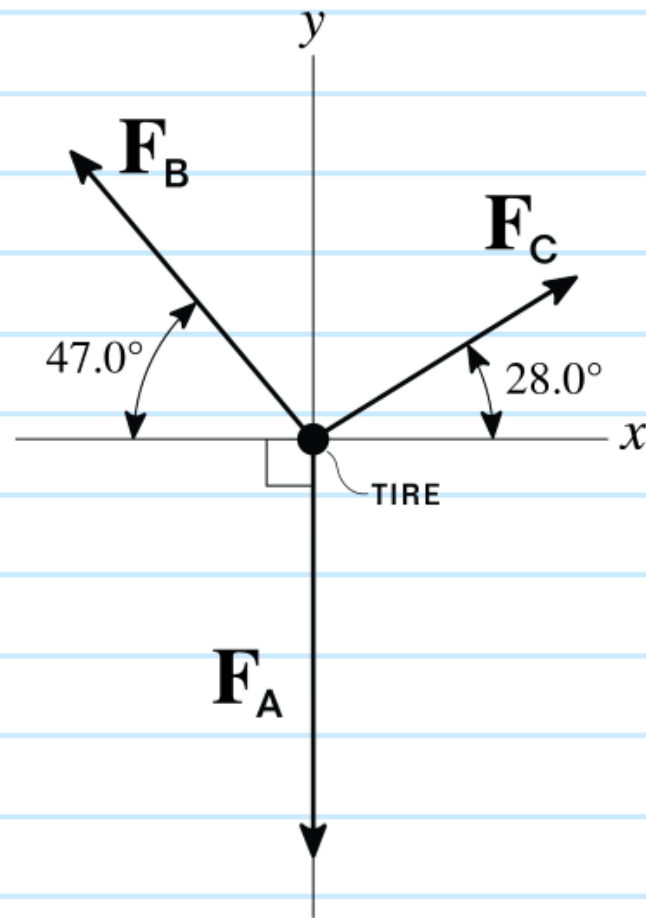
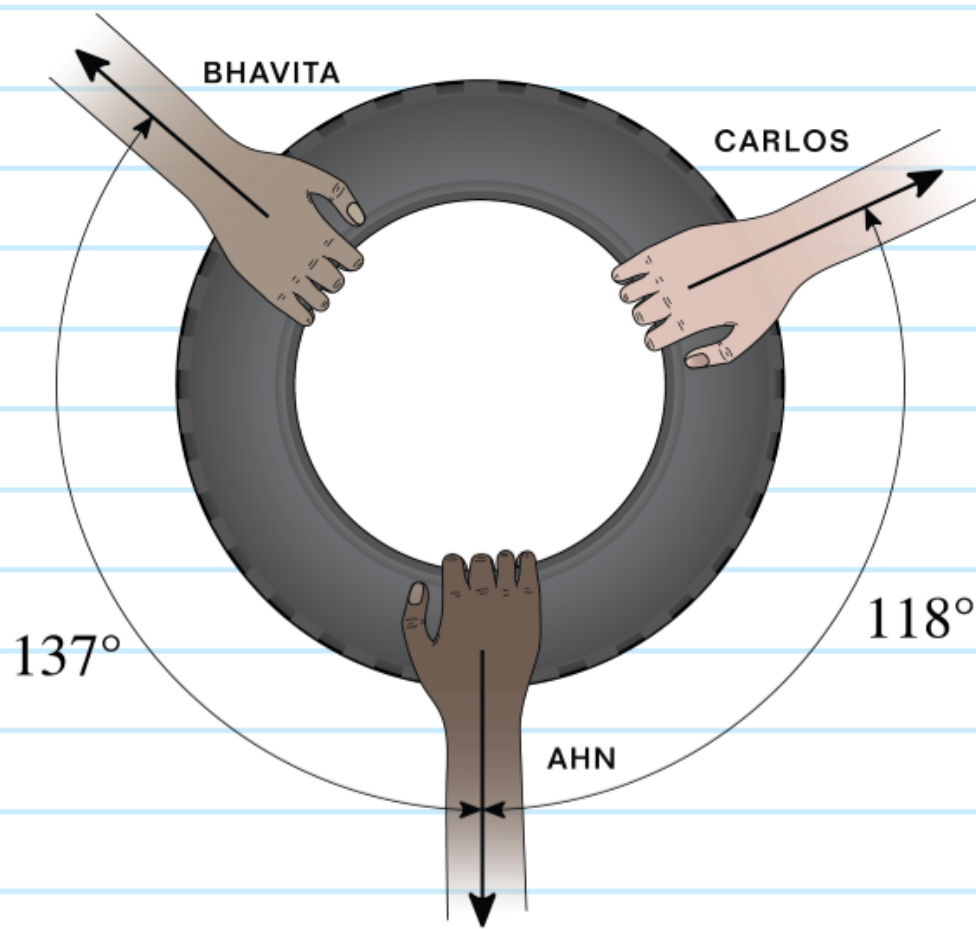


