle TRS$

Non-example

$\triangle QPR \not\cong \triangle ZXY$

Jan 18-2:30 PM

### Rules for Triangle Congruency

SSS, SAS, ASA, AAS, HL, SSA (not sufficient), RHS.

Example 2:  $\triangle ABC \cong \triangle ZXY$

Example 3:  $\triangle JKL \cong \triangle RST$

$\angle J \cong \angle R$   
 $\angle S \cong \angle K$   
 $\overline{KL} \cong \overline{ST}$

Jan 18-2:44 PM

January 24, 2019, Thursday

$\triangle ABC \cong \triangle ZYX$

Using the congruence statement Triangle ABC  $\cong$  Triangle ZYX list 3 congruent set of legs and 3 sets of congruent vertices.

legs:  
 $AB \cong ZY$   
 $BC \cong YX$   
 $AC \cong ZX$

angles:  
 $\angle C \cong \angle X$   
 $\angle A \cong \angle Z$   
 $\angle B \cong \angle Y$

What if...  
 $CA \cong XZ$

Jan 15-2:31 PM



## PROOF! you can't handle the PROOF

Given:  $OM \perp EY$   
 M is the midpoint of  $EY$   
 Prove:  $\triangle EOM \cong \triangle YOM$   
 $\angle EOM \cong \angle YOM$

Statements:	Reasons:
1.	1. Given
2. $m\angle EMO = 90, m\angle OMY = 90$	2.
3. $m\angle EMO = m\angle OMY$	3. Transitive Property
4. $\angle EMO \cong \angle OMY$	4.
5. M is the midpoint of $EY$	5.
6.	6. Def. of a Midpoint
7. $OM = OM$	7.
8. $\triangle EOM \cong \triangle YOM$	8.
9. $\angle EOM \cong \angle YOM$	9.

Given:  $AM \parallel CD, AM = CD, \angle M = \angle D$   
 Prove:  $\triangle AMC \cong \triangle CDO$

Statements:	Reasons:
1. $\angle M \cong \angle D$	1.
2.	2. Given
3. $AM \parallel CD$	3. Given
4. $\angle MAC \cong \angle DCO$	4.
5. $\triangle AMC \cong \triangle CDO$	5.
6. $MC = DO$	6.

Jan 15-2:28 PM

Jan 15-2:30 PM

### Triangle Congruency Proof Rules

Angle / Segment Addition Substitution Reflexive sides or angles Vertical Angles Corresponding Angles Complementary Supplementary	$\triangle A$ (Alternate Exterior Angle) $\triangle A$ (Alternate Interior Angle) Definition of Right Angle Definition of Perpendicular Definition of Congruent	Angle Bisector Mid-segment Perpendicular Bisector All right angles are congruent Base angles of an isosceles triangle are congruent
--	---	---

Proofs Using CPCTC

Fill in the missing information for each proof.

1. Given:  $GH \cong KL, \angle G \cong \angle K$ , and  $\overline{GI} \cong \overline{KI}$

Prove:  $\overline{HI} \cong \overline{LI}$

Statements	Reasons
1. $GH \cong KL$	1. Given
2.	2. Given
3. $\overline{GI} \cong \overline{KI}$	3.
4.	4. SAS
5. $\overline{HI} \cong \overline{LI}$	5.

2. Given:  $\angle MNP \cong \angle OPN$ , and  $\overline{MN} \cong \overline{OP}$

Prove:  $\overline{MP} \cong \overline{NO}$

Statements	Reasons
1.	1. Given
2. $\overline{MN} \cong \overline{OP}$	2.
3. $\overline{NP} \cong \overline{NP}$	3.
4. $\triangle MNP \cong \triangle OPN$	4. SAS
5.	5. CPCTC

3. Given:  $\overline{AC} \cong \overline{CE}, \overline{DC} \cong \overline{BC}$

Prove:  $\angle B \cong \angle D$

Statements	Reasons
1.	1.
2.	2. Given
3. $\angle ACB \cong \angle DCE$	3.
4. $\triangle ABC \cong \triangle DEF$	4.
5. $\angle B \cong \angle D$	5.

4. Given:  $\overline{PM} \parallel \overline{NO}, \overline{MN} \parallel \overline{PO}$

Prove:  $\overline{PM} \cong \overline{ON}$

Statements	Reasons
1. $\overline{PM} \parallel \overline{NO}$	1.
2.	2. Given
3. $\angle PMO \cong \angle NOP$	3.
4.	4. Alternate Interior
5. $\overline{MO} \cong \overline{MO}$	5. ASA
6.	6. ASA
7.	7.

GDE GEOMETRY 1 | Page

Jan 15-2:31 PM

Write a two-column proof for each.

