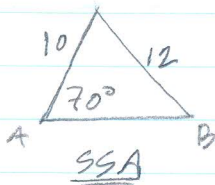


LAW OF SINES WS

1.



$$\frac{\sin 70^\circ}{12} = \frac{\sin B}{10}$$

$$B = 51.5^\circ$$

$$C = 180^\circ - 70^\circ - 51.5^\circ$$

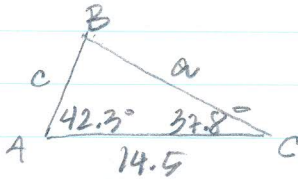
$$C = 58.5^\circ$$

$$\frac{12}{\sin 70^\circ} = \frac{c}{\sin 58.5^\circ}$$

$$c = 10.9$$

one solution

2.



$$B = 180^\circ - 42.3^\circ - 37.8^\circ$$

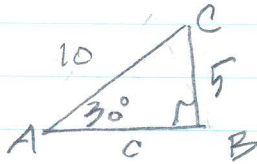
$$B = 99.9^\circ$$

$$\frac{14.5}{\sin 99.9^\circ} = \frac{a}{\sin 42.3^\circ} \rightarrow a = 9.9$$

$$\frac{14.5}{\sin 99.9^\circ} = \frac{c}{\sin 37.8^\circ} \rightarrow c = 9.0$$

ASA → one sol.

3.



$$\frac{\sin 30^\circ}{5} = \frac{\sin B}{10}$$

$$B = 90^\circ$$

$$C = 180^\circ - 90^\circ - 30^\circ$$

$$C = 60^\circ$$

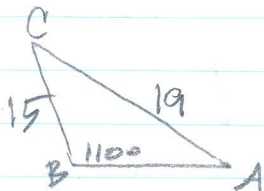
$$c^2 = 10^2 - 5^2$$

$$c^2 = 75$$

$$c = 8.7$$

SSA → one sol.

4.



$$\frac{\sin 110^\circ}{19} = \frac{\sin A}{15}$$

$$A = 47.9^\circ$$

$$C = 180^\circ - 110^\circ - 47.9^\circ$$

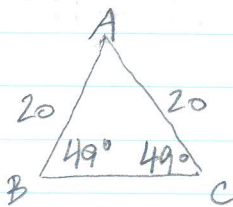
$$C = 22.1^\circ$$

$$\frac{19}{\sin 110^\circ} = \frac{c}{\sin 22.1^\circ}$$

$$c = 7.6$$

SSA → one sol.

5.



$$C = 49^\circ$$

isosceles Δ!

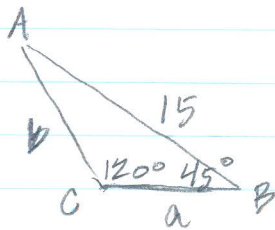
$$A = 180^\circ - 49^\circ - 49^\circ$$

$$A = 82^\circ$$

$$\frac{20}{\sin 49^\circ} = \frac{a}{\sin 82^\circ}$$

$$a = 26.2$$

6.



$$A = 180^\circ - 120^\circ - 45^\circ$$

$$A = 15^\circ$$

$$\frac{15}{\sin 120^\circ} = \frac{b}{\sin 45^\circ}$$

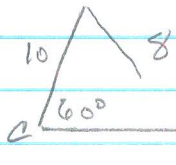
$$b = 12.2$$

$$\frac{15}{\sin 120^\circ} = \frac{a}{\sin 15^\circ}$$

$$a = 4.5$$

AAS → one

7.

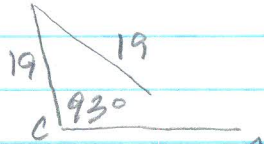
SSA \rightarrow none

$$\frac{\sin 60^\circ}{8} = \frac{\sin A}{10}$$

"ERROR"

not possible!

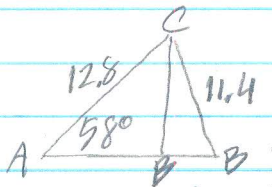
8.

SSA \rightarrow none

~~$$\frac{\sin 93^\circ}{19} = \frac{\sin A}{19}$$~~

Cannot create isosceles Δ !

9.

