Helicopter Activity                    ID:_____                    Name:



| Vendor | Max Tension (N) | Price Per Meter ($) |
|---|---|---|
| Company X | 35000 | $5,000 |
| Company Y | 40000 | $10,000 |
| Company Z | 50000 | $15,000 |

You have been hired as an engineer by PHY Corp to determine which high strength rope to purchase in order to safely attach and vertically transport a large box by helicopter.  A single rope attaches a single box to the helicopter.  The PHY Corporation is considering three different vendors from which to purchase high strength rope: Company X, Company Y, and Company Z.   Each company produces a rope with a different price and a different tension specification.  g = -10 m/s/s

The helicopter can achieve a maximum thrust force of _____ N.

The maximum mass of the helicopter with pilot and passengers is _____ kg.

The maximum mass of a box is _____ kg.

Questions:

Carry the decimal to the hundredths place.

   A.  Determine the maximum upward acceleration of the helicopter/box system: _____ N/kg
   B.  Determine the maximum tension experienced by the rope: _____ N
   C.  If your helicopter/box has an initial vertical velocity of -25 m/s, how much time in would be required for it to come to a stop at maximum acceleration? _____ seconds
   D.  What is the minimum altitude needed to safely stop if the initial vertical velocity is -25 m/s? _____ meters
   E.  From which company should PHY Corporation purchase rope?