Unit 3 Study Guide Name Key S ____

1) Name one pair of angles for each description.

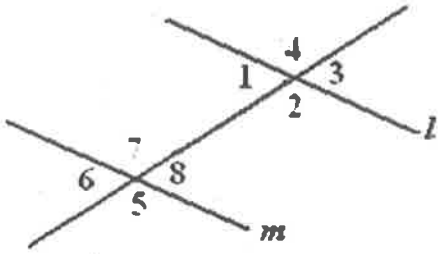
≅ Corresponding ∠4, ∠7 ; ∠2, ∠5

≅ Alternate Interior ∠1, ∠8 ; ∠2, ∠7

≅ Alternate Exterior ∠4, ∠5 ; ∠3, ∠6

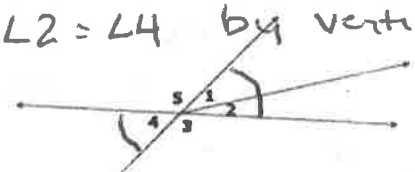
≅ Vertical ∠4, ∠2 ; ∠6, ∠8

=180° Same side interior ∠1, ∠7 ; ∠2, ∠8



2) If $m\angle 1 = x + 7, m\angle 2 = 2(x + 2)$, and $m\angle 4 = 2(x + 13)$ in the diagram below, find $m\angle 4$.

∠1 + ∠2 = ∠4 by vertical ∠'s.



$(x+7) + (x+2)2 = 2(x+13)$

$x + 7 + 2x + 4 = 2x + 26$

$3x + 11 = 2x + 26$

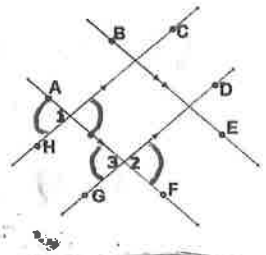
$x = 15$

so ↑

$m\angle 4 = 2(28)$

$m\angle 4 = 56°$

3) Find $m\angle 3$ if $m\angle 1 = 3x + 1$ and $m\angle 2 = 2(x + 7)$.



∠1 ≅ ∠3 by corresponding

∠2 ≅ ∠3 by vertical

so, ∠1 = ∠2

$3x + 1 = 2(x + 7)$

$3x + 1 = 2x + 14$

$x = 13$

$\angle 1 = 3(13) + 1$

$= 40°$

$\angle 2 = 2(13 + 7)$

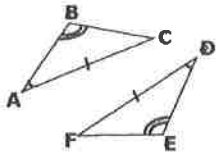
$= 40°$

$m\angle 3 = 40°$

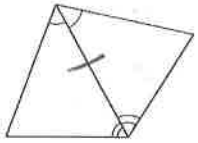
4) What are the five theorems / rules used to prove that two triangles are congruent?

SSS, SAS, ASA, AAS, HL (w/ Rt ∠)

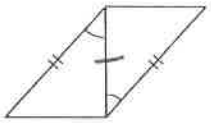
5) Consider the triangles shown. Which rule, if any, can used to prove triangle congruency?



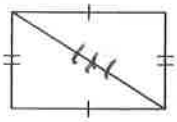
AAS



ASA



SAS

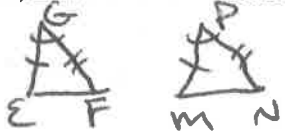


SSS

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

∠P → ∠S ; ∠Q → ∠T ; ∠R → ∠U ; $\overline{PQ} \to \overline{ST}$; $\overline{QR} \to \overline{TU}$; $\overline{RP} \to \overline{US}$

7) For ΔEFG and ΔMNP, it is known that $\overline{EG} \cong \overline{MP}$, ∠G ≅ ∠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.

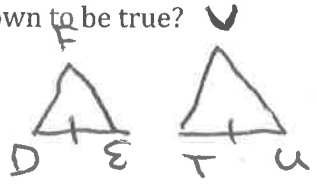
8) ΔDEF and ΔTUV are congruent triangles. Which statement is known to be true?

(a. $\overline{DE} \cong \overline{TU}$)

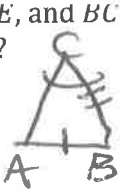
c. ~~$\overline{DE} \cong \overline{UV}$~~

~~b. $\overline{DF} \cong \overline{TU}$~~

d. ~~$\overline{DE} \cong \overline{TV}$~~



9) For ΔABC and ΔDEF, 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?



