Review Packet for Unit 5 Answer Key

1a. x=1 1b. WS=3	2. x=9	3. Z is the circumcenter ZY = 9	4. Point X is the incenter; $m\measuredangle PQX = 52°$	5. BG=16
6. a. x=25 b. x=3	7. QL=3	8. $\overline{CB}, \overline{AC}, \overline{AB}$	9. $\measuredangle G, \measuredangle F, \measuredangle H$	10. 3 < x < 13
11. No: 7+20 $\not>$ 27 is a counterexample. Since the sum of two sides is not always greater than the third side alone, then 7,20, and 27 cannot be the sides of a triangle.		12. Point-Slope : $y-4=-\frac{1}{2}(x-4)$ Slope-Intercept: $y=-\frac{1}{2}x+6$	13. Circumcenter (-1,4) Orthocenter (3,1)	

14. Since $\measuredangle 4$ is the exterior $\measuredangle$, then $m\measuredangle 4 = m\measuredangle 1 + m\measuredangle 2$ by the exterior angle theorem. Thus $m\measuredangle 4 > m\measuredangle 1$ and $*m\measuredangle 4 > m\measuredangle 2*$ because an exterior angle measure is greater than the measure of either its remote interior angles.

15. Since $\measuredangle 1$ is the exterior $\measuredangle$, then $m\measuredangle 1 = m\measuredangle 3 + m\measuredangle 4$ by the exterior angle theorem. Thus $m\measuredangle 1 > m\measuredangle 3$ and $*m\measuredangle 1 > m\measuredangle 4*$ by the triangle exterior angle inequality theorem. Since $\parallel$ lines $\rightarrow$ alternate interior $\measuredangle$'s $\cong$, $\measuredangle 2 \cong \measuredangle 4 \rightarrow m\measuredangle 2 = m\measuredangle 4$. By substitution, $m\measuredangle 1 > m\measuredangle 2$.

16.

STATEMENTS	REASONS
1. $\overline{TH} \cong \overline{MH}$	1. Given
2. $\overline{AH} \cong \overline{AH}$	2. Reflexive
3. $\overline{AH}$ is the median of ΔMAT; $\overline{MAT}$	3. Given
4. A is the midpoint of $\overline{MT}$	4. Definition of a median; OR Median → Midpoint
5. $\overline{TA} \cong \overline{MA}$	5. Defn of a midpoint; OR Midpoint → 2 congruent segments
6. $\Delta THA \cong \Delta MHA$	6. SSS ≅ SSS (1, 2, 5)
7. $\measuredangle 1 \cong \measuredangle 2$	7. CPCTC

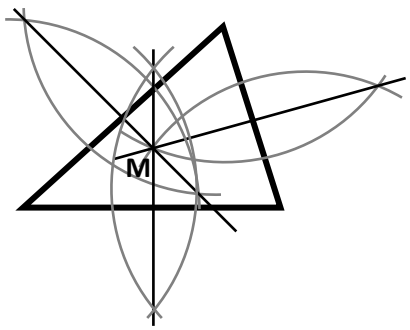
Alternative: SAS criteria using the given side as a side and as → isosceles triangle → base angle $\measuredangle T \cong \measuredangle M$ s and the steps 3-5 above to work the median. Note that you would not use the reflexive side in this case.

17.

STATEMENTS	REASONS
1. $\overline{AB}$ is an altitude of ΔCAT; $\overline{CBT}$	1. Given
2. $\overline{AB} \perp \overline{CT}$	2. Defn of an altitude; OR An altitude is perpendicular to the base
3. $\measuredangle CBA$ & $\measuredangle TBA$ are right $\measuredangle$'s	3. $\perp$ lines $\rightarrow$ right $\measuredangle$'s
4. ΔCBA & ΔTBA are right triangles	4. Definition of a right triangle; OR right angle → right triangle
5. $\overline{CA} \cong \overline{TA}$	5. Given
6. $\overline{AB} \cong \overline{AB}$	6. Reflexive
7. $\Delta CBA \cong \Delta TBA$	7. $R_{\Delta}HL \cong R_{\Delta}HL$ (4, 5, 6)
8. $\overline{CB} \cong \overline{TB}$	8. CPCTC

Alternative: AAS criteria using the given side as a side and as → isosceles triangle → base angles $\measuredangle C \cong \measuredangle T$ and the steps 1-3 to get right angles but then say that $\measuredangle CBA \cong \measuredangle TBA$ since all right angles are congruent rather than going to right triangles. You could also use the reflexive side for AAS.

18. Circumcenter (perpendicular bisectors)



Incenter (angle bisectors)