G.CO.D.12: Constructions 5

1 In the diagram below, $\triangle ABC$ is equilateral. Using a compass and straightedge, construct a new equilateral triangle congruent to $\triangle ABC$ in the space below. [Leave all construction marks.]

2 Triangle $XYZ$ is shown below. Using a compass and straightedge, on the line below, construct and label $\triangle ABC$, such that $\triangle ABC \cong \triangle XYZ$. [Leave all construction marks.] Based on your construction, state the theorem that justifies why $\triangle ABC$ is congruent to $\triangle XYZ$. 

Using a compass and straightedge, construct a new equilateral triangle congruent to $\triangle ABC$ in the space below. [Leave all construction marks.]
3 Construct a triangle with sides of lengths $a$, $b$, and $c$, as shown below. Be sure the longest side of your triangle lies on $PQ$ and that point $P$ is one of the triangle’s vertices. *[Show all arcs necessary for a valid construction.]*

4 Using a compass and straightedge, construct and label $\triangle A'B'C'$, the image of $\triangle ABC$ after a dilation with a scale factor of 2 and centered at $B$. [Leave all construction marks.] Describe the relationship between the lengths of $AC$ and $A'C'$.

5 Triangle $ABC$ is shown below. Using a compass and straightedge, construct the dilation of $\triangle ABC$ centered at $B$ with a scale factor of 2. [Leave all construction marks.]

Is the image of $\triangle ABC$ similar to the original triangle? Explain why.
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Answer Section

1 ANS:

REF: 081532ge

2 ANS:

REF: 011634geo

3 ANS:

REF: 010225a
4 ANS: The length of $A'C'$ is twice $AC$.

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5 ANS: Yes, because a dilation preserves angle measure.

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