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PEER INSTRUCTION: DISCUSSION AND "BRAINS-ON" DEMONSTRATION

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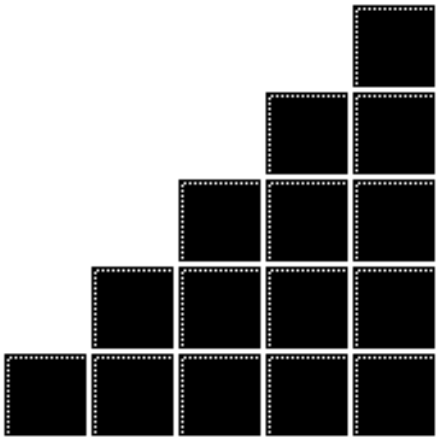


Hong Kong University
28 February 1998

OUTLINE

1. Feedback
2. ConcepTests
3. Problems with problems
4. Discussion

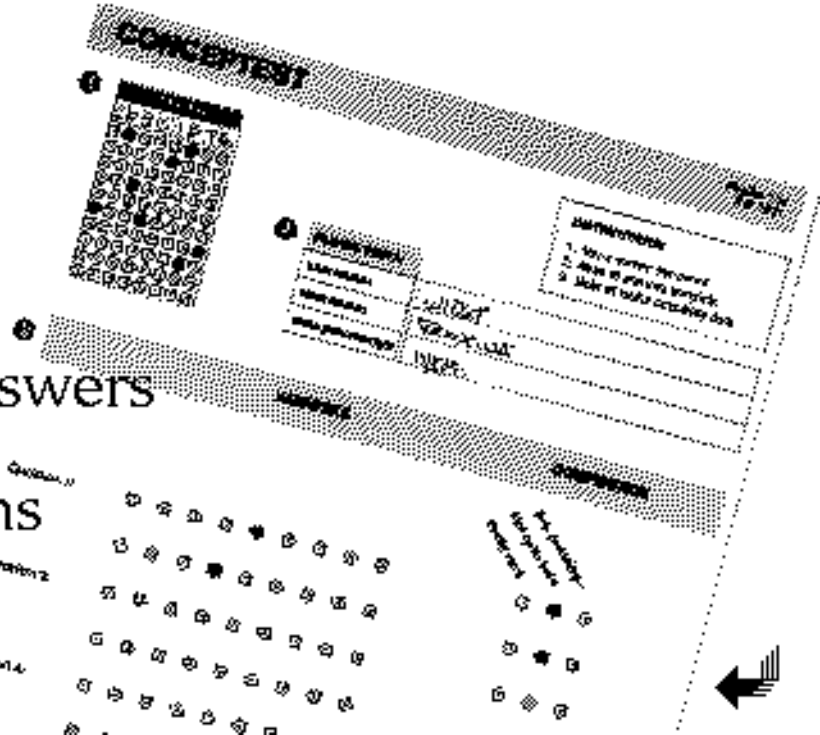
FEEDBACK

Methods:

- show of hands
- scanning forms
- palmtops/calculators
- flashcards

FORMS

- record of answers
- test questions

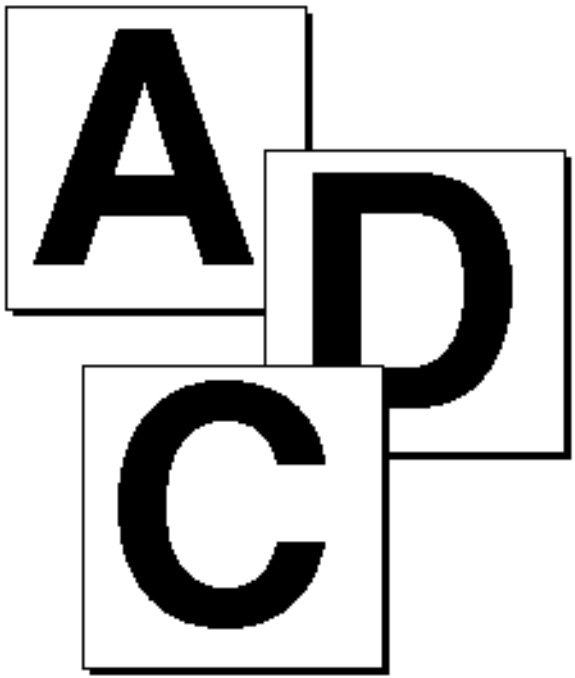


CLASSTALK

HP95LX

FLASHCARDS

- simple & cheap
- effective



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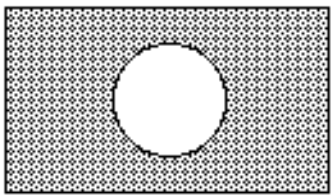
Question 1

Consider a rectangular metal plate with a circular hole in it. When the plate is uniformly heated, the diameter of the hole



1. increases.

2. stays the same.

3. decreases.

Message 1

It's easy to fire up the audience!

Question 2

A boat carrying a large boulder is floating on a lake. The boulder is thrown overboard and sinks to the bottom of the lake.

Will the level of the water in the lake (with respect to the shore) go

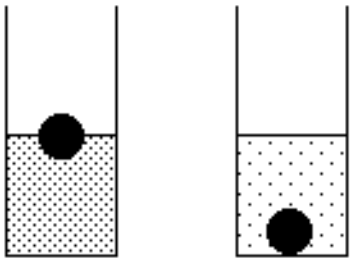
1. up,
2. down, or
3. stay the same?

Message 2

W e a ll m a ke m is ta ke s...

Question 3

Consider an object that floats in water but sinks in oil. When the object floats in water, half of it is submerged.



Message 3

It's easy to make simple

demonstrations fascinating!

Question 4

When we hold a page of printed text in front of a mirror, the text on the image in the mirror runs from right to left.

Message 4

It's "simple" only if you know the answer!

OUTLINE

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The problem with problems

On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces.

How long do you have to wait before someone frees up a space?

Requires assumptions
Requires developing a model
Requires applying that model

The problem with problems

On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces. On average people shop for about 2 hours.

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Assuming people leave at regularly-spaced intervals, how long do you have to wait before someone frees up a space?

The problem with problems

On a Saturday afternoon, you pull into a parking lot with unmetered spaces near a shopping area where people are known to shop, on average, for two hours. You circle around, but there are no empty spots. You decide to wait at one end of the lot, where you can see (and command) about 20 spaces.

How long do you have to wait before someone frees up a space?

$$t_{wait} = \frac{T_{shop}}{N_{spaces}}$$