

5.1 The Law of Cosines

2. Answers:

- a. $a^2 = 8^2 + 11^2 - 2 \cdot 8 \cdot 11 \cdot \cos 50^\circ, a \approx 8.5$
- b. $11^2 = 6^2 + 7^2 - 2 \cdot 6 \cdot 7 \cdot \cos I, \angle I \approx 115.4^\circ$
- c. $l^2 = 22.4^2 + 13.17^2 - 2 \cdot 22.4 \cdot 13.17 \cdot \cos 79.5^\circ, l \approx 23.8$
- d. $12.8^2 = 17^2 + 18.6^2 - 2 \cdot 17 \cdot 18.6 \cdot \cos D, \angle D \approx 41.8^\circ$
- e. $b^2 = 39^2 + 43^2 - 2 \cdot 39 \cdot 43 \cdot \cos 67.2^\circ, b \approx 45.5$
- f. $11^2 = 9^2 + 13^2 - 2 \cdot 9 \cdot 13 \cdot \cos D, \angle D \approx 56.5^\circ$

3. Answer:

- $63^2 = 52^2 + 41.9^2 - 2 \cdot 52 \cdot 41.9 \cdot \cos C$
- $52^2 = 63^2 + 41.9^2 - 2 \cdot 63 \cdot 41.9 \cdot \cos I$
- $180^\circ - 83.5^\circ - 55.1^\circ = 41.4^\circ$
- $\angle C \approx 83.5^\circ, \angle I \approx 55.1^\circ, \angle R \approx 41.4^\circ$

6. Answer:

- To determine this, use the Law of Cosines and solve for d to determine if the picture is accurate.
- $d^2 = 12^2 + 24^2 - 2 \cdot 12 \cdot 24 \cdot \cos 30^\circ, d = 14.9$, which means d in the picture is off by 1.9.