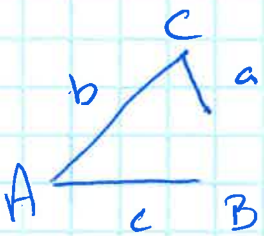
4.7 day 2 ex 3+4 2/3/2020

Goal: Be able to determine the # of triangles given a SSA triangle ~ & be able to completely solve ambiguous triangles

Given A, a, b



step 1 find the height

$h = b \sin A$

step 2 use the rules on the # of Δ's to find how many Δ's there are →

how many Δ's

$a < h$ 0 Δ's

$a = h$ 1 rt Δ

$h < a < b$ 2 Δ's

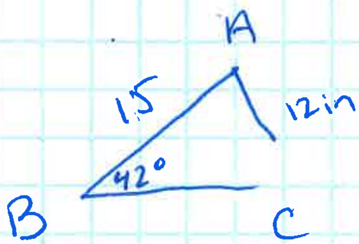
$a \geq b$ 1 triangle

no height needed

ex | Given Δ ABC $B = 42^\circ$

$b = 12$in c 15in

determine # of Δ's + include a picture



$h = 15 \sin 42^\circ$

$h = 10.037$

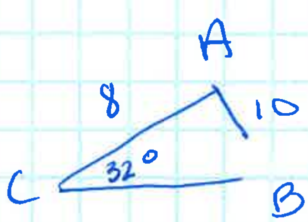
$10.037 < 12 < 15$ ∴ 2 Δ's

yt | ① Δ ABC

$C = 32^\circ$

$c = 10$ miles

$b = 8$ miles



$10 > 8$

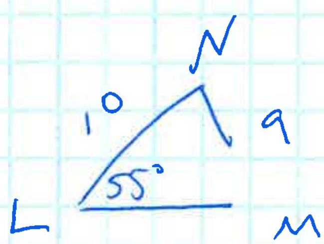
1 Δ

② ΔLMN

$L = 55^\circ$

$l = 9$ in

$m = 10$ in



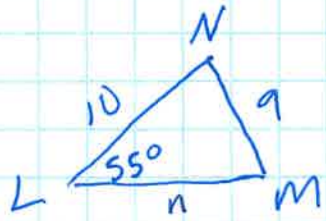
$h = 10 \sin 55$

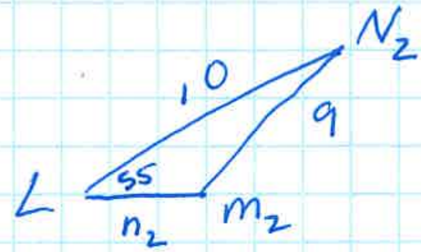
$h = 8.192$ in

$8.192 < 9 < 10$ ∴

2 Δ's

Solve ΔLMN for all missing pieces





$* \ \frac{\sin M}{10} = \frac{\sin 55}{9}$

$\sin M = \frac{10 \sin 55}{9}$

$* \ M = \sin^{-1}\left(\frac{10 \sin 55}{9}\right)$

$* \ M = 65.529°$

$N = 180 - (65.529° + 55°)$

$N = 59.471°$

$\frac{9}{\sin 55} = \frac{n}{\sin 59.471}$

$9.464 = n$

$M_2 = 180° - 65.529°$

$M_2 = 114.471°$

$N_2 = 180° - (114.471° + 55°)$

$N_2 = 10.529°$

$\frac{n_2}{\sin 10.529} = \frac{9}{\sin 55}$

$n_2 = 2.008$