

# What's Normal?

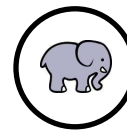
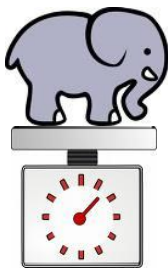
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Name: \_\_\_\_\_ Date: \_\_\_\_\_

**The Normal force (reaction force) is a force that is perpendicular (normal) to a surface that an object is in contact with.**

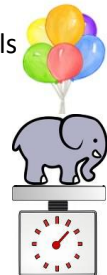
Consider Vector the Elephant (mass of 1000kg) standing on a scale. V.T.E. is pulled downward by gravity. Calculate his weight in Newtons. If this were the only force acting on V.T.E. what would happen to him? Think about Newton's 3<sup>rd</sup> Law. If vector is pushing down on the scale because of gravity what do we know about the force pushing up on V.T.E.?

**What is the reading on the scale?**



## PROBLEMS

1. Consider V.T.E. standing on the scale. He is holding a Helium balloon. The balloon pulls upwards with a force of 200 N.
  - a) What is the reading on the scale (normal force) now?



- b) V.T.E. is holding 2 identical Helium Balloons. What is the reading on the scale?
- c) How many balloons would V.T.E need so that the reading on the scale is zero (i.e. the normal force is equal to zero)?
- d) What would happen if V.T.E. picked up one more balloon from the number calculated in part c? Based on your F.B.D. determine the acceleration of V.T.E.

2. V.T.E. is standing on the scale holding two of the balloons from question 1. A large mouse crawls onto his back. The reading on the scale was found to be 20500N. Determine the mass of the mouse.

