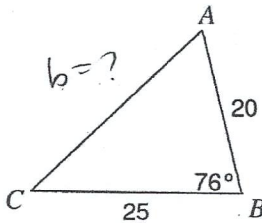
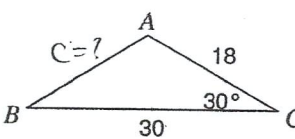
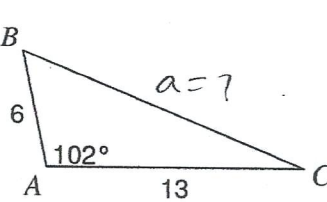
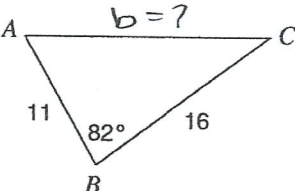
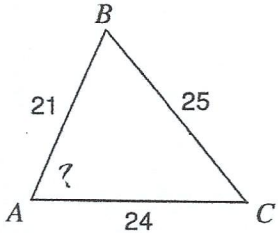
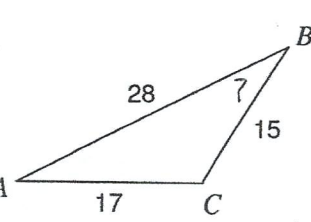
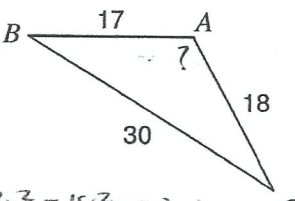
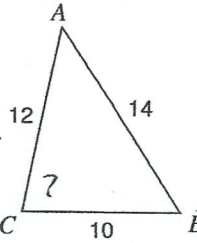
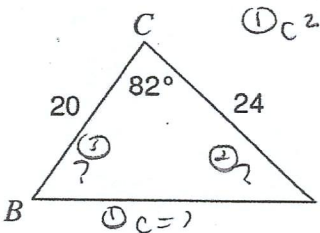
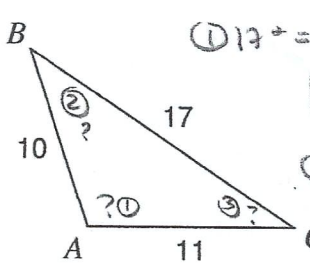
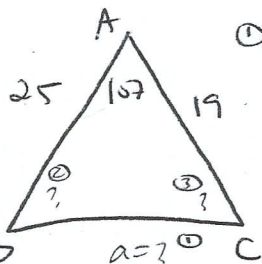
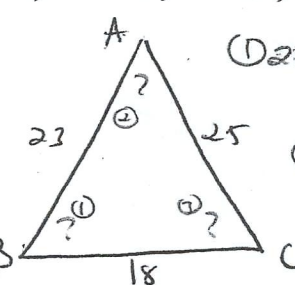


I. Find the indicated side or angle for each given triangle. Round to tenth place. Show work!!!

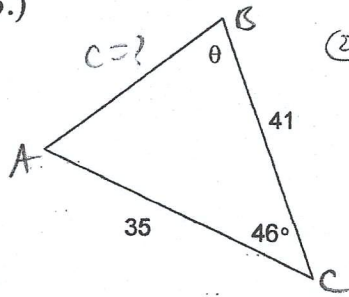
<p>1.) Find side b.</p>  $b^2 = 25^2 + 20^2 - 2(25)(20)\cos 76^\circ$ $b^2 = 783.0781044$ $b = 28$	<p>2.) Find side c.</p>  $c^2 = 18^2 + 30^2 - 2(18)(30)\cos 30^\circ$ $c^2 = 288.6925635$ $c = 17$	<p>3.) Find side a.</p>  $a^2 = 13^2 + 6^2 - 2(13)(6)\cos 102^\circ$ $a^2 = 237.4342238$ $a = 15.4$	<p>4.) Find side b.</p>  $b^2 = 11^2 + 16^2 - 2(11)(16)\cos 82^\circ$ $b^2 = 328.0110685$ $b = 18.1$
<p>5.) Find angle A.</p>  $25^2 = 24^2 + 21^2 - 2(24)(21)\cos A$ $A = \cos^{-1}\left(\frac{-392}{-1008}\right)$ $A = 67.1^\circ$	<p>6.) Find angle B.</p>  $17^2 = 15^2 + 28^2 - 2(15)(28)\cos B$ $B = \cos^{-1}\left(\frac{-720}{-840}\right)$ $B = 31^\circ$	<p>7.) Find angle A.</p>  $30^2 = 18^2 + 17^2 - 2(18)(17)\cos A$ $A = \cos^{-1}\left(\frac{287}{-612}\right)$ $A = 118^\circ$	<p>8.) Find angle C.</p>  $14^2 = 12^2 + 10^2 - 2(12)(10)\cos C$ $C = \cos^{-1}\left(\frac{-48}{-240}\right)$ $C = 78.5^\circ$

