

## MATH 1000 READING CHECK 8

WEDNESDAY, FEBRUARY 7

**Instructor:** Alex Rice

**Name:**

These questions concern Chapter 7 of *How Not to Be Wrong* by Jordan Ellenberg, titled “Dead Fish Don’t Read Minds”.

- (1) What was the motivation for neuroscientist Craig Bennett when he presented a poster about fMRI readings of dead salmon correlating with the emotions of people in presented photographs?
  - a) He was obsessed with immortality and wanted to prove that brain activity could persist after death.
  - b) He was illustrating a flaw in the methodology of other neuroimaging articles.
  - c) He observed an astonishing coincidence, and even though he knew it wasn’t scientifically meaningful, he wanted to share it.
  
- (2) What does Jordan say are the two moments when a lot of kids “fall off the math train”?
  - a) fractions and algebra
  - b) geometry and statistics
  - c) trigonometry and calculus

- (3) What is the “null hypothesis”?
- a) The hypothesis that the methodology in a statistical study is invalid.
  - b) The hypothesis that the specific intervention you are studying has no effect on what you are measuring.
  - c) The hypothesis that nothing anyone does really matters.
- (4) What is the traditional threshold for a “very small”  $p$  value required to call something “statistically significant”?
- a)  $0.1 = 10\%$
  - b)  $.01 = 1\%$
  - c)  $.05 = 5\%$
- (5) What is the main difference between the way the word “significant” is used in statistics compared to its usual English usage?
- a) In statistics, to say a result is “significant” is to suggest that an effect probably exists, but not necessarily that the effect is large or important.
  - b) In statistics, “significant” specifically means “more than half”, whereas in English it is not that specific.
  - c) There is no difference, statistics uses the term in the same way it is used in English.
- (6) Why was there a noticeable uptick in conceptions and abortions in England and Wales in 1996?
- a) A popular birth control pill turned out to be ineffective.
  - b) A popular birth control pill turned out to cause severe nausea, leading many women to interrupt their usage.
  - c) A popular birth control pill was found to increase the chance of vein thrombosis, leading many women to stop taking it.

- (7) What does Jordan use as an additional example of how “risk ratios” can be misleading?
- a) the fact that in-home day care and nannies have a fatality rate seven times as high as daycare centers.
  - b) the fact that people with blue eyes are nine times as likely to die in plane crashes
  - c) the fact that brick houses are thirteen times as likely to be devoured by a sinkhole
- (8) What is the “hot hand”?
- a) The pain induced by flipping a coin many times while collecting statistical data.
  - b) The idea that a basketball player who has made a few shots in a row is more likely to continue making shots.
  - c) A medical condition that indicates poor circulation and pooling of blood in the extremities.
- (9) What summarizes Jordan’s thoughts on the “hot hand”?
- a) It is definitely a real thing.
  - b) It is definitely not a real thing.
  - c) It’s brief nature makes