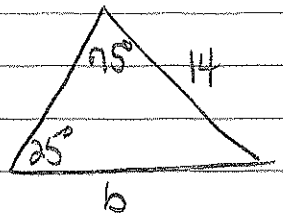
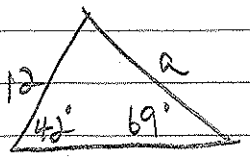
PW #2 The Law of Sines [TRIANGLES NOT DRAWN TO SCALE!]

① 1 △



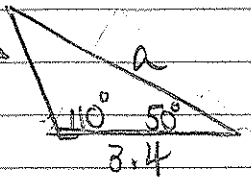
$\frac{\sin 25^\circ}{14} = \frac{\sin 75^\circ}{b}$ $\boxed{b = 31.99}$

② 1 △



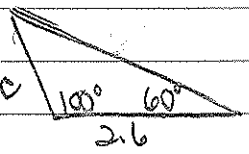
$\frac{\sin 69^\circ}{12} = \frac{\sin 42^\circ}{a}$ $\boxed{a = 8.6}$

③ 1 △



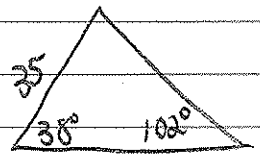
$\frac{\sin 20^\circ}{3.4} = \frac{\sin 110^\circ}{a}$ $\boxed{a = 9.34}$

④ 1 △



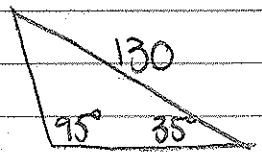
$\frac{\sin 20^\circ}{2.6} = \frac{\sin 100^\circ}{c}$ $\boxed{c = 7.49}$

⑤ 1 △



$\frac{\sin 40^\circ}{b} = \frac{\sin 102^\circ}{35}$ $\boxed{b = 23}$

⑥ 1 △



$\frac{\sin 95^\circ}{130} = \frac{\sin 50^\circ}{a}$ $\boxed{a = 99.97}$

⑦ Ambiguous Case: $4 \square 3\sin 40^\circ$

$4 > 1.92$ (at least 1 △)

$1.92 < 4 < 3$ False → Only 1 △ $\frac{\sin 40^\circ}{4} = \frac{\sin B}{3}$

$\boxed{\angle B = 28.82^\circ}$

⑧ Ambiguous Case: $6 \square 4.5\sin 35^\circ$

$6 > 2.58$ (at least 1 △)

$2.58 < 6 < 4.5$ False → Only 1 △ $\frac{\sin 35^\circ}{6} = \frac{\sin A}{4.5}$

$\boxed{\angle A = 25.5^\circ}$

(9) Ambiguous Case: $6.4 \square 4 \sin 125°$

$6.4 > 3.28$ (at least 1 $\triangle$) → only 1 $\triangle$

$3.28 < 6.4 < 4$ False

$\frac{\sin 125°}{6.4} = \frac{\sin A}{4}$

$\measuredangle A = 20.8°$

$\boxed{\measuredangle B = 24.2°}$

(10) Ambiguous Case: $18 \square 12 \sin 110°$

$18 > 11.28$ (at least 1 $\triangle$) → only 1 $\triangle$

$11.28 < 18 < 12$ False

$\frac{\sin 110°}{18} = \frac{\sin B}{12}$

$\measuredangle B = 38.8°$

$\boxed{\measuredangle C = 31.2°}$

(11) Ambiguous Case: $5 \square 7 \sin 42°$

$5 > 4.68$ (at least 1 $\triangle$) → 2 $\triangle$'s !!

$4.68 < 5 < 7$ True

$\frac{\sin 42°}{5} = \frac{\sin C}{7}$

$\measuredangle C = 69.5°$

$\boxed{\text{OR } \measuredangle C = 110.5°}$

(12) Ambiguous Case: $11 \square 15 \sin 40°$

$11 > 9.64$ (at least 1 $\triangle$) → 2 $\triangle$'s !!

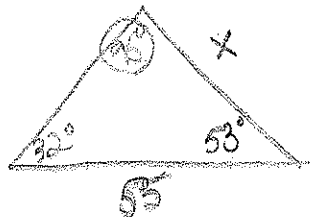
$9.64 < 11 < 15$ True

$\frac{\sin 40°}{11} = \frac{\sin B}{15}$

$\measuredangle B = 61.2°$

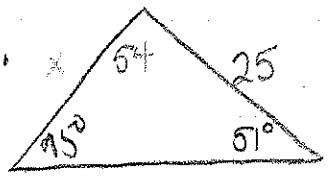
$\boxed{\text{OR } \measuredangle B = 118.8°}$

PW #2 The Law of Sines Word Problems

1. 

