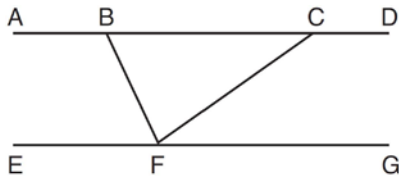


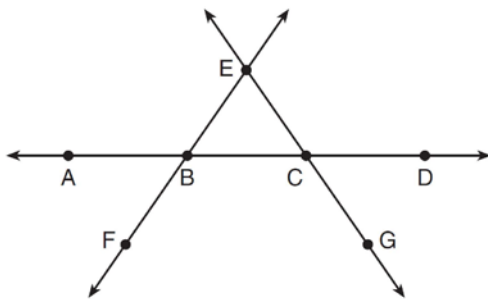
G.CO.C.9: Lines and Angles 1

- 1 Steve drew line segments \overline{ABCD} , \overline{EFG} , \overline{BF} , and \overline{CF} as shown in the diagram below. Scalene $\triangle BFC$ is formed.



Which statement will allow Steve to prove $\overline{ABCD} \parallel \overline{EFG}$?

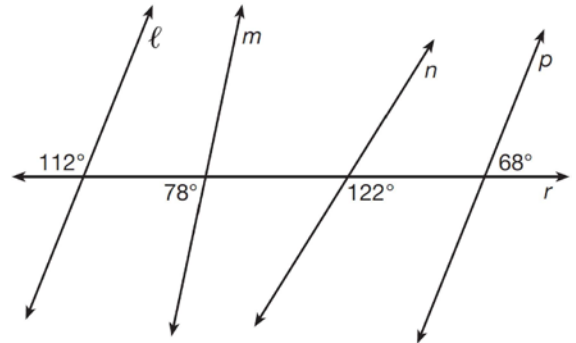
- 1) $\angle CFG \cong \angle FCB$
 - 2) $\angle ABF \cong \angle BFC$
 - 3) $\angle EFB \cong \angle CFB$
 - 4) $\angle CBF \cong \angle GFC$
- 2 In the diagram below, \overleftrightarrow{FE} bisects \overline{AC} at B , and \overleftrightarrow{GE} bisects \overline{BD} at C .



Which statement is always true?

- 1) $\overline{AB} \cong \overline{DC}$
- 2) $\overline{FB} \cong \overline{EB}$
- 3) \overleftrightarrow{BD} bisects \overleftrightarrow{GE} at C .
- 4) \overleftrightarrow{AC} bisects \overleftrightarrow{FE} at B .

- 3 In the diagram below, lines ℓ , m , n , and p intersect line r .

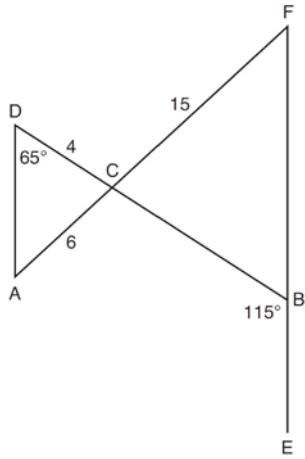


Which statement is true?

- 1) $\ell \parallel n$
 - 2) $\ell \parallel p$
 - 3) $m \parallel p$
 - 4) $m \parallel n$
- 4 Segment \overline{CD} is the perpendicular bisector of \overline{AB} at E . Which pair of segments does *not* have to be congruent?

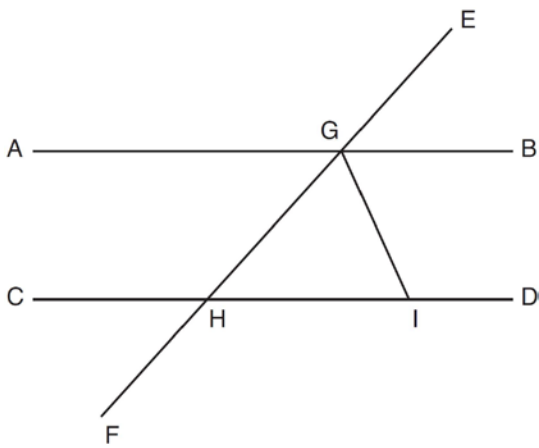
- 1) $\overline{AD}, \overline{BD}$
- 2) $\overline{AC}, \overline{BC}$
- 3) $\overline{AE}, \overline{BE}$
- 4) $\overline{DE}, \overline{CE}$

- 5 In the diagram below, \overline{DB} and \overline{AF} intersect at point C , and \overline{AD} and \overline{FBE} are drawn.



If $AC = 6$, $DC = 4$, $FC = 15$, $m\angle D = 65^\circ$, and $m\angle CBE = 115^\circ$, what is the length of \overline{CB} ?

- 1) 10
 - 2) 12
 - 3) 17
 - 4) 22.5
- 6 In the diagram below, \overline{EF} intersects \overline{AB} and \overline{CD} at G and H , respectively, and \overline{GI} is drawn such that $\overline{GH} \cong \overline{IH}$.



If $m\angle EGB = 50^\circ$ and $m\angle DIG = 115^\circ$, explain why $\overline{AB} \parallel \overline{CD}$.

G.CO.C.9: Lines and Angles 1
Answer Section

- 1 ANS: 1
Alternate interior angles

REF: 061517geo

- 2 ANS: 1 REF: 011606geo
3 ANS: 2 REF: 081601geo
4 ANS: 4 REF: 081611geo
5 ANS: 1

$$\frac{f}{4} = \frac{15}{6}$$

$$f = 10$$

REF: 061617geo

- 6 ANS:
Since linear angles are supplementary, $m\angle GIH = 65^\circ$. Since $\overline{GH} \cong \overline{IH}$, $m\angle GHI = 50^\circ$ ($180 - (65 + 65)$). Since $\angle EGB \cong \angle GHI$, the corresponding angles formed by the transversal and lines are congruent and $\overline{AB} \parallel \overline{CD}$.

REF: 061532geo