A HYPERMEDIA APPROACH TO TEACHING PHYSICS

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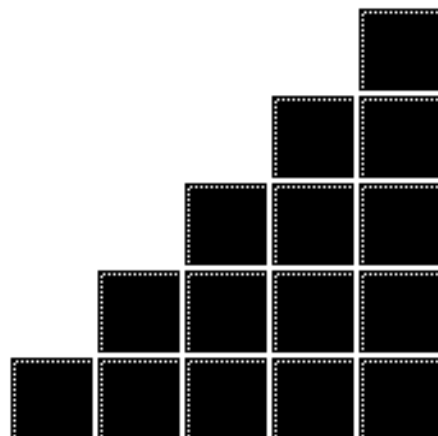
❶ Animation Clips

❷ The *Essence of Physics*

❸ Computer Tests

❹ Course Interface Software

▶

ANIMATION CLIPS
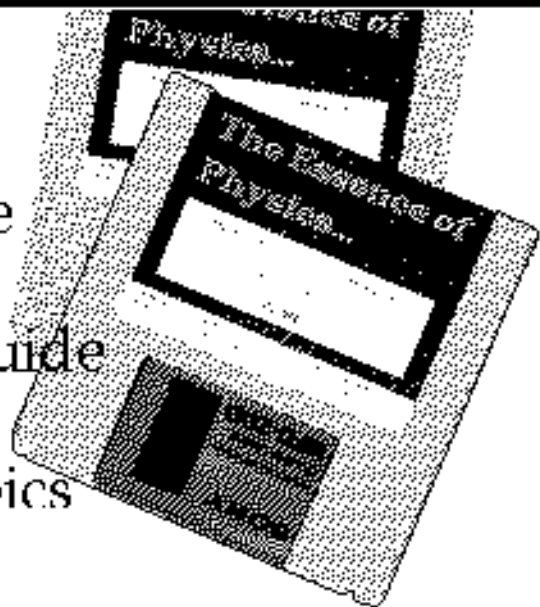
- in classroom

- short, single topic

- motion, time

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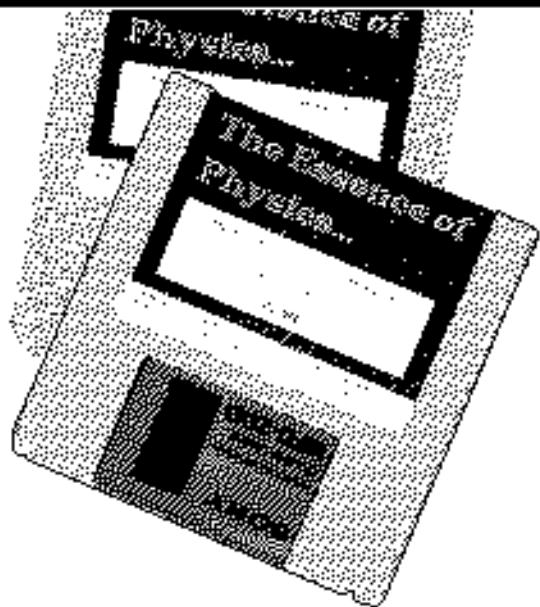❹ Course Interface Software

