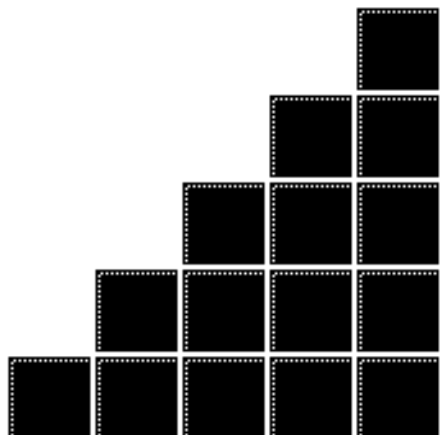




PEER INSTRUCTION: DISCUSSION AND “BRAINS-ON” DEMONSTRATION

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- ① Feedback
- ② Concept Tests
- ③ Problems with problems
- ④ Discussion



FEEDBACK

Methods:

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



FORMS

- record of answers
- test questions

The image shows a scan of a 'CONCEPT TEST' form. At the top, the title 'CONCEPT TEST' is printed in a bold, sans-serif font. Below the title, there are several sections:

- Section 1:** A grid of bubbles for marking answers, with the word 'ANSWERS' written vertically on the right side.
- Section 2:** A section for 'PERSONAL DETAILS' with fields for 'NAME', 'ADDRESS', and 'PHONE NUMBER'. Handwritten text in these fields includes 'John Doe', '123 Main St', and '555-1234'. To the right of this section is a box labeled 'MARKING INSTRUCTIONS' containing a list: '1. Mark your answer', '2. Mark all possible answers', and '3. Mark all false/incorrect data'.
- Section 3:** A section for 'QUESTIONS' with a grid of bubbles. The word 'QUESTIONS' is written vertically on the right side. Below the grid, there are labels for 'Question 1', 'Question 2', and 'Question 3'.
- Section 4:** A section for 'MARKING' with a grid of bubbles. The word 'MARKING' is written vertically on the right side.

At the bottom right of the form, there is a large, stylized arrow pointing to the left.

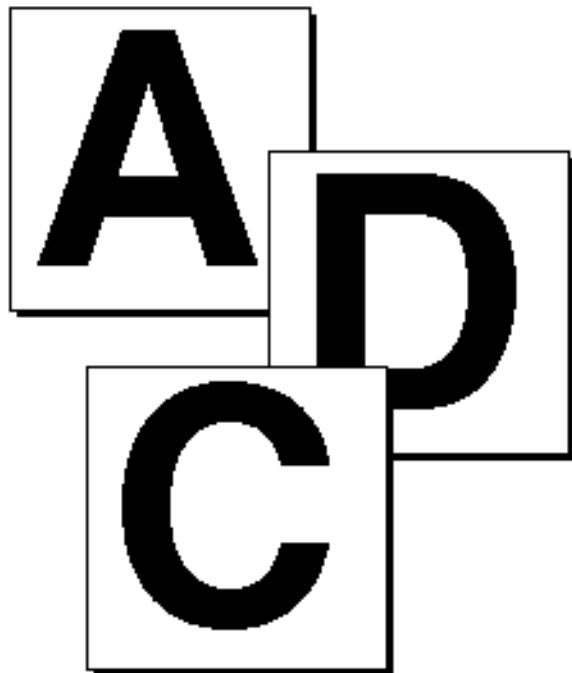
CLASSTALK

HP95LX



FLASHCARDS

- simple & cheap
- effective

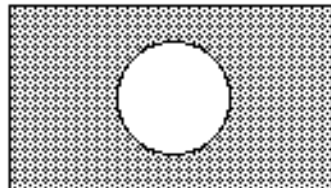


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Question 1

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?



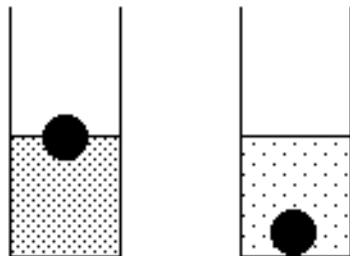
Message 2

We all make mistakes...



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!*



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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.

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

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.

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?

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

