

Name \_\_\_\_\_

Period \_\_\_\_\_

## Gravity Contract

### Homework

- \_\_\_  Climate Change Personal Response
- \_\_\_  HW 1A: Read 1.1 (*Early Astronomy*)
- \_\_\_  HW 9A: Read 9.1-9.4 R9,13 E6,9,18,22 (*Newton's Law of Gravitation*)
- \_\_\_  HW 9B: Read 9.5 R21 E25,28,29,30,31 (*Tides*)
- \_\_\_  HW 9C: Read 9.6 R30,31,33 E37,39,40 (*Gravitational Fields*)
- \_\_\_  HW 10A: Read 10.1-10.4, 10.6-10.7 R15,18 E15,21,24,26 (*Orbits*)
- \_\_\_  HW36A: Read 36.1, 36.2, 36.5-36.7 R2.5,14,18,19 E8,15 (*General Relativity*)  
Read 9.7-9.9 R35
- \_\_\_  HW 1B: Read 1.4-1.8 (*The Meaning of Science*)
- \_\_\_  HW 35A: Read 35.1 - 35.6 R4,9,15,16,17,18 E3,4,6 (*Time dilation*)
- \_\_\_  HW 35B: Read 35.9 - 35.13 R28,30,31,33,34 E15,18,37 (*Length contraction*)
- \_\_\_  Gravity Problem Set I
- \_\_\_  Gravity Problem Set II
- \_\_\_  A&B Giancoli 5A: page 141 E32,35,36,37
- \_\_\_  A&B: CD 13-1 (Prerequisite: HW9C)
- \_\_\_  CD 13-2
- \_\_\_  A&B: CD 13-3 (Prerequisite: HW9B)
- \_\_\_  A&B: HW 35C: Read 35.7, 35.8 (*The twin paradox*)
- \_\_\_  A&B: Space-time Dilation Problem Set
- \_\_\_  Current Events (please make this about a subject related to this unit)
- \_\_\_  Concept Map
- \_\_\_  Class Notes
- \_\_\_
- \_\_\_

Self    Teacher

CONTRACT GRADE    \_\_\_    \_\_\_

Grade is based on a total of 14 items

Number of items completed: \_\_\_\_\_

**Essential Questions:**

**What is the ancient Greek model of gravity?** What are the four essences? What are gravity and levity and why do they happen? Is this model true?

**What is Newton's model of gravity?** According to Newton, what causes gravity? How can the force of gravity be computed? What is an inverse square relationship? Is this model true?

**What is apparent weightlessness?** Are astronauts in orbit around the earth weightless? Do they feel weightless? Why? What makes you feel apparent weight or weightlessness?

**What is satellite motion?** What has to happen to a projectile for it to become a satellite? Is a satellite being acted on by gravity? What is the difference between an object in free fall and an object in orbit around the Earth?

**What are the differences between circular and elliptical orbits?** Why is the speed of a satellite in circular orbit a constant? What happens to the PE and KE of a satellite in circular orbit? Why is the speed of a satellite in elliptical orbit not a constant? What happens to the KE and PE of a satellite in elliptical orbit? What is escape velocity?

**What is Einstein's model of gravity?** What is space-time? What happens to space-time near massive objects, like the sun or the earth? According to Einstein, what is gravity? Is this model true? What is the principle of Equivalence? How does gravity affect light? What is a black hole?

**What is the special theory of relativity?** What did Michelson and Morley discover? How did Einstein's theory affect the idea of simultaneity? What is time dilation and why must it occur at relativistic speeds? What is the Lorentz factor? What is length contraction? How is time travel possible, and in what direction could it happen? What does the equation  $E=mc^2$  actually mean?

**Things You Should Be Able to Do:**

Use Newton's Universal Law of Gravitation  $F_g = Gm_1m_2/d^2$  to calculate the force due to gravity.

Monday	Tuesday	Wednesday	Thursday	Friday
2/8 HW1A	2/9 HW9A	2/10 GRAVITY I	2/11 HW10A	2/12
X	2/16	2/17 HW1B	2/18 HW36A	2/19
2/22 HW35A	2/23	2/24 GRAVITY TEST		