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ESSENCE OF PHYSICS

- for student at home

- interactive study guide

- all introductory topics

ESSENCE OF PHYSICS

Design Goals:
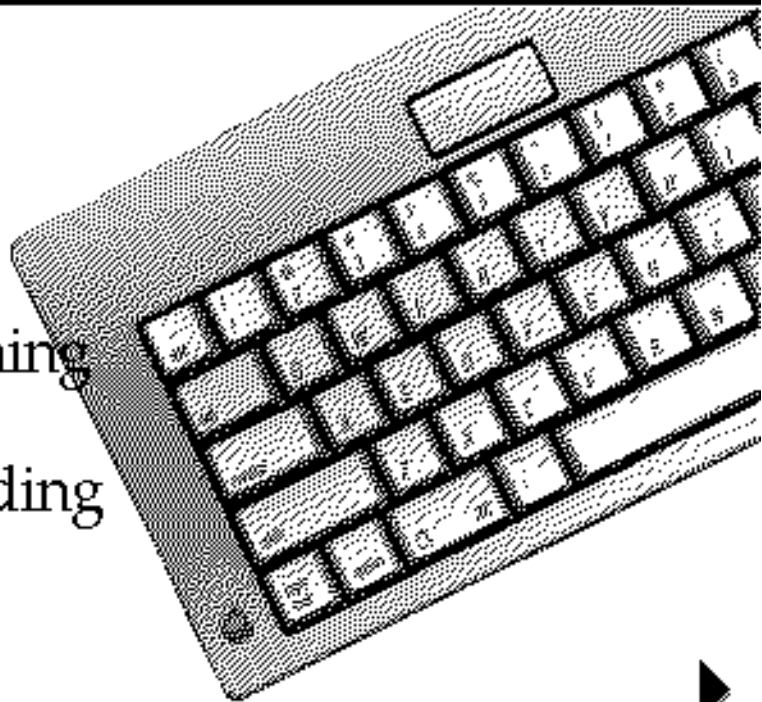
- inexpensive

- complete

- simple to use

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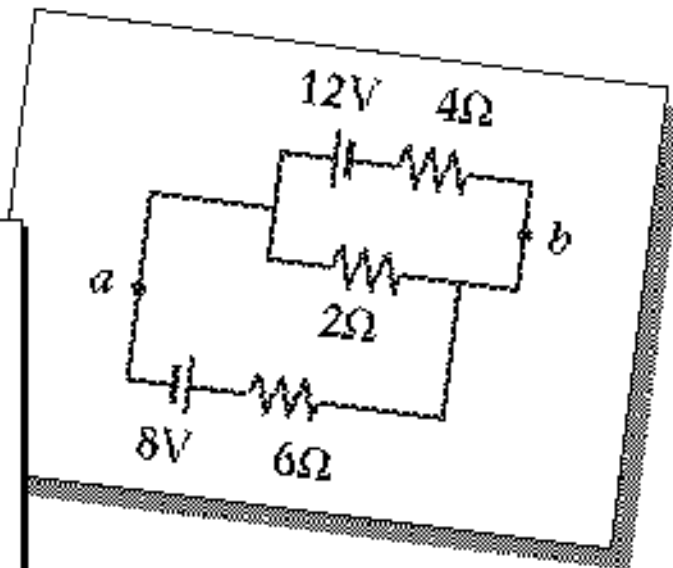
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Purpose:

- 'measure' learning

- test understanding

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Traditional question:

Calculate:

(a) the current in the 2-Ω resistor, and
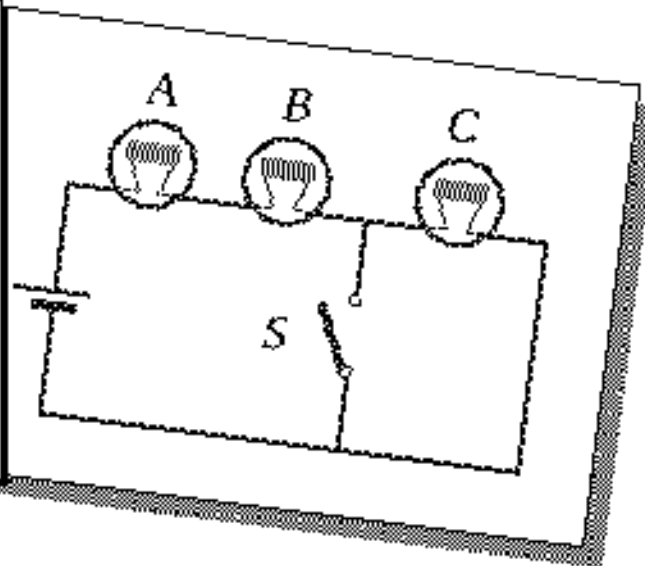
(b) the potential difference between points a and b.

12V   4Ω

2Ω

8V   6Ω

a   b

COMPUTER TESTING

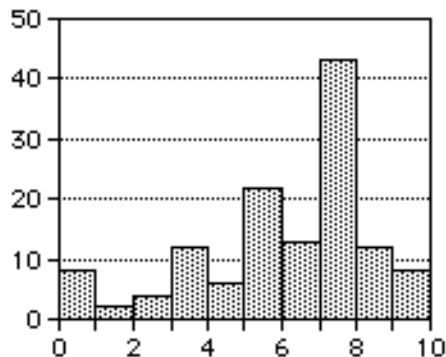When S is closed, what happens to the:

