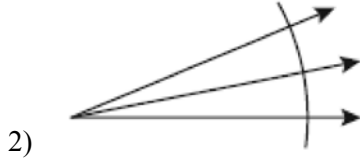
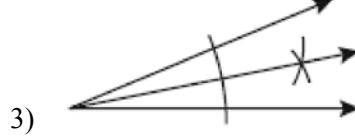
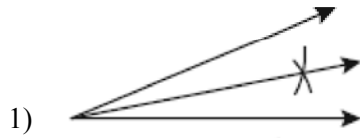
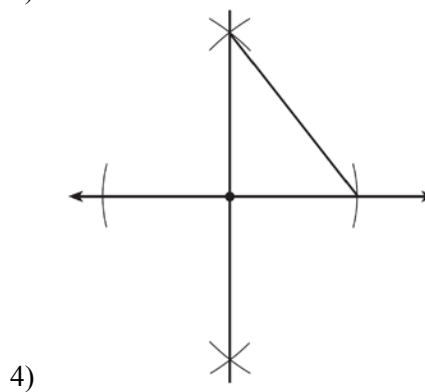
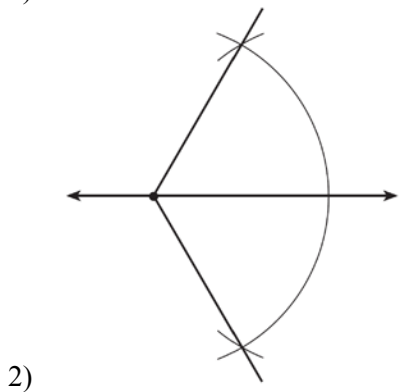
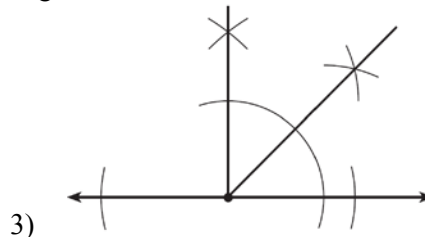
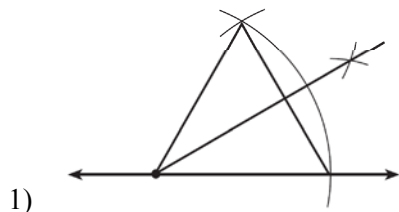


G.G.17: Constructions: Construct a bisector of a given angle, using a straightedge and compass, and justify the construction

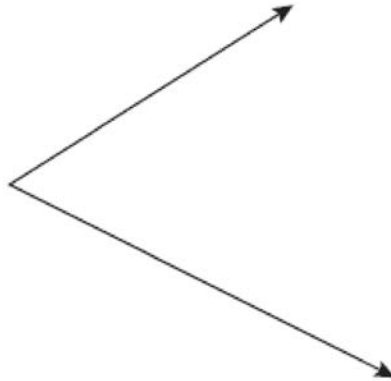
- 1 Which illustration shows the correct construction of an angle bisector?



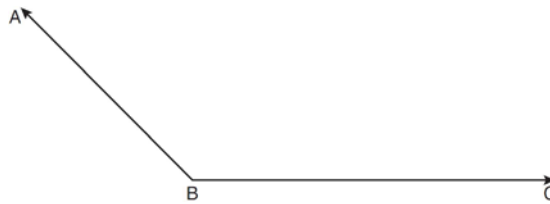
- 2 Which diagram shows the construction of a 45° angle?



