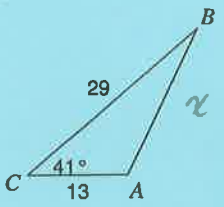
Kuta Software - Infinite Algebra 2 Name Key

The Law of Cosines

Date_____ Period____

Find each measurement indicated. Round your answers to the nearest tenth.

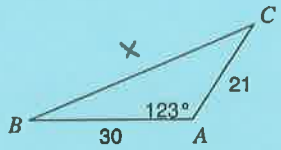
1) Find AB



$x^2 = 13^2 + 29^2 - 2(13)(29)\cos 41$

$x = 21.0$

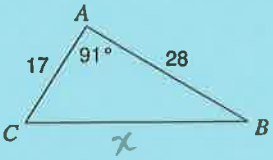
2) Find BC



$x^2 = 30^2 + 21^2 - 2(30)(21)\cdot\cos 123°$

$x = 45$

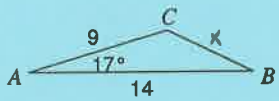
3) Find BC



$x^2 = 17^2 + 28^2 - 2(17)(28)\cos 91$

$x = 33.0$

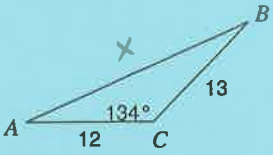
4) Find BC



$x^2 = 14^2 + 9^2 - 2(14)(9)\cdot\cos 17$

$x = 6$

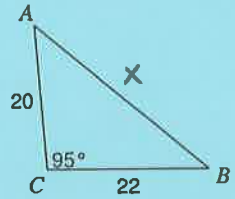
5) Find AB



$x^2 = 12^2 + 13^2 - 2(12)(13)\cos 134$

$x = 23.0$

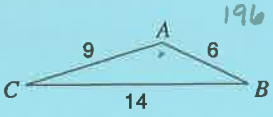
6) Find AB



$x^2 = 20^2 + 22^2 - 2(20)(22)\cdot\cos 95$

$x = 31$

7) Find $m\angle A$



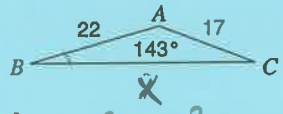
$14^2 = 9^2 + 6^2 - 2(9)(6)\cos A$

$196 = 117 - 108\cos A$

$79 = -108\cos A$

$\angle A = 137$

8) Find $m\angle B$



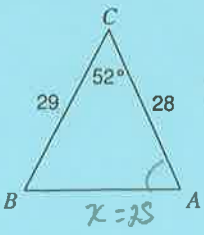
$x^2 = 22^2 + 17^2 - 2(22)(17)\cdot\cos 143$

$x = 37$

① $\frac{37}{\sin 143} = \frac{17}{\sin B}$

$B = 16°$

9) Find $m\angle A$



① $x^2 = 29^2 + 28^2 - 2(29)(28)\cos 52$

$x = 25$

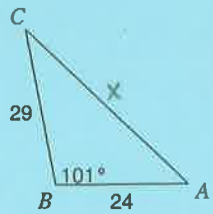
② $\frac{25}{\sin 52} = \frac{29}{\sin A}$

$25\sin A = 22.85$

$\sin A = .9141$

$\angle A = 66.1°$

10) Find $m\angle C$



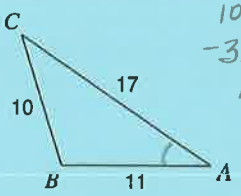
$x^2 = 29^2 + 24^2 - 2(24)(24)\cdot\cos 101$

$x = 41$

② $\frac{41}{\sin 101} = \frac{24}{\sin C}$

$C = 35°$

11) Find $m\angle A$



$10^2 = 11^2 + 17^2 - 2(11)(17)\cos A$

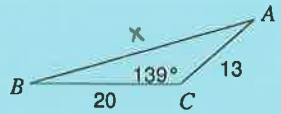
$100 = 410 - 374\cos A$

$-310 = -374\cos A$

$.8289 = \cos A$

$\angle A = 34.0°$

12) Find $m\angle A$



$x^2 = 20^2 + 13^2 - 2(20)(13)\cdot\cos 139$

$x = 31$

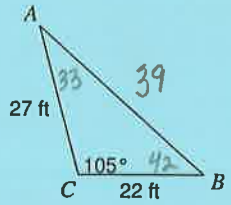
(1)

(2) $\frac{31}{\sin 139} = \frac{20}{\sin A}$

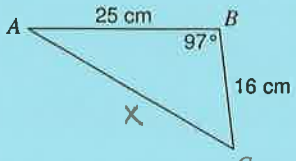
$A = 25°$

Solve each triangle. Round your answers to the nearest tenth.

13)



14)



$x^2 = 25^2 + 16^2 - 2(25)(16)\cdot\cos 97$

$x = 31.3$

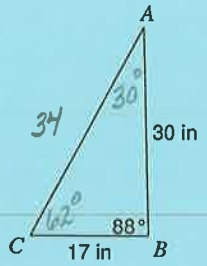
(1)

(2) $\frac{31.3}{\sin 97} = \frac{16}{\sin A}$

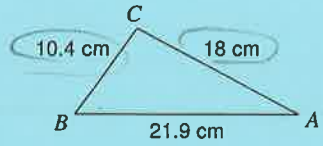
$A = 30.5°$

$B = 52.5°$

15)



16)



$21.9^2 = 10.4^2 + 18^2 - 2(10.4)(18)\cdot\cos C$

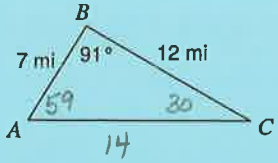
$C = 97.3°$

(1)

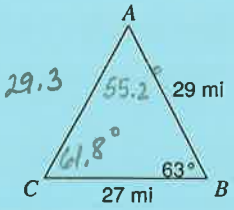
(2) $\frac{21.9}{\sin 97.3} = \frac{18}{\sin B}$

$B = 54.6°$, $C = 28.1°$

17)



18)



19) In ΔABC, $a = 14$ cm, $b = 9$ cm, $c = 6$ cm

20) In ΔXYZ, $m\angle X = 138°$, $y = 15$ in, $z = 25$ in

21) In ΔQRP, $q = 12$ in, $p = 28$ in, $r = 18$ in

22) In ΔQRP, $p = 28$ km, $q = 17$ km, $r = 15$ km

23) In ΔDEF, $e = 16$ yd, $d = 12$ yd, $f = 17$ yd

24) In ΔRPQ, $p = 18$ mi, $m\angle R = 17°$, $q = 28$ mi