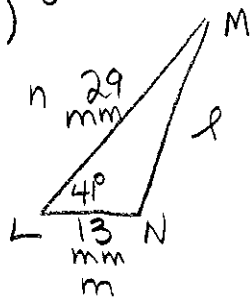
# Pre-Calculus Math 11

Page 119 # 1bc, 2bd, 4be, 5, 7, 8

1. b)




$l^2 = m^2 + n^2 - 2mn\cos L$

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

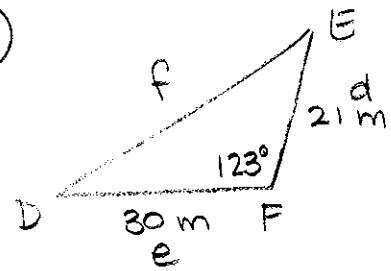
$l^2 = 169 + 841 - 569.0510$

$l^2 = 440.949$

$l = 20.999$

$l = 21$ mm

c)




$f^2 = d^2 + e^2 - 2de\cos F$

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

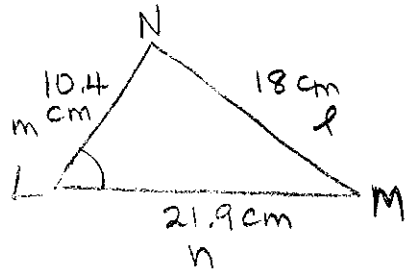
$f^2 = 441 + 900 - (-686.2452)$

$f^2 = 2027.2452$

$f = 45.0249$

$f = 45$ m

2. b)




$l^2 = m^2 + n^2 - 2mn\cos L$

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

$324 = 108.16 + 479.61 - 455.52\cos L$

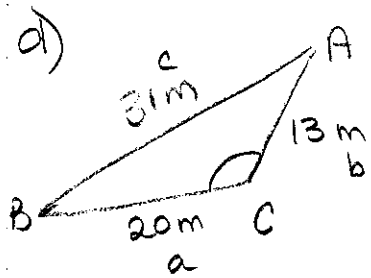
$\frac{-263.77}{-455.52} = \frac{-455.52\cos L}{-455.52}$

$0.57905 = \cos L$

$\angle L = 54.616$

$\angle L = 55°$

d)




$c^2 = a^2 + b^2 - 2ab\cos C$

$31^2 = 20^2 + 13^2 - 2(20)(13)\cos C$

$961 = 400 + 169 - 520\cos C$

$392 = -520\cos C$

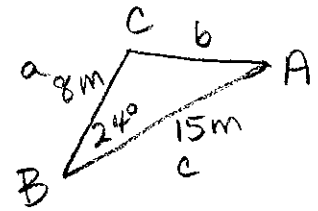
$-0.753846 = \cos C$

$\angle C = 138.925$

$\angle C = 139°$

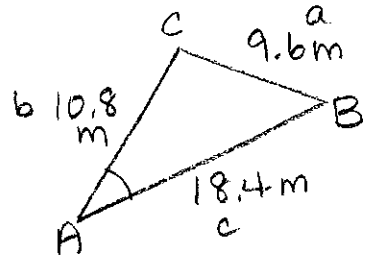
Page 119 cont.

4. b)



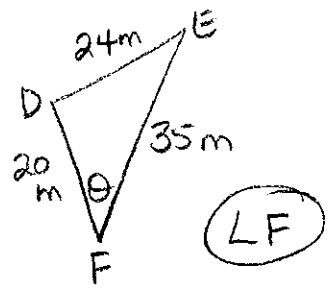

$b^2 = a^2 + c^2 - 2ac\cos B$
$b^2 = 8^2 + 15^2 - 2(8)(15)\cos 24°$
$b^2 = 64 + 225 - 219.2509$
$b^2 = 69.7491$
$b = 8.3516$
$b = 8.4\ m$

e)




$a^2 = b^2 + c^2 - 2bc\cos A$
$9.6^2 = 10.8^2 + 18.4^2 - 2(10.8)(18.4)\cos A$
$92.16 = 116.64 + 338.56 - 397.44\cos A$
$-363.04 = -397.44\cos A$
$0.913446 = \cos A$
$\angle A = 24.013999$
$\angle A = 24°$

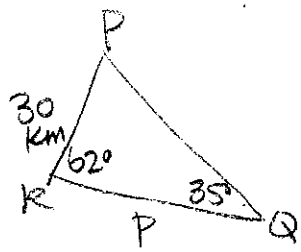
5. a)




LF

cosine law - 3 sides are known

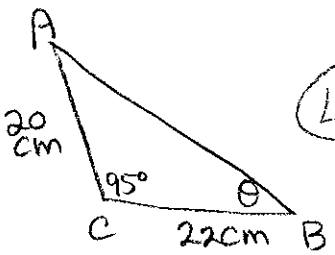
b)




side p

sine law - only 1 side is known

c)

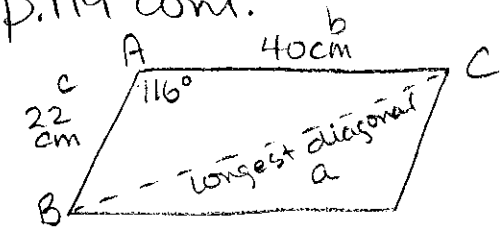



∠B

sine law - if you are looking for an angle, you need to be given the 3 sides to use the cosine law.

P.119 cont.

7.




$a^2 = b^2 + c^2 - 2bc\cos A$

$a^2 = 40^2 + 22^2 - 2(40)(22)\cos 116°$

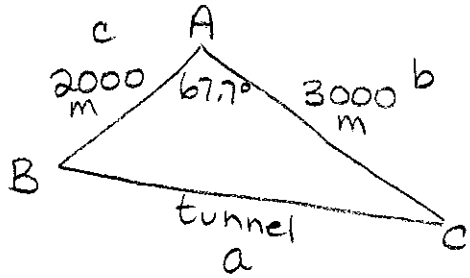
$a^2 = 1600 + 484 - (-771.533218)$

$a^2 = 2855.533218$

$a = 53.4372$

$a = 53\text{ cm}$

8.




$a^2 = b^2 + c^2 - 2bc\cos A$

$a^2 = 3000^2 + 2000^2 - 2(3000)(2000)\cos 67.7$

$a^2 = 9{,}000{,}000 + 4{,}000{,}000 - 4{,}553{,}473.914$

$a^2 = 8{,}446{,}526.086$

$a = 2906.2908$

$a = 2906\text{ m}$