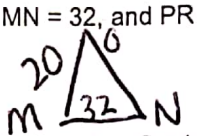
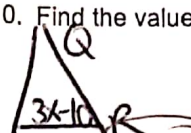
Honors Math 2 Unit 2 Problem Set
**Congruent Triangles**

Name KEY

1. If ΔIGH ≅ ΔKLJ, then ∠H ≅ ∠J.

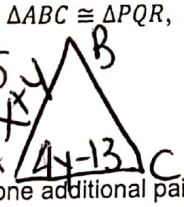
2. Given ΔMON ≅ ΔPQR with MO = 20, MN = 32, and PR = 3x – 10. Find the value of x.

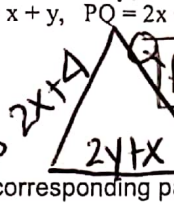



$3x-10=32$, $+10\ +10$, $x=14$

3. Given $\Delta ABC \cong \Delta PQR$, AB = x + y, PQ = 2x + 4, AC = 4y – 13, PR = 2y + x. Find PQ.




$PQ = 14$

$x+y=2x+4$, $-x\ \ -x$, $y=x+4$

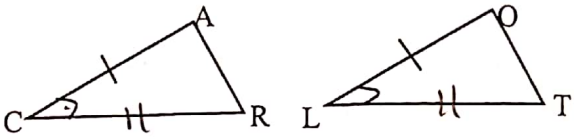
$4y-13=2y+x$, $-2y\ \ -2y$, $2y-13=x$, $+13\ +13$, $2y=x+13$, $\frac{2y}{2}=\frac{x+13}{2}$

$3x=42$, $\frac{3x}{3}=\frac{42}{3}$

$y=\frac{1}{2}x+6.5$

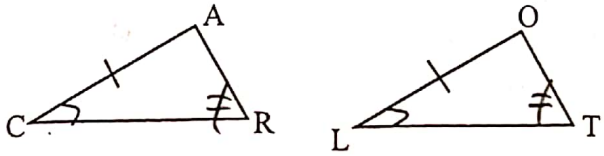
$x+4=\frac{1}{2}x+6.5$, $-x\ \ -x$, $4=-\frac{1}{2}x+6.5$, $-6.5\ \ -6.5$, $-2.5=-\frac{1}{2}x$, $\frac{-2}{1}\cdot\frac{-2}{1}$, $5=x$

4. Name one additional pair of corresponding parts that need to be congruent in order to prove that ΔCAR ≅ ΔLOT by SAS.




$\overline{CR} \cong \overline{LT}$

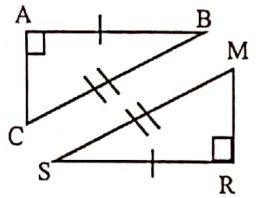
5. Name one additional pair of corresponding parts that need to be congruent in order to prove that ΔCAR ≅ ΔLOT by AAS.




$\angle R \cong \angle T$

For 6-14, a) Tell whether the triangles are congruent by SSS, SAS, ASA, AAS, HL, or none. Remember to FIRST mark vertical angles congruent, alternate interior angles congruent (look for Z's), and segments congruent by reflexive property.
b) If the triangles are congruent, name the triangle that is congruent to ΔABC.

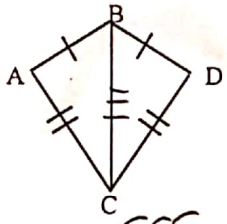
6.




a) HL

b) ΔABC ≅ Δ RSM

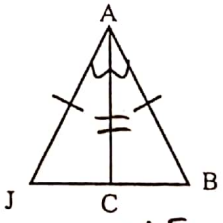
7.




a) SSS

b) ΔABC ≅ Δ DBC

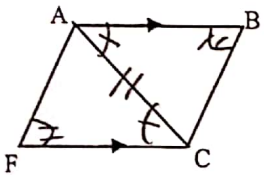
8.




a) SAS

b) ΔABC ≅ Δ AJC

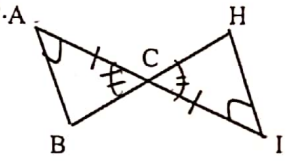
9.




a) AAS

b) ΔABC ≅ Δ CFA

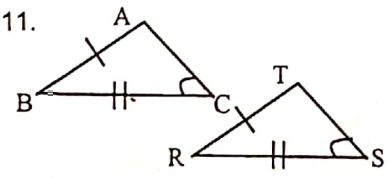
10.




a) ASA

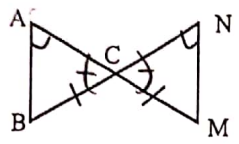
b) ΔABC ≅ Δ IHC

11.



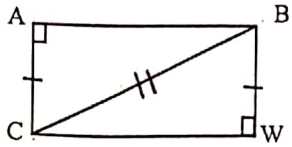

a) None

b) ΔABC ≅ Δ_____

12. 

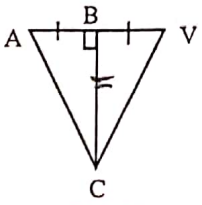

a) AAS

b) $\Delta ABC \cong \Delta$ NMC

13. 


a) HL

b) $\Delta ABC \cong \Delta$ WCB

14. 

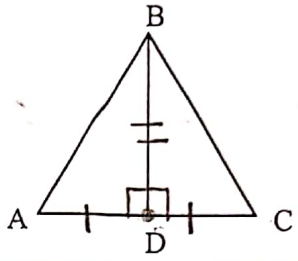

a) SAS

b) $\Delta ABC \cong \Delta$ VBC

For the proof, fill in the missing statements and reasons.

15. Given: $\overline{BD}$ bisects $\overline{AC}$ at D, $\angle BDA$ and $\angle BDC$ are right angles.

Prove: $\overline{AB} \cong \overline{CB}$

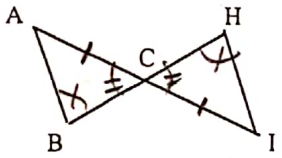



| Statements | Reasons |
|---|---|
| 1. $\overline{BD}$ bisects $\overline{AC}$ at D, $\angle BDA$ and $\angle BDC$ are right angles | 1. Given |
| 2. D is the midpoint of $\overline{AC}$ | 2. Definition of a bisector. |
| 3. $\overline{AD} \cong \overline{DC}$ | 4. Definition of a bisector. |
| 4. $\angle ADB \cong \angle CDB$ | 4. All right angles are congruent |
| 5. $\overline{BD} \cong \overline{BD}$ | 5. Reflexive property. |
| 6. $\Delta ABD \cong \Delta CBD$ | 6. SAS $\cong$ SAS |
| 7. $\overline{AB} \cong \overline{CB}$ | 7. CPCTC |

16. Write a flow or 2-column proof.

Given: $\angle B \cong \angle H$, and $\overline{AC} \cong \overline{CI}$

Prove: $\angle A \cong \angle I$




| Statement | Reason |
|---|---|
| (1) $\angle B \cong \angle H$, $\overline{AC} \cong \overline{CI}$ | (1) Given |
| (2) $\angle ACB \cong \angle ICH$ | (2) vertical Angles Theorem |
| (3) $\Delta ACB \cong \Delta ICH$ | (3) AAS $\cong$ AAS |
| (4) $\angle A \cong \angle I$ | (4) CPCTC |