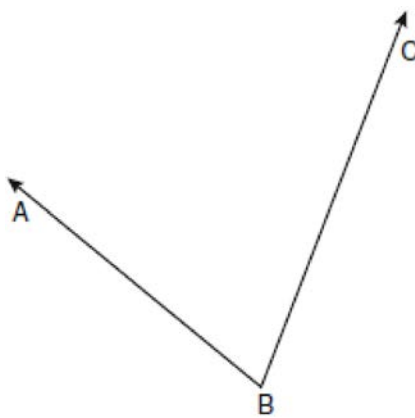
- 3 Using a compass and straightedge, construct the bisector of the angle shown below. [*Leave all construction marks.*]



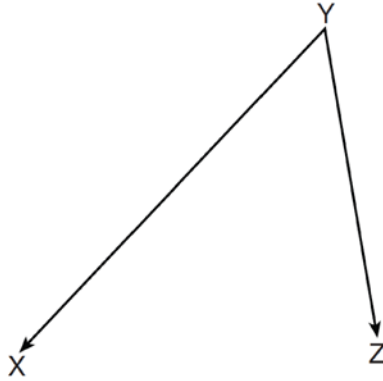
- 4 On the diagram below, use a compass and straightedge to construct the bisector of $\angle ABC$. [Leave all construction marks.]



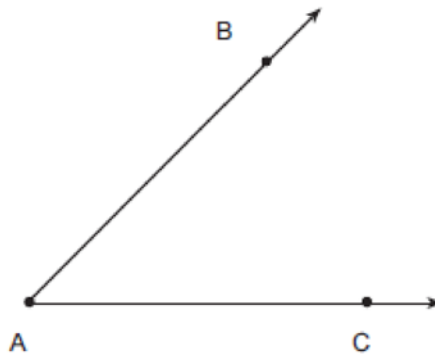
- 5 Using a compass and straightedge, construct the angle bisector of $\angle ABC$ shown below. [Leave all construction marks.]



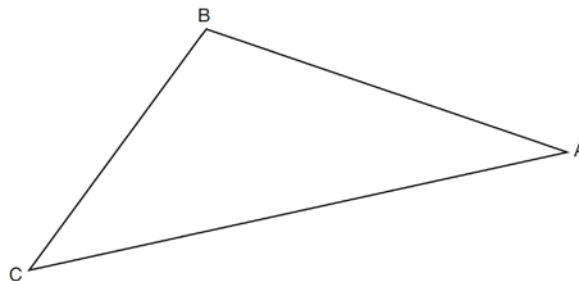
- 6 On the diagram below, use a compass and straightedge to construct the bisector of $\angle XYZ$. [Leave all construction marks.]



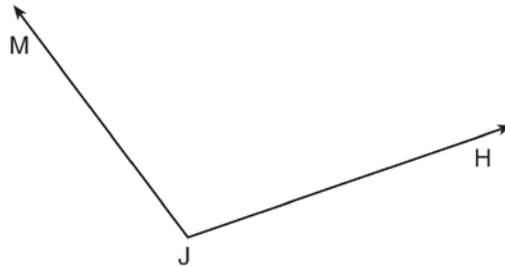
- 7 Using only a ruler and compass, construct the bisector of angle BAC in the accompanying diagram.



- 8 Using a compass and straightedge, construct the bisector of $\angle CBA$. [Leave all construction marks.]



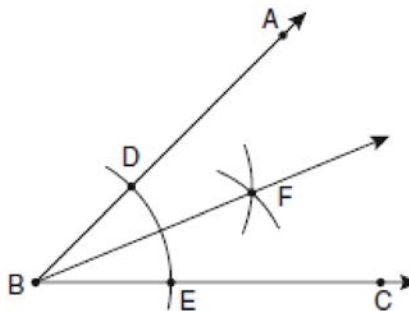
- 9 Using a compass and straightedge, construct the bisector of $\angle MJH$. [Leave all construction marks.]



- 10 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.]



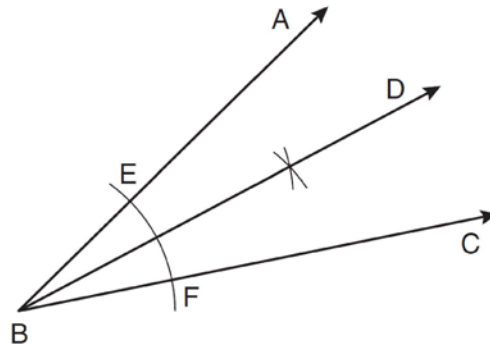
- 11 The diagram below shows the construction of the bisector of $\angle ABC$.