II. Solve each triangle. If no drawn triangle is given, draw one. Round to tenth place. Show work!

<p>9.)</p>  $c^2 = 20^2 + 24^2 - 2(20)(24)\cos 82^\circ$ $c = 29$ $\frac{29}{\sin 82^\circ} = \frac{20}{\sin A}$ $A = 43.1^\circ$ $B = 180 - 82 - 43.1$ $B = 54.9^\circ$	<p>10.)</p>  $17^2 = 10^2 + 11^2 - 2(10)(11)\cos A$ $A = 108^\circ$ $\frac{17}{\sin 108^\circ} = \frac{11}{\sin B}$ $B = 38^\circ$ $C = 180 - 108 - 38$ $C = 34^\circ$
<p>11.) $A = 107^\circ, b = 19, c = 25$</p>  $a^2 = 19^2 + 25^2 - 2(19)(25)\cos 107^\circ$ $a = 35.5$ $\frac{35.5}{\sin 107^\circ} = \frac{19}{\sin B}$ $B = 30.8^\circ$ $C = 180 - 107 - 30.8$ $C = 42.2^\circ$	<p>12.) $a = 18, b = 25, c = 23$</p>  $25^2 = 18^2 + 23^2 - 2(18)(23)\cos B$ $B = 74^\circ$ $\frac{25}{\sin 74^\circ} = \frac{18}{\sin A}$ $A = 43.8^\circ$ $C = 180 - 74 - 43.8$ $C = 62.2^\circ$

III. Critical Thinking Problems – Find the side x or angle θ for each given figure.
Round to tenth place. Figures NOT DRAWN to SCALE. Must SHOW WORK for credit!

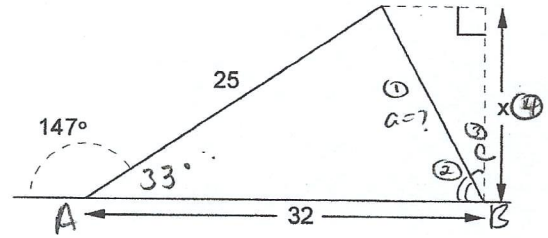
13.)



$$\begin{aligned} \textcircled{2} \frac{30.2}{\sin 46} &= \frac{35}{\sin \theta} \\ 30.2 \sin \theta &= 35 \sin 46 \\ \frac{30.2}{30.2} &= \frac{35 \sin 46}{30.2} \\ \theta &= \sin^{-1}\left(\frac{35 \sin 46}{30.2}\right) \\ \theta &= 56.5^\circ \end{aligned}$$

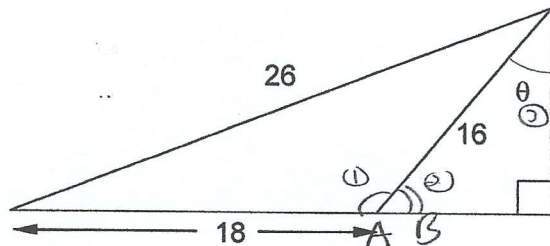
$$\begin{aligned} \textcircled{1} c^2 &= 35^2 + 41^2 - 2(35)(41) \cos 46 \\ c &= 30.2 \end{aligned}$$

14.)



