**Activity 2.1.2 Properties of Congruence**

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1. In the diagram at the right distances and angle measures are given:

a. Name pairs of congruent segments:

$\overbar{OI }≅$ \_\_\_\_\_\_\_ $\overbar{OH}$ $≅$ \_\_\_\_\_\_\_

b. Name pairs of congruent angles:

$∠$ *FOE* $≅$\_\_\_\_\_\_ $∠$*HOI* $≅$\_\_\_\_\_

c. Find equal measures:

*OE* = \_\_\_\_\_\_\_\_\_

m $∠$ *GOH* = m $∠$ \_\_\_\_\_\_



1. Fill in the blanks:

 a. If *KL* = *MN*

then \_\_\_\_\_\_\_ $≅$\_\_\_\_\_\_\_\_

b. If $\overbar{PQ}$ $≅ \overbar{RS}$

then \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_



c. If m $∠$ *XYZ* = m $∠ $*TUV*

then \_\_\_\_\_\_\_\_ $≅$\_\_\_\_\_\_\_\_\_

d. If $∠$*DFG* $≅$ $∠$*WCJ*

then \_\_\_\_\_\_\_ = \_\_\_\_\_

1. **The Reflexive Property**: Any number is equal to itself, that is *a* = *a*.



1. Does the reflexive property apply to congruent segments?
Is it true that $\overbar{AB}$ $≅$ $\overbar{AB}$? Explain.



1. Does the reflexive property apply to congruent angles?
Is it true that $∠$*KLM* $≅$ $∠$*KLM*? Explain.
2. The **Symmetric Property**: We can switch the expressions on the left and right sides of an equation, that is if we know that *a* = *b,* then we can conclude that *b* = *a*.



1. Does the symmetric property apply to congruent segments? Is it true that if $\overbar{AB}$ $≅$ $\overbar{CD},$
then $\overbar{CD}$ $≅$ $\overbar{AB}$? Explain.



1. Does the symmetric property apply to congruent
angles? Is it true that if $∠$*KLM* $≅$ $∠$*NOP,*
then $∠$*NOP* $≅$ $∠$*KLM*? Explain.
2. The **Transitive Property:** Two things equal to the same thing are equal to each other, that is if we know that *a* = *b* and that *b* = *c,* then we can conclude that *a* = *c*.
3. Does the transitive property apply to congruent segments? Is it true that if $\overbar{AB}$ $≅$ $\overbar{CD},$
and $\overbar{CD}$ $≅$ $\overbar{EF}$, then $\overbar{AB}$ $≅$ $\overbar{CD}$? Explain.
4. Does the transitive property apply to congruent angles? Is it true that if $∠KLM≅∠NOP,$
and $∠$*NOP* $≅$ $∠$*QRS*, then $∠KLM≅∠QRS$? Explain.

