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Period Date

**PHYSICS UNIT IV Worksheet 3A - Force Diagrams & Statics**

For each of the problems below, carefully draw a force diagram of the system before attempting to solve the problem.

1. Determine the tension in each cable in case A and case B.

Case A Case B

 

2. Determine tension in each cable. (Hint: There is more than one way to define the system.



3. The object below is hung from two cables that each have a tension of 25 N. Write the equation for the sum of the forces in the y-direction. What is the weight of the object?



4. The cable at left (T1) exerts a -30 N force.



a. Write the equation for the sum of the forces in the

x-direction. What is the value of T2?

b. Write the equation for the sum of the forces in the

y-direction. What is the force of gravity acting on the ball?

c. What if now, T1 = -50 N and T2 = 100 N, what would the value of the weight have to be? (solve by vector addition)

5. A 20 kg weight is hung from a rope that is pushed away from the wall by a boom that that applies a tension T2.

T2

T1

40°

W

a. Write the equation for the sum of the forces

in the y-direction. What is the force of

tension T1 acting on the rope?

b. Write the equation for the sum of the forces

in the x-direction. What is the value of

tension along the boom T2?