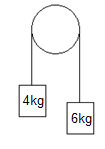
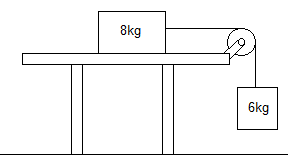
**LAWS OF MOTION: TENSION PROBLEMS I**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_

**1. Two blocks, m1= 6kg and m2= 4 kg blocks are hanging from a frictionless pulley and released at rest. Find:**

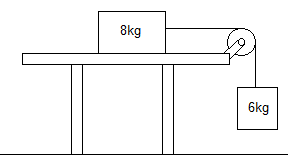
a. The acceleration of the system. \_\_\_\_\_\_\_\_\_\_\_\_\_

b. The tension in the string. \_\_\_\_\_\_\_\_\_\_\_\_\_

**2. A mass on a frictionless table is attached to a hanging mass over a frictionless pulley as shown. Find:**

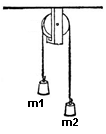
a. the acceleration of the masses \_\_\_\_\_\_\_\_\_\_\_\_\_

b. the tension in the rope \_\_\_\_\_\_\_\_\_\_\_\_\_

**3. If the 8kg block from the system from problem 2 has a friction force of 25N acting on the 8kg, find:**

a. the acceleration of the masses \_\_\_\_\_\_\_\_\_\_\_\_\_

b. tension in the rope \_\_\_\_\_\_\_\_\_\_\_\_\_

**4. Two blocks (m1 = 7.0 kg and m2 = 13.0 kg) are connected by a rope over a pulley as shown.**

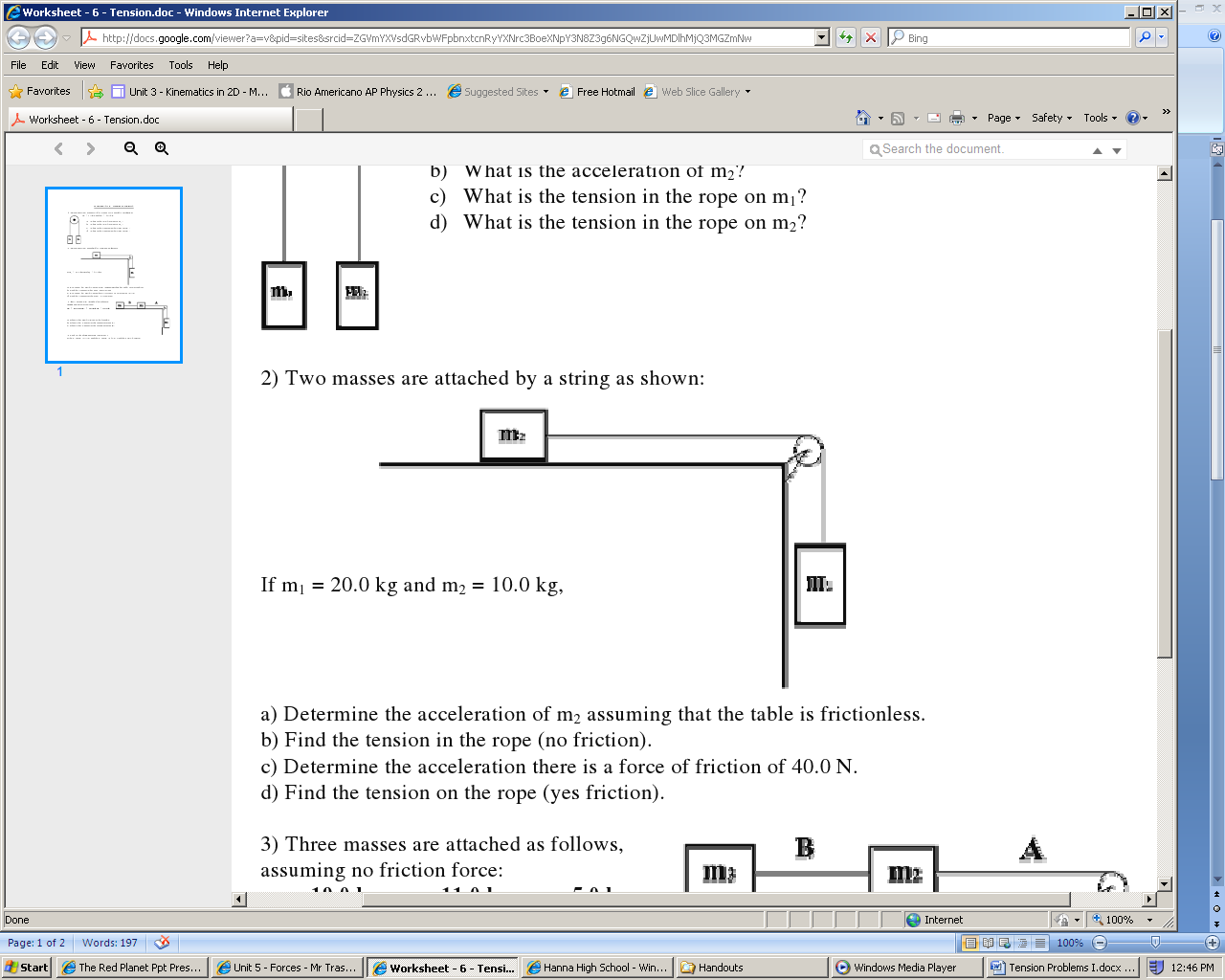
a) What is the acceleration of m1? \_\_\_\_\_\_\_\_\_\_\_\_\_

