

Embedded Assessments within eBooks: Interactivity, Accessibility, Connectivity, Security and Standards

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Themes

- Assessments
- Interactivity
- **Accessibility**
- Connectivity
- Security
- Standards

eTextBooks and Assessment

- eTextBooks, whether they be EPUBs, apps, or web content, are here to stay as a platform for delivering learning materials
- Combination of EPUB and the Open Web Platform moves the eBook beyond static presentations of print book content to rich, interactive learning experiences

- A key aspect of any learning scenario is the assessment of the degree of learning that is taking place
- Traditional end of chapter quizzes **will be** replaced by embedded adaptive assessments
- Interactive tasks will not only measure whether concepts are mastered, but can also adapt the presentation of materials to facilitate learning

13. A virus particle in a rotating liquid-filled centrifuge tube is in uniform circular motion (that is, in accelerated motion) as viewed by an observer in the laboratory. An observer rotating with the centrifuge, however, would declare the particle to be unaccelerated. Explain how the virus particle can be in equilibrium for this second observer but not for the first.

14. In Chapter 5 we defined force in terms of acceleration from the relation $\mathbf{F} = m\mathbf{a}$. For a body in equilibrium, however, there are no accelerations. How, then, can we give meaning to the forces acting on such a body?

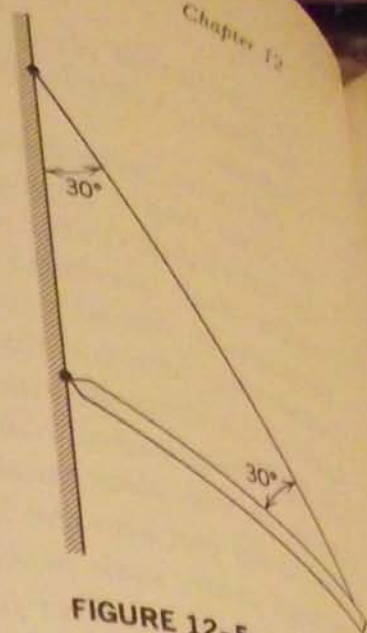


FIGURE 12-5

PROBLEMS

- 1(1). A 10-lb book remains at rest on a table. Identify the forces on it.
- 2(1). A 10-gm cork floats in a stream flowing west with constant velocity. Identify the forces on the cork and show that they add up to zero.
- 3(1). Prove that when only three forces act on a body in equilibrium, they must be coplanar and their lines of action must meet at a point or at infinity.
- 4(2). A nonuniform bar of weight W is suspended at rest in a horizontal position by two light cords as shown in Fig. 12-5; the angle one cord makes with the vertical is $\theta = 36.9^\circ$; the other makes the angle $\phi = 53.1^\circ$ with the vertical. If the length l of the bar is 20.0 ft, compute the distance x from the left-hand end to the center of gravity.
- 5(2). A circular section of radius r is cut out of a uniform disk of radius R , the center of the hole being $R/2$ from the center of the original disk. Locate the center of gravity of the resulting body.
Answer: Along a line from the center of the hole through the center of the disk, beyond the latter point by a distance $Rr^2/2(R^2 - r^2)$.

3. What is a Punnett square? How is it used?
4. What information must you know to determine the phenotypes of different genotypes for a gene with two alleles?
5. Based on the results of his experiments, what did Mendel conclude about the factors that control characteristics such as flower color?

Apply Concepts

6. Draw a Punnett square of an $Ss \times ss$ cross. The S allele codes for long stems in pea plants and the s allele codes for short stems. If S is dominant to s , what percent of offspring would you expect to have each phenotype?
7. What letter should replace the question marks (?) in this Punnett square? Explain how you know.

	A	A
?	A?	Aa
?	Aa	A?

Think Critically

8. Explain how Mendel used math and probability to understand the results of his experiments.
9. Compare and contrast codominance and incomplete dominance.
10. Mendel investigated stem length, or height, in pea plants. What if he had investigated human height instead? Why would his results have been harder to interpret?

Points to Consider

Like most of the characteristics of living things, the characteristics Mendel studied in pea plants are controlled by genes. All the cells of an organism contain the same genes, because all organisms begin as a single cell. Most of the genes code



The Solar System and Beyond

1. What is the name given to planets like Jupiter and Neptune?

- a. Gas Giants
- b. Gas Monsters
- c. Rocky Dwarves
- d. Rocky Giants

2. Why does Saturn have a longer year than Earth?

- a. Saturn is closer to the Sun than Earth
- b. Saturn spins slower than Earth
- c. Saturn is bigger than Earth
- d. Saturn is further away from the Sun than Earth

3. When do you get a lunar eclipse?

- a. The Moon is between the Earth

• Lorem Ipsum

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- A. Answer 1**
- B. Answer 2**
- C. Answer 3**
- D. Answer 4**

Check Answer

Widget

Layout Interaction






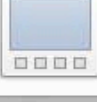
Full-screen only

Questions	# of Answers
1 - Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do tempor incididuntun...	4 ▾

+ ▾

Acceptance Question

1 - Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do tempor incididuntun...

-  Multiple Choice
-  Multiple Choice
-  Multiple Choice
-  Multiple Choice
-  Drag Label to Target
-  Drag Thumbnail to Target

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Accessibility

- The move to interactive content must not compromise or limit accessibility to students with disabilities
- Requires support for accessibility at the standards, authoring, and reading system level
- Support for accessibility guidelines from W3C, such as WCAG and UAAG
- Significant work needed on including math, highly visual content, such as graphics, and simulations

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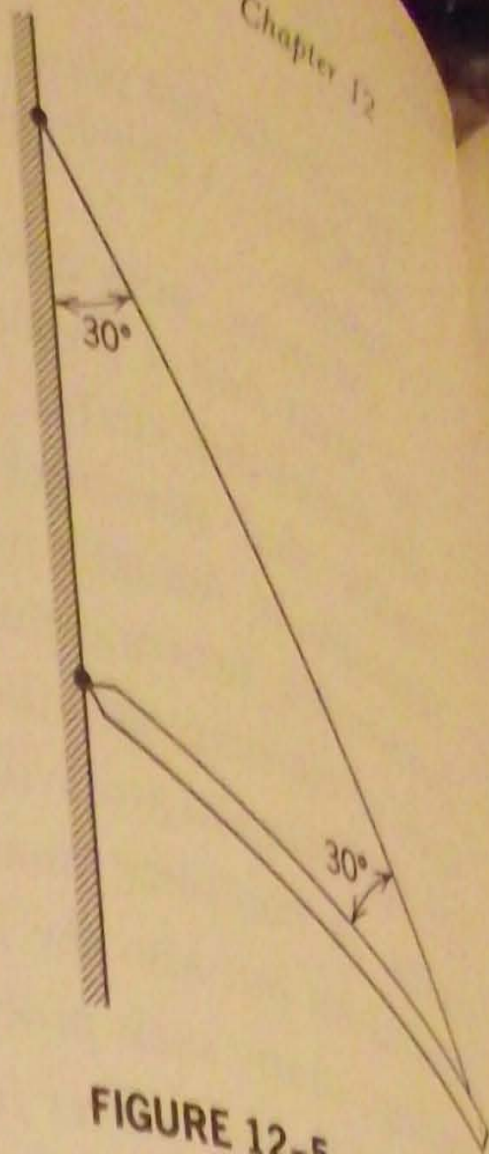
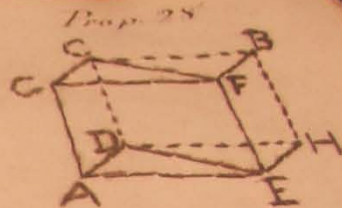
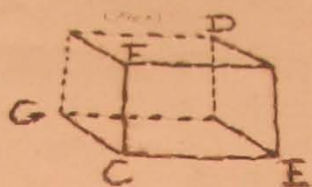
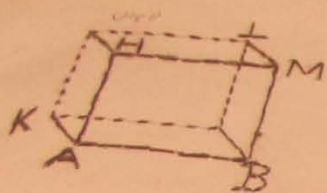
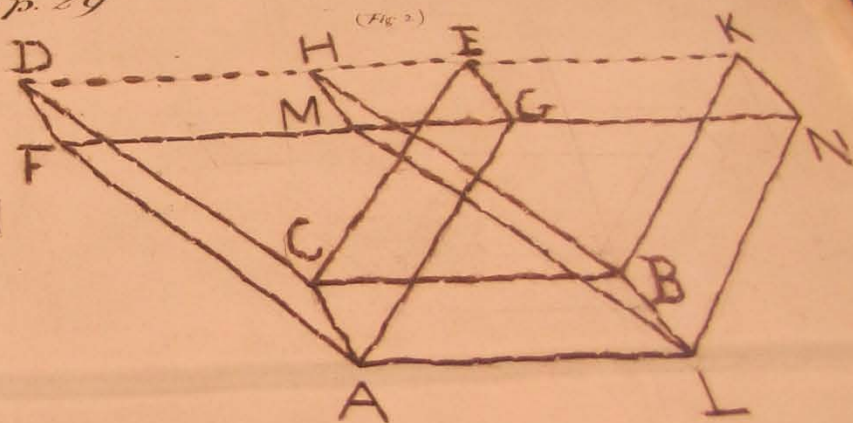
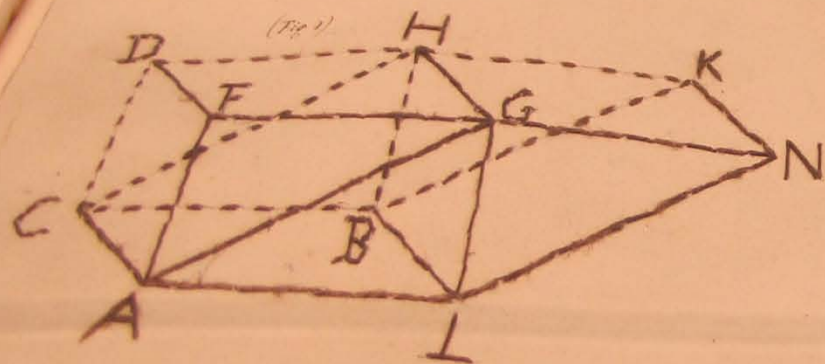
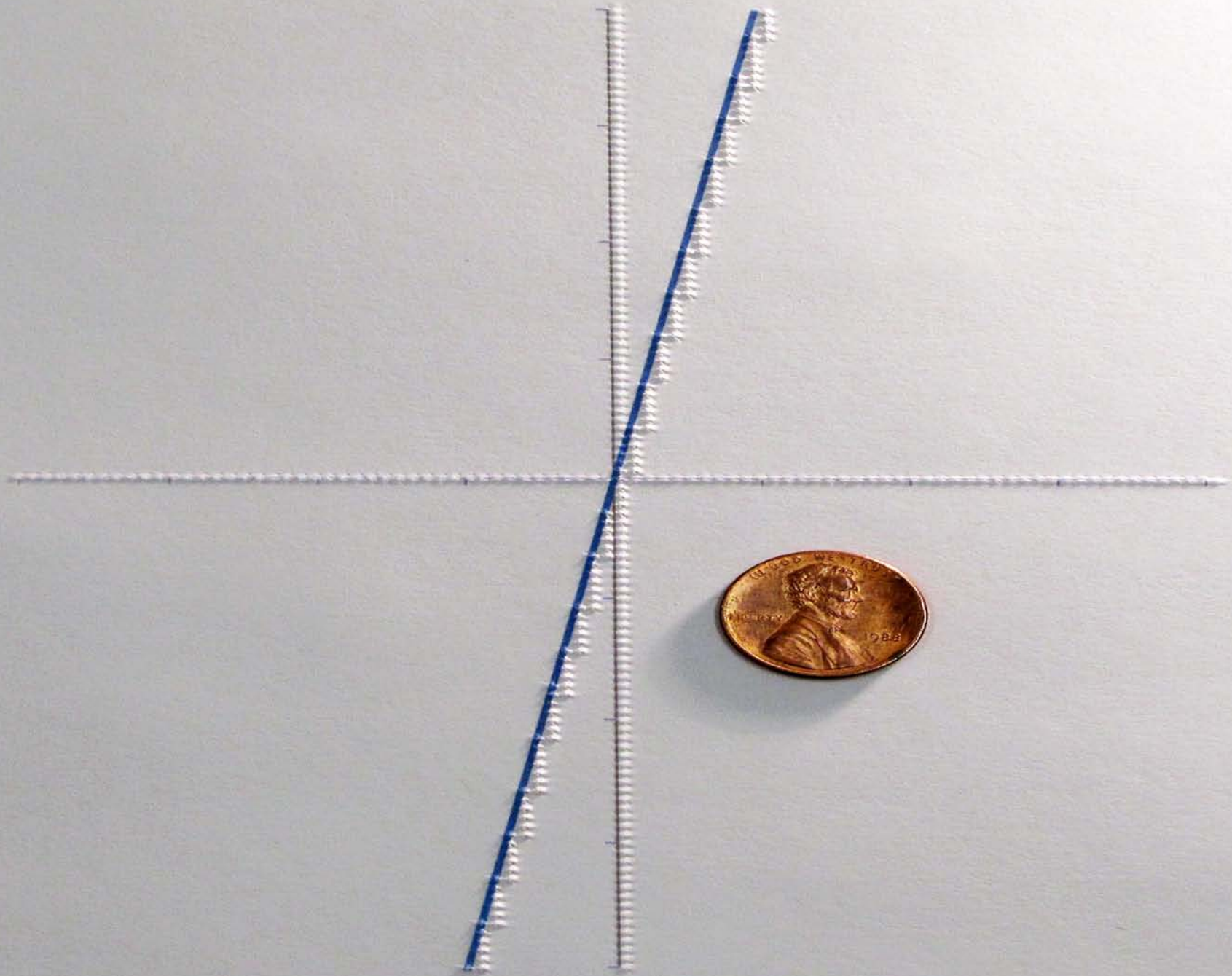


FIGURE 12-5

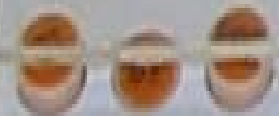


Prop. 29





POWER



POTENTIOMETER

階層1

階層2

階層3

階層4



入切



速



速

縮小



拡大

PREV



左

右

NEXT

ESC

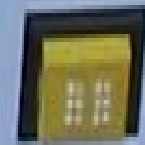


OK

決定

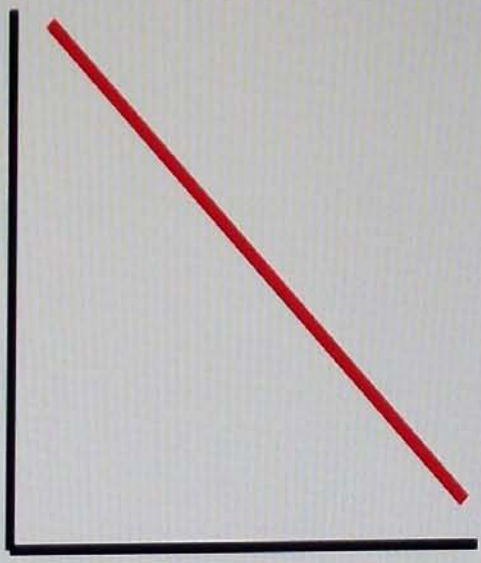


確認



決定

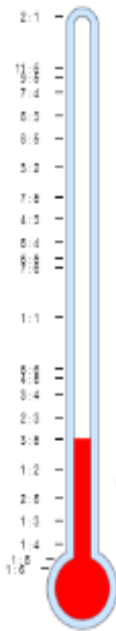
Item 3.



Done

Sweetness Meter

Scoops of dissolved mix : Cups of Water



Scoops of Mix: **3**

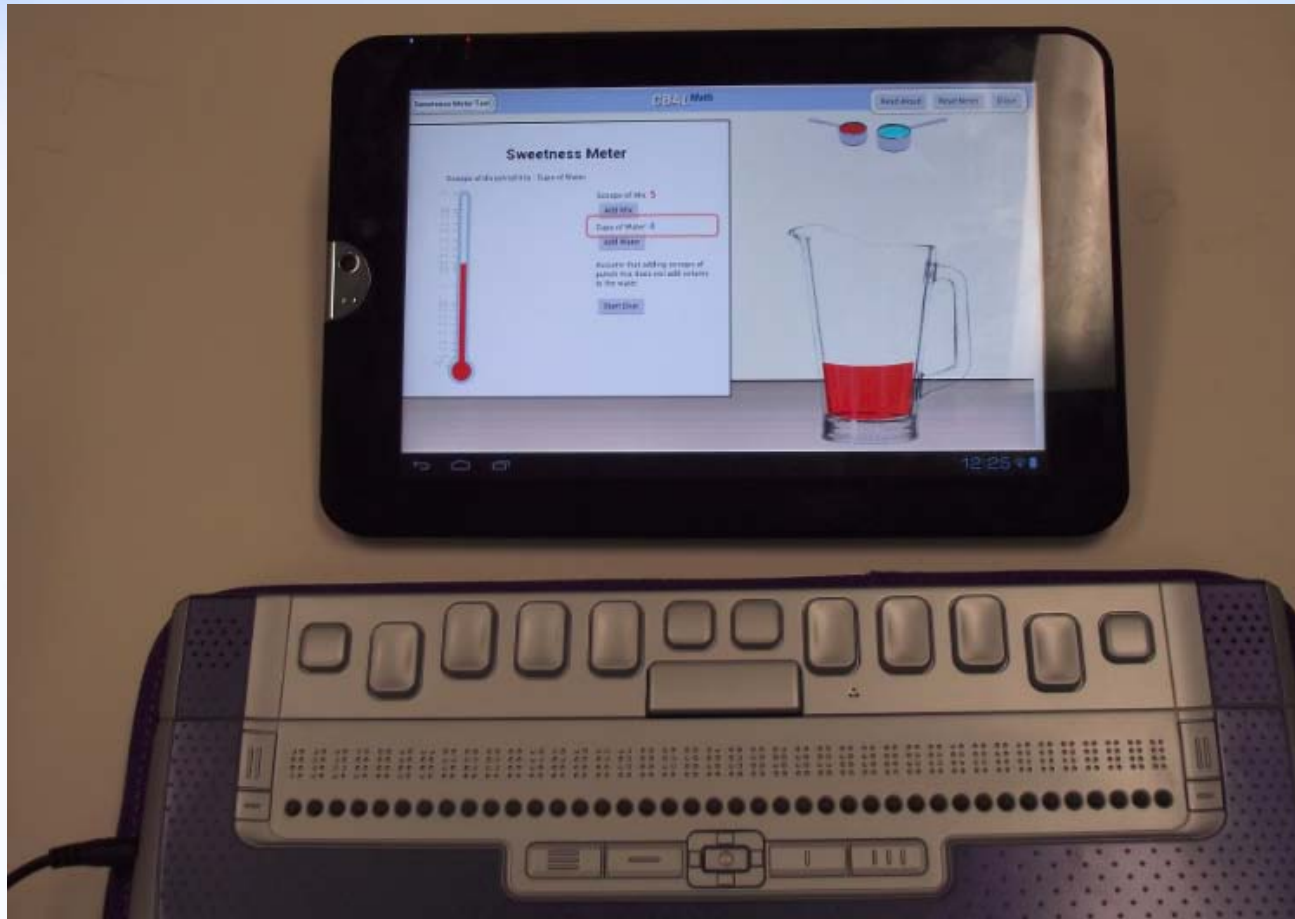
Cups of Water: **5**

Assume that adding scoops of punch mix does not add volume to the water.

Haptic and Audio feedback



Refreshable Braille



Connectivity

- Connectivity between an eTextBook and external resources
 - Test item repositories (transformed to HTML5)
 - Scoring services
 - School Information Systems
 - Sharing student progress with parents or teachers, can enhance the learning experience

Standards

- Standards outside of W3C and IDPF
 - IMS Global Consortium's APIP, AfA, and QTI will have relevance and potential for collaboration
 - Common Core State Standards promise to become the lingua franca among educators for discussing student achievement
- DIAGRAM Center – Image description

Technical Goals for Embedded Assessment

- HTML5
- Conformant with W3C Web Content Accessibility Guidelines 2.0 (AA) and other applicable standards
- Keyboard, Touch, Speech (TTS/SR) → Multi-Modal Interaction
- Compatible with Assistive Technologies such as screen readers as well as eReaders/Browsers providing built-in accessibility
- Interoperable, cross platform

Standards for accessible and interoperable assessments?