6-62. See below.

a.   Lines *l* and *m* are parallel because alternate interior angles are equal.

b.   Line *n* is perpendicular to line *m* because $w + k = 180°$ and if $w = k$, then each is 90°.

c.   No special statements can be made because vertical angles are always equal.

d.   Lines *l* and *m* cannot be parallel because otherwise $z + k = 180°$.

6-63. See below.

a. $\triangle ABC \sim \triangle DEF$ (AA~)

b. $\triangle MON \cong \triangle PQR$(AAS$\cong$ or ASA$\cong$)

c.   Neither congruent nor similar because $m\angle J \ne 62°$. If $m\angle J = 62°$, then $m\angle L = 180° - 2 \cdot 62° = 56°$.

Since $\dfrac{\sin 56}{5} \ne \dfrac{\sin 72}{8}$, this triangle cannot exist.

6-64. See below.

a.   Converse: If the cat runs away frightened, then it knocked over the lamp. Not always true.

b.   Converse: If the chances of getting a 3 are $\dfrac{1}{6}$, then a 6-sided dice was rolled. Not always true.

c.   Converse: If a triangle is a right triangle, then it has a 90º angle. Always true.

6-65. $\dfrac{19}{4}$

6-66. D

6-67. See below.

a.   It is a trapezoid. The slope of $\overrightarrow{WZ}$ equals the slope of $\overrightarrow{XY}$.

b.   ≈ 18.3 units

c.   (−9, 1)

d.   2