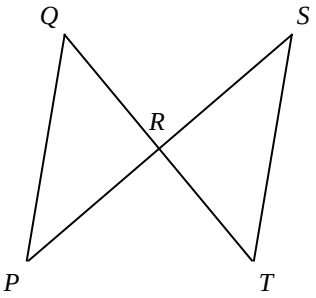
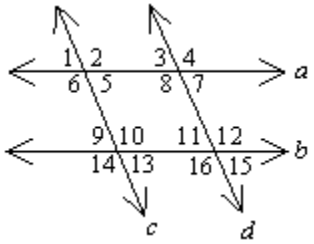
## Math 3 Unit 3 Review, Geometry

**Multiple Choice**
*Identify the choice that best completes the statement or answers the question.*

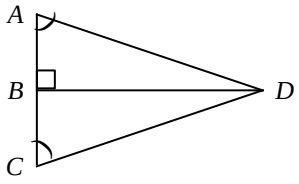
1. Complete the proof.
   **Given:** $\angle Q \cong \angle T$ and $\overline{QR} \cong \overline{TR}$
   **Prove:** $\overline{PR} \cong \overline{SR}$




2. Name all angles that are corresponding angles?

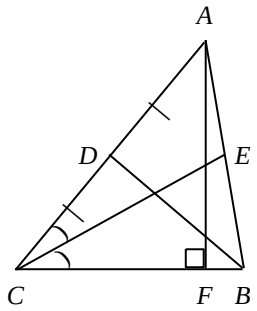



3. Name the postulate that allows $\Delta ABD \cong \Delta CBD$.




**Short Answer**

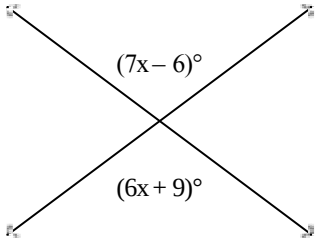
4. Name a median for $\Delta ABC$.




5. In $\Delta ABC$, centroid $D$ is on median $\overline{AM}$. $AD = x + 5$ and $DM = 2x - 5$. Find $AM$.

6. Find the coordinates of the centroid about $\Delta EFG$ with $E(4, 5)$, $F(4, -2)$, and $G(8, -2)$.

7.Find the value of *x*.

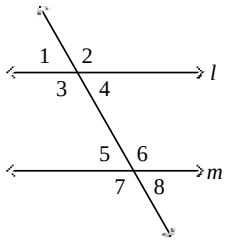



Drawing not to scale

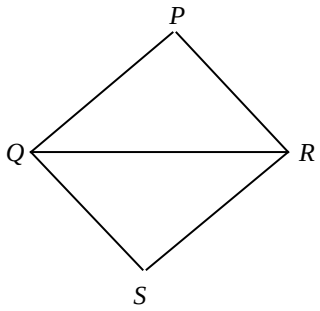
8. $\angle 1$ and $\angle 2$ are supplementary angles. $m\angle 1 = x - 22$, and $m\angle 2 = x + 64$. Find the measure of each angle.

9. For a triangle, list the respective names of the points of concurrency of
   - perpendicular bisectors of the sides
   - bisectors of the angles
   - medians
   - lines containing the altitudes.

10.*Find the value of *x* if $m \parallel l$, $m\angle 1 = 6x + 35$ and $m\angle 5 = 8x + 43$. The diagram is not to scale.




11. Justify the last two steps of the proof.
Given: $\overline{PQ} \cong \overline{SR}$ and $\overline{PR} \cong \overline{SQ}$
Prove: $\Delta PQR \cong \Delta SRQ$



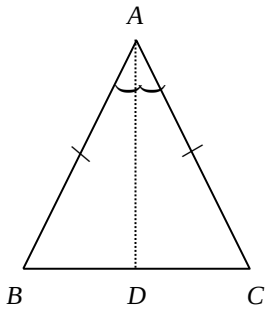

Proof:

| | |
|---|---|
| 1. $\overline{PQ} \cong \overline{SR}$ | 1. Given |
| 2. $\overline{PR} \cong \overline{SQ}$ | 2. Given |
| 3. $\overline{QR} \cong \overline{RQ}$ | 3. ? |
| 4. $\Delta PQR \cong \Delta SRQ$ | 4. ? |

12. Supply the reasons missing from the proof shown below.

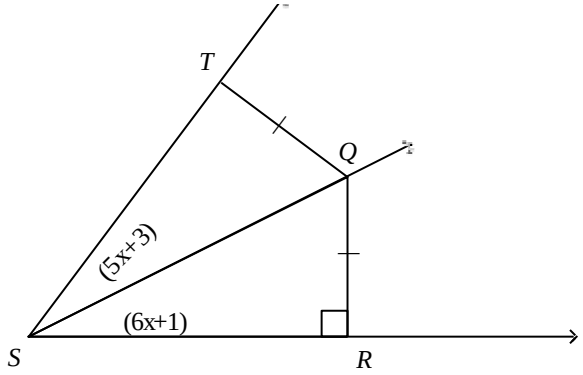
**Given:** $\overline{AB} \cong \overline{AC}$, $\angle BAD \cong \angle CAD$

