January 22, 2019 Tuesday

Write all the facts you know about triangles...

3 SIDES 3 3 angle

The angles 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°

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Unit 2 test review:

6) Not a rotation

Reflection

9) (x,y) → (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) → (y,-x) (6,2) (-6,2) → (-2,6)

(C)

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...

TerryV, How to write triangle congruence statements

...write his example in your notebook!

Jan 18-2:15 PM

More from Terry V...

Congruence Statements

△GHI ≅ △JLK

Angles ∠G ≅ ∠J ∠H ≅ ∠L ∠I ≅ ∠K

G ↔ J H ↔ L I ↔ K

Segments $\overline{GI} \cong \overline{JK}$ $\overline{HI} \cong \overline{LK}$ $\overline{GH} \cong \overline{JL}$

△GHI ≅ △LKJ

△HGI ≅ △LJK

△KLJ ≅ △IHG

∠K ≅ ∠I $\overline{LJ} \cong \overline{HG}$

∠L ≅ ∠H $\overline{JK} \cong \overline{GI}$

∠J ≅ ∠G

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Geometry Name ID: 1

Triangle Congruence Date Period

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

1) SSS SAS ASA AAS HL

2) SSS

3) HL? Not Cong

4) AS? Not Congruent

6) SAS ASA AAS HL

8) ASA AAS AAS

9) HL!

10) SSS

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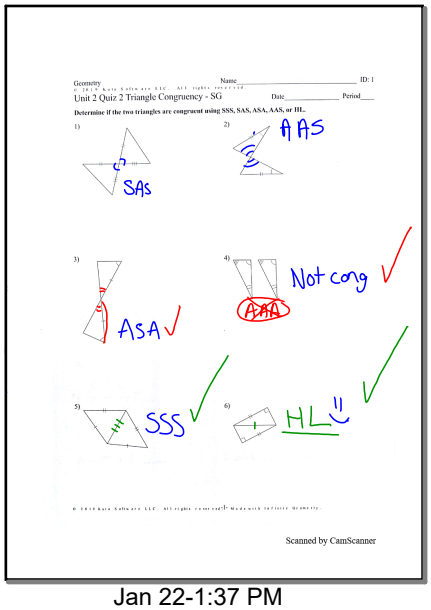
Jan 22-1:31 PM



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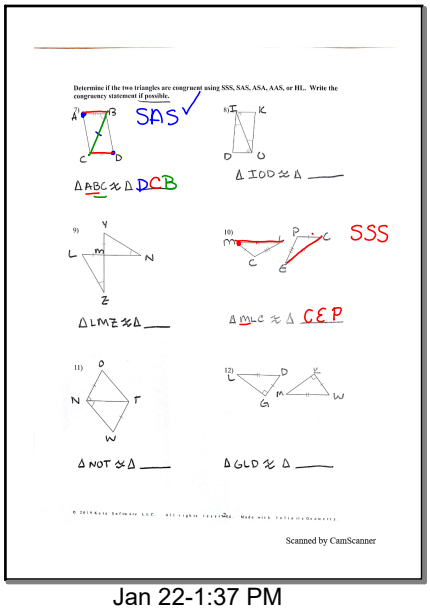

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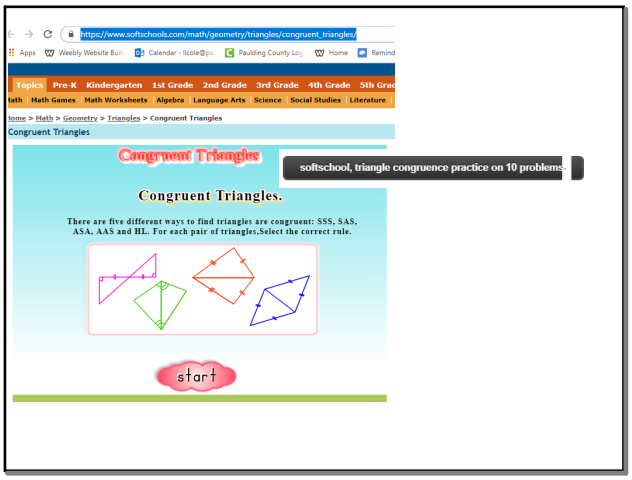

