

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,  $AB = 16$ ,  $AC = 12$ .

Find:

a. BD

b. Area of Quadrilateral ABCD

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3. (8:4,4) Consider  $\triangle ABC$ ,  $AB = AC = x$ .

a. If  $m\angle A = 45^\circ$ , find the area of  $\triangle ABC$   
in terms of  $x$ .

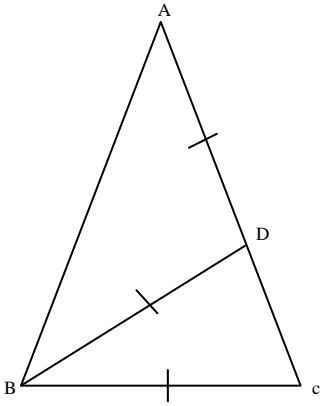
b. If  $m\angle A = 60^\circ$ , find the area of  $\triangle ABC$   
in terms of  $x$ .

4. (7:4,3) Consider  $\triangle ABC$ . Let  $AC = 8$ ,  $m\angle A = 45^\circ$ ,  $m\angle B = 30^\circ$ . Find:
- BC
  - Area of  $\triangle ABC$

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5. (8:4,4) Consider right  $\triangle ABC$ , right angle at B, with altitude  $\overline{BD}$  to  $\overline{AC}$ . Let  $AD = 5$  and  $BD = 12$ .
- Find AB.
  - 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:  $AB = 8$ ,  $BC = 6$ ,  $m\angle A = 60^\circ$ . Find:
- AC
  - BD

7. (8) Let  $\triangle ABC$  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  $\overline{AB}$  intersect  $\overline{CD}$  at E such that  $\angle BCE \cong \angle DAE$ . If  $AB = 15$ ,  $CD = 20$  and  $AD = 4 BC$ , find AE.





