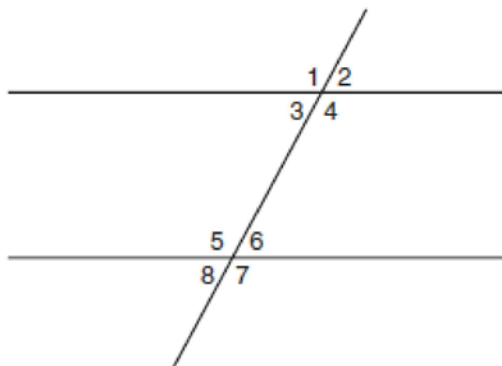


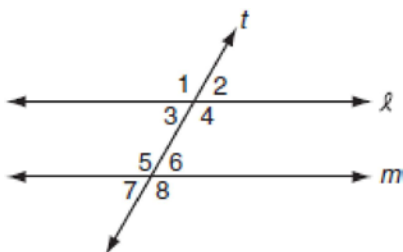
G.G.35: Parallel Lines and Transversals: Determine if two lines cut by a transversal are parallel based on the measure of given pairs of angles formed by the transversal and lines

- 1 In the accompanying figure, what is one pair of alternate interior angles?



- 1) $\angle 1$ and $\angle 2$
- 2) $\angle 4$ and $\angle 5$
- 3) $\angle 4$ and $\angle 6$
- 4) $\angle 6$ and $\angle 8$

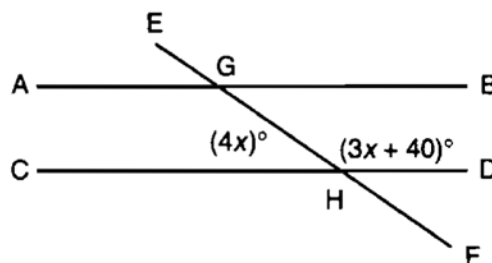
- 2 In the accompanying diagram, line ℓ is parallel to line m , and line t is a transversal.



Which must be a true statement?

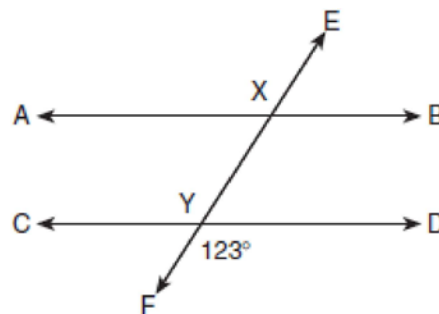
- 1) $m\angle 1 + m\angle 4 = 180$
- 2) $m\angle 1 + m\angle 8 = 180$
- 3) $m\angle 3 + m\angle 6 = 180$
- 4) $m\angle 2 + m\angle 5 = 180$

- 3 In the diagram below, \overline{AB} is parallel to \overline{CD} . Transversal \overline{EF} intersects \overline{AB} and \overline{CD} at G and H , respectively. If $m\angle AGH = 4x$ and $m\angle GHD = 3x + 40$, what is the value of x ?

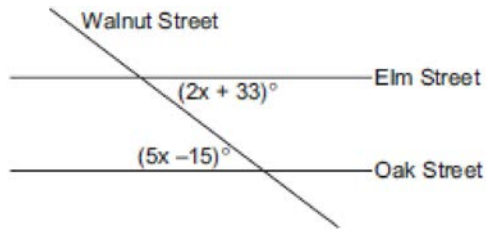


- 1) 20
- 2) 40
- 3) 80
- 4) 160

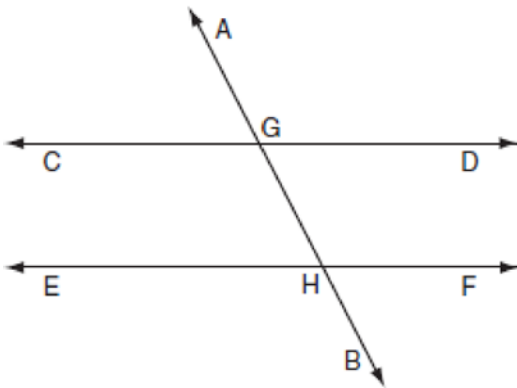
- 4 In the accompanying diagram, parallel lines \overline{AB} and \overline{CD} are intersected by transversal \overline{EF} at points X and Y , and $m\angle FYD = 123$. Find $m\angle AXY$.



- 5 Two parallel roads, Elm Street and Oak Street, are crossed by a third, Walnut Street, as shown in the accompanying diagram. Find the number of degrees in the acute angle formed by the intersection of Walnut Street and Elm Street.



- 6 In the accompanying diagram, $\overleftrightarrow{CD} \parallel \overleftrightarrow{EF}$, \overleftrightarrow{AB} is a transversal, $m\angle DGH = 2x$, and $m\angle FHB = 5x - 51$. Find the measure, in degrees, of $\angle BHE$.



G.G.35: Parallel Lines and Transversals: Determine if two lines cut by a transversal are parallel based on the measure of given pairs of angles formed by the transversal and lines
Answer Section

1 ANS: 2 REF: 010320a

2 ANS: 4

Since $\angle 2$ and $\angle 3$ are congruent vertical angles, and $\angle 3$ and $\angle 5$ are supplementary same side interior angles, $\angle 2$ and $\angle 5$ are also supplementary.

REF: 080613a

3 ANS: 2 REF: spring9815a

4 ANS:

57. Since $\angle FYD$ and $\angle CYX$ are congruent vertical angles, and $\angle CYX$ and $\angle AXY$ are supplementary same side interior angles, $\angle FYD$ and $\angle AXY$ are also supplementary.

REF: 060122a

5 ANS:

$$5x - 15 = 2x + 33$$

$$x = 16$$

65. The acute angles are congruent alternate interior angles: $2(16) + 33 = 65^\circ$

REF: 060226a

6 ANS:

146. $\angle DGH$ and $\angle FHB$ are congruent corresponding angles. $\begin{matrix} 5x - 51 = 2x \\ x = 17 \end{matrix}$. $m\angle FHB = 5(17) - 51 = 34$. Since $\angle FHB$ and $\angle BHE$ are supplementary angles, $m\angle BHE = 146$

REF: 010639a