Su 12 Math 32 Test 2 Version A Name:_____

A. Computation: 65 points. No need to show work. Box your final answer.

1. (5) Consider Quadrilateral ABCD, $\overline{AB} \cong \overline{CD}$ and $\overline{AB} \parallel \overline{CD}$.
   Given: $AB = 5x + 2$, $BC = 3x - 2$,
   and $CD = 3x + 7$.
   Find BC

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2. (9:4,5) Given: Rhombus ABCD, $AB = 10, AC = 12$.
   Find:
   a. BD
   b. Area of Quadrilateral ABCD

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3. (8:4,4) Consider $\Delta ABC, AB = AC = x$.
   a. If $m\angle A = 60°$, find the area of ΔABC in terms of *x*.
   b. If $m\angle A = 45°$, find the area of ΔABC in terms of *x*.

4. (7:4,3) Consider ΔABC. Let AC = 8, $m\angle A = 30°, m\angle B = 45°$. Find:
   a. BC
   b. Area of ΔABC

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5. (8:4,4) Consider right ΔABC, right angle at B, with altitude $\overline{BD}$ to $\overline{AC}$. Let AD = 12 and BD =5.
   a. Find AB.
   b. Find DC.

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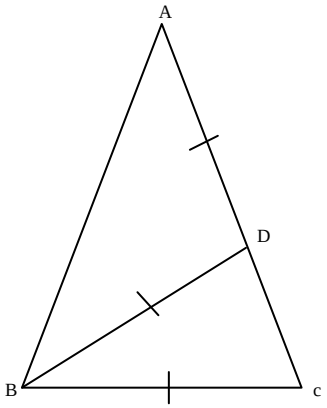
6. (12:6,6) Consider Quadrilateral ABCD, $\overline{AB} \parallel \overline{CD}$ and $\overline{BC} \parallel \overline{AD}$.
   Given: $AB = 5, BC = 8, m\angle A = 60°$. Find:
   a. AC
   b. BD

7. (8) Let ΔABC be an isosceles triangle with vertex A. Let D be on $\overline{AC}$ such that $\overline{BC} \cong \overline{BD} \cong \overline{AD}$. If AC = 8, find DC.



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8. (8) Let $\overline{AB}$ intersects $\overline{CD}$ at E such that ∠BCE ≅ ∠DAE. If AB = 15, CD = 20 and AD = 3 BC, find AE.

B. Proving: 40 points. Always use T-table.

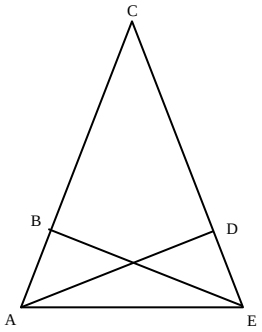
1. (8) The following is to prove a theorem that says: If the opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram.
   Given: Quadrilateral ABCD with $\overline{AB} \cong \overline{CD}$ and $\overline{AD} \cong \overline{BC}$.
   Prove: ABCD is a parallelogram.

STATEMENTS	REASONS

2. (10) The following is to prove a theorem that says: The vertex angle bisector of an isosceles triangle is also the perpendicular bisector of the base.
   Given: Isosceles ΔABC with vertex C. If D is on $\overline{AB}$ and $\overline{CD}$ is the vertex angle bisector.
   Prove: $\overline{CD}$ is also a perpendicular bisector of $\overline{AB}$.

STATEMENTS	REASONS

3. (10:6,4) Given: $\overline{BE}$ is the altitude to $\overline{AC}$, $\overline{AD}$ is the altitude to $\overline{CE}$, $\overline{BC} \cong \overline{DC}$
Prove:
   a. $\overline{BE} \cong \overline{AD}$, then continue to part (b)
   b. $\angle AEB \cong \angle EAD$



STATEMENTS	REASONS

4. (12) Given: $\overline{AP} \cong \overline{BP}, \overline{AQ} \cong \overline{BQ}$.

Prove: $\overline{PQ} \perp \overline{AB}$.

Hint: First prove $\Delta PAQ \cong \Delta PBQ$, and then prove $\Delta PRA \cong \Delta PRB$

STATEMENTS	REASONS