NAME: DATE: Period:

Forces at an angle

Solve each problem and include an illustration indicating what is occurring. (With vectors)

1. A jet is taking off from ABIA. The 12,000kg airplane is accelerating at $6m/s^2$. At an angle of 36°. What are the vertical and horizontal components of the force? Draw this.

2. Aleah pushes in her chair, like every good student should, after class. She applies 22N of force at a 62° angle. What are the vertical and horizontal components of this force?

3. Victoria pulls the cord of a ceiling fan in order to modify the airflow in his room. If he pulls the cord at an angle, the force will not be direct. She pulls down with a force of 3.5N and horizontally at 1.1N. What is the total force? What is the angle of force?

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4. Lombard St. in San Francisco is famous for being steep and curvy. If a Smart FourTwo (730kg) is descending Lombard St. at an angle of 28°, what are the vertical and horizontal components of force? If the car is travelling at 7.6m/s, what are the vertical and horizontal components of velocity?

5. A Tomahawk cruise missile is being fired out of a F-18 fighter jet during the first Gulf War in 1991. The maximum velocity of this ordinance is 880km/h. If fired at an angle of 75°, what are the vertical and horizontal components?

6. Jon walks his dog Scruffie down the street. Scruffie wishes to be free from the bondage of pet ownership and pulls on the leash. If Jon holds the leash at a 45° angle and senses that Scruffie is pulling at 56N, what are the vertical and horizontal components of that force?