Mathematics 10D

7.2 Solving Similar Δ Problems

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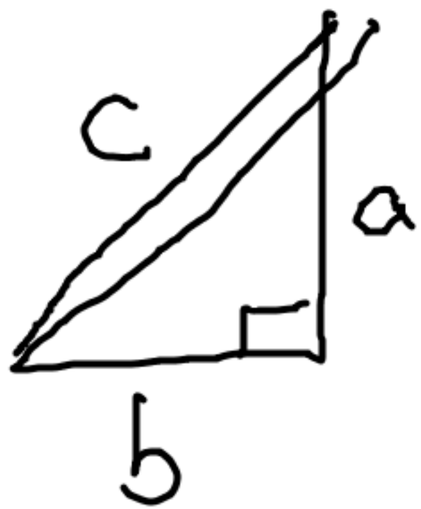
Our Goal: Solve problems using similar triangle models

Applications:

Indirect measurement (shadows, surveyors, etc)

Don't forget about the Pythagorean Theorem!

$$a^2 + b^2 = c^2$$



Determine the scale factor and the height of the mountain.

1) $\frac{1350m+4m}{4m} = \frac{1354}{4} = 338.5$

2) $2m \times 338.5 = 677m$

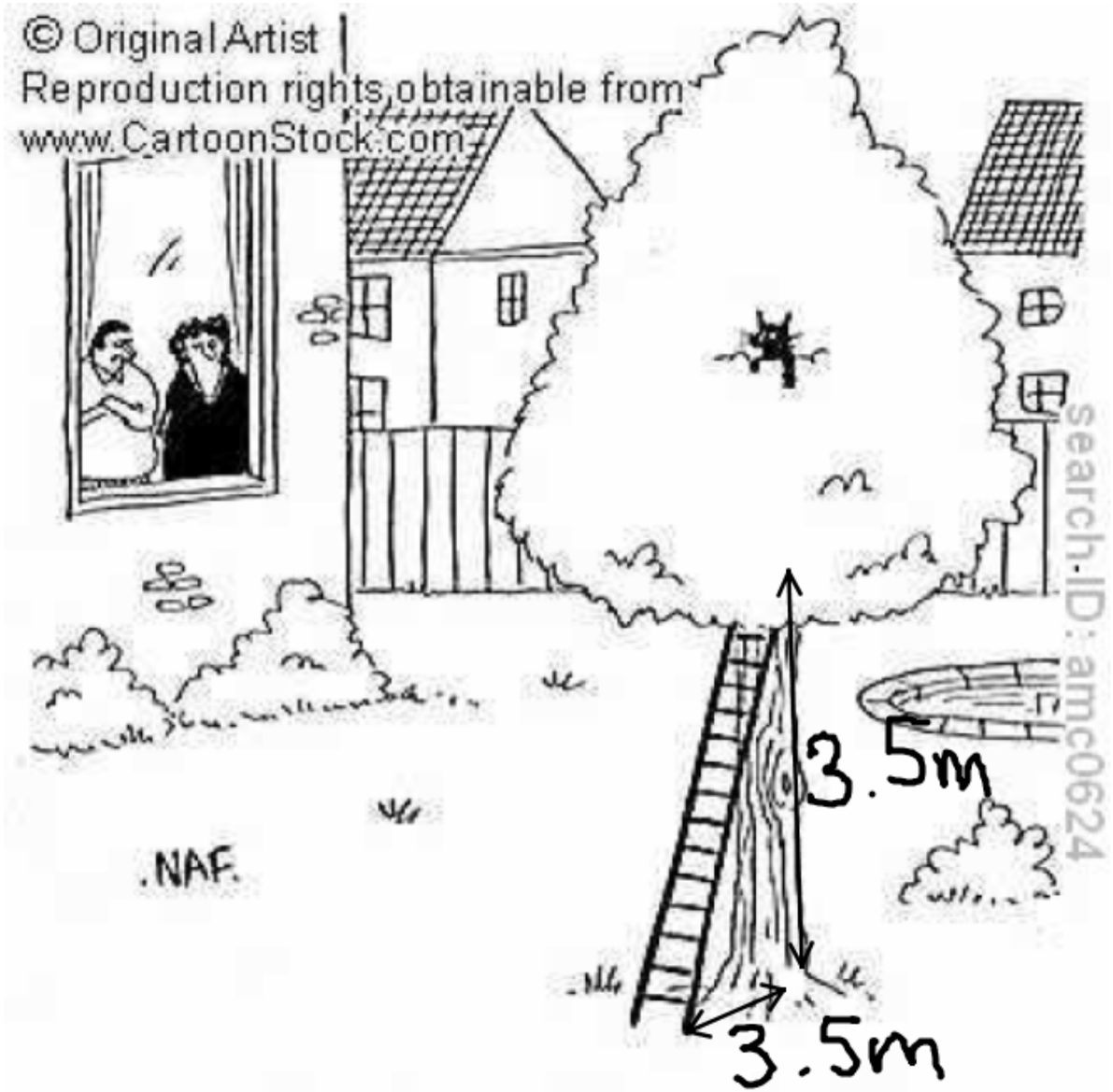
$\therefore$ S.F. = 338.5 and the mountain is 677m tall.

Alt: prop.

