

## Solutions Attendance Quiz for Review Class, April 20, 2017

[5 Minutes!]

**Preliminary Note:** These questions were taken from Daniel Kahnemann's masterpiece "Thinking Fast and Slow", where he talks about the long-term, slow, *bookish* thinking style, and the 'street-smart', fast, way, and that some people are better in one way other people are better in the other way [and some people are equally good (or equally bad) at both ways].

It turned out that there is only a weak correlation between how well people did in this quiz and how they do in this class. In fact, at least three people who scored perfectly on Exam 1, did not get this quiz perfectly.

Here are the stats: Out of 30 students

- 13 got all three answers right
- 8 got two answers right
- 6 got only one answer right
- 3 got nothing right

1. A bat and a ball cost \$1.10. The bat costs one dollar more than the ball. How much does the ball cost?

**Ans.** 5 cents.

Comments: Many people got it correctly, but I was disappointed that they used algebra. This defies the spirit of the question. A better way would be to do *guess and check*. If a bat costs 100 cents and a ball costs 10 cents, then the difference is too little, 90 cents. If a bat costs 110 cents and a ball costs 0 cents, then the difference is too high 110 cents. So let's compromise and try 105 cents for the bat and 5 cents for the ball, and now it is *just right*.

2. If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets?

**Ans.** The **same** 5 minutes!

It takes 1 machine 5 minutes to make 1 widget,

so it still takes  $n$  machines 5 minutes to make  $n$  widget, no matter what  $n$  is. In particular  $n = 100$ .

3. In a lake, there is patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half the lake?

**Ans.** 47 days.

This is more *reading comprehension* question. Since the area today is double the area yesterday, the area yesterday is half of the area today.