

Name: _____

Date: _____

Astron 211 OOM #3 Gravity

OOM Policy: You can work in pairs or groups of 3 if desired. You can consult class notes and books — no phones or computers. Make sure you are clear about the process you use to solve the problems: partial credit will be awarded. Always include units.

1. According to Newton's law of universal gravitation, the earth's gravity gets weaker as we go further from the earth. But when we drop a ball near the top of the classroom it doesn't seem to fall any differently than we drop it near the floor. Let g_t stand for the gravitational acceleration observed at the top of the classroom and g_b for it at the bottom. Estimate how much Newton's universal gravitation theory predicts g_t will be less than g_b . (Hint: It's easier if you estimate the fractional change, $g_b/g_t - 1$.)

2. Do the same for the tower formerly known as Sears compared to the ground.

3. Do the same for the International Space Station compared to the ground.