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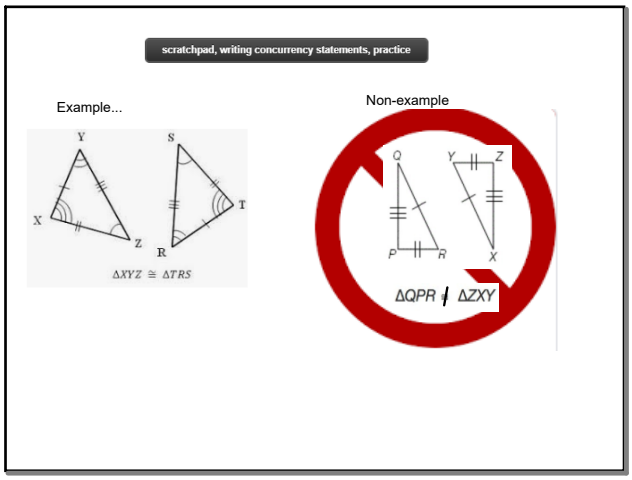

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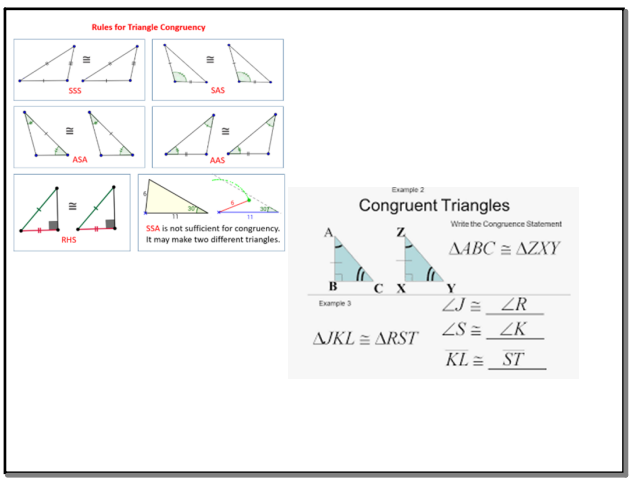

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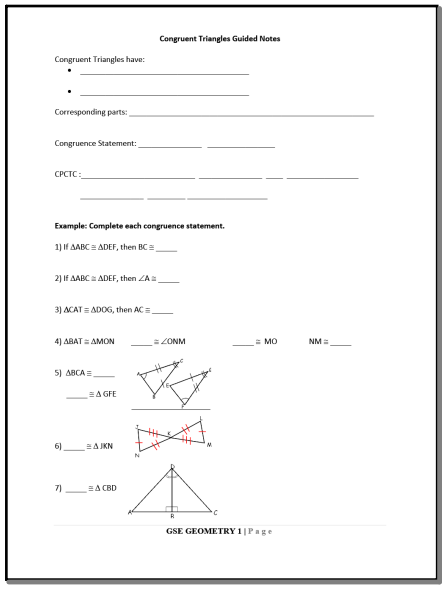
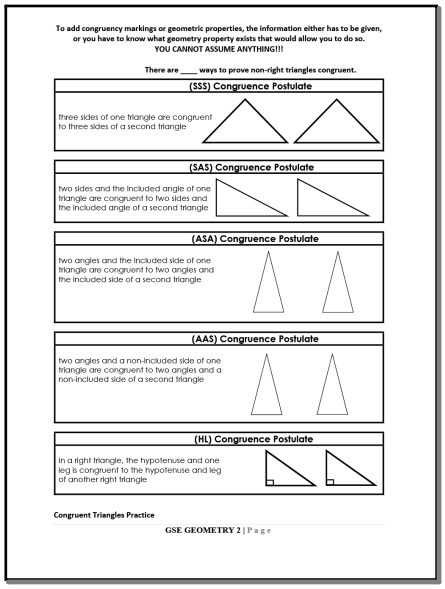




To add congruency markings or geometric properties, the information either has to be given, or you have to know what geometry property exists that would allow you to do so.
YOU CANNOT ASSUME ANYTHING!!!