(a) intensities of A and B?
(b) intensity of C?
(c) current through battery?
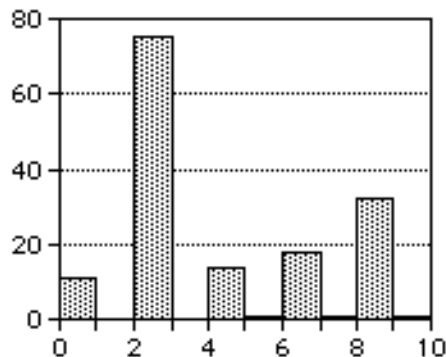(d) voltage drop across
    A, B, and C?
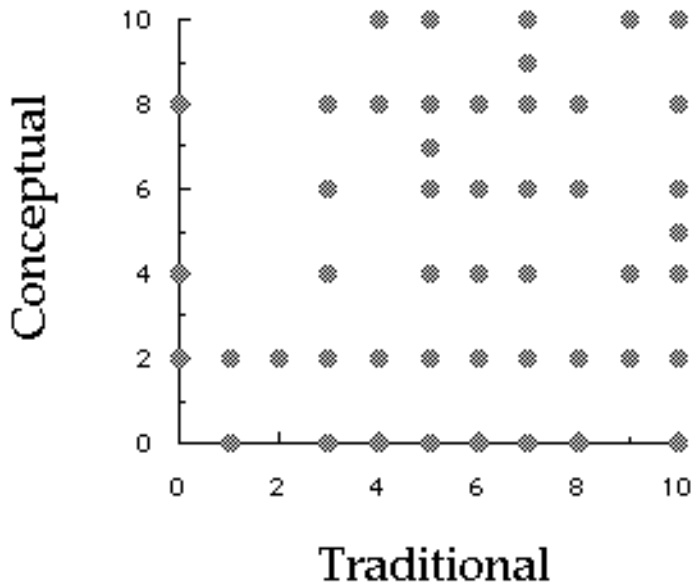(e) total power dissipated?
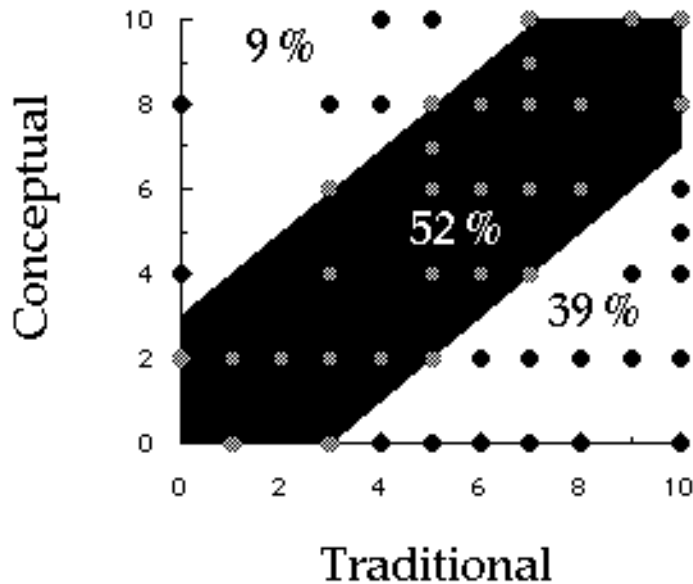
COMPUTER TESTING

Results
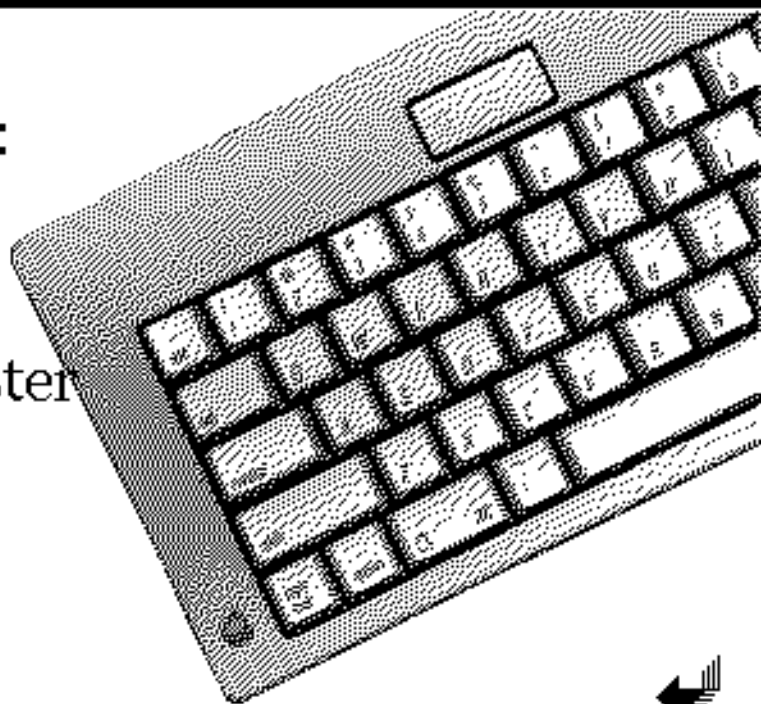

Traditional

Conceptual

COMPUTER TESTING

Conceptual vs. Traditional

COMPUTER TESTING

COMPUTER TESTING

Automate testing:

- Easy to administer

- Instant results

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❶ Teaching $\Leftrightarrow$ Learning

❷ Tool to *measure* learning

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David Borthwick   (Harvard)
Bob Flaherty   (Apple)
Daniel Goroff   (Harvard)
David Hestenes   (ASU)
Andrew McKinney   (Harvard)
Ron Thornton   (Tufts)

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