2-115) Right L's, \( \perp \) diagonals, 2 pairs of opposite 

2-116) Right L's, \( \perp \) diagonals, 2 pairs of opposite 

\[ \text{Distance Formula} \]
\[ d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2} \]
\[ AB = \sqrt{(9-0)^2 + (2-8)^2} \]
\[ = \sqrt{81 + 36} \]
\[ = 117 \approx 10.8 \]
\[ AB \approx 10.8 \]

\[ CD = \sqrt{(9-1)^2 + (15-3)^2} \]
\[ = \sqrt{82 + 144} \]
\[ = \sqrt{224} \approx 14.4 \]
\[ CD \approx 14.4 \]

b) \[ y = mx + b \]

\[ \text{Slope} \]
\[ \text{y-intercept} \]
\[ \frac{2}{3} \]
\[ (0, b) \]

\[ \frac{y_2-y_1}{x_2-x_1} \]

\[ \frac{9-0}{15-3} \]

\[ AB : m = -\frac{2}{3} \]

\[ b = 8 \]

So \[ y = -\frac{2}{3}x + 8 \]

\[ y_2 = \frac{1}{2}x + \frac{3}{2} \]

So \[ y = \frac{3}{2}x + b \]

Point slope form: use a point 

\[ y - y_1 = m(x - x_1) \]

slope \[ m = \frac{3}{2} \]

Coordinating a point \[ (1, 3) \]

\[ y - 3 = \frac{3}{2}x - \frac{3}{2} \]

\[ 2y = 3x - 3 + 6 \]

\[ 2y = 3x + 3 \]

So \[ y = \frac{3}{2}x + \frac{3}{2} \]

Hence \[ AB \perp CD \]

\[ x = 3 \]

\[ \frac{3y}{13} \]

\[ \frac{2}{3} \]
7-117 a) Check to see if the slopes are the same for \( \overline{HA} \) & \( \overline{SY} \).

\( \overline{HA} \): \((0,5), (4,8) \) \( m = \frac{8-5}{4-0} = \frac{3}{4} \)

\( \overline{SY} \): \((0,0), (7,4) \) \( m = \frac{4-0}{7-0} = \frac{4}{7} \)

Slopes are not \( \parallel \), \( \perp \), or \( \neq \). 

\( \overline{SH} \) is not a trapezoid.

b) Shayla’s quadrilateral is not one of the other special quadrilaterals we studied.

c) \( \overline{SH} = \overline{HA} = \overline{AY} = 5 \)

\( \overline{HA} \parallel \overline{AY} \) since slopes are \( \frac{3}{4} \) \& \( \frac{4}{7} \)

7-118 a) Must be a rhombus.  Could be a square.

b) Must be a trapezoid.  Could be a rhombus, rectangle, square.

c) Must be an isosceles trapezoid.  Could be a rhombus, rectangle, square.

d) Must be nothing!  Could be an isosceles trapezoid, parallelogram, midpoints, rectangle, kite, rhombus, square.

7-119) \( a: (2,3) \& (2,3) \rightarrow (4,5,3) \)

\( b: (-3,1) \& (-3,7) \rightarrow (-5,1,5) \)

\( c: (2,-2) \& (5,-2) \rightarrow (1,5,-2) \)

7-120 a) \( \Delta SHR \sim \Delta SAK \) by \( AA \)

b) \( 2SR = AK, 2SH = 5SA \) \( SH = HA \)

c) \( SH^2 + 8^2 = 10^2 \), \( SR^2 = 36 \)

ty^2 + 16^2 = 20^2

so \( HA = 6 \) also

7-121 on page 3

7-122 a) \( \Delta CAB \sim \Delta CED \) by \( \text{Vertical Ls} \)

b) \( \Delta CED \neq \Delta EFG \) by \( \text{SAS} \)

c) \( \Delta LCS \neq \Delta HSK \) by \( \text{SAS} \)

d) Not \( \approx \) all common Ls \( \neq \) prans only \( \approx \) not \( \approx \).
7-121 a) **Expected Value**: 
\[
\frac{1}{2}(6) + \frac{1}{8}(-8) + \frac{1}{8}(0) + \frac{1}{4}(8) = 4
\]

7-121 b) **Expected Value**: 
\[
\frac{1}{2}(6) + \frac{1}{8}(-6) + \frac{1}{8}(0) + \frac{1}{4}(-4) = 0
\]

7-121 c) **Expected Value**: 
\[
\frac{1}{2}(6) + \frac{1}{8}(-8) + \frac{1}{8}(0) + \frac{1}{4}(x) = 0
\]

7-123 on page 4

A would need \(x = -8\) to make the expected value 0.
For each pair of triangles below, determine if the triangles are congruent. If the triangles are congruent, state the triangle congruence condition that justifies your conclusion. If you cannot conclude that the triangles are congruent, explain why not.

a. \( \triangle CAB \cong \triangle CED \)

b. \( \triangle CBD \cong \triangle EFG \)

[ \( \triangle CED; \) vertical angles are equal, \( ASA \cong \) ]

[ \( \triangle EFG; SAS \cong \) ]

c. \( \triangle LJH \cong \triangle HSK \)

[ \( \triangle HJK; HI + IJ = LK + KJ, \) \( \angle J \equiv \angle J, SAS \cong \) ]

[ Not \( \cong \), all corresponding pairs of angles equal is not sufficient. ]

da. \( \triangle PRQ \cong \triangle JKL \)

[ Not \( \cong \), all corresponding pairs of angles equal is not sufficient. ]