There are ____ ways to prove non-right triangles congruent.

(SSS) Congruence Postulate

three sides of one triangle are congruent to three sides of a second triangle

(SAS) Congruence Postulate

two sides and the included angle of one triangle are congruent to two sides and the included angle of a second triangle

(ASA) Congruence Postulate

two angles and the included side of one triangle are congruent to two angles and the included side of a second triangle

(AAS) Congruence Postulate

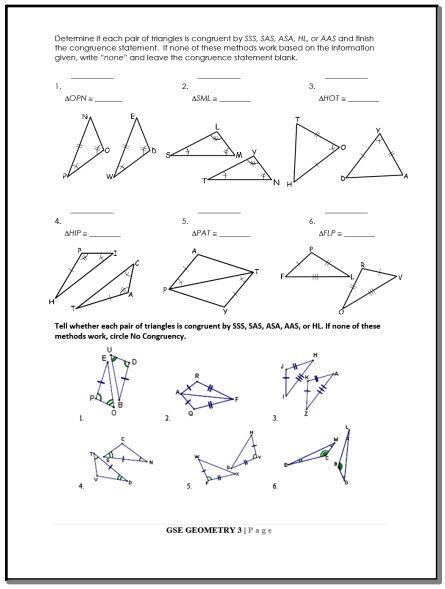
two angles and a non-included side of one triangle are congruent to two angles and a non-included side of a second triangle

(HL) Congruence Postulate

In a right triangle, the hypotenuse and one leg is congruent to the hypotenuse and leg of another right triangle

Congruent Triangles Practice

GSE GEOMETRY 2 | P a g e



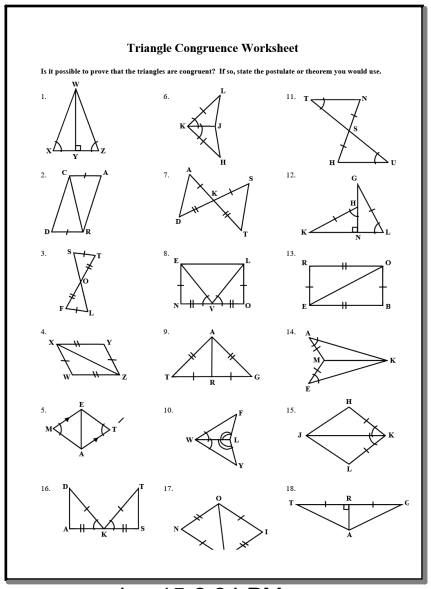
Determine if each pair of triangles is congruent by *SSS, SAS, ASA, HL, or AAS* and finish the congruence statement. If none of these methods work based on the information given, write "none" and leave the congruence statement blank.

1. _____ ΔOPN ≅ _____
2. _____ ΔSML ≅ _____
3. _____ ΔHOT ≅ _____
4. _____ ΔHIP ≅ _____
5. _____ ΔPAT ≅ _____
6. _____ ΔFLP ≅ _____

Tell whether each pair of triangles is congruent by SSS, SAS, ASA, AAS, or HL. If none of these methods work, circle No Congruency.

1. 2. 3. 4. 5. 6.

GSE GEOMETRY 3 | P a g e



Triangle Congruence Worksheet

Is it possible to prove that the triangles are congruent? If so, state the postulate or theorem you would use.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18.

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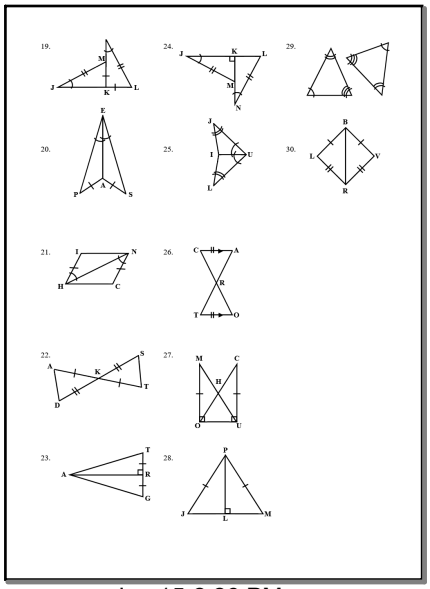

19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30.