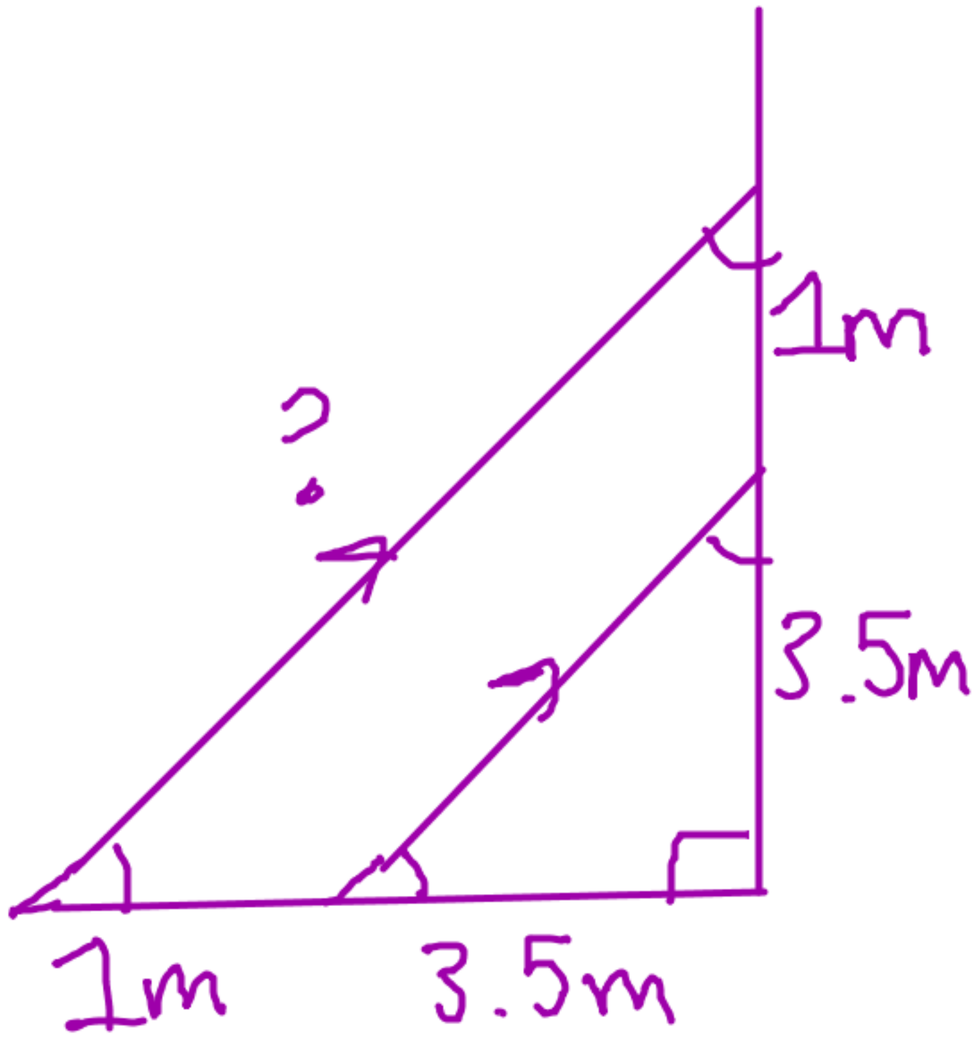
$\frac{2}{4} = \frac{h}{1354}$

$2708 = 4h$

$677 = h$



These people need to buy a larger ladder and place it parallel to the one currently there one meter farther and one meter higher. Draw this image.



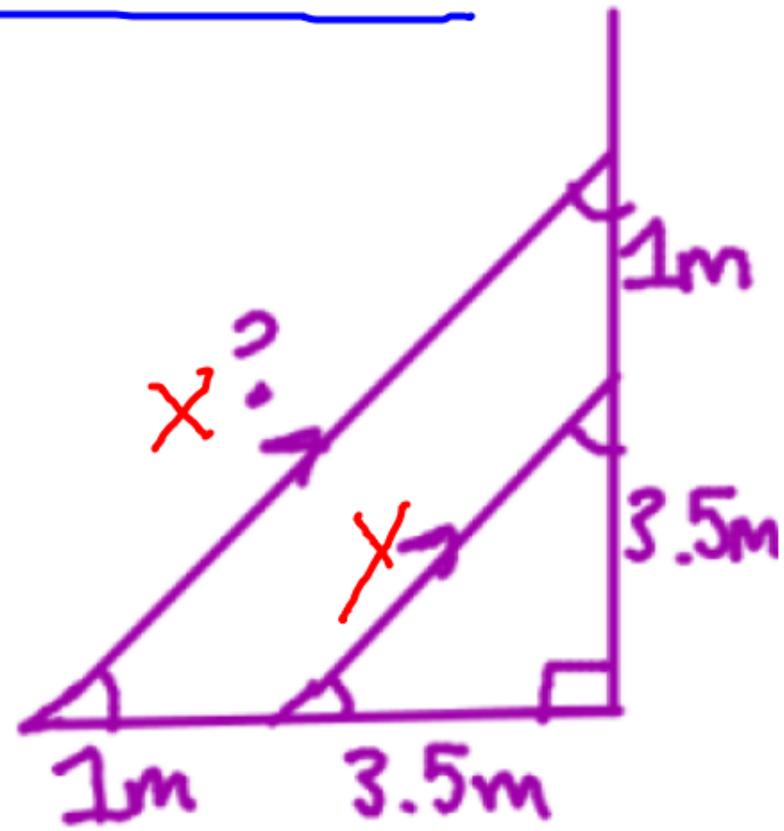
How long does the new ladder need to be? How much longer is it than the one there?

$x^2 = 4.5^2 + 4.5^2$

$x^2 = 20.25 + 20.25$

$x = \sqrt{40.5}$

$x \approx 6.36m$



$y^2 = 3.5^2 + 3.5^2$

$y^2 = 12.25 + 12.25$

$y = \sqrt{24.5}$

$y \approx 5m$

$6.36m - 5m$

$= 1.36m$ longer

∴ they need a 6.36m ladder, which is 1.36m longer