b) What is the acceleration of m2? \_\_\_\_\_\_\_\_\_\_\_\_\_

c) What is the tension in the rope on m1? \_\_\_\_\_\_\_\_\_\_\_\_\_

d) What is the tension in the rope on m2? \_\_\_\_\_\_\_\_\_\_\_\_\_

e) The distance each objet will move in the first two seconds of motion if both objects start from rest. \_\_\_\_\_\_\_\_\_\_\_\_\_

**5. Two masses (m1 = 20.0 kg and m2 = 10.0 kg) are attached by a string as shown:**

a) Determine the acceleration of m2 assuming that the table

m2

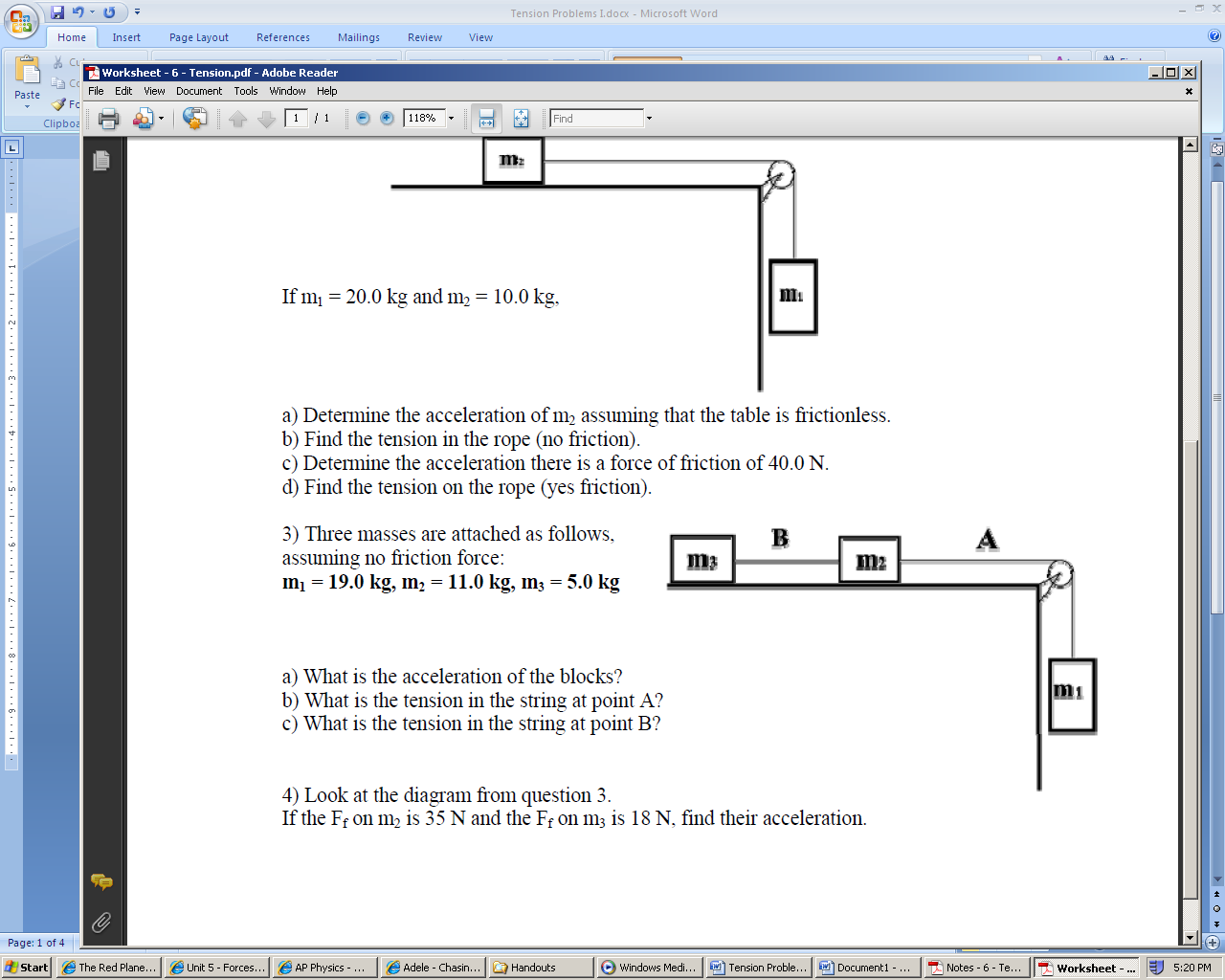
is frictionless. \_\_\_\_\_\_\_\_\_\_\_\_\_