21-5-3-3 - GD - 001

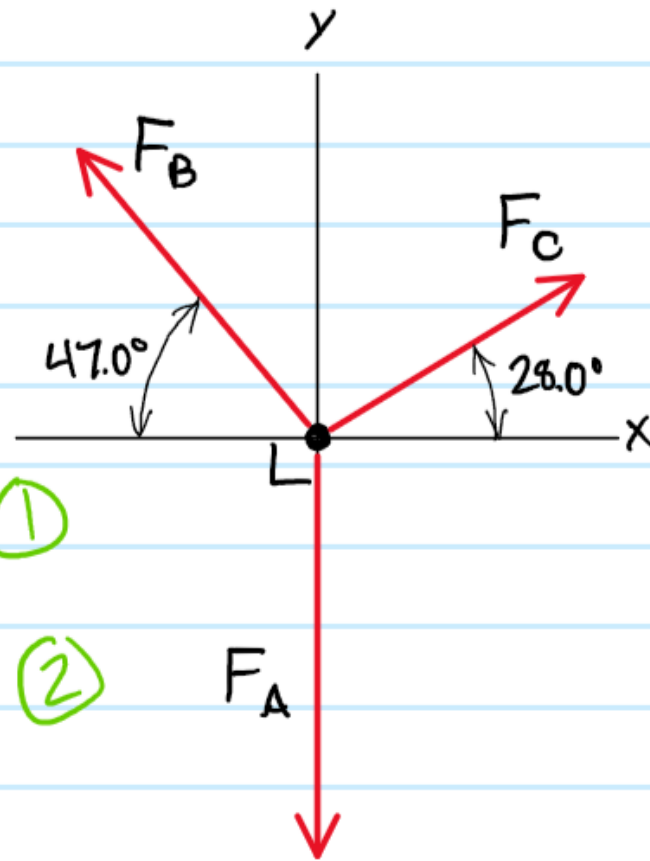


Douglas College

Three children are pulling on a tire, such that the tire is in equilibrium. If Ahn is pulling at \underline{F}_B N, then with how many newtons are Bhavita and Carlos pulling respectively?

given F_A
find F_B, F_C

FBD



Equations of Equilibrium

$$\sum F_x = 0 = F_C \cos 28^\circ - F_B \cos 47^\circ \quad (1)$$

$$\sum F_y = 0 = F_C \sin 28^\circ + F_B \sin 47^\circ - F_A \quad (2)$$

$$(1)' \quad F_C = F_B \frac{\cos 47}{\cos 28}$$

substitute (1)' \rightarrow (2)

$$0 = F_B \frac{\sin 28 \cos 47}{\cos 28} + F_B \sin 47 - F_A$$

$$F_B = \frac{F_A}{(\tan 28 \cos 47 + \sin 47)}$$

sub back into (1)'

$$F_C = \frac{F_A \cos 47}{\cos 28 (\tan 28 \cos 47 + \sin 47)}$$