"SSA" aka The Donkey

a. SSS c. ASA

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

10) ΔUVW and ΔXYZ are congruent triangles. Which statement is known to be true?

a. $\angle U \cong \angle V$ c. $\angle V \cong \angle X$

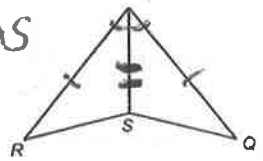
b. $\angle W \cong \angle X$ d. $\angle V \cong \angle Y$

"ORDER matters"

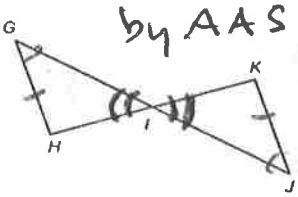
CHK Givens

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

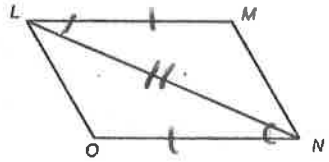
$\Delta RPS \cong \Delta QPS$ by SAS



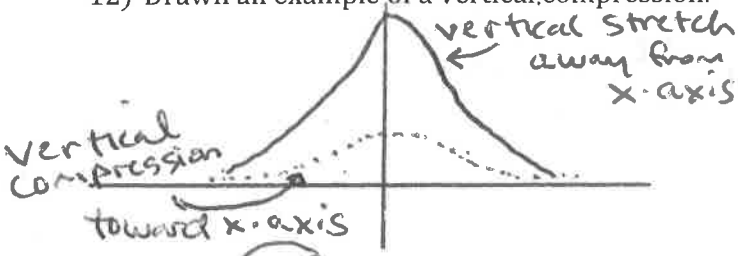
$\Delta HIG \cong \Delta KIJ$ by AAS



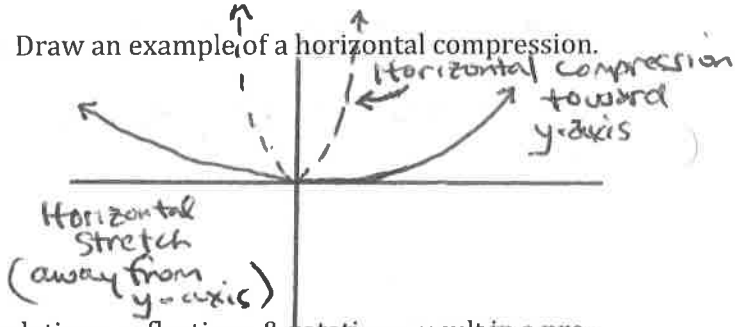
$\Delta MLN \cong \Delta ONL$ by SAS



12) Drawn an example of a vertical compression.



13) Draw an example of a horizontal compression.



14) **True or False:** Rigid motion transformations such as translations, reflections & rotations result in a pre-image that is not congruent to its post-image.

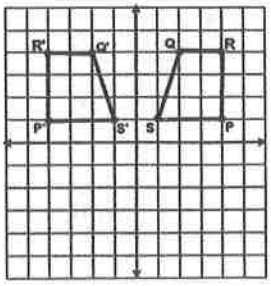
Dialations are not $\cong$ from pre-image to image.

15) **True or False:** Similar triangles are congruent.

These are dialations.

16) In the figure at right, the pre-image on the left has been reflected about the y-axis. Explain how you know that the post-image is congruent or not.

- Each corresponding side is = to each other.
- Area of each figure is = to each other.
- Figures are located the same distance from the Line of Reflection (LOR)



17) Find the distance between these two points.

Then find the partition segment with ratio of 1:3 for segment AB.

1:3 → $\frac{1}{4}$ $A(10,7)$ *and* $B(-6,-2)$

Δx: $x_2 - x_1 = -6 - 10 = -16\left(\frac{1}{4}\right) = -4$

Δy: $y_2 - y_1 = -2 - 7 = -9\left(\frac{1}{4}\right) = -\frac{9}{4} = -2\frac{1}{4}$

So, $(10,7) + (-4, -2\frac{1}{4}) = (6, 4\frac{3}{4})$

$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

$= \sqrt{(-6-10)^2 + (-2-7)^2}$

$= \sqrt{(-16)^2 + (-9)^2}$

$= \sqrt{256+81} \Rightarrow \sqrt{337} = 18.4$

18) Make sure you review reflections, rotations & translations.