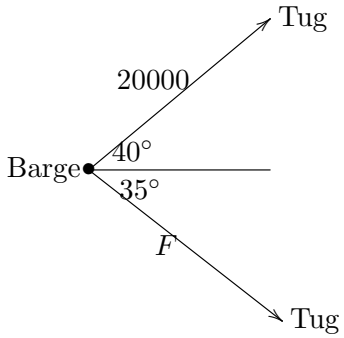
Force is a vector

1. The picture shows two tugs pulling a barge. If one pulls with 20000 Newtons of force what force should the other tug pull with to keep the barge going straight to the right.



Answer: We need the vertical components of the forces to cancel.

So, $20000\sin(40°) = F\sin(35°) \;\Rightarrow\; F = \dfrac{20000\sin(40°)}{\sin(35°)} \approx 22413.32.$

18.02SC Multivariable Calculus
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