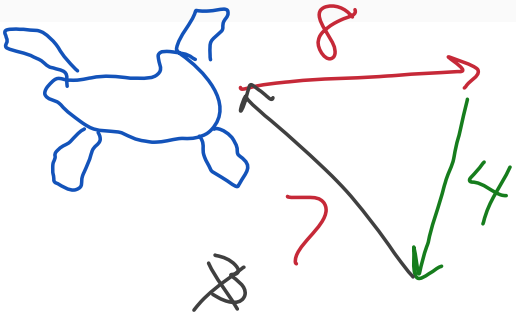
Triangle Possible Side Lengths & Hinge Theorem

Friday, February 17, 2023 7:18 AM

Example 2: Find Possible Side Lengths

Drones A delivery company uses drones to make speedy deliveries around the city. A drone leaves the home office and flies 8 miles east to its first delivery and then 4 more miles southwest to a second delivery. What is the least possible whole-number distance the drone will fly to return to the home office?



$8+4=12$

$8-4=4$

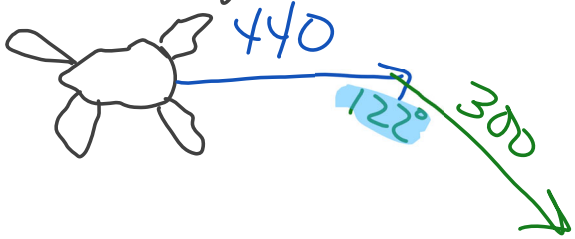
$4 < x < 12$

Example 1: Use the Hinge Theorem Continued

Check

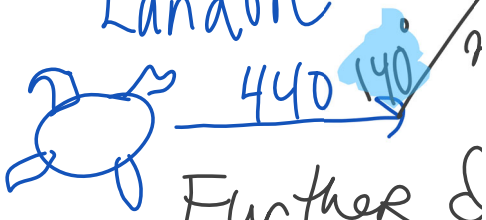
Drones Esperanza and Landon each fly a drone from the same place in a park and at the same altitude. Esperanza flies her drone 440 feet east, then turns it 122° south of east and flies 300 more feet. Landon flies his drone 440 feet east, then turns it 140° north of east and flies 300 more feet.

Esperanza



$140 > 122$

Landon

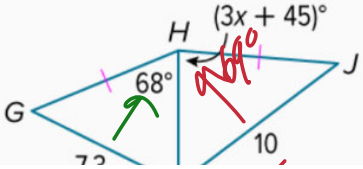


Further

Example 3: Apply Algebra to Relationships in Triangles

Find the range of possible values for x.

$3(8)+45 =$



$\angle JHE > \angle GHE$

$5x + 45 > 68$

$-45 \quad -45$

$3x > 23$

$\frac{3x}{3} > \frac{23}{3}$

$x > 7.6\overline{6}$