****

1. A persistent coyote is trying to drop a wrecking ball on a pesky roadrunner! If the mass of the wrecking ball is 500. kg and it is hung from a spring scale **what does the scale read when the wrecking ball:**
	1. … is at rest
	2. … is accelerating downwards at 2.00 $^{ m}/\_{s^{2}}$
	3. … is accelerating upwards at 2.00 $^{ m}/\_{s^{2}}$
	4. … is being lifted at a constant rate of 1.00$^{ m}/\_{s}$
	5. … is being lowered at a constant rate of 1.00$^{ m}/\_{s}$



1. A 20.0 kg rock is sitting on a bathroom scale in an elevator. **Fill in the blanks** for the following statements, but be sure to show all of your work completely!
	1. The scale reads  N to cause an upward acceleration\* 2.00 $^{ m}/\_{s^{2}}$
	2. The scale reads N to cause an downward acceleration\* 2.00 $^{ m}/\_{s^{2}}$

\*doesn’t indicate the direction of movement of the elevator!

1. Jack and Jill have identical cars. Both have a mass of 60.0 kg and both are driving at 20.0$^{ m}/\_{s}$ when they collide with identical brick walls.

Jack is not wearing a seatbelt, but Jill is. If it takes Jill 0.10 seconds to stop during the crash, but it only takes Jack 0.010 seconds, **compare the forces of impact** they experience.

1. A 2009 Mazda CX-7 and a 1970 Ford Galaxie 500 collide with a wall with an initial velocity of 20. $^{m}/\_{s}$. The 2500 kg CX-7 has a crumple distance of 1.0 m during the crash. The 2500 kg Ford has a crumple distance of 0.20 m. **Compare the force of impact** on both cars during the crash.





1. A 0.50 g leaf falls to the ground at a constant downward velocity of 1.00$^{ m}/\_{s}$.



* 1. Calculate the upward **force of air drag** acting on the leaf.
	2. Draw a **quantitative FBD** of the leaf.