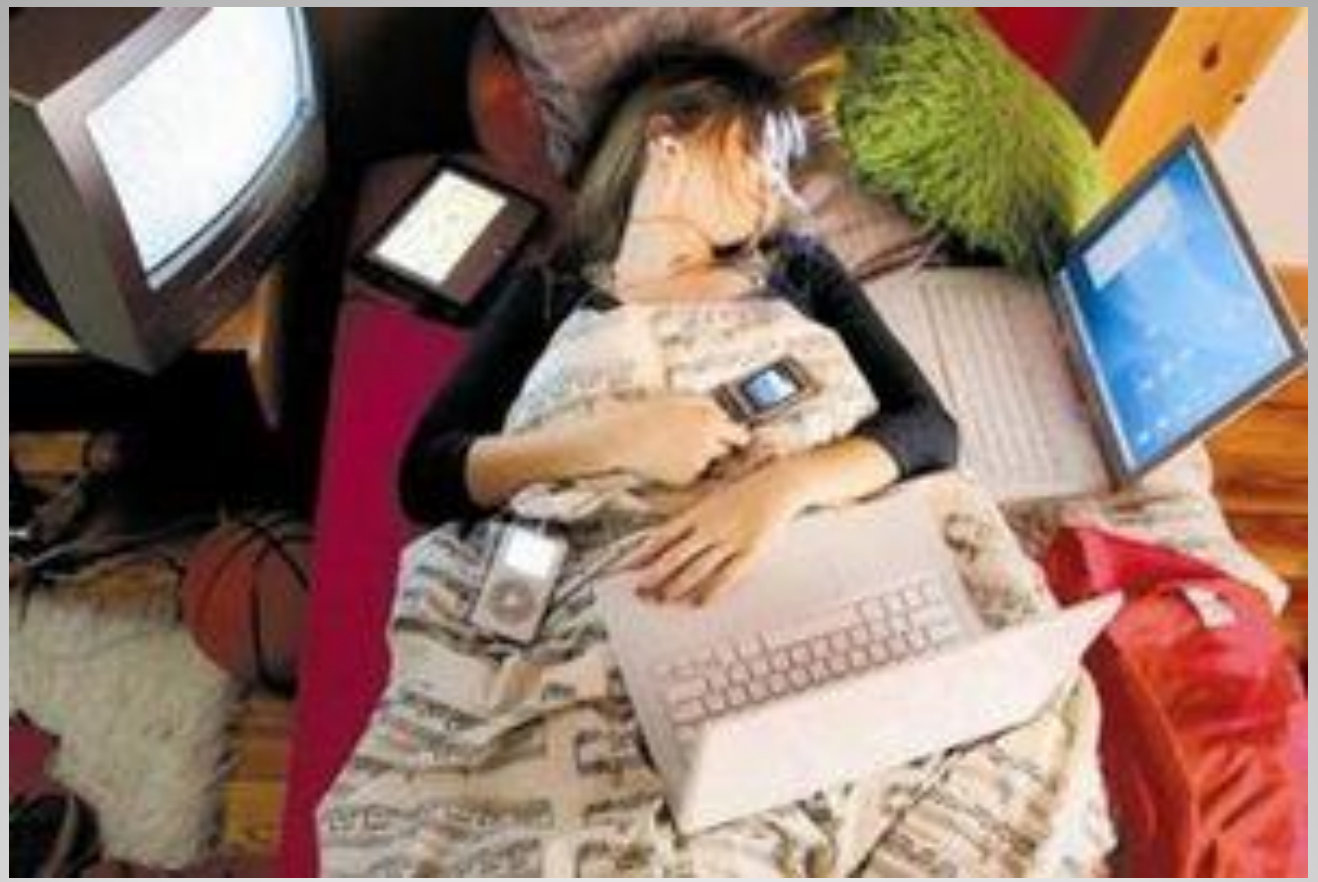
Teaching Math Online

~~all~~ things considered…



Working with screenagers…

Things that I considered about an online math course:

- Maintaining expectations consistent with a traditional lecture class setting
- Adequately providing students with feedback on understanding
- Communication with students
- Meeting the needs of students

Maintaining expectations consistent with a traditional lecture class setting

- Amount of time spent with the content
  - Videos and Tutorials
  - Lecture notes or other resources
- Homework
  - Assigned Readings
  - Conditional release of assignment
  - Mastery level expectations
  - Extensions
- Tests
  - Timed
  - Secure situation (lockdown browser or proctored)

Adequately providing students with feedback on understanding

- Homework
  - Immediate response of correct/incorrect
  - Multiple submissions
- Tests
  - Immediate response of correct/incorrect
  - Answer key/solutions
- Additional student work
  - Opportunity to view handwritten work

Communication with students

- Email/private messages
  - Help requests
  - Reminders to specific students of deadlines
- Announcements
  - General information traditionally covered during classes
  - Reminders of upcoming tests/quizzes/assignments
- Discussion boards/forums
  - Check for student understanding

Meeting the needs of students

- Ability to access resources as needed
  - Variety of resources available
- Flexibility of schedule
  - Homework and tests are available for a period of time before the due date
- Proximity to campus

Question Writing Activity

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Standards for Mathematical Practice

Start with the answer

- Can check for understanding of multiple concepts/ideas
- Stresses the importance of checking/verifying the result
- Allows for creativity of students

Example:

Write a linear equation in one variable that meets the following requirements and verify your equation:

- has a solution of $x = 7$
- requires two or more steps to solve
- must involve the distributive property

Determine where I went wrong…

- Allows students to find the mistake of the teacher (they love this!)
- Highlight commonly occurring mistakes
- Can use this to model expectations of structure

Example:

Solve using the quadratic formula.

$$x^2 - 5x - 4 = 0$$

$a = 1$

$b = -5$

$c = -4$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(1)(-4)}}{2(1)}$$

$$x = \frac{5 \pm \sqrt{-25 + 16}}{2}$$

$$x = \frac{5 \pm \sqrt{-9}}{2}$$

$$x = \frac{5 \pm 3i}{2}$$