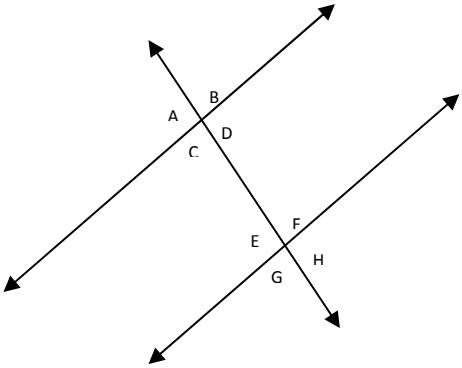
Self-Check for Tutorial 6
Parallel lines, Polygons, and the Pythagorean Theorem

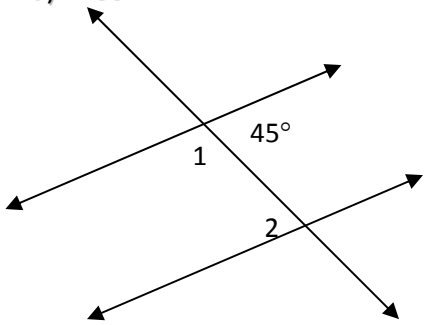
1. Name 2 sets of alternate interior angles.

   a) ∠A & ∠H and ∠B & ∠G
   b) ∠ C & ∠F and ∠D & ∠E
   c) ∠C & ∠E and ∠D & ∠F
   d) ∠B & ∠C and ∠E & ∠H



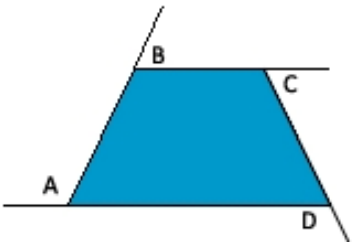
2. Find the measures of ∠1 and ∠2.

   a) 45°
   b) 180°
   c) 90°
   d) 135°



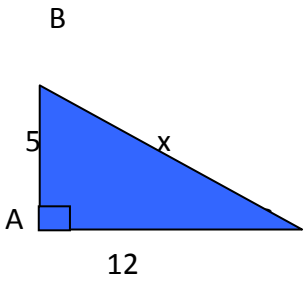
3. m∠A= 100°, m∠B = 60°, m∠c = 75°. Find the measure of ∠D.

   a. 80°
   b. 180°
   c. 125°
   d. 235°



4. Find the measure of x.

   a) $\sqrt{119}$
   b) 13
   c) 17
   d) $\sqrt{17}$



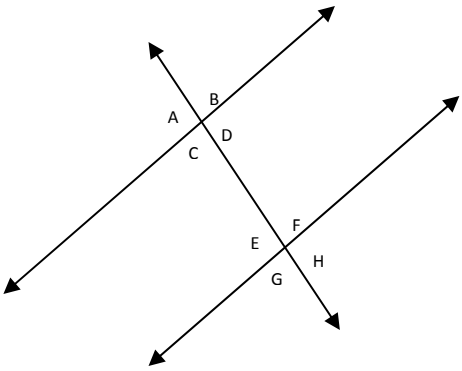
5. A baseball diamond is a square with sides of 90 feet. What is the shortest distance, to the *nearest tenth* of a foot, between first base and third base? Draw and label the sides, the diagonals, and the right angles found in a baseball diamond.

Solutions to Self-Check for Tutorial 6
Parallel lines, Polygons, and the Pythagorean Theorem

1. Name 2 sets of alternate interior angles.

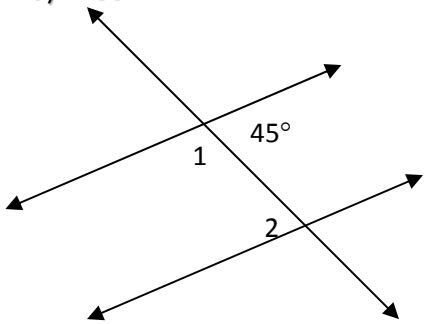
b

a) ∠A & ∠H and ∠B & ∠G
b) ∠C & ∠F and ∠D & ∠E
c) ∠C & ∠E and ∠D & ∠F
d) ∠B & ∠C and ∠E & ∠H



2. Find the measures of ∠1 and ∠2.

a) 45°
b) 180°
c) 90°
d) 135°

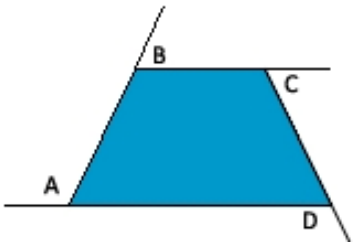


Since the 45° angle and ∠1 are supplementary, they have a sum of 180°. Therefore 45° + m∠1 = 180°. By subtracting 45° from each side we obtain m∠1 = 135°. By observing that the 45° angle and ∠2 are alternate interior angles, we know that m∠2 = 45°.

3. m∠A= 100°, m∠B = 60°, m∠C = 75°. Find the measure of ∠D.

c

a) 80°
b) 180°
c) 125°
d) 235°



The sum of the exterior angles of any regular polygon in always 360°.

100° + 60° + 75° + m∠D = 360°

235° + m∠D = 360°

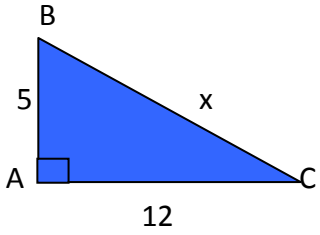
235° + m∠D - 235° = 360° - 235°

m∠D = 125°

4. Find the measure of x.

c

a) $\sqrt{119}$
b) 13
c) 17
d) $\sqrt{17}$



Since this is a right triangle, we can use the Pythagorean theorem to solve for x.

$5^2 + 12^2 = x^2$

$25 + 144 = x^2$

$169 = x^2$

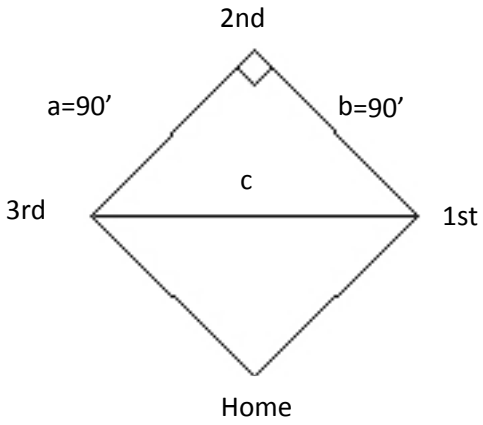
$\sqrt{169} = \sqrt{x^2}$

$13 = x$

5. A baseball diamond is a square with sides of 90 feet. What is the shortest distance, to the *nearest tenth* of a foot, between first base and third base? Draw and label the sides, the diagonals, and the right angles found in a baseball diamond.

Use the Pythagorean theorem to find the length of the diagonal which is the hypotenuse of the right triangle.

$a^2 + b^2 = c^2$



$(90\text{ ft})^2 + (90\text{ ft})^2 = c^2$

$8100\text{ ft}^2 + 8100\text{ ft}^2 = c^2$

$16{,}200\text{ ft}^2 = c^2$

$\sqrt{16200\text{ft}^2} = \sqrt{c^2}$

$127.2792206\text{ ft} = c$

$127.3\text{ ft} \approx c$