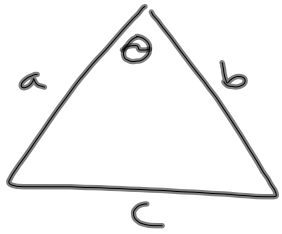
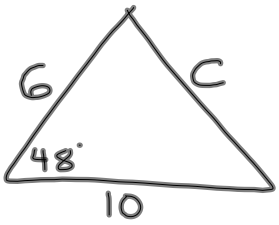
2-20-14

3rd Trig



Law of Cosines:

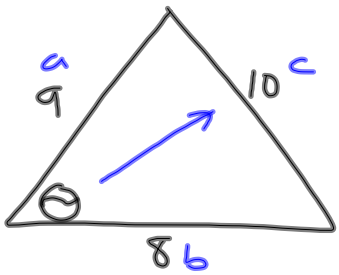
$$c^2 = a^2 + b^2 - 2ab\cos\theta$$



$$c^2 = 10^2 + 6^2 - 2\cdot 10\cdot 6\cdot \cos 48^\circ$$

$$\sqrt{c^2} = \sqrt{55.7\ldots\ldots}$$

$$c \approx 7.46$$



$$c^2 = a^2 + b^2 - 2ab\cos\theta$$

$$10^2 = 9^2 + 8^2 - 2\cdot 9\cdot 8\cdot \cos\theta$$

$$100 = 81 + 64 - 144\cos\theta$$

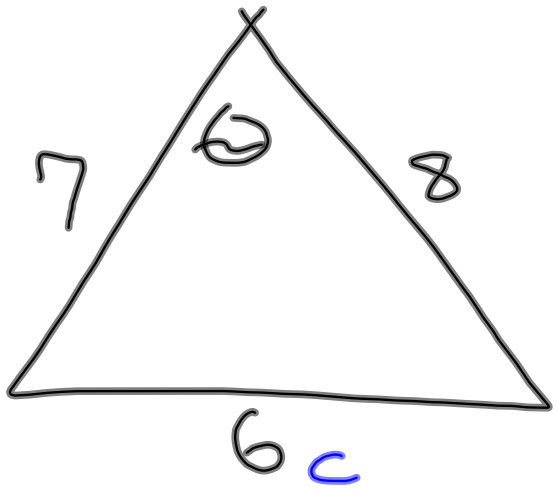
$$100 = 145 - 144\cos\theta$$

$$-145 \quad -145$$

$$\frac{-45}{-144} = \frac{-144\cdot\cos\theta}{-144}$$

$$\cos^{-1}\frac{45}{144} = \cos\theta$$

$$71.8 \approx \theta$$



c

$$6^2 = 8^2 + 7^2 - 2 \cdot 8 \cdot 7 \cdot \cos\theta$$

$$36 = 64 + 49 - 112 \cdot \cos\theta$$

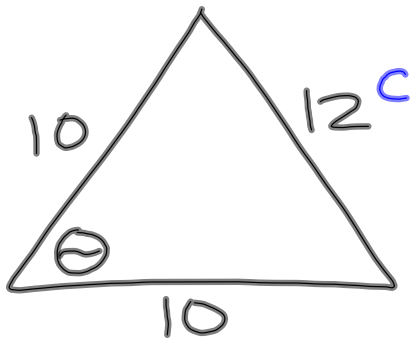
$$36 = 113 - 112 \cdot \cos\theta$$

$$-113 \quad -113$$

$$\frac{-77}{-112} = \frac{-112 \cdot \cos\theta}{-112}$$

$$\cos^{-1}\left(\frac{77}{112}\right) = \cos^{-1}\cos\theta$$

$$46.6^\circ \approx \theta$$



$12^2 = 10^2 + 10^2 - 2 \cdot 10 \cdot 10 \cdot \cos\theta$

$144 = 100 + 100 - 200 \cdot \cos\theta$

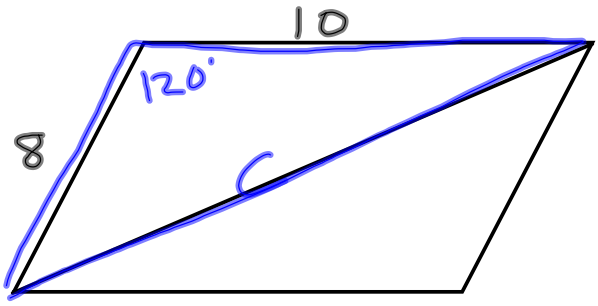
$144 = 200 - 200\cos\theta$

$-200 \quad -200$

$\frac{-56}{-200} = \frac{-200\cos\theta}{-200}$

$\cos^{-1}.28 = \cos^{-1}\cos\theta$

$73.7^\circ \approx \theta$



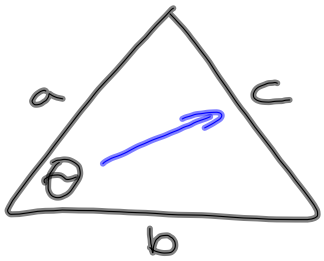
If parallelogram has angles of 120° and 60°, what is the diagonal?

