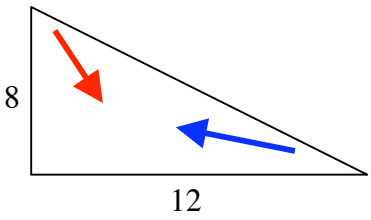
Right Triangles

For each triangle determine a) slope, b) the length of the missing side, c) the angles of the triangle.

Example:



$$slope = m = \frac{8}{12} = \frac{2}{3}$$

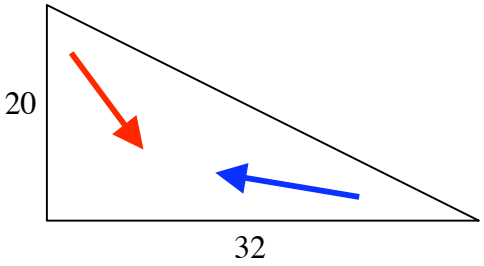
length of hypotenuse $\Rightarrow c^2 = a^2 + b^2 \Rightarrow$

$c^2 = 8^2 + 12^2 \Rightarrow c^2 = 64 + 144 \Rightarrow c^2 = 208 \Rightarrow$

$c = \sqrt{208} = 14.42$

$\tan\theta = \frac{opp}{adj} \Rightarrow \tan\theta = \frac{8}{12} \Rightarrow \tan\theta = 0.6667 \Rightarrow \theta = 33.69$

$\tan\theta = \frac{opp}{adj} \Rightarrow \tan\theta = \frac{12}{8} \Rightarrow \tan\theta = 1.5 \Rightarrow \theta = 56.3$



$$slope = m = \frac{20}{32} = \frac{5}{8}$$

length of hypotenuse $\Rightarrow c^2 = a^2 + b^2 \Rightarrow$

$c^2 = 20^2 + 32^2 \Rightarrow c^2 = 400 + 1024 \Rightarrow$

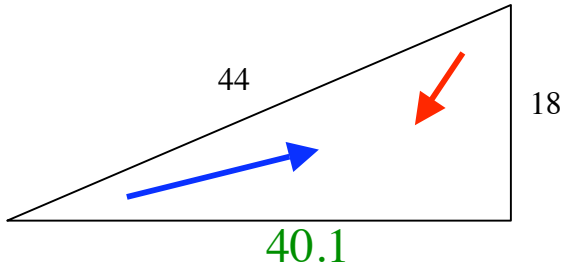
$c^2 = 1424 \Rightarrow c = \sqrt{1424} = 37.7$

$\tan\theta = \frac{opp}{adj} \Rightarrow \tan\theta = \frac{20}{32} \Rightarrow \tan\theta = 0.625 \Rightarrow$

$\theta = 33.01$

$\tan\theta = \frac{opp}{adj} \Rightarrow \tan\theta = \frac{32}{20} \Rightarrow \tan\theta = 1.6 \Rightarrow$

$\theta = 57.99$



length of side $\Rightarrow c^2 = a^2 + b^2 \Rightarrow$

$44^2 = 18^2 + b^2 \Rightarrow 1936 = 324 + b^2 \Rightarrow$

$1612 = b^2 \Rightarrow b = \sqrt{1612} = 40.1$

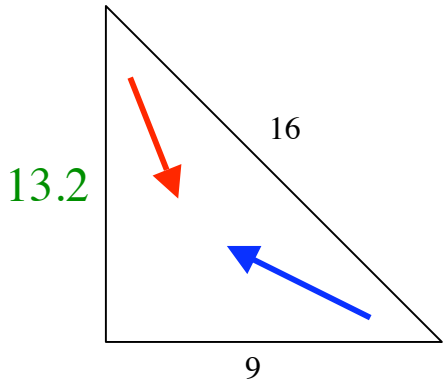
$$slope = m = \frac{18}{40.1} = 0.448 = \frac{448}{1000} = \frac{112}{250} = \frac{56}{125}$$

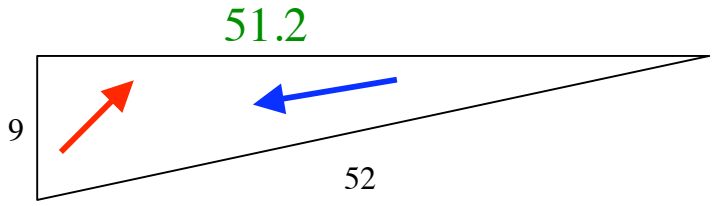
$\tan\theta = \frac{opp}{adj} \Rightarrow \tan\theta = \frac{18}{40.1} \Rightarrow \tan\theta = 0.448 \Rightarrow$

$\theta = 24.1$

$\tan\theta = \frac{opp}{adj} \Rightarrow \tan\theta = \frac{40.1}{18} \Rightarrow \tan\theta = 2.227 \Rightarrow$

