### 2 Force Problems

1) A 25 Newton force to the right, a 15 Newton force to the left and a 10 Newton force up, are acting on a single point. What additional forces must be added to be in equilibrium?

2) You push down on the 12 kg box with force of 40.0 N. Draw a FBD on the static box. What would the net force be? Determine the normal force acting on the box.

3) a) Calculate the acceleration if you push with a 30 N force sideways on a 2 kg pitcher of water.

b) What would the acceleration be if there was a friction force of 4N?

4) 3000N accelerates a 1500kg car. If frictional forces total 1000N, what is the acceleration of the car?

5) A bird is soaring to the ground and has a weight of 10 N and air resistance is pushing up on the bird with 3 N. What is the acceleration of the bird, if it has a mass 1kg?

6) Two dogs are playing tug-o-war. One dog is pulling with 14 N and the other dog with 8 N. If the toy is accelerating at 2 m/s2, what is the mass of the toy?

7) A student applies a force of 20 Newtons to a 4 kg box. 5 Newtons of friction also act on the block in the opposite direction of motion. What is the acceleration of the box?

8) a) A 5000 kg plane is flying with a thrust force of 1000N and against a headwind of 150 N. What is the acceleration of the plane?

b) What would be the acceleration of the plane on the trip back, if instead it was flying with a tailwind of 200 N?

1) 10N down and left 2) 157.6 N 3)a) 15 m/s2 b) 13 m/s2 4) 1.3 m/s2 5) 7 m/s2 6) 3 kg 7) 3.75 m/s2 8)a) .17 m/s2 b) .24 m/s2

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