### Lesson 19 Practice Problems

1. What is the measure of angle $ABE$?
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1. Select **all** true statements about the figure.
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	1. $c+b=d+c$
	2. $d+b=180$
	3. Rotate clockwise by angle $ABC$ using center $B$. Then angle $CBD$ is the image of angle $ABE$.
	4. Rotate 180 degrees using center $B$. Then angle $CBD$ is the image of angle $EBA$.
	5. Reflect across the angle bisector of angle $ABC$. Then angle $CBD$ is the image of angle $ABE$.
	6. Reflect across line $CE$. Then angle $CBD$ is the image of angle $EBA$
1. Point $D$ is rotated 180 degrees using $B$ as the center. Explain why the image of $D$ must lie on the ray $BA$.
* 
1. Draw the result of this sequence of transformations.
	1. Rotate $ABCD$ clockwise by angle $ADC$ using point $D$ as the center.
	2. Translate the image by the directed line segment $DE$.
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* (From Unit 1, Lesson 18.)
1. Quadrilateral $ABCD$ is congruent to quadrilateral $A^{′}B^{′}C^{′}D^{′}$. Describe a sequence of rigid motions that takes $A$ to $A^{′}$, $B$ to $B^{′}$, $C$ to $C^{′}$, and $D$ to $D^{′}$.
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* (From Unit 1, Lesson 17.)
1. Triangle $ABC$ is congruent to triangle $A^{′}B^{′}C^{′}$. Describe a sequence of rigid motions that takes $A$ to $A^{′}$, $B$ to $B^{′}$, and $C$ to $C^{′}$.
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* (From Unit 1, Lesson 17.)
1. In quadrilateral $BADC$, $AB=AD$ and $BC=DC$. The line $AC$ is a line of symmetry for this quadrilateral.
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	1. Based on the line of symmetry, explain why the diagonals $AC$ and $BD$ are perpendicular.
	2. Based on the line of symmetry, explain why angles $ACB$ and $ACD$ have the same measure.
* (From Unit 1, Lesson 15.)
1. Here are 2 polygons:
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* Select **all** sequences of translations, rotations, and reflections below that would take polygon $P$ to polygon $Q$.
	1. Reflect over line $BA$ and then translate by directed line segment $CB$.
	2. Translate by directed line segment $BA$ then reflect over line $BA$.
	3. Rotate $60^{∘}$ clockwise around point $B$ and then translate by directed line segment $CB$.
	4. Translate so that $E$ is taken to $H$. Then rotate $120^{∘}$ clockwise around point $H$.
	5. Translate so that $A$ is taken to $J$. Then reflect over line $BA$.
* (From Unit 1, Lesson 13.)



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