$\theta = 65.8$





length of side $\Rightarrow c^2 = a^2 + b^2 \Rightarrow$

$16^2 = a^2 + 9^2 \Rightarrow 256 = a^2 + 81 \Rightarrow$

$175 = a^2 \Rightarrow a = \sqrt{175} = 13.2$

$slope = m = \dfrac{13.2}{9} = 1.469 = \dfrac{1469}{1000}$

$\tan\theta = \dfrac{opp}{adj} \Rightarrow \tan\theta = \dfrac{13.2}{9} \Rightarrow \tan\theta = 1.469 \Rightarrow$

$\theta = 55.7$

$\tan\theta = \dfrac{opp}{adj} \Rightarrow \tan\theta = \dfrac{9}{13.2} \Rightarrow \tan\theta = 0.681 \Rightarrow$

$\theta = 34.2$

length of side $\Rightarrow c^2 = a^2 + b^2 \Rightarrow$

$52^2 = 9^2 + b^2 \Rightarrow 2704 = 81 + b^2 \Rightarrow$

$2623 = b^2 \Rightarrow b = \sqrt{2623} = 51.2$

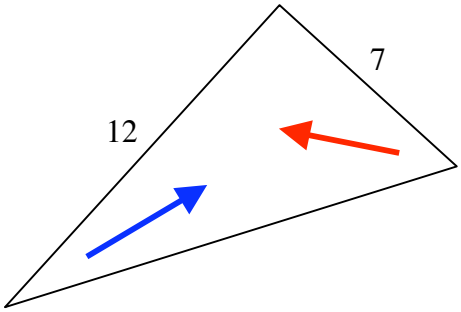
$slope = m = \dfrac{9}{51.2} = 0.175 = \dfrac{175}{1000} = \dfrac{35}{200} = \dfrac{7}{40}$

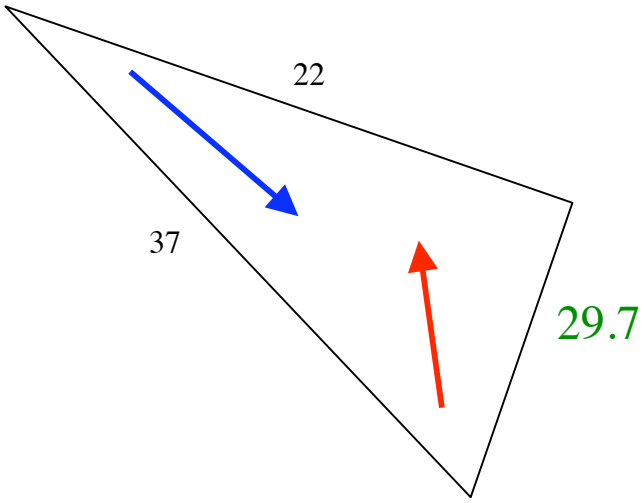
$\tan\theta = \dfrac{opp}{adj} \Rightarrow \tan\theta = \dfrac{9}{51.2} \Rightarrow \tan\theta = 0.175 \Rightarrow$

$\theta = 9.9$

$\tan\theta = \dfrac{opp}{adj} \Rightarrow \tan\theta = \dfrac{51.2}{9} \Rightarrow \tan\theta = 5.668 \Rightarrow$

$\theta = 80.0$





$slope = m = \frac{7}{12}$

length of hypotenuse $\Rightarrow c^2 = a^2 + b^2 \Rightarrow$

$c^2 = 7^2 + 12^2 \Rightarrow c^2 = 49 + 144 \Rightarrow$

$c^2 = 193 \Rightarrow c = \sqrt{193} = 13.89$

$\tan\theta = \frac{opp}{adj} \Rightarrow \tan\theta = \frac{7}{12} \Rightarrow \tan\theta = 0.583 \Rightarrow$

$\theta = 30.2$

$\tan\theta = \frac{opp}{adj} \Rightarrow \tan\theta = \frac{12}{7} \Rightarrow \tan\theta = 1.714 \Rightarrow$

$\theta = 59.7$

length of side $\Rightarrow c^2 = a^2 + b^2 \Rightarrow$

$37^2 = a^2 + 22^2 \Rightarrow 1369 = a^2 + 484 \Rightarrow$

$885 = a^2 \Rightarrow a = \sqrt{885} = 29.7$

$slope = m = \frac{29.7}{22} = 1.35 = \frac{135}{100} = \frac{27}{20}$

$\tan\theta = \frac{opp}{adj} \Rightarrow \tan\theta = \frac{29.7}{22} \Rightarrow \tan\theta = 1.35 \Rightarrow$

$\theta = 53.4$

$\tan\theta = \frac{opp}{adj} \Rightarrow \tan\theta = \frac{22}{29.7} \Rightarrow \tan\theta = 0.74 \Rightarrow$

$\theta = 36.5$