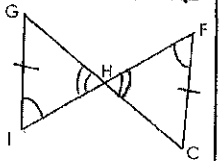
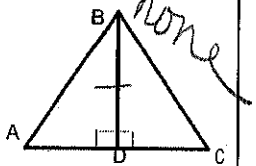
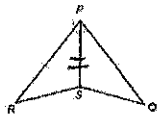
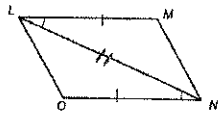
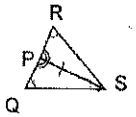
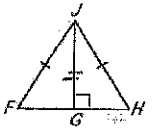
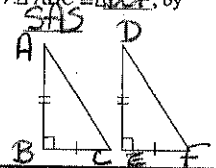
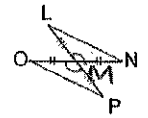
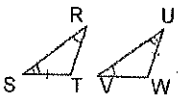
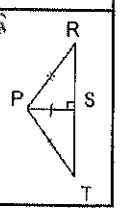
GSE Geometry Unit 2 – Congruence & Triangles 2.11 – Review

Name: Key Date: _____

Use the following to review for you test. **Show your work on a separate sheet of paper if needed.**

Things to Know	Things to Remember	Examples
Triangle Congruence SSS, SAS, ASA, AAS, HL, None		1. $\Delta GHI \cong$ CHE by AAS  2. $\Delta ABD \cong$ ___ by None  3. $\Delta RPS \cong \Delta QPS$ by SAS  4. $\Delta LNO \cong \Delta MLN$ by SAS  5. $\Delta RPS \cong \Delta QPS$, by AAS  6. $\Delta FJG \cong \Delta HJG$ by HL  7. $\Delta ABC \cong \Delta DEF$, by SAS  8. $\Delta LMN \cong \Delta PMO$ by SAS  9. $\Delta RST \cong \Delta VUW$ by AAS  10. $\Delta RPS \cong \Delta TPS$ by HL 

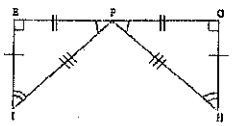
add letters # 7 + 8

GSE Geometry Unit 2 – Congruence & Triangles 2.11 – Review

CPCTC
Congruent Parts of Congruent Triangles are congruent

11.

Name the congruent triangle and the congruent parts. $\Delta PGH \cong \Delta$ FEI



$\angle EFI \cong \angle$ GFH $\overline{FG} \cong \overline{FE}$

$\angle G \cong \angle$ E $\overline{GH} \cong \overline{EI}$

$\angle H \cong \angle$ I $\overline{FH} \cong \overline{FI}$

12.

Use the congruency statement to fill in the corresponding congruent parts.

$\Delta EFI \cong \Delta HGI$ $\angle E \cong \angle$ H $\overline{FE} \cong \overline{GH}$ $\angle EFI \cong \angle$ HGI

$\overline{FI} \cong \overline{GI}$ $\angle FIE \cong \angle$ GIH $\overline{IE} \cong \overline{IH}$

$z^2 + 35 = 12z - 1$

$z^2 - 12z + 36 = 0$

$(z-6)(z-6) = 0$

$z = 6$

Solving Quadrilaterals

$6^2 + 35 = 71$

$7x = 2x + 2.5$

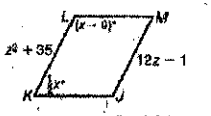
$5x = 2.5$

$x = .5$

$2y = y + 3$

$y = 3$

13. JKLM is a parallelogram.



Find each measure.

z = 6

LK = 71

$\angle L$ = 117

x = 126

MJ = 71

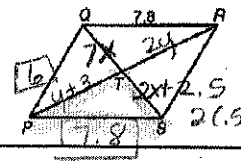
$\angle K$ = 63

$\frac{1}{2}x + x - 9 = 180$

$1.5x = 189$

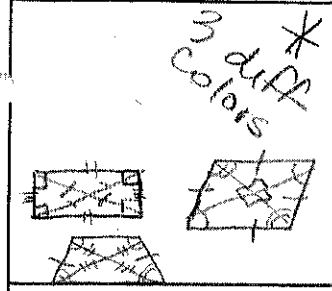
$x = 126$

14. In $\square PQRS$, $QT = 7x$, $TS = 2x + 2.5$, $RT = 2y$, and $TP = y + 3$. Find the perimeter of ΔPTS.

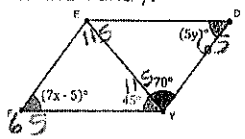


$6 + 3.5 + 7.8 =$ 17.3

$2(.5) + 2.5 =$ 3.5



15. Find x and y.



$5y = 65$
$y = 13$
$7x - 5 = 65$
$7x = 70$
$x = 10$

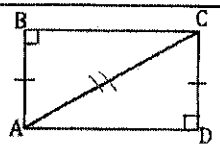
16. What are the special properties of a rectangle? Rhombus? Isosceles trapezoid?