b) Find the tension in the rope (no friction). \_\_\_\_\_\_\_\_\_\_\_\_\_

m1

c) Determine the acceleration there is a force of friction of 40N.

d) Find the tension on the rope (yes, now with friction). \_\_\_\_\_\_\_\_\_\_\_\_\_

**3. Three masses are attached (m1 = 19.0 kg, m2 = 11.0 kg, m3 = 5.0 kg) as shown.**

Assuming no friction for, determine:

m1

m2

1. What is the acceleration of the blocks?

\_\_\_\_\_\_\_\_\_\_\_\_\_

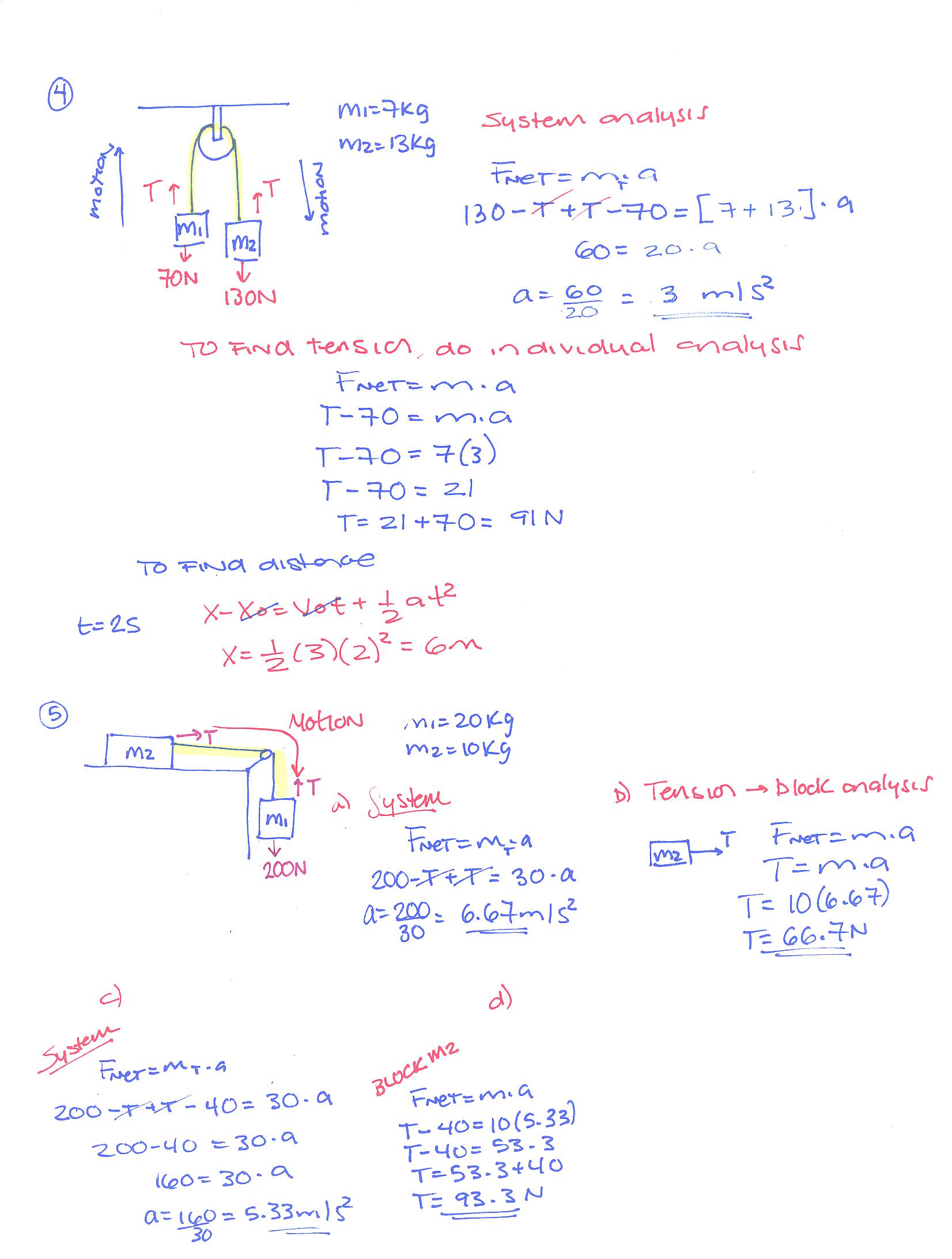
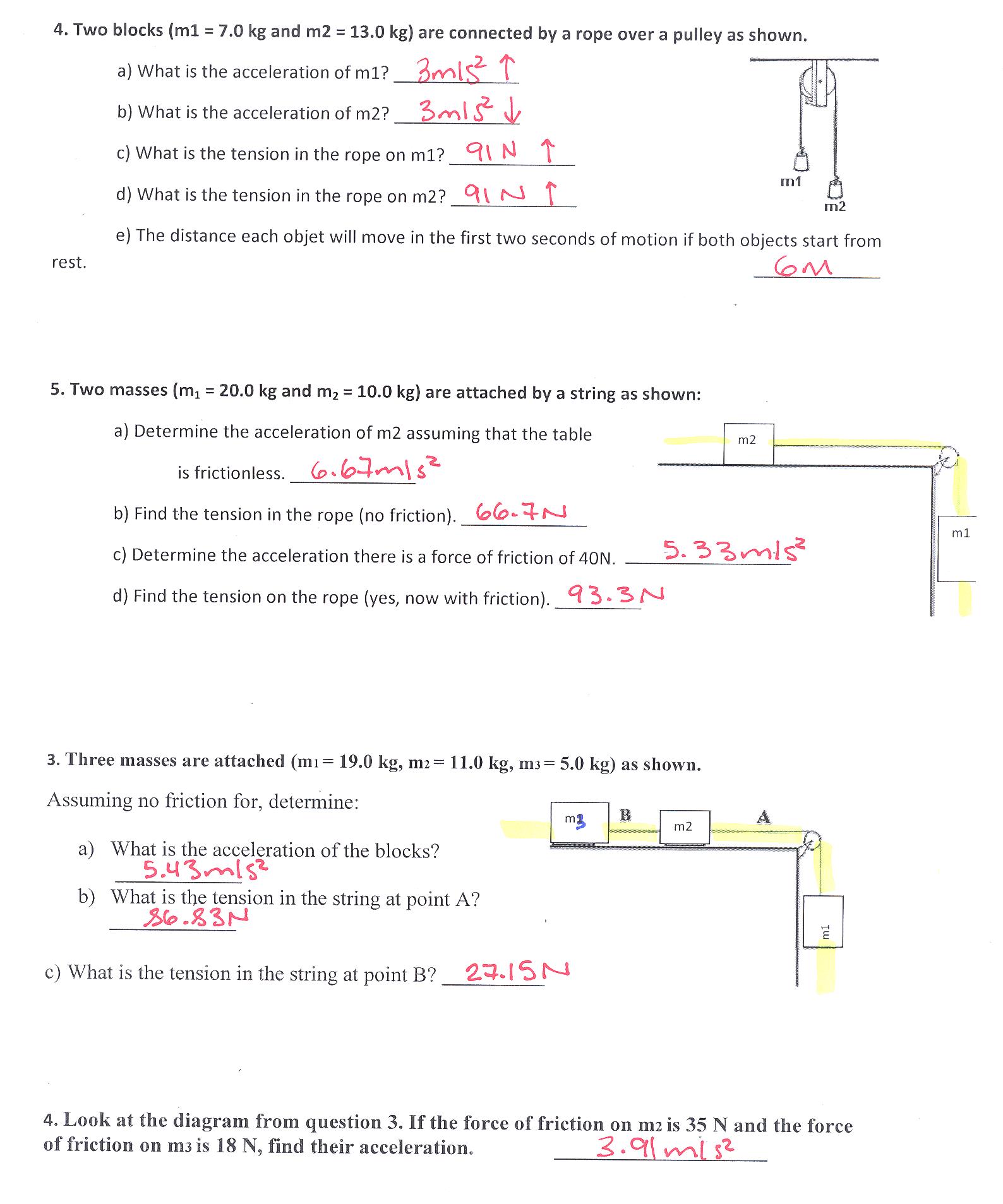
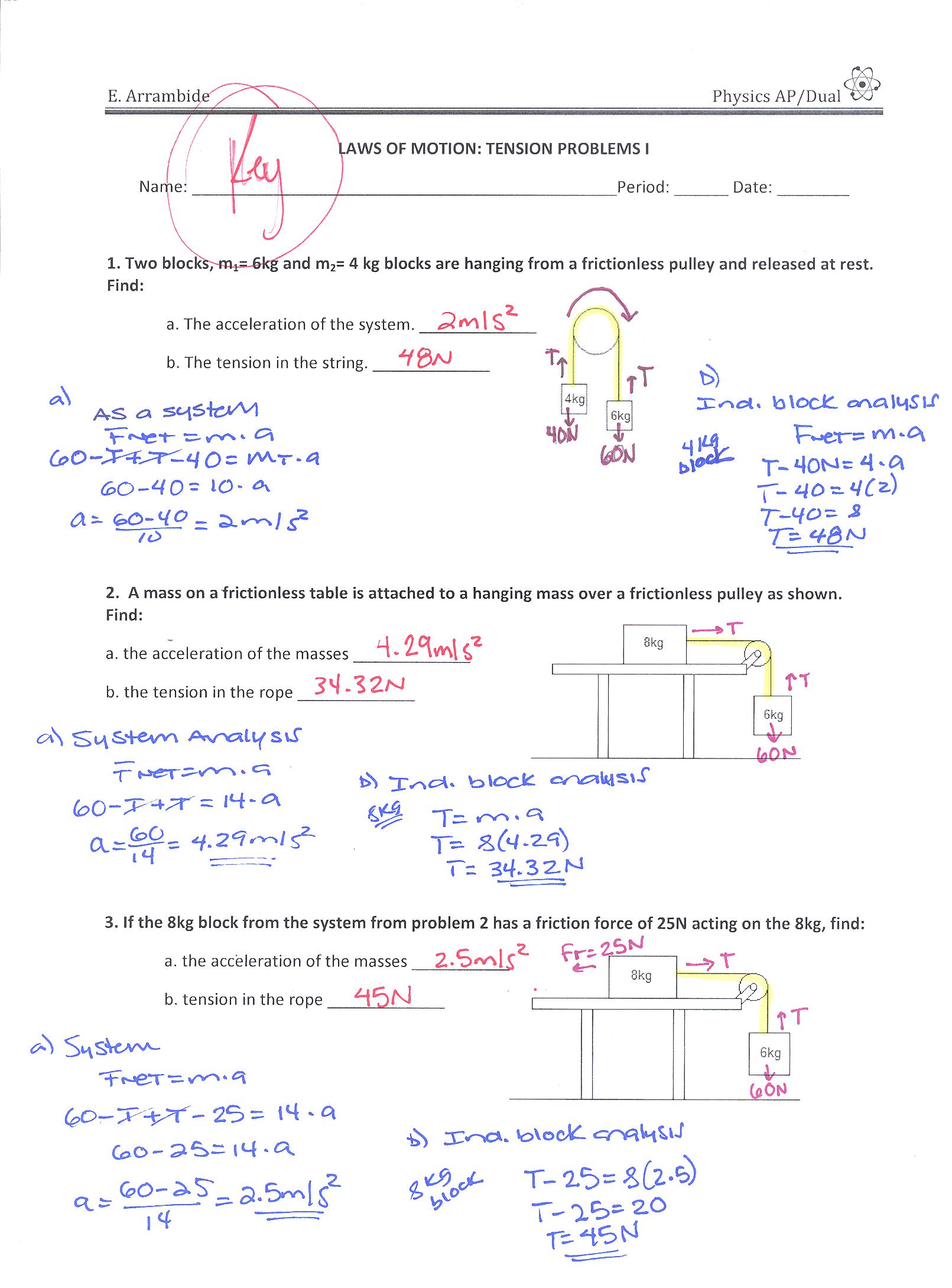
1. What is the tension in the string at point A?

