

December 7, 2011

Physics 131

Prof. E. F. Redish

- **Theme Music:**
Robert Alda
Luck be a Lady
(from Guys & Dolls)

- **Cartoon:**
Gary Larson
The Far Side



"Hey! What's this, Higgins? Physics equations?... Do you enjoy your job here as a cartoonist, Higgins?"

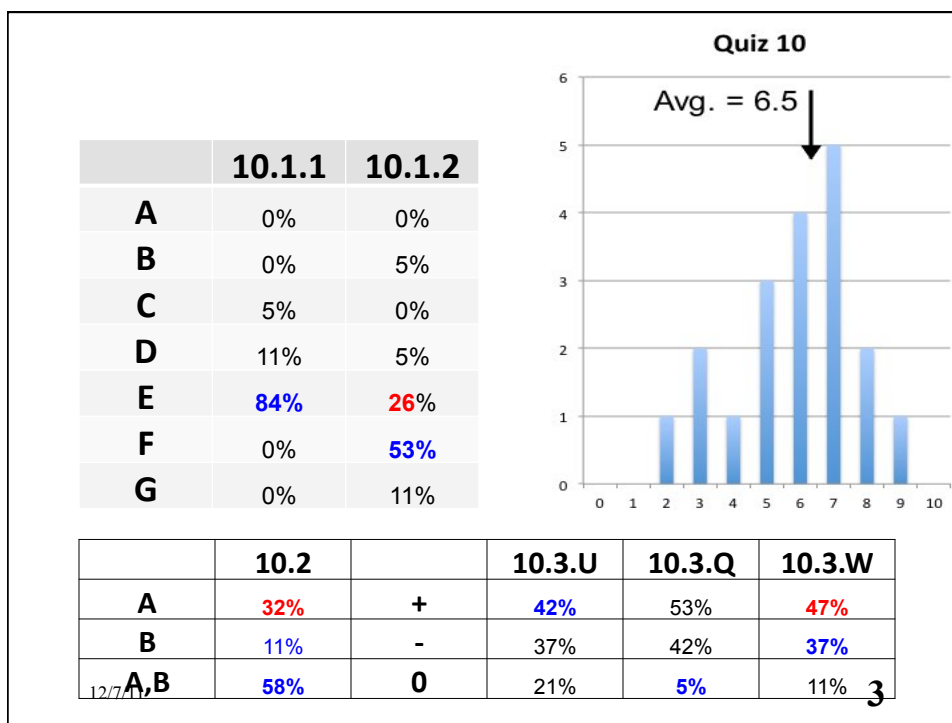
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Outline

- Go over Quiz 10
- Gradients: Examples
- Second law phenomena
- Probabilities
 - Microstates and macrostates

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Second law of thermo

- “If energy is conserved, why do we need to conserve energy?” Discuss.

Everyday second law phenomena: Thought experiments

- 1: Hot flows to cold spontaneously and not the other way round.
 - Is it always like this?
 - Does it matter which is bigger?
 - Can you NEVER do this?
- 2: A sliding chair stops, giving up its KE to thermal energy.
 - Why doesn't this go the other way?

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Randomness

- Probability is a mathematical model.
- When is it appropriate to use it for physical systems? Why?

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