Which statement is *not* true?

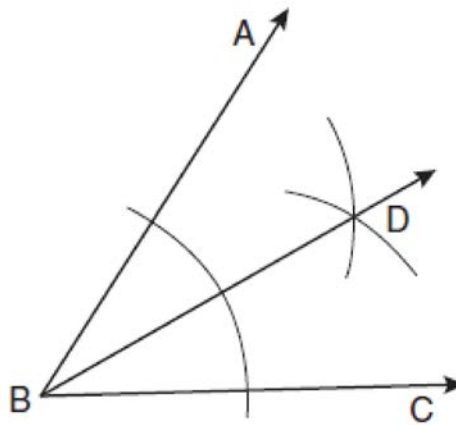
- | | |
|--|--------------------------------|
| 1) $m\angle EBF = \frac{1}{2} m\angle ABC$ | 3) $m\angle EBF = m\angle ABC$ |
| 2) $m\angle DBF = \frac{1}{2} m\angle ABC$ | 4) $m\angle DBF = m\angle EBF$ |

- 12 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 .



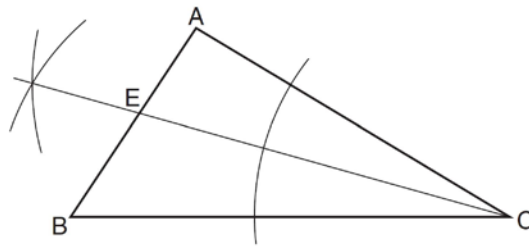
Which statement is *false*?

- | | |
|---|-----------------------------------|
| 1) $m\angle ABD = m\angle DBC$ | 3) $2(m\angle DBC) = m\angle ABC$ |
| 2) $\frac{1}{2}(m\angle ABC) = m\angle ABD$ | 4) $2(m\angle ABC) = m\angle CBD$ |
- 13 Based on the construction below, which statement must be true?



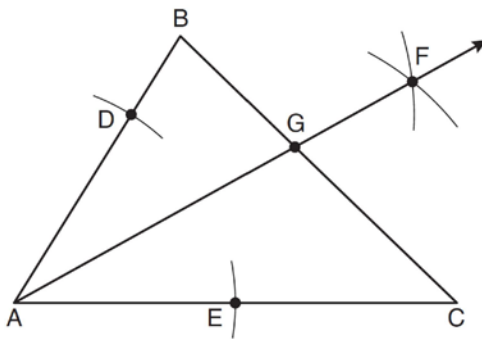
- | | |
|--|--|
| 1) $m\angle ABD = \frac{1}{2} m\angle CBD$ | 3) $m\angle ABD = m\angle ABC$ |
| 2) $m\angle ABD = m\angle CBD$ | 4) $m\angle CBD = \frac{1}{2} m\angle ABD$ |

- 14 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) $\angle CEA \cong \angle CEB$ | 3) $\overline{AE} \cong \overline{BE}$ |
| 2) $\angle ACE \cong \angle BCE$ | 4) $\overline{EC} \cong \overline{AC}$ |
- 15 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 \overline{BC} of $\triangle ABC$, is labeled.



Which statement must be true?

- | | |
|---|--|
| 1) \overrightarrow{AF} bisects side \overline{BC} | 3) $\overrightarrow{AF} \perp \overline{BC}$ |
| 2) \overrightarrow{AF} bisects $\angle BAC$ | 4) $\triangle ABG \sim \triangle ACG$ |

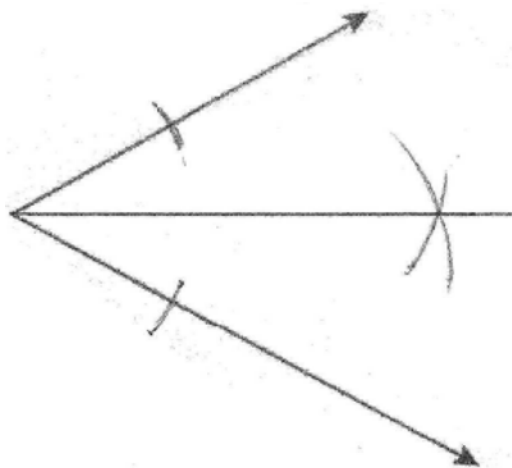
G.G.17: Constructions: Construct a bisector of a given angle, using a straightedge and compass, and justify the construction