**Prove:** $\overline{AD}$ bisects $\overline{BC}$

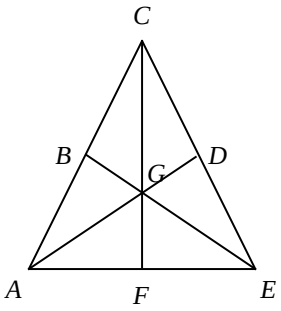



| Statements | Reasons |
|---|---|
| 1. $\overline{AB} \cong \overline{AC}$ | 1. Given |
| 2. $\angle BAD \cong \angle CAD$ | 2. Given |
| 3. $\overline{AD} \cong \overline{AD}$ | 3. Reflexive Property |
| 4. $\Delta BAD \cong \Delta CAD$ | 4. ___?___ |
| 5. $\overline{BD} \cong \overline{CD}$ | 5. ___?___ |
| 6. $\overline{AD}$ bisects $\overline{BC}$ | 6. Def. of segment bisector |

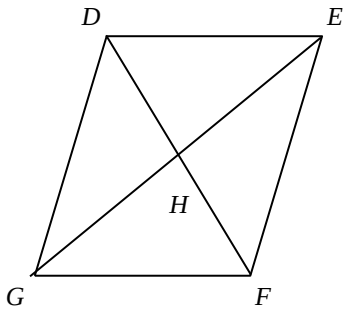
13. *$Q$ is equidistant from the sides of $\angle TSR$. Find $m\angle TSQ$. The diagram is not to scale.



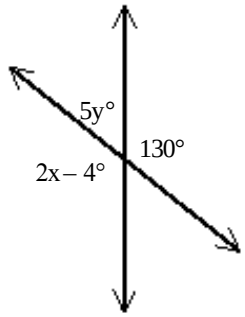

14. In $\Delta ACE$, $G$ is the centroid and $BE = 12$. Find $BG$ and $GE$.




15. In parallelogram $DEFG$, $DH = x + 3$, $HF = 2y$, $GH = 4x - 5$, and $HE = 5y + 1$. Find the values of $x$ and $y$. The diagram is not to scale.



16. Find the values of *x* and *y*.

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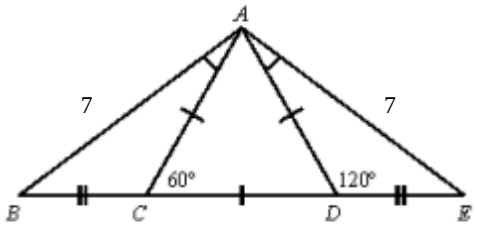
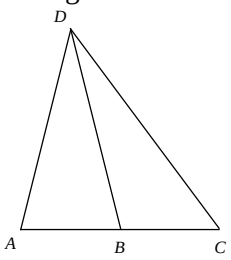
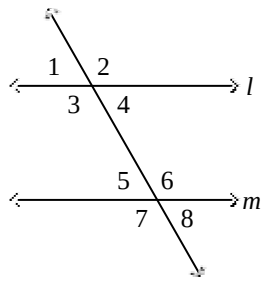
17. State whether $\Delta ABC$ and $\Delta AED$ are congruent. Justify your answer.



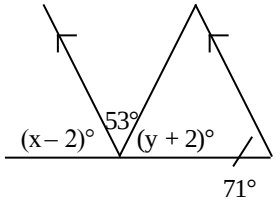

18. Find the length of $\overline{AB}$, given that $\overline{DB}$ is a median of the triangle and *AC* = 36.



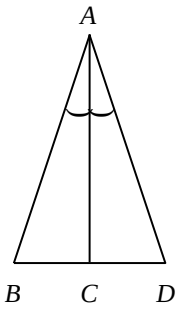

19. Find the value of the variable if $m \parallel l$, $m\angle 1 = 9x + 25$ and $m\angle 5 = 5x + 33$. The diagram is not to scale.



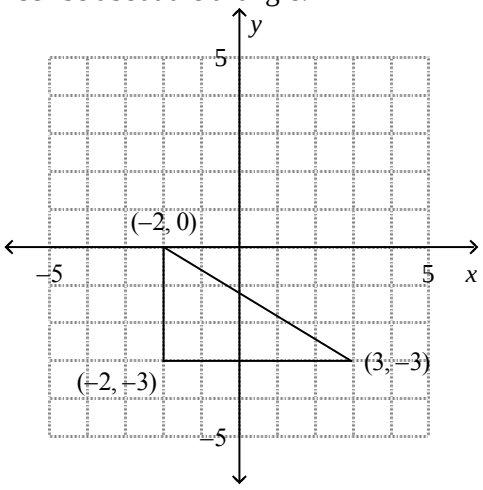

20. Find the values of *x* and *y*. The diagram is not to scale.




21. What other information do you need in order to prove the triangles congruent using the SAS Congruence Postulate?



22. Find the center of the circle that you can circumscribe about the triangle.



## Math 3 Unit 3 Test, Geometry
## Answer Section

### MULTIPLE CHOICE

1. B
2. B
3. C

### SHORT ANSWER

4. $\overline{BD}$
5. 15
6. (6, 0)
7. –15
8. $\angle 1 = 47, \angle 2 = 133$
9. circumcenter
   incenter
   centroid
   orthocenter
10. –4
11. Reflexive Property of $\cong$; SSS
12. SAS; CPCTC
13. 13
14. $BG = 4,\ GE = 8$
15. $x = 9, y = 6$
16. $x = 67, y = 10$
17. yes, by either SSS or SAS
18. 18
19. 2
20. $x = 73, y = 54$
21. $\overline{AB} \cong \overline{AD}$
22. $(\frac{1}{2}, -\frac{3}{2})$