iClickers
In the Classroom

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Flex-Cal

What are iClickers?

- Audience response system (ARS)
- Anonymous
- Radio frequency
- Allows immediate assessment of student learning

Why use iClickers?

- Increase participation/interaction
- Assessment of student preparation and learning
- Quizzes
- Graded participation
- Make lecture more “fun”

Students Like It

- Anonymity, shy students will participate
- Comparing answers to rest of the class
- Like the reassurance that they're not alone even when they are wrong
- Get impression that teachers care more
- Increase their confidence to ask follow-up questions

Research Says…

- Increase in active student engagement
- Increase comprehension
- Improved exam scores
- Increase in passing rate
- Lower attrition rate
- Increase in attendance

McDermott L. C., Redish E. F. Resource letter PER-1. Phys. Educ. Res. Am. J. Phys. 1999;67(9):755–767.

Duncan D. New York: Addison Wesley and Benjamin Cummings; 2005. Clickers in the Classroom: How to Enhance Science Teaching Using Classroom Response Systems.

Simpson V., Oliver M. Using electronic voting systems in lectures. 2006.

Research Also Says…

- Technology is not a panacea in and of themselves
- "best understood as a tool rather than a teaching approach"
- effectiveness in increasing learning depends heavily on the intent and thought behind their design

Draper S. W. Evaluating effective use of PRS: results of the evaluation of the use of PRS in Glasgow University, October 2001-June 2002. 2002.

Wood W. B. Clickers: a teaching gimmick that works. Dev. Cell. 2004;7(6):796–798.

Caldwell J. E. Life Sciences Education 2007; 6(1)

Designing Effective Questions

- address a specific learning goal, content goal, skill, or reinforce a specific belief about learning
- Not too easy
- Elicit thought responses not memorized responses
- Concept-based questions

Not as Effective

Which law deals with pressure and volume at a constant temperature and pressure?

a) Charles' Law
b) Avogadro's Law
c) Boyle's Law
d) Gay-Lussac's Law
e) Murphy's Law

More Effective

The temperature outside drops from 65 °F to 8 °F and your car's low tire pressure warning light comes on. Which 2 characteristics change?

a) T and V
b) n and T
c) V and n
d) T and P
e) n and P

More Effective

The temperature outside drops from 65 °F to 8 °F and your car's low tire pressure warning light comes on. Which 2 characteristics remain constant?

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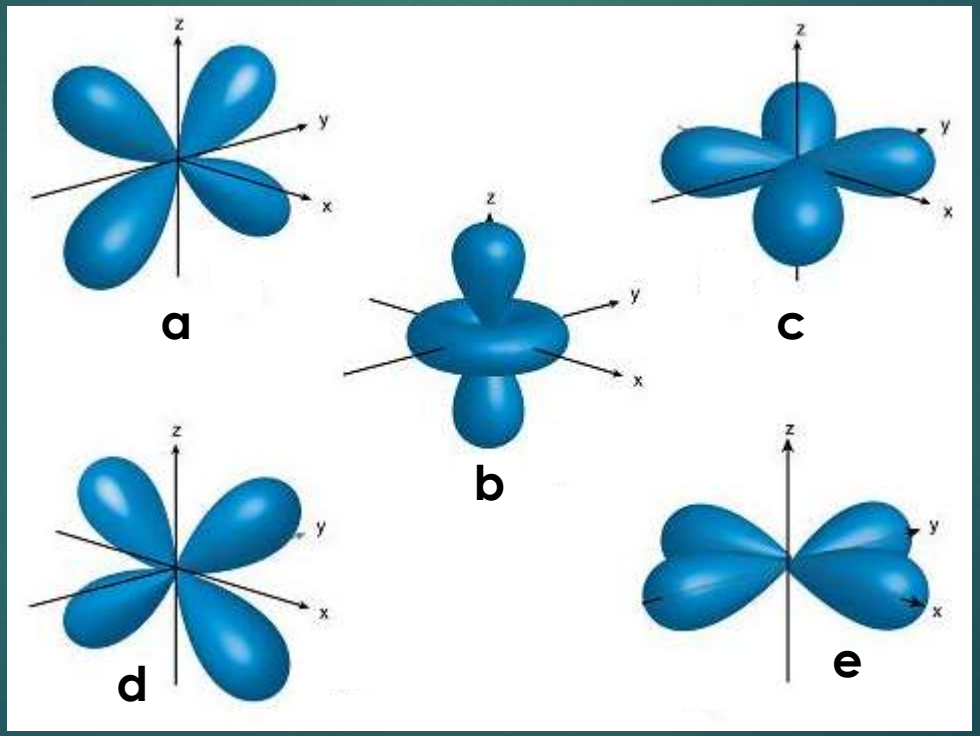
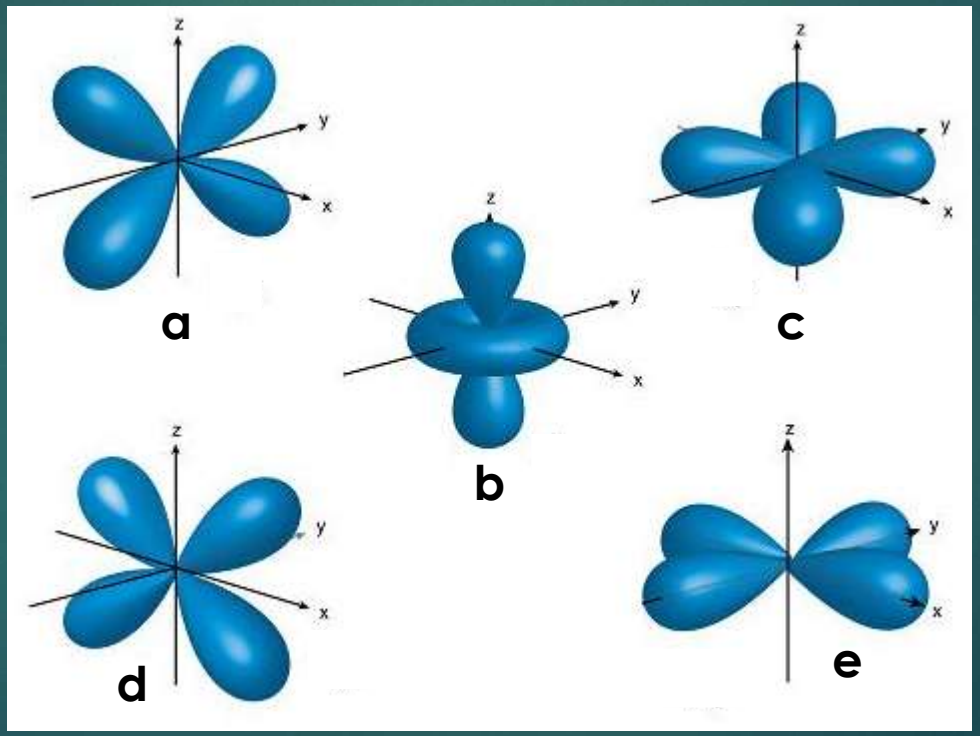
More Effective

Which is the d_{yz} orbital?



More Effective

Which is the d_{z2} orbital?



Links to iClicker Questions

- Google "Conceptests" for your subject
  Ex: Conceptests physics, conceptests psychology

- http://www.cwsei.ubc.ca/resources/clickers.htm
  (good for science and math)

THANK YOU FOR YOUR ATTENTION!!