SSA \rightarrow two!

$$\frac{\sin 58^\circ}{11.4} = \frac{\sin B}{12.8}$$

$$B = 72.2^\circ$$

$$C = 180^\circ$$

$$- 58^\circ$$

$$- 72.2^\circ$$

$$C = 49.8^\circ$$

$$\frac{11.4}{\sin 58^\circ} = \frac{c}{\sin 49.8^\circ}$$

$$c = 10.3$$

$$B_2 = 180^\circ - 72.2^\circ$$

$$B_2 = 107.8^\circ$$

$$C_2 = 180^\circ$$

$$- 58^\circ$$

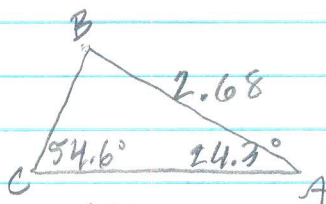
$$- 107.8^\circ$$

$$C_2 = 14.2^\circ$$

$$\frac{11.4}{\sin 58^\circ} = \frac{c_2}{\sin 14.2^\circ}$$

$$c_2 = 3.3$$

10.

AAS \rightarrow one

$$B = 180^\circ$$

$$- 54.6^\circ$$

$$- 24.3^\circ$$

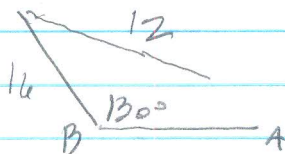
$$B = 101.1^\circ$$

$$\frac{2.68}{\sin 54.6^\circ} = \frac{a}{\sin 24.3^\circ} = \frac{b}{\sin 101.1^\circ}$$

$$a = 1.4$$

$$b = 3.2$$

11.

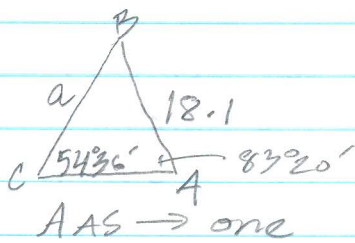
SSA \rightarrow none!

$$\frac{\sin 130^\circ}{12} = \frac{\sin A}{16}$$

"ERROR"

not possible!

12.



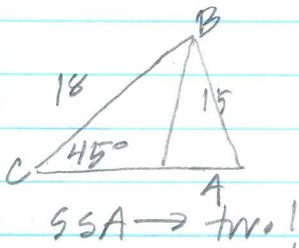
$$B = 180^\circ - 54^\circ 36' - 83^\circ 20'$$

$$\boxed{B = 42^\circ 4'}$$

$$\frac{18.1}{\sin 54^\circ 36'} = \frac{a}{\sin 83^\circ 20'} = \frac{b}{\sin 42^\circ 4'}$$

$$\boxed{a = 22.1} \quad \boxed{b = 14.9}$$

13.



$$\frac{\sin 45^\circ}{15} = \frac{\sin A}{18}$$

$$\boxed{A = 58.1^\circ}$$

$$A_2 = 180^\circ - 58.1^\circ$$

$$\boxed{A_2 = 121.9^\circ}$$

$$B = 180^\circ - 45^\circ - 58.1^\circ$$

$$\boxed{B = 76.9^\circ}$$

$$B_2 = 180^\circ - 45^\circ - 121.9^\circ$$

$$\boxed{B_2 = 13.1^\circ}$$

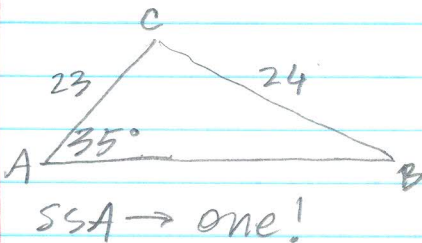
$$\frac{15}{\sin 45^\circ} = \frac{b}{\sin 76.9^\circ}$$

$$\boxed{b = 20.7}$$

$$\frac{15}{\sin 45^\circ} = \frac{b_2}{\sin 13.1^\circ}$$

$$\boxed{b_2 = 4.8}$$

14.



$$\frac{\sin 35^\circ}{24} = \frac{\sin B}{23}$$

$$\boxed{B = 33.3^\circ}$$

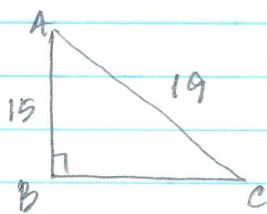
$$C = 180^\circ - 35^\circ - 33.3^\circ$$

$$\boxed{C = 111.7^\circ}$$

$$\frac{24}{\sin 35^\circ} = \frac{c}{\sin 111.7^\circ}$$

$$\boxed{c = 38.9}$$

15.