Answer Section

1 ANS: 3 REF: 060925ge

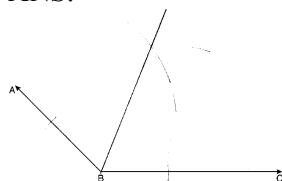
2 ANS: 3 REF: 011402ge

3 ANS:



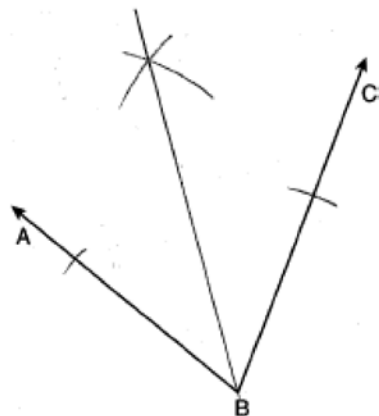
REF: fall0832ge

4 ANS:



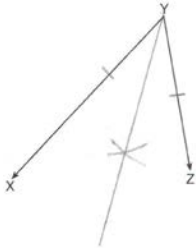
REF: 011133ge

5 ANS:



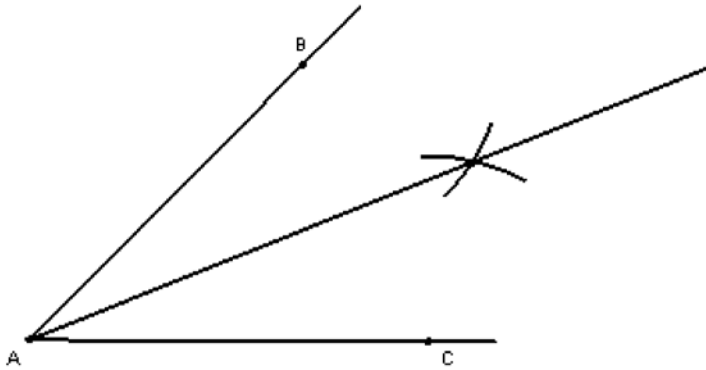
REF: 080932ge

6 ANS:



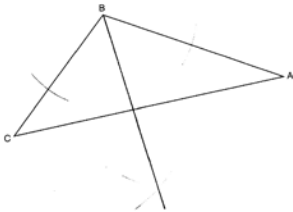
REF: 011233ge

7 ANS:



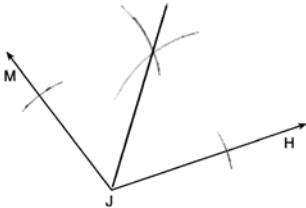
REF: 060022a

8 ANS:



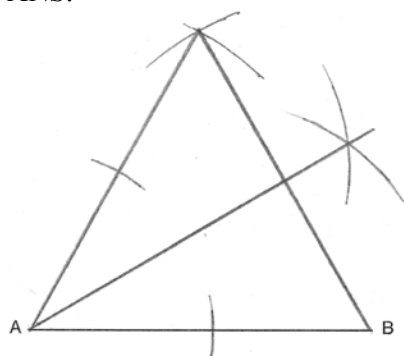
REF: 061232ge

9 ANS:



REF: 081330ge

10 ANS:



REF: 061437ge

- | | | |
|----|--------|---------------|
| 11 | ANS: 3 | REF: 080902ge |
| 12 | ANS: 4 | REF: 081106ge |
| 13 | ANS: 1 | REF: 011004ge |
| 14 | ANS: 2 | REF: 011509ge |
| 15 | ANS: 2 | REF: 081205ge |