Physics 11

**Section 5.4: Tension**

Tension occurs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a material (usually a rope or string) that is being

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Tension occurs because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

This helps to illustrate why \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The steps for solving tension problems are…

1)

2)

3)

4)

**Example:** Two carts, attached by a rope, are being pulled to the right with a force of 40 N.

1. Find the acceleration of the carts.
2. Find the tension in the rope.

40 N

6 kg

4 kg

**Example:** Two masses hanging from a *massless* string over a *frictionless* pulley are released from rest.

1. Find the acceleration of the system.
2. Find the tension in the string.

6 kg

4 kg