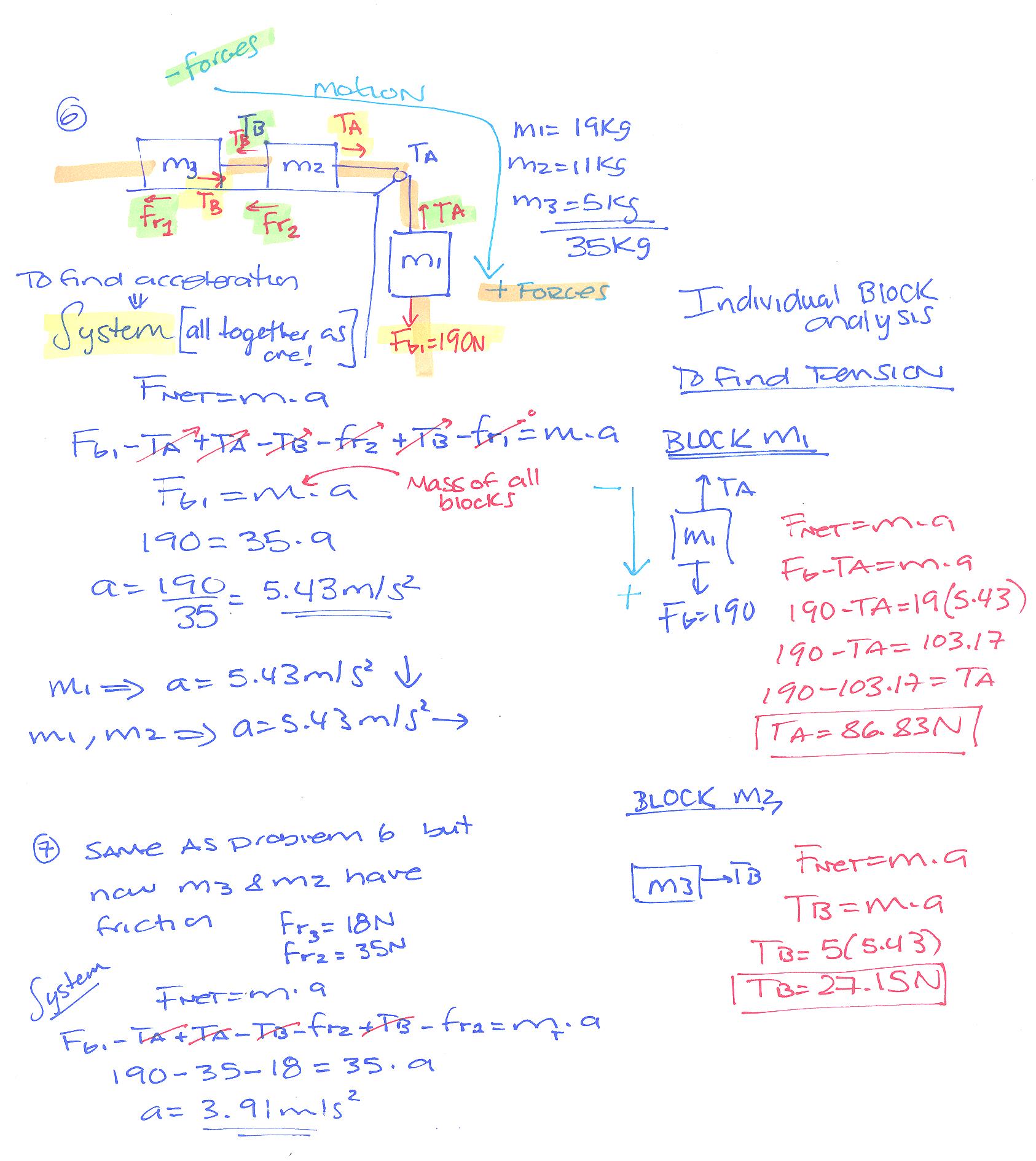
m1

\_\_\_\_\_\_\_\_\_\_\_\_\_

c) What is the tension in the string at point B? \_\_\_\_\_\_\_\_\_\_\_\_\_

**4. Look at the diagram from question 3. If the force of friction on m2 is 35 N and the force of friction on m3 is 18 N, find their acceleration. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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