

1. What single force is equivalent to the combination of the two forces 15 N at 10° above the positive x -axis and 25 N at 40° below the positive x -axis?

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2. A plane is headed due east; its air speed indicator reads 215 km/h. A steady wind of 65 km/h is blowing due north.
- (a) What is the velocity of the plane with respect to the ground?
 - (b) If the pilot wishes to fly due east, what must be the heading? That is, what must the compass read?

3. In a two-dimensional tug-of-war, Alex, Betty, and Charles pull on ropes that are tied to an automobile tire. The angle between Alex and Betty's ropes is 137° . Alex pulls with a force of 220 N, and Charles with a force of 170 N. With what force does Betty pull?