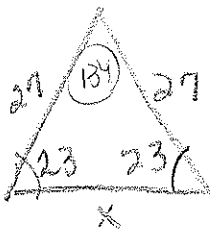
$\frac{\sin 95^\circ}{55} = \frac{\sin 32^\circ}{x}$

$x = 29.26$

2. 

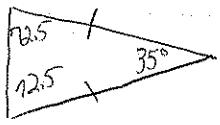
$\frac{\sin 75}{25} = \frac{\sin 51}{x}$

$20.11 = x$

3. 

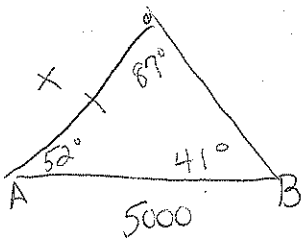
$\frac{\sin 23}{27} = \frac{\sin 134}{x}$

$49.7 = x$

4. 

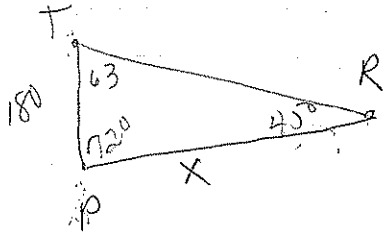
$\frac{\sin 35^\circ}{16} = \frac{\sin 22.5^\circ}{x}$

$26.6 = x$

5. 

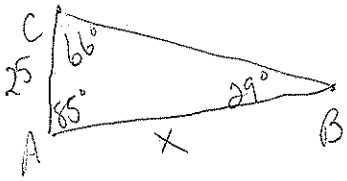
$\frac{\sin 87}{5000} = \frac{\sin 41}{x}$

$3284.8 = x$

6. 

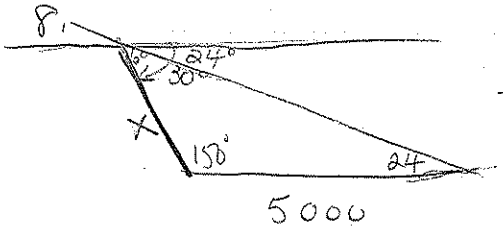
$\frac{\sin 45}{180} = \frac{\sin 63}{x}$

$226.8 = x$

7. 

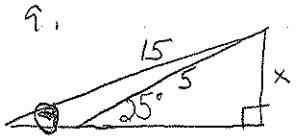
$\frac{\sin 29}{25} = \frac{\sin 66}{x}$

$47.11 = x$

8. 

$\frac{\sin 6^\circ}{5000} = \frac{\sin 24}{x}$

$19455.8 = x$

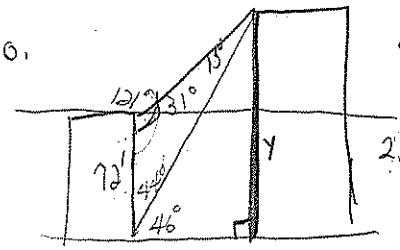
9. 

$\sin 25^\circ = \frac{x}{5}$

$x = 2.1131$

$\sin^{-1}\left(\frac{2.1131}{15}\right) = \theta$

$8.1^\circ = \theta$

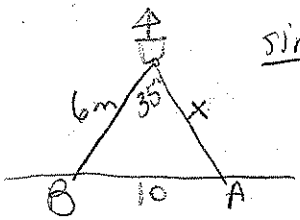
10. 

$\frac{\sin 15^\circ}{72} = \frac{\sin 121}{x}$

$238.4525 = x$

$\sin 46^\circ = \frac{y}{238.4525}$

$y = 171.5$

11. 

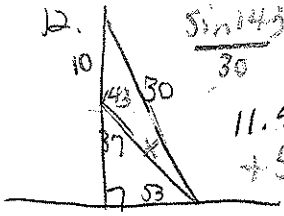
$\frac{\sin 35}{10} = \frac{\sin A}{6}$

$20.13^\circ = A$

$124.87^\circ = B$

$\frac{\sin 35}{10} = \frac{\sin 124.9}{x}$

$x = 14.4$

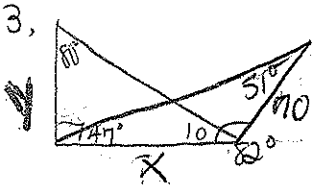
12. 

$\frac{\sin 143}{30} = \frac{\sin x}{10}$

$11.57 = x$

$+53$

64.6°

13. 

$\frac{\sin 47}{70} = \frac{\sin 51}{x}$

$x = 74.38$

$\tan 82^\circ = \frac{74.38}{y}$

$13.1 = y$