1) a = 0 and T = 20 N
2) a = 4.29 m/s^2 and T = 29 N
3) a) a – 1.67 m/s^2 and b) T = 33 N
4) F = ma or a = F/m

   $F_{net} = 4 \times 10^{-5}$ N

   $m = 2 \times 10^{-4}$ kg

   $a = 0.2\ m/s^2$

   Tension is up as 2×10^{-3} N and weight is down as 1.96×10^{-3} N

   F_{net} – top – bottom

   a = F/m = 4×10^{-5} N divided by the mass of 2×10^{-4} kg = 0.2 m/s^2
5) F_{net} = -400 N

   m = 81.6 kg

   a = F_{net}/m = -4.9 m/s^2
6) <u>Part 1</u>

   F_{scale} = 300 N

   (remember 1 N = 1 (kg x m)/s^2

   up weight must equal 300 down

   since a = 0, g = Weight/mass = 300 N/70 kg = 4.29 m/s^2

   <u>Part 2</u>

   F_{scale} is up weight = 300 N

   down F_{net} = F_{scale} - 300 N = ma = 70 kg x 7 m/s^2

   F_{scale} = 490 N + 300 N = 790 N