

① $c^2 = 6^2 + 7^2 - 2(6)(7)\cos 20$
 $c^2 = 6.06$
 $c = 2.46$

② $a^2 = 12^2 + 17^2 - 2(12)(17)\cos 74$
 $a^2 = 320.54$
 $a = 17.9$

③ $b^2 = 15^2 + 13^2 - 2(15)(13)\cos 83$
 $b^2 = 346.47$
 $b = 18.61$

④ $c^2 = 3^2 + 4^2 - 2(3)(4)\cos 40$
 $c^2 = 6.615$
 $c = 2.57$

⑤ $a^2 = 15^2 + 30^2 - 2(15)(30)\cos 140$
 $a^2 = 1814.44$
 $a = 42.6$

⑥ $b^2 = 100^2 + 200^2 - 2(100)(200)\cos 150$
 $b^2 = 84641.02$
 $b = 290.93$

⑦ $10^2 = 8^2 + 12^2 - 2(8)(12)\cos B$
 $\frac{10^2 - 8^2 - 12^2}{(-2)(8)(12)} = \cos B$
 $.5625 = \cos B$
 $55.77 = B$

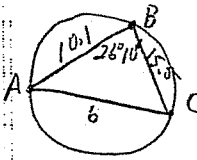
⑧ $15^2 = 9^2 + 10^2 - 2(9)(10)\cos C$
 $\frac{15^2 - 9^2 - 10^2}{(-2)(9)(10)} = \cos C$
 $-.2444 = \cos C$
 $104.15 = C$

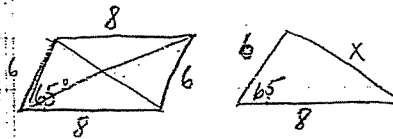
⑨ $13^2 = 30^2 + 40^2 - 2(30)(40)\cos A$
 $\frac{13^2 - 30^2 - 40^2}{(-2)(30)(40)} = \cos A$
 $.97125 = \cos A$
 $3.77 = A$

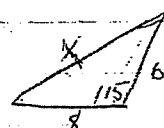
⑩ $40^2 = 30^2 + 20^2 - 2(30)(20)\cos C$
 $\frac{40^2 - 30^2 - 20^2}{(-2)(30)(20)} = \cos C$
 $-.25 = \cos C$
 $104.48 = C$

⑪ $1.8^2 = 1.6^2 + .9^2 - 2(1.6)(.9)\cos C$
 $\frac{1.8^2 - 1.6^2 - .9^2}{(-2)(1.6)(.9)} = \cos C$
 $.0451 = \cos C$
 $87.4 = C$

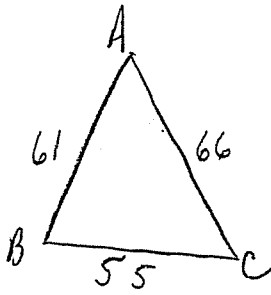
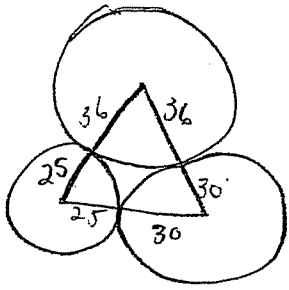
⑫ $1.2^2 = 2.4^2 + 2^2 - 2(2.4)(2)\cos A$
 $\frac{1.2^2 - 2.4^2 - 2^2}{(-2)(2.4)(2)} = \cos A$
 $.8667 = \cos A$
 $29.92 = A$

⑬ 
 $b^2 = 10.1^2 + 15.5^2 - 2(10.1)(15.5)\cos 26.1$
 $b^2 = 61.248$
 $b = 7.83$

⑭ 
 $x^2 = 6^2 + 8^2 - 2(6)(8)\cos 65$
 $x^2 = 59.43$
 $x = 7.71$


 $x^2 = 6^2 + 8^2 - 2(6)(8)\cos 115$
 $x^2 = 140.57$
 $x = 11.86$

(15)



$$55^2 = 61^2 + 66^2 - 2(61)(66)\cos A$$

$$6274 = \cos A$$

$$51.1^\circ = A$$

$$66^2 = 61^2 + 55^2 - 2(61)(55)\cos B$$

$$3562 = \cos B$$

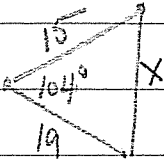
$$69.1^\circ = B$$

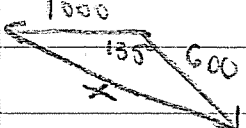
$$61^2 = 66^2 + 55^2 - 2(66)(55)\cos C$$

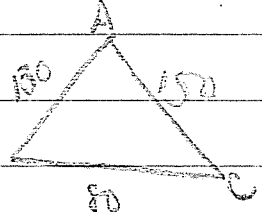
$$5041 = \cos C$$

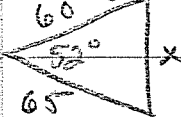
$$59.7^\circ = C$$

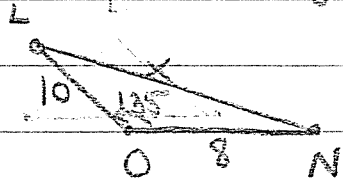
The Law of Cosines PW# 4


①  $x^2 = 15^2 + 19^2 - 2(15)(19)\cos 104^\circ$
 $x^2 = 723.9$
 $x = 26.91 \text{ km}$

