7.51 a) It is a kite because it has two pairs of adjacent sides that are the same length.

b) It reflected the D across one of its sides.

c) Because no sides are ≅, this kite has at least one pair of opposite sides that are congruent and a diagonal that bisects the other pair of opposite sides.
7) a)

b) The diagonals are \( \perp \).

- One diagonal bisects the other.

- \( AC \neq BC \)

- \( \triangle ACD \cong \triangle BCD \) by SAS

- \( \angle ADC = \angle BDC \)

- \( CD = CD \) by Reflexive property

- \( \angle ACD = \angle BCD \)

- \( m \angle ACD = m \angle BCD \)

- \( m \angle ACD + m \angle BCD = 180^\circ \)

- Therefore, \( m \angle ADC = 90^\circ \) and the diagonals are \( \perp \).

7) 53

See resource page.

7) 54

a) \( 15x - 10 \) and \( 5x - 10 \) are complementary.

\[ \begin{align*}
(5x-10) + (5x-10) &= 65 \\
10x - 20 &= 65 \\
10x &= 85 \\
x &= 8.5
\end{align*} \]

b) \( 4y - 2 = 3x + 9 \)

\[ \begin{align*}
4y - 2 &= 3x + 9 \\
3y &= -5y + 11 \\
x &= 11
\end{align*} \]

c) \( 9x - 15 + 3x + 15 = 180 \)

\[ \begin{align*}
12x &= 180 \\
x &= 15
\end{align*} \]

- \( 12x = 168 \)

- \( x = 14 \)

7) 55

a) \( 360^\circ \div 72^\circ = 5 \) sides.

b) \( 360^\circ \div 9 = 40^\circ \)
# Theorem Toolkit

## Parallelograms
- Opposite sides are \( \parallel \) and \( \cong \)
- Opposite \( \angle \)'s are \( \cong \)
- \( \angle \)'s that are not opposite are supplementary

## Kites
- 4 sides 2 pairs of \( \cong \) sides
- One diagonal bisects the other & also bisects to opp. \( \angle \)'s
- The diagonals are \( \perp \)
Sandra should park about 36.4 feet from the point directly across from the art museum.

7-57. \( a) \frac{40}{10} \sqrt{60} \sqrt{80} \ldots \)  
\( b) \frac{3}{4} \sqrt{3} \sqrt{4} \ldots \)

\[ a_n = \frac{20 + 20n}{2} \quad \text{or} \quad a_n = 40 + 20(n-1) \]

\[ a_n = 6 \left(\frac{1}{2}\right)^n \]

7-58

7-59

7-58

7-60 Possible response: Rotate the second triangle 180° and then translate it so sides match up with the first triangle.