* Multiple choice questions
* no partial credit, small penalty for wrong answers
* Last question, open gl assignment
* Lecture 03 - 07
  + Understanding points, vectors, lines, planes
  + affine transformations
  + coordinate systems and transformations
  + order of operations with Matrices
  + Protection Transformations
  + Open GL

Understanding Points, Lines

* Explicit, implicit, parametric representations: what are they? what are they good for?
  + Explicit: Simple form using x and y to figure where things are
  + Implicit: whether you’re on the object or off the object.
  + Parametric: given parameter, gives back x and y coordinates.
* How do we use an affine combination to find point C which is, say, 20% of the way from A to B?
  + 0.8 \* a + 0.2 \* b = C
* How do planes generalize lines?
  + Need 3 minimum points to define a plane
  + Use two vectors to create a planar coordinate system

Affine Transformations

* Translate, Scale, Shear, Rotate
* How are they represented?
* What effect do they have on objects? What effect do they have on angles?
  + Shear is created with non uniform scaling
* What is the form of the inverse matrices for these transformations.

Coordinate Systems

* Given a coordinate system and a point, can you give the coordinates of that point with respect to the coordinate system?
* If a matrix represents a coordinate system, what does it mean to multiply a point by the matrix?
* Given basis vectors b1, b2, b3 and origin 0, how do we convert from the canonical coordinate system to the [b1 b2 b3 0] Coordinate system.
  + Unit Matrix
* Given a picture of two coordinates system can you describe the operations that transform to the other?
  + Review change of coordinate systems

Projection Transformations

* Given a point in x, y, z space, how do we calculate where it appears on the screen.
  + If distance N for
* How is the perspective projection different from affine transformations?
  + perspective is not linear
  + Divide x and y coordinates by z?
* What do perspective projections preserve?
  + Parallel Lines?
  + Ratios along a line?

OpenGL

* Given a set of OpenGL Commands and graph paper, draw what appears on screen.
  + 2D shape, square, apply a bunch of transformations and see where ends up