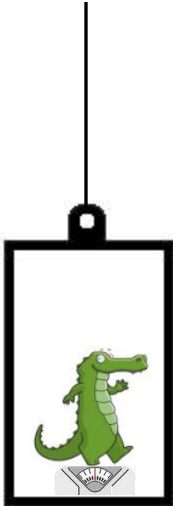


# Elevator Problems

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Consider **Alpha the Alligator** standing on a Newton scale inside of an elevator. His mass is set at 120 kg. Analyze each of the situations below using F.B.D.s.



- a) Calculate the reading on the scale (Normal force) when the elevator is at **rest**.



- b) Calculate the reading on the scale when the elevator is **moving upwards** at a **constant speed**.



- c) Calculate the reading on the scale when the elevator is **moving downwards** at a **constant speed**.



d) Calculate the reading on the scale when the elevator is **accelerating upwards** at a rate of  $3.0 \text{ m/s/s}$ .



e) Calculate the reading on the scale when the elevator is **accelerating downwards** at a rate of  $3.0 \text{ m/s/s}$ .



**Try This:**

Calculate the acceleration of elevator if the reading on the scale is  $65 \text{ N}$ . Which direction is the elevator accelerating?

