

Physics IA – Winter 2012

For your exam, you will be building a custom level in the Puzzle Maker then describing how concepts of physics control the way objects in the level behave.

Your level must demonstrate 3 or more of the following concepts from physics:

- Projectile (Parabolic) Motion
- Conservation of Momentum (collisions)
- Conservation of Energy
- Acceleration due to gravity
- Friction
- Multiple forces acting on an object
- Newton's Laws
- The relationship between velocity and acceleration
- Work
- Power
- Some other concept you clear with me first

For each concept in your level, you will need to:

- a. Explain what the concept is. (3 points per concept)
- b. Explain which specific aspects of your level are demonstrating the concept. (3 points per concept)
- c. Explain how you could measure variables in your level to calculate the concept (for instance, if part of the concept was $F = ma$, you would need to explain how you would determine mass and acceleration to find force in your level). (4 points per concept)

For one concept in your level, you will actually need to make sample calculations. For instance, if you are examining Newton's laws, you would need to calculate $F = ma$ by actually measuring the mass of an object, determining its acceleration, then do math to determine the actual force of an object. *This is worth 5 points.*

You have from now until the day of the exam to send me your level (instructions to follow) and turn in your essay. Good luck!