1. The diagram below shows the construction of the bisector of $\angle ABC$.

Which statement is not true?
1) $m\angle EBF = \frac{1}{2} m\angle ABC$
2) $m\angle DBF = \frac{1}{2} m\angle ABC$
3) $m\angle EBF = m\angle ABC$
4) $m\angle DBF = m\angle EBF$

2. A student used a compass and a straightedge to construct $\overline{CE}$ in $\triangle ABC$ as shown below.

Which statement must always be true for this construction?
1) $\angle CEA \cong \angle CEB$
2) $\angle ACE \cong \angle BCE$
3) $AE \cong BE$
4) $EC \cong AC$

3. Based on the construction below, which statement must be true?
1) $m\angle ABD = \frac{1}{2} m\angle CBD$
2) $m\angle ABD = m\angle CBD$
3) $m\angle ABD = m\angle ABC$
4) $m\angle CBD = \frac{1}{2} m\angle ABD$
4 A straightedge and compass were used to create the construction below. Arc $EF$ was drawn from point $B$, and arcs with equal radii were drawn from $E$ and $F$.

Which statement is false?
1) $m\angle ABD = m\angle DBC$
2) $\frac{1}{2} (m\angle ABC) = m\angle ABD$
3) $2(m\angle DBC) = m\angle ABC$
4) $2(m\angle ABC) = m\angle CBD$

5 As shown in the diagram below of $\triangle ABC$, a compass is used to find points $D$ and $E$, equidistant from point $A$. Next, the compass is used to find point $F$, equidistant from points $D$ and $E$. Finally, a straightedge is used to draw $\overrightarrow{AF}$. Then, point $G$, the intersection of $\overrightarrow{AF}$ and side $BC$ of $\triangle ABC$, is labeled.

Which statement must be true?
1) $\overrightarrow{AF}$ bisects side $BC$
2) $\overrightarrow{AF}$ bisects $\angle BAC$
3) $\overrightarrow{AF} \perp BC$
4) $\triangle ABG \sim \triangle ACG$
6 Which diagram shows the construction of a 45° angle?

1)

2)

3)

4)

7 Which illustration shows the correct construction of an angle bisector?

1)

2)

3)

4)

8 Using only a ruler and compass, construct the bisector of angle \( BAC \) in the accompanying diagram.
9 Using a compass and straightedge, construct the bisector of the angle shown below. [Leave all construction marks.]

10 Using a compass and straightedge, construct the angle bisector of ∠ABC shown below. [Leave all construction marks.]

11 On the diagram below, use a compass and straightedge to construct the bisector of ∠ABC. [Leave all construction marks.]

12 On the diagram below, use a compass and straightedge to construct the bisector of ∠XYZ. [Leave all construction marks.]
13 Using a compass and straightedge, construct the bisector of \( \angle MJH \). [Leave all construction marks.]

14 Using a compass and a straightedge, construct the bisector of \( \angle CDE \). [Leave all construction marks.]

15 Using a compass and straightedge, construct the bisector of \( \angle CBA \). [Leave all construction marks.]

16 Using a compass and straightedge, construct an equilateral triangle with \( \overline{AB} \) as a side. Using this triangle, construct a 30° angle with its vertex at \( A \). [Leave all construction marks.]
G.CO.D.12: Constructions 1
Answer Section

1  ANS:  3  REF:  080902ge
2  ANS:  2  REF:  011509ge
3  ANS:  2  REF:  011004ge
4  ANS:  4  REF:  081106ge
5  ANS:  2  REF:  081205ge
6  ANS:  3  REF:  011402ge
7  ANS:  3  REF:  060925ge
8  ANS:  

REF:  060022a
9  ANS:  

REF:  fall0832ge
10 ANS:  

REF:  080932ge
11 ANS:

REF: 011133ge

12 ANS:

REF: 011233ge

13 ANS:

REF: 081330ge

14 ANS:

REF: 011634ge

15 ANS:

REF: 061232ge
16 ANS:

REF: 061437ge