Proofs

State what is given first, and mark your picture!

Step 1 – Write down the givens
Step 2 – Make any marks that you know are congruent (reflexive property, vertical angles, alternate interior angles)
Step 3 – The last Statement will always be showing the Triangles are $\cong$ (SSS, SAS, ASA, AAS, HL)
or CPCTC

17. Given: $\overline{AB} \cong \overline{DC}$
Prove: $\triangle ABC \cong \triangle CDA$

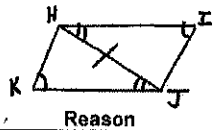


Statements	Reasons
1. $\overline{AB} \cong \overline{DC}$	1. given
2. $\overline{AC} \cong \overline{AC}$	2. reflexive
3. $\angle ABC \cong \angle CDA$	3. all rt $\angle$s $\cong$
4. $\triangle ABC \cong \triangle CDA$	4. HL

18. Given: $\overline{RT} \cong \overline{TV}$, $\overline{ST} \cong \overline{TU}$
Prove: $\angle TSR \cong \angle TUV$

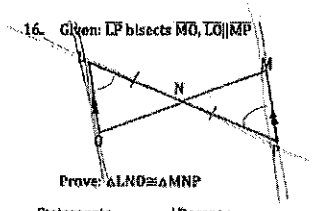
Statements	Reasons
1. $\overline{RT} \cong \overline{TV}$	1. given
2. $\overline{ST} \cong \overline{TU}$	2. Given
3. $\angle RTS \cong \angle VTU$	3. Vertical $\angle$s $\cong$
4. $\triangle RTS \cong \triangle VTU$	4. SAS
5. $\angle TSR \cong \angle TUV$	5. CPCTC

19. Complete the following proof:



Statement	Reason
1. $\angle I \cong \angle K$	1. given
2. $\angle IHJ \cong \angle KJH$	2. given
3. $\overline{HJ} \cong \overline{HJ}$	3. reflexive
4. $\triangle HJK \cong \triangle JHI$	4. AAS

20.



16. Given: LP bisects $\overline{MO}$, $\overline{LO} \parallel \overline{MP}$
Prove: $\triangle LNO \cong \triangle MNP$

Statements	Reasons
1. $\overline{LP}$ bisects $\overline{MO}$	1. Given
2. $\overline{LO} \parallel \overline{MP}$	2. Given
3. $\overline{LN} \cong \overline{PN}$	3. def of bisect
4. $\angle L \cong \angle P$	4. Alternate Interior
5. $\angle LNO \cong \angle PNM$	5. Vertical Angles
6. $\triangle LNO \cong \triangle MNP$	6. ASA

* hypothesis of the conditional statement is given
* conclusion is what you are proving

21.

1. Use the diagram at the right to prove the following theorem: "If the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram."

Given:

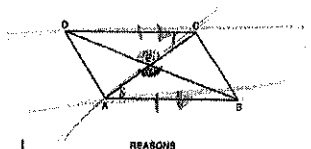
Prove:

Statements	Reasons
1. $\overline{AC}$ bisects $\overline{BD}$ and $\overline{BD}$ bisects $\overline{AC}$	1. Given
2. M is the midpoint of $\overline{AC}$; M is the midpoint of $\overline{BD}$	2. Def. of segment bisector
3. $\overline{AM} \cong \overline{CM}$, $\overline{BM} \cong \overline{DM}$	3. Def. of midpoint
4. $\angle AMB \cong \angle CMD$; $\angle AMD \cong \angle CMB$	4. Vert $\angle$s $\cong$
5. $\triangle AMB \cong \triangle CMD$; $\triangle AMD \cong \triangle CMB$	5. SAS $\cong$
6. $\overline{AB} \cong \overline{CD}$; $\overline{AD} \cong \overline{CB}$	6. CPCTC
7. ABCD is a parallelogram	7. If both pairs of opp. sides of a quad. are $\cong$, then the quad. is a parallelogram

22.