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January 23, 2019, Wednesday

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

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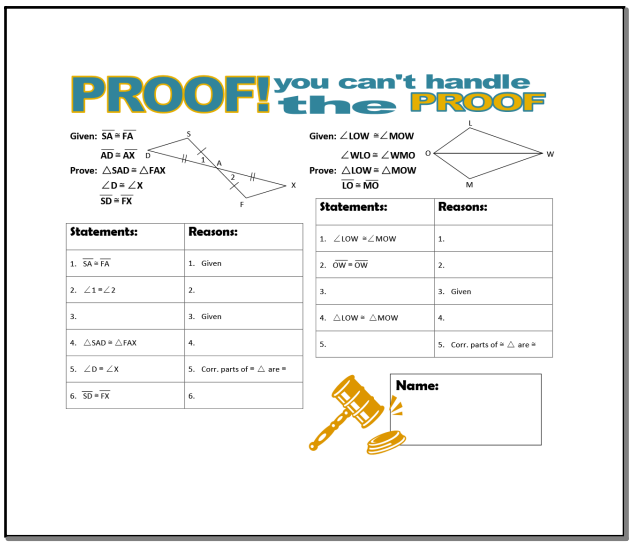

PROOF! you can't handle the PROOF

Given: $\overline{SA} \cong \overline{FA}$
$\overline{AD} \cong \overline{AX}$
Prove: $\triangle SAD \cong \triangle FAX$
$\angle D \cong \angle X$
$\overline{SD} \cong \overline{FX}$

Statements:	Reasons:
1. $\overline{SA} \cong \overline{FA}$	1. Given
2. $\angle 1 \cong \angle 2$	2.
3.	3. Given
4. $\triangle SAD \cong \triangle FAX$	4.
5. $\angle D \cong \angle X$	5. Corr. parts of ≅ △ are ≅
6. $\overline{SD} \cong \overline{FX}$	6.

Given: $\angle LOW \cong \angle MOW$
$\angle WLO \cong \angle WMO$
Prove: $\triangle LOW \cong \triangle MOW$
$\overline{LO} \cong \overline{MO}$

Statements:	Reasons:
1. $\angle LOW \cong \angle MOW$	1.
2. $\overline{OW} \cong \overline{OW}$	2.
3.	3. Given
4. $\triangle LOW \cong \triangle MOW$	4.
5.	5. Corr. parts of ≅ △ are ≅

Name:

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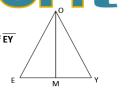
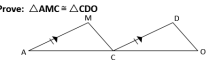
PROOF! you can't handle the PROOF

Given: $\overline{OM} \perp \overline{EY}$
M is the midpoint of $\overline{EY}$
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 $\overline{EY}$	5.
6.	6. Def. of a Midpoint
7. $\overline{OM} = \overline{OM}$	7.
8. $\triangle EOM \cong \triangle YOM$	8.
9. $\angle EOM \cong \angle YOM$	9.

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



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

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Triangle Congruency Proof Rules

Angle/ Segment Addition
Substitution
Reflexive sides or angles
Vertical Angles
Corresponding Angles
Complementary
Supplementary

AIA (Alternate Exterior Angle)
AIA (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

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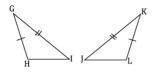
Proofs Using CPCTC

Name _____ S: ____

Fill in the missing information for each proof.

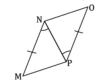
1. Given: $\overline{GH} \cong \overline{KL}$, $\angle G \cong \angle K$, and $\overline{GI} \cong \overline{KJ}$



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

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

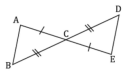
2. Given: $\angle MNP \cong \angle OPN$, and $\overline{MN} \cong \overline{OP}$



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

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.
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: $PM \cong ON$

Statements	Reasons
1. $PM \parallel ON$	1.
2.	2. Given
3. $\angle PMO \cong \angle NOP$	3.
4.	4. Alternate Interior
5. $\overline{MO} \cong \overline{MO}$	5.
6.	6. ASA
7.	7.

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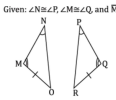
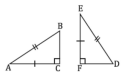
Write a two-column proof for each.

5. Given: $\angle N \cong \angle P$, $\angle M \cong \angle Q$, and $\overline{MO} \cong \overline{QR}$



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

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



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

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

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

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January 24, 2019, Thursday

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

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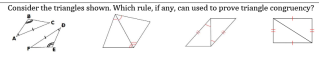
Unit 2 Test Part 1 Study Guide Name _____ S ____

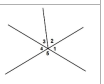
1. Which theorems or rule are used to prove that two triangles are congruent?

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



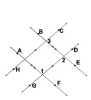
3. If $m\angle 1 = 45, m\angle 2 = 30$ in the diagram below, find $m\angle 3$ *and* $m\angle 4$.

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* $m\angle 1 = 85$ degress.

6. Find m<1 if m<2 = 5x and m<3 = 6x – 7.



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7. ΔPQR and ΔSTU are congruent triangles. Using this information, list the corresponding sides and corresponding angles.

8. For ΔEFG and ΔMNP, it is known that $\overline{EG} \cong \overline{MP}$, $<G \cong <P$, 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, $\overline{CD}$ is the perpendicular bisector of $\overline{AB}$. The two-column proof shows that $\overline{AC}$ is congruent to $\overline{BC}$. Fill in the missing pieces of the proof. **Bank: AD = BD, Vertical Angles, Reflexive Property, SSS, SAS, HL.**

Step	Statement	Reason
1	$\overline{CD}$ is the perpendicular bisector of $\overline{AB}$	Given
2	$\overline{AD} \cong \overline{BD}$	Definition of bisector
3	$\overline{CD} \cong \overline{CD}$	
4		Definition of perpendicular lines
5	$\angle ADC \cong \angle BDC$	All right angles are congruent
6	$\Delta ADC \cong \Delta BDC$	
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 <s are =.
3	$\angle NPM \cong \angle ONP$	Alt. Interior <s are =.
4	$\overline{NP} \cong \overline{NP}$	
5	Δ MNP $\cong \Delta$ OPN	

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11. **Given:** E is the midpoint of $\overline{AC}$ and $\overline{DB}$ **Bank: $\Delta AEB \cong \Delta CED$, vertical angles, Defn of midpoint BE = ED**
Prove: $\Delta ABE \cong \Delta CED$

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

12. ΔDEF and ΔTUV are congruent triangles. Which statement is known to be true?
a. $\overline{DE} \cong \overline{TU}$ c. $\overline{DF} \cong \overline{UV}$
b. $\overline{DF} \cong \overline{TU}$ d. $\overline{DE} \cong \overline{TV}$

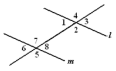
13. For ΔABC and ΔDEF, the following is given: $\angle C \cong \angle F$, $\overline{AB} \cong \overline{DE}$, and $\overline{BC} \cong \overline{EF}$. By which triangle congruence statement can it be concluded that the triangles are congruent?

a. SSS c. ASA

b. SAS d. It cannot be determined if the triangles are congruent.

14. ΔUVW and ΔXYZ are congruent triangles. Which statement is known to be true?
a. <U $\cong$ <V c. <V $\cong$ <X
b. <W $\cong$ <X d. <V $\cong$ <Y

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



Corresponding_____
Alternate Interior_____
Alternate Exterior_____
Vertical_____
Same side interior_____

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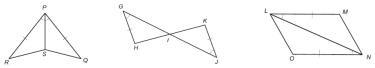
16. Identify all angle measures.

Congruent Triangles

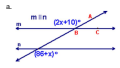
17. Determine whether each pair of triangles is congruent. If so, write a congruence statement, and explain why the triangles are congruent.



Theorems about Lines and Angles

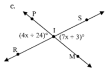
19. Name the relationship and then find the missing angle measures by solving for x.

a.



b.

c.



d.

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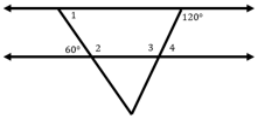
January 24, 2019, Friday

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



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