5. Given:  $\angle N \cong \angle P, \angle M \cong \angle Q$ , and  $\overline{NO} \cong \overline{QR}$

Prove:  $\angle O \cong \angle R$

6. Given:  $\overline{AC} \cong \overline{EF}$ , and  $\overline{AB} \cong \overline{FD}$

Prove:  $\overline{BC} \cong \overline{FD}$

7. Given:  $\overline{MN} \parallel \overline{NO}, \overline{NP} \cong \overline{OP}$

Prove:  $\angle O \cong \angle M$

GDE GEOMETRY 2 | Page

Jan 15-2:31 PM

Unit 2 Test Part 1 Study Guide

1. Which theorems or rule are used to prove that two triangles are congruent?

2. Consider the triangles shown. Which rule, if any, can be used to prove triangle congruency?

3. If  $m\angle 1 = 45, m\angle 2 = 30$  in the diagram below, find  $m\angle 3$  and  $m\angle 4$ .

4. In the diagram below  $m\angle 1 = 65, m\angle 4 = 3x + 5$ . Find  $x$  and the measure of angle  $\angle 4$ .

5. Find  $m\angle 3$  and  $m\angle 2$ , if  $m\angle 1 = 85$  degrees.

6. Find  $m\angle 1$  if  $m\angle 2 = 5x$  and  $m\angle 3 = 6x - 7$ .

GDE GEOMETRY 1 | Page

Jan 15-2:32 PM

7.  $\triangle PQR$  and  $\triangle STU$  are congruent triangles. Using this information, list the corresponding sides and corresponding angles.

8. For  $\triangle EFG$  and  $\triangle MNP$ , it is known that  $\overline{EG} \cong \overline{MP}, \angle G \cong \angle P$ , and  $\overline{FG} \cong \overline{NP}$ . Determine if the triangles are congruent, and if so, by which type of congruency.

a. SSS      c. ASA  
 b. SAS      d. It cannot be determined if the triangles are congruent.

9. In this diagram,  $\overline{EF}$  is the perpendicular bisector of  $\overline{AB}$ . The two-column proof shows that  $\triangle AC$  is congruent to  $\triangle BC$ . Fill in the missing pieces of the proof. Bank:  $\overline{AD} \cong \overline{BD}$ , Vertical Angles, Reflexive Property, SSS, SAS, HL.

Step	Statement	Reason
1	$\overline{ED}$ is the perpendicular bisector of $\overline{AB}$	Given
2	$\overline{AD} \cong \overline{BD}$	Definition of bisector
3	$\overline{ED} \cong \overline{ED}$	
4		Definition of perpendicular lines
5	$\angle ADC \cong \angle BDC$	All right angles are congruent
6	$\triangle ADC \cong \triangle BDC$	
7	$\overline{AC} \cong \overline{BC}$	

10. Given:  $\overline{NO} \parallel \overline{MP}$  and  $\overline{MN} \parallel \overline{OP}$   
 Prove:  $\overline{MN} \cong \overline{OP}$

Steps	Statements	Reasons
1	$\overline{NO} \parallel \overline{MP}$ and $\overline{MN} \parallel \overline{OP}$	
2	$\angle MNP \cong \angle OPN$	Alt. Interior $\angle$ s are $\cong$ .
3	$\angle NPM \cong \angle OPN$	Alt. Interior $\angle$ s are $\cong$ .
4	$\overline{NP} \cong \overline{NP}$	
5	$\triangle MNP \cong \triangle OPN$	

GDE GEOMETRY 2 | Page

Jan 15-2:32 PM

11. Given: E is the midpoint of AC and DB. Rank:  $\triangle AEB \cong \triangle CED$ , vertical angles, Defn of midpoint BE = ED. Prove:  $\triangle ABE \cong \triangle CED$

Steps	Statements	Reasons
1	E is the midpoint of AC and DB	Given
2	$AE \cong EC$	
3		Definition of a midpoint
4	$\angle AEB \cong \angle CED$	
5		SAS

12.  $\triangle DEF$  and  $\triangle UVV$  are congruent triangles. Which statement is known to be true?  
 a.  $DE \cong UV$                       c.  $DF \cong UV$   
 b.  $DF \cong UV$                       d.  $DE \cong UV$

13. For  $\triangle ABC$  and  $\triangle DEF$ , the following is given:  $\angle C \cong \angle F$ ,  $AB \cong DE$ , and  $BC \cong EF$ . By which triangle congruence statement can it be concluded that the triangles are congruent?  
 a. SSS                      c. ASA  
 b. SAS                      d. It cannot be determined if the triangles are congruent.

14.  $\triangle UVW$  and  $\triangle XYZ$  are congruent triangles. Which statement is known to be true?  
 a.  $\angle U \cong \angle X$                       c.  $\angle V \cong \angle X$   
 b.  $\angle W \cong \angle X$                       d.  $\angle V \cong \angle Y$

15. Name **one set** of each type of angles below.

Corresponding: \_\_\_\_\_  
 Alternate Interior: \_\_\_\_\_  
 Alternate Exterior: \_\_\_\_\_  
 Vertical: \_\_\_\_\_  
 Same side interior: \_\_\_\_\_

Jan 15-2:32 PM

16. Identify all angle measures.

Congruent Triangles  
 17. Determine whether each pair of triangles is congruent. If so, write a congruence statement, and explain why the triangles are congruent.

Theorems about Lines and Angles  
 19. Name the relationship and then find the missing angle measures by solving for x.

a. b.

c. d.

Jan 15-2:32 PM

January 24, 2019, Friday

Using the figure below, find each measure of each numbered angle.

Jan 15-2:32 PM