$$\frac{\sin 90^\circ}{19} = \frac{\sin C}{15}$$

$$\boxed{C = 52.1^\circ}$$

$$A = 180^\circ - 90^\circ - 52.1^\circ$$

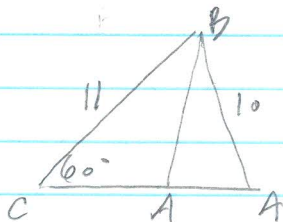
$$\boxed{A = 37.9^\circ}$$

$$b^2 = 19^2 - 15^2$$

$$b^2 = 136$$

$$\boxed{b = 11.7}$$

16.



$$\frac{\sin 60^\circ}{10} = \frac{\sin A}{11}$$

$$\boxed{A = 72.3^\circ}$$

$$A_2 = 180^\circ - 72.3^\circ$$

$$\boxed{A_2 = 107.7^\circ}$$

$$B = 180^\circ - 60^\circ - 72.3^\circ$$

$$\boxed{B = 47.7^\circ}$$

$$B_2 = 180^\circ - 60^\circ - 107.7^\circ$$

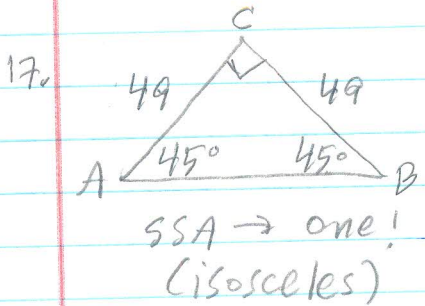
$$\boxed{B_2 = 12.3^\circ}$$

$$\frac{10}{\sin 60^\circ} = \frac{b}{\sin 47.7^\circ}$$

$$\boxed{b = 8.5}$$

$$\frac{10}{\sin 60^\circ} = \frac{b_2}{\sin 12.3^\circ}$$

$$\boxed{b_2 = 2.5}$$



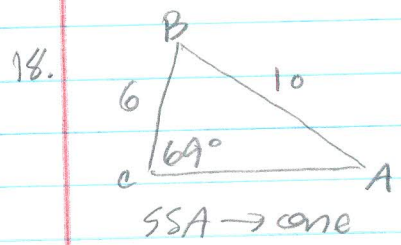
$$C = 180^\circ - 90^\circ$$

$$\boxed{C = 90^\circ}$$

$$c^2 = 49^2 + 49^2$$

$$c^2 = 4802$$

$$\boxed{c = 69.3}$$



$$\frac{\sin 69^\circ}{10} = \frac{\sin A}{6}$$

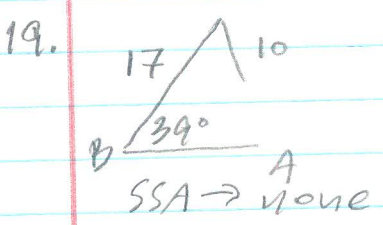
$$\boxed{A = 34.1^\circ}$$

$$B = 180^\circ - 69^\circ - 34.1^\circ$$

$$\boxed{B = 76.9^\circ}$$

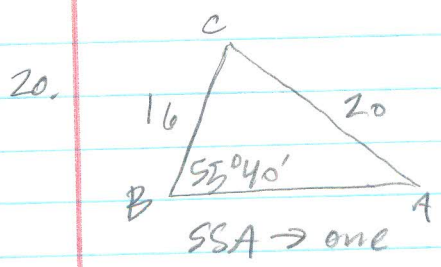
$$\frac{10}{\sin 69^\circ} = \frac{b}{\sin 76.9^\circ}$$

$$\boxed{b = 10.4}$$



$$\frac{\sin 39^\circ}{10} = \frac{\sin A}{17}$$

Error!
not possible



$$\frac{\sin 55^\circ 40'}{20} = \frac{\sin A}{16}$$

$$\boxed{A = 47^\circ 21'}$$

$$C = 180^\circ - 55^\circ 40' - 47^\circ 21'$$

$$\boxed{C = 82^\circ 59'}$$

$$\frac{20}{\sin 55^\circ 40'} = \frac{c}{\sin 82^\circ 59'}$$

$$\boxed{c = 24.0}$$