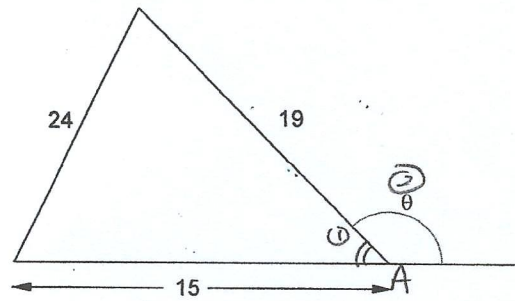
$$\begin{aligned} \textcircled{1} a^2 &= 25^2 + 32^2 - 2(25)(32) \cos 33 \\ a &= 17.5 \\ \textcircled{2} \frac{17.5}{\sin 33} &= \frac{25}{\sin B} \\ B &= 51.1^\circ \\ \textcircled{3} C &= 90 - 51.1 \\ C &= 38.9 \\ \textcircled{4} \cos 38.9 &= \frac{x}{17.5} \\ x &= 13.6 \end{aligned}$$

15.)



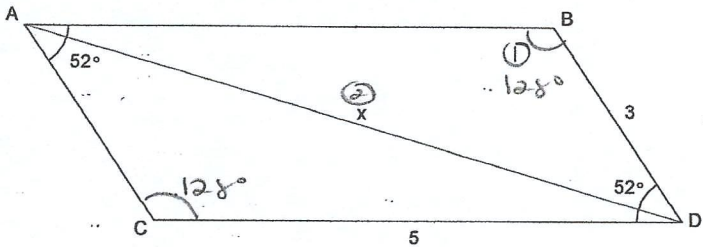
$$\begin{aligned} \textcircled{1} 26^2 &= 18^2 + 16^2 - 2(18)(16) \cos A \\ A &= 99.6^\circ \\ \textcircled{2} B &= 180 - 99.6 \\ B &= 80.4^\circ \\ \textcircled{3} \theta &= 90 - 80.4 \\ \theta &= 9.6^\circ \end{aligned}$$

16.)



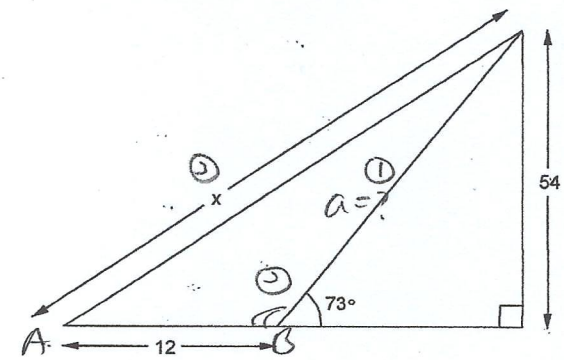
$$\begin{aligned} \textcircled{1} 24^2 &= 15^2 + 19^2 - 2(15)(19) \cos A \\ A &= 89^\circ \\ \textcircled{2} \theta &= 180 - 89 \\ \theta &= 91^\circ \end{aligned}$$

17.) Find diagonal (side) x.



$$\begin{aligned} \textcircled{1} B + C &= 360 - 2(52) \\ B + C &= 256 \rightarrow B = C = 128^\circ \\ \textcircled{2} x^2 &= 3^2 + 5^2 - 2(3)(5) \cos 128 \\ x &= 7.2 \end{aligned}$$

18.)



$$\begin{aligned} \textcircled{1} \sin 73 &= \frac{54}{a} \\ a &= 56.5 \\ \textcircled{2} B &= 180 - 73 \\ B &= 107^\circ \\ \textcircled{3} x^2 &= 12^2 + 56.5^2 - 2(12)(56.5) \cos 107 \\ x &= 61.1 \end{aligned}$$