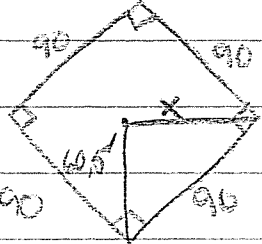
②  $x^2 = 600^2 + 1000^2 - 2(600)(1000)\cos 135^\circ$
 $x^2 = 2208528.137$
 $x = 4486.11 \text{ km}$

③  $80^2 = 130^2 + 150^2 - 2(130)(150)\cos A$ $\cos A = .8462$ $A = 32.2^\circ$
 $150^2 = 80^2 + 130^2 - 2(80)(130)\cos B$ $\cos B = -.0385$ $B = 89.8^\circ$
 $130^2 = 80^2 + 150^2 - 2(80)(150)\cos C$ $\cos C = .5$ $C = 60^\circ$

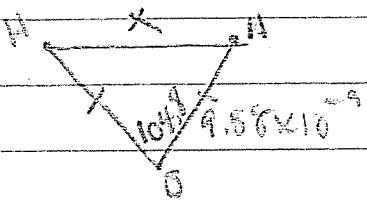
④  $x^2 = 60^2 + 65^2 - 2(60)(65)\cos 52^\circ$ $P = 60 + 65 + 55$
 $x^2 = 3022.84$ $P = 180 \text{ m}$
 $x = 54.9$

⑤  $x^2 = 8^2 + 10^2 - 2(8)(10)\cos 125^\circ$
 $x^2 = 277.14$
 $x = 16.65 \text{ mi}$

⑥  $40^2 = 20^2 + 50^2 - 2(20)(50)\cos x$
 $.65 = \cos x$ $x = 49.5^\circ$

⑦  $x^2 = 60.5^2 + 90^2 - 2(60.5)(90)\cos 115^\circ$
 $x^2 = 4059.816$
 $x = 63.72$

8

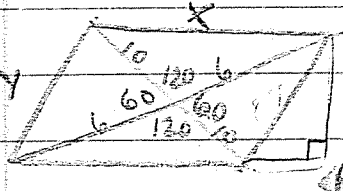


$$x^2 = (9.58 \times 10^{-9})^2 + (9.58 \times 10^{-9})^2 - 2(9.58 \times 10^{-9})^2 \cos 104^\circ$$

$$x^2 = 2.3 \times 10^{-16}$$

$$x = 1.52 \times 10^{-8}$$

8
 *
 2 parallel
 lines meet
 at 45°



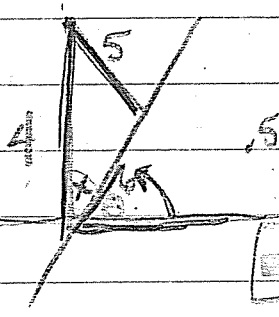
$$x^2 = 6^2 + 10^2 - 2(6)(10) \cos 120^\circ \quad x^2 = 196 \quad x = 14$$

$$y^2 = 6^2 + 10^2 - 2(6)(10) \cos 60^\circ \quad y^2 = 76 \quad y = 8.7$$

$$A = \frac{1}{2} ab \sin C \quad x \cdot 4 = 103.6$$

$$\therefore \left(\frac{1}{2} (10)(6) \sin 60^\circ \right) \times 4 = 103.6$$

9



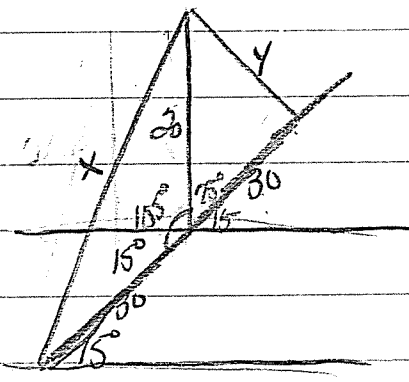
$$5^2 = 4^2 + 6^2 - 2(4)(6) \cos x$$

$$.5625 = \cos x$$

$$55.8^\circ = x$$

$$34.2^\circ = \odot$$

* 11



$$x^2 = 20^2 + 30^2 - 2(20)(30) \cos 105^\circ$$

$$x^2 = 1610.58$$

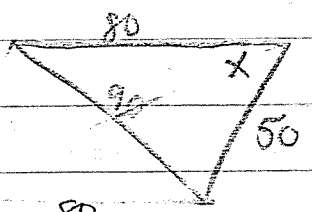
$$x = 40.1 \text{ m}$$

$$y^2 = 20^2 + 30^2 - 2(20)(30) \cos 75^\circ$$

$$y^2 = 989.42$$

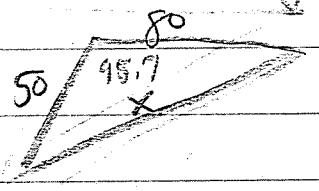
$$y = 31.5 \text{ m}$$

12



$$90^\circ = 80^2 + 50^2 - 2(80)(50) \cos x$$

$$.1 = \cos x \quad x = 84.3^\circ$$



$$x^2 = 50^2 + 80^2 - 2(80)(50) \cos 95.7^\circ$$

$$x^2 = 9694.6$$

$$x = 98.5$$