$c^2 = 8^2 + 10^2 - 2 \cdot 8 \cdot 10 \cdot \cos(120)$

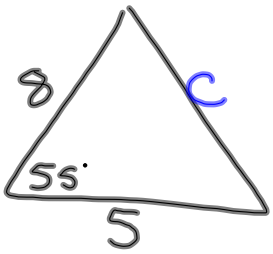
$c^2 = 244$

$c \approx 15.6$

2-20-14
4th Trig



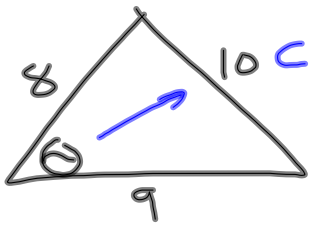
Law of Cosines: $c^2 = a^2 + b^2 - 2ab\cos\theta$



$c^2 = 5^2 + 8^2 - 2 \cdot 5 \cdot 8 \cdot \cos 55°$

$\sqrt{c^2} \approx \sqrt{43.11\ldots}$

$c \approx 6.57$



$10^2 = 9^2 + 8^2 - 2 \cdot 9 \cdot 8 \cdot \cos\theta$

$100 = 81 + 64 - 144 \cdot \cos\theta$

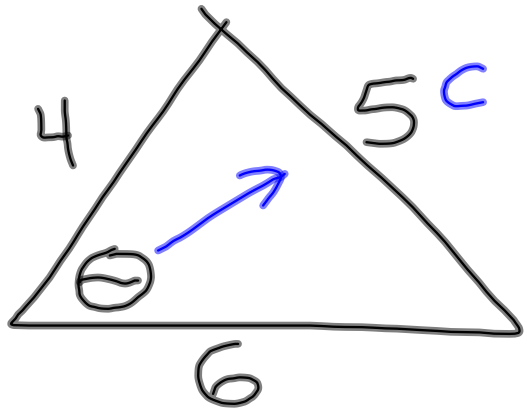
$100 = 145 - 144 \cdot \cos\theta$

$-145 \quad -145$

$\frac{-45}{-144} = \frac{-144 \cdot \cos\theta}{-144}$

$\cos^{-1}\frac{45}{144} = \cos^{-1}\cos\theta$

$71.8° = \theta$



$5^2 = 6^2 + 4^2 - 2 \cdot 6 \cdot 4 \cdot \cos\theta$

$25 = 36 + 16 - 48 \cdot \cos\theta$

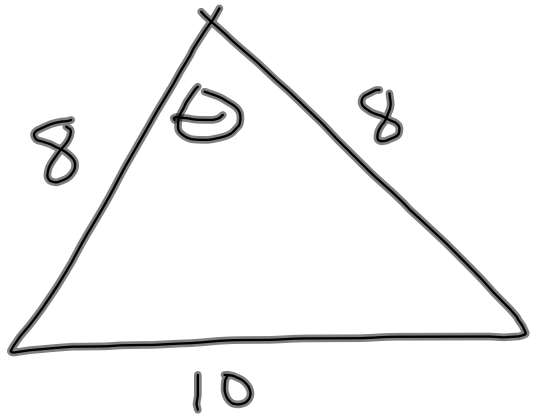
$25 = 52 - 48 \cdot \cos\theta$

$-52 \quad -52$

$\frac{-27}{-48} = \frac{-48 \cdot \cos\theta}{-48}$

$\cos^{-1}\frac{27}{48} = \cos^{-1}\cos\theta$

$55.7^\circ \approx \theta$



$10^2 = 8^2 + 8^2 - 2 \cdot 8 \cdot 8 \cdot \cos\theta$

$100 = 64 + 64 - 128 \cdot \cos\theta$

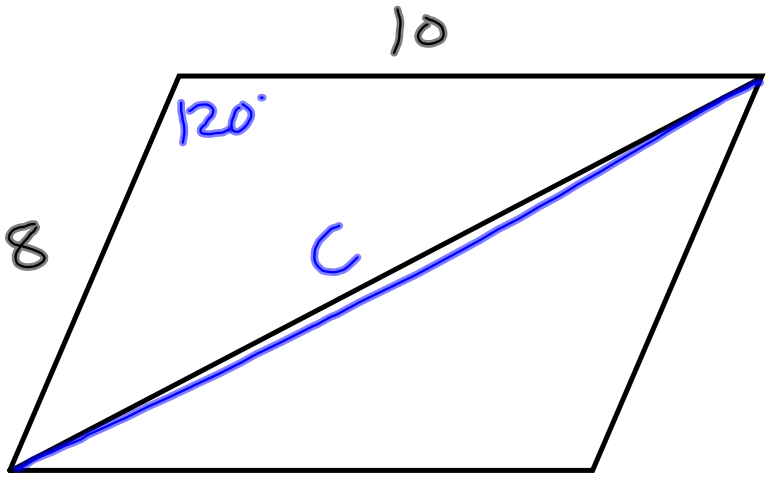
$100 = 128 - 128 \cdot \cos\theta$

$-128 \quad -128$

$\frac{-28}{-128} = \frac{-128 \cdot \cos\theta}{-128}$

$\cos^{-1}\frac{28}{128} = \cos^{-1}\cos\theta$

$77.4^\circ \approx \theta$



The parallelogram above has angles of 60° and 120°. What is the length of the diagonal

$$c^2 = 8^2 + 10^2 - 2 \cdot 8 \cdot 10 \cdot \cos 120^\circ$$

$$\sqrt{c^2} = \sqrt{244}$$

$$c \approx 15.6$$