Given: ▱ ABCD

Prove: △AEB ≅ △CED



STATEMENT	REASONS
1. Parallelogram ABCD	1. Given
2. $\overline{AB} \cong$	2. Def. ▱ → opp sides ≅
3. $\overline{AB} \parallel$	3. Def. ▱ → opp sides ∥
4. ∠CAB ≅ ∠AED	4. Alt. ∠s ≅
5. ∠AEB ≅ ∠CED	5. Vert. ∠s ≅
6. △AEB ≅ △CED	A.A.S

Key

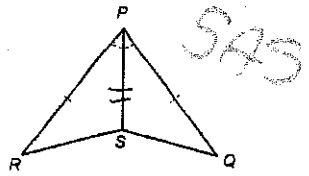
GSE Geometry | Unit 2 - Congruence and Proofs | Review Guide

Name _____ Date _____

UNIT 2 TEST REVIEW

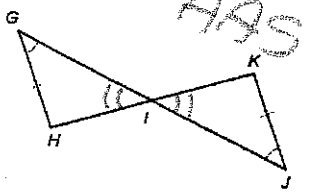
Congruent Triangles: Determine whether each pair of triangles are congruent (SSS, SAS, ASA, AAS, or HL). If not, write not congruent. If they are congruent, write a congruence statement.

1. Δ_____ ≅ Δ_____, by _____



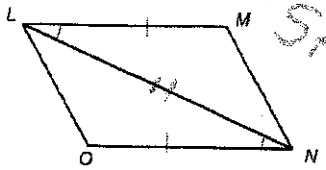
SAS

2. Δ_____ ≅ Δ_____, by _____



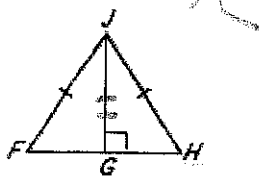
AAS

3. Δ_____ ≅ Δ_____, by _____



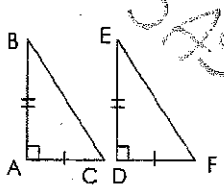
SAS

4. Δ_____ ≅ Δ_____, by _____



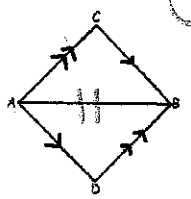
HL

5. Δ_____ ≅ Δ_____, by _____



SAS

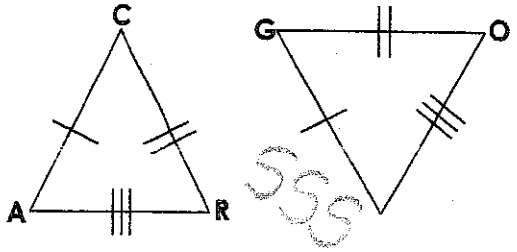
6. Δ_____ ≅ Δ_____, by _____



SSS

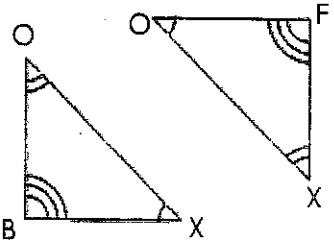
Congruent Triangles: Write the congruence statement for each pair of triangles.

7. $\Delta RAC \cong \Delta$_____



SSS

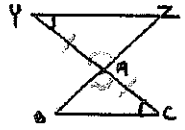
8. $\Delta FOX \cong \Delta$_____



none

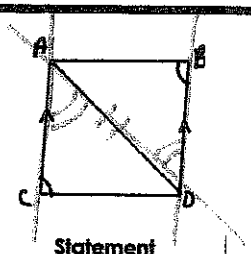
Proofs: Complete the following proofs.

9.



Statement	Reason
1. ∠Y ≅ ∠C	1. given
2. A is mdpt of $\overline{YC}$	2. Given
3. $\overline{AY} \cong \overline{AC}$	3. def of midpt
4. ∠ZAY ≅ ∠BAC	4. vertical ∠s ≅
5. ΔYZA ≅ ΔCBA	5. ASA

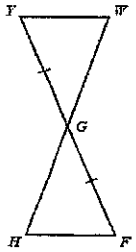
10.

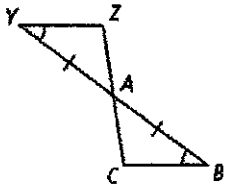


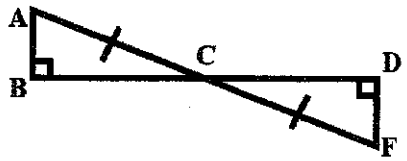
Statement	Reason
1. ∠C ≅ ∠B	1. Given
2. $\overline{AC} \parallel \overline{BD}$	2. Given
3. ∠CAD ≅ ∠BDA	3. alt int ∠s ≅
4. $\overline{AD} \cong \overline{AD}$	4. reflexive
5. ΔACD ≅ ΔDBA	5. AAS

Missing Information: State what additional information (Sides or Angles) is required to know that the triangles are congruent for the reason given. **Hint: Mark the drawing!**

11. ASA; $\angle Y \cong \angle F$ 12. AAS; $\angle Z \cong \angle C$ 13. HL; $\overline{AB} \cong \overline{FD}$



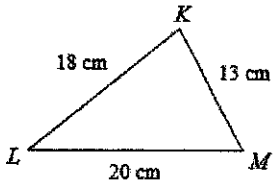




Triangle Theorems: Use your knowledge of triangle theorems to complete the following.

14. List the angles from smallest to biggest.

$\angle L, \angle M, \angle K$



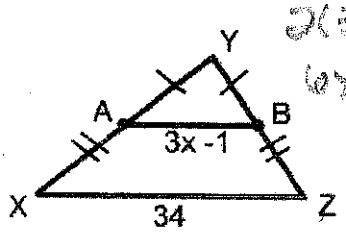
15. Show how you know that the following lengths can make a triangle: 9, 14, 22.

$9+14=23$

$23 > 22$

Free Response: Solve. Show all work.

16. Find the value of x.



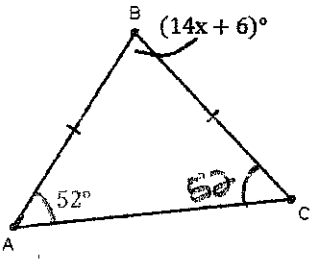
$2(3x-1) = 34$

$6x - 2 = 34$

$6x = 36$

$x = 6$

17. Solve for x.

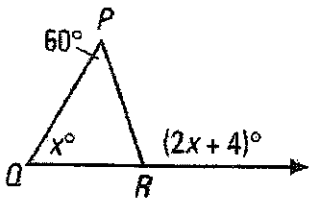


$76 = 14x + 6$

$70 = 14x$

$5 = x$

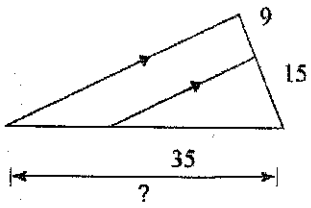
18. Solve for x.



$60 + x = 2x + 4$

$56 = x$

19. Find the missing segment.



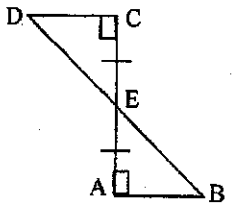
$\frac{15}{35} = \frac{24}{x}$

$15x = 840$

$x = 56$

II. For each pair of triangles, tell: (a) Are they congruent (b) Write the triangle congruency statement. (c) Give the conjecture that makes them congruent.

1.

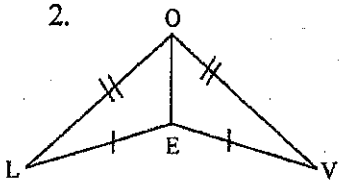


a. yes

b. $\Delta DCE \cong \Delta BAE$

c. ASA

2.

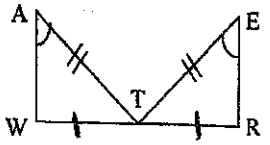


a. yes

b. $\Delta LOE \cong \Delta VOE$

c. SSS

3. Given: T is the midpoint of $\overline{WR}$

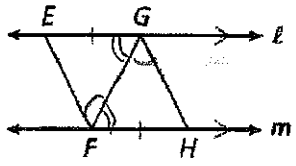


a. ND

b. Δ____ $\cong \Delta$____

c.

4.

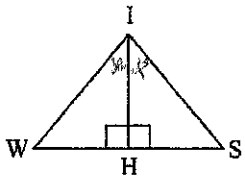


a. yes

b. $\Delta EGF \cong \Delta HFG$

c. AAS

5. Given: $\overrightarrow{IH}$ Bisects $\angle WIS$

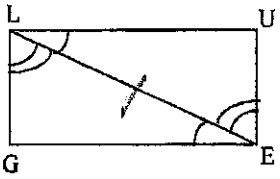


a. yes

b. $\Delta WIH \cong \Delta SIH$

c. ASA

6.

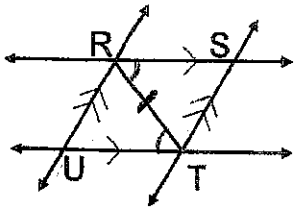


a. yes

b. $\Delta GLE \cong \Delta ULE$

c. ASA

7.

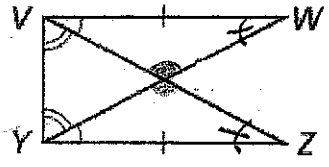


a.

b. Δ____ $\cong \Delta$____

c.

8. VA $\cong$
$\angle W \cong \angle Y$ CPCTC

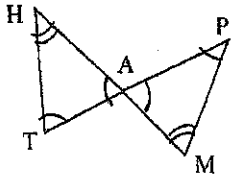


a. yes

b. $\Delta WYV \cong \Delta ZVY$

c. AAS

9.



a. ND

b. Δ____ $\cong \Delta$____

c.