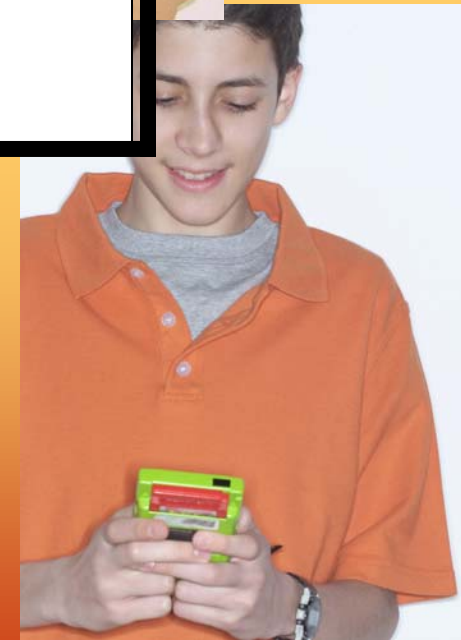
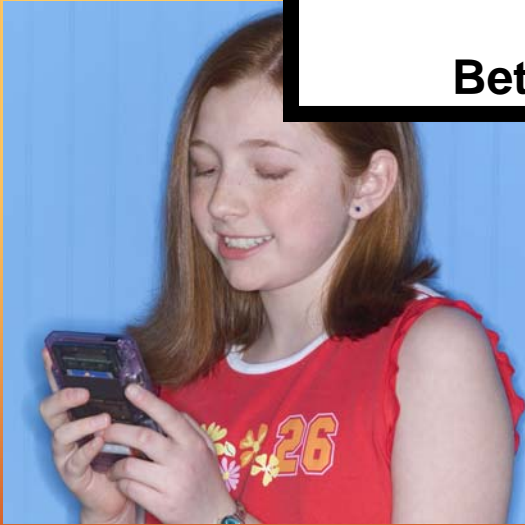


**Using the Four Corner Model and Podcasts
to Develop Algebraic Reasoning
MELL 2008
Beth Bos, Texas State University**



Solve

- If $(A+3) \div (B+5) \geq 10$ and $B \geq 7$,
what is the least possible value of A?

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What difficulties would be encountered by
an English Language Learner?

What factors affect second language acquisition?

- Motivation
 - Age
 - Access to the language
 - Personality
 - First language development
 - Cognitive development
 - Effective instruction
- Schumann (1978)

Mathematical Obstacles

- Commas and decimal points may be interchanged.
- Numeral may be formed differently
- Subtraction may be done by borrowing from the bottom numbers.
- Division and dividend may be expressed differently (a divided by b is written $a:b$).
- The metric system may be used exclusively, which greatly decreases the need for learning fractions,

- Manipulatives may have not been used.
- Estimation may not have been emphasized.
- Concept development may have been stressed far more than computational skills or vice versa.
- Geometry is not emphasized in some countries.

- What are some of the ways they compensate for not understanding?

Overcoming Mathematics Obstacles

- Mathematical Representations
 - 4 quadrant problem solver
- Podcasts, emphasis on representations

- The ***Rule of Four*** suggests that a concept be presented
 - (a) Using natural language (words)
 - (b) Numerically (concrete examples, 'plugging in', use of data tables, etc.)
 - (c) Visually (e.g., using graphs, charts, concrete models)
 - (d) Symbolically (algebraical mode)

Verbal

Table

Graph

Equation

Verbal

The Handel family is considering renting a minivan for their vacation to another state. The cost of the minivan is \$45.00 per day plus \$0.35 per mile. The drive is an 800 mile round trip and they plan to be gone 7 days. They decided they would spend no more than \$600 renting the minivan.. Can they rent the minivan and stay within their budget? Justify your answer

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Table

x	Process	y
0	$7(45) + 0$	315
1	$7(45) + .35 (1)$	315.35
2	$7(45) + .35 (2)$	315.70
3	$7(45) + .35 (3)$	316.05
x	$7(45) + .35 (x)$	$315 + .35x$

Graph

Equation

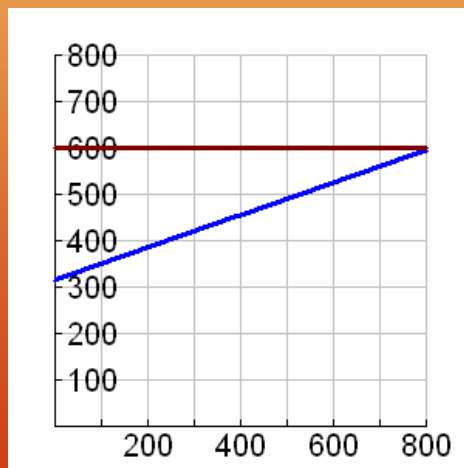
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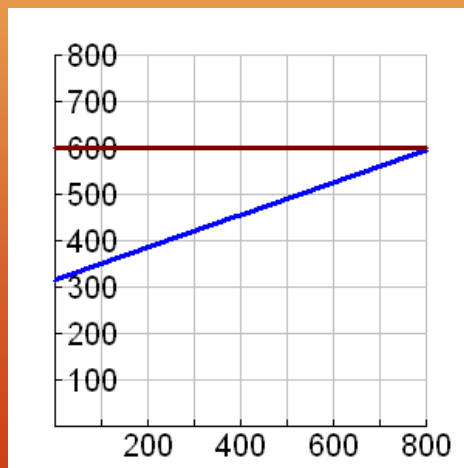
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Graph



Equation

$$Y = 315 + .35x$$

$$Y = 315 + .35(800)$$

Multiply $7 \times \$45$ since the minivan is \$45 each day plus $00 \text{ miles} \times .35$ per mile equals \$595. So they have enough money.

If $(A+3) \div (B+5) \geq 10$ and $B \geq 7$,
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- Verbal:

If I add 3 to a number (a) then divide it by another number (b) plus 5 the result is greater or equal to 10. If b is greater or equal to 7, what is least possible value of a ?

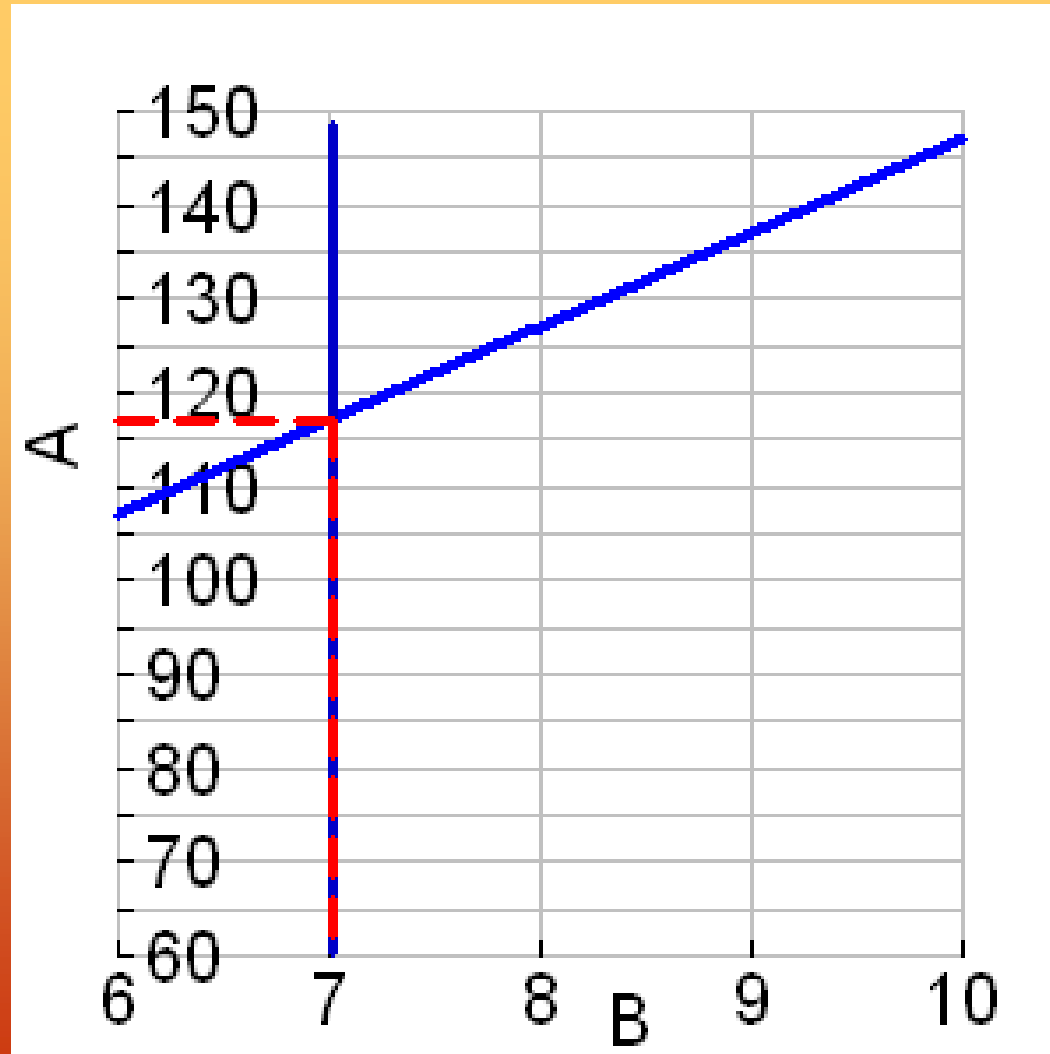
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- Table/Numerical

B	$(A+3) \div (B+5) \geq 10$	A
7	$(117+3) \div (7+5) = 10$	117
8	$(127+3) \div (8+5) = 10$	127
9	$(137+3) \div (9+5) = 10$	137
10	$(147+3) \div (10+5) = 10$	147

If $(A+3) \div (B+5) \geq 10$ and $B \geq 7$,
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- Graph



If $(A+3) \div (B+5) \geq 10$ and $B \geq 7$,
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- Equation:

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- Equation:

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$$a = 117 \text{ when } b \text{ is } 7$$

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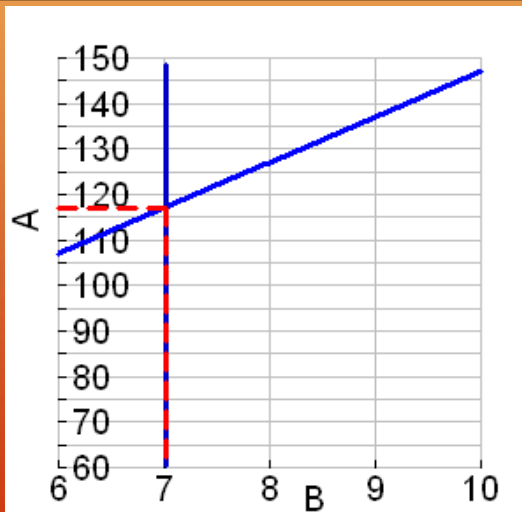
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What is podcasting?

- An MP3 player is a portable device that is usually smaller than a cassette tape. The device, often associated with downloading music from the Internet, stores, organizes, and plays digital music files. An iPod® is an example of an MP3 player.
- The word *podcasting* is derived from two words: iPod and broadcast.
- The EDUCAUSE Learning Initiative (2005) described podcasting as a "software and hardware combination that permits automatic downloading of audio files (most commonly in MP3 format) for listening at the user's convenience."
- Podcasting is a method of publishing both audio and video using the Internet (Clyde 2005, 54).

- When people subscribe to a podcast, files are delivered to their computers whenever new information or "feeds" become available.
- They can listen to or view the recorded material on their computer, or it can be downloaded to a mobile device such as an iPod or other MP3 player.
- According to the Pew Internet and American Life Project (2005), more than 22 million Americans own MP3 players and more than 6 million have downloaded podcasts.

- There are many sources of sound on the Internet but not all audio is a podcast and not all podcasts are simply audio.
- Podcasts were originally audio files uploaded to the internet to be downloaded onto a mobile device such as a cell phone, mp3 player--such as iPod--or else simply to be listened to directly from the computer.
- An important feature that makes the online audio file into a podcast is the possibility of subscription, so that the listener is alerted when a new episode is available and may even have it automatically downloaded onto a computer ready for listening or transfer to a mobile device.
- A podcast can also include video or pictures.
- Podcasts also often have a Web location on a blog where information, sometimes called "show notes," about each episode is also stored and where listeners can interact with the podcasters through email or a comment function.

Critical Features of a Podcast

- *content choice,*
- *portability,* and
- *time shifting*

Support personalized and mobile learning.

People are intrinsically motivated to learn in general and learn language in particular (Pinker, 1994) and will do so most effectively when:

- the process is pleasurable (for example, Csikszentmihalyi's (1990) "flow"), and
- the starting point matches their existing expertise (Vygotsky's (1962) "zone of proximal development")
- and reflects their values and concerns (for example, is problem-based and authentic);
- where they have a degree of control over what they learn (flow), and how (learning styles, flow),
- against a background of continued dialogue with peers and mentors (social constructivism, Siemens' (2006) "connectivism").

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- Business Partners
- Crisis Management
- Distance Education
- Early Education
- History
- Leadership
- Math
- Migrant/ESOL
- Prevention
- Prof. Development
- Reading
- School Safety

Podcasts for Math

 Migrant: Elementary Strategies Math Calculations Visually Verbally integrating reading in Math lessons

View

 Migrant: Christy discusses mathematics - group test review cooperative learning style

View

 Migrant: Christy discusses mathematics - subtracting integers

View

- <http://podcast.greenbush.us/index.php?page=includes/tags.php&tag=Math>

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- Turn Power Point into Podcast
 1. Change PPT to jpeg slides.
 2. Windows Movie Maker – free download
 3. Jodix – free download

- The audio can be slowed down, chunked and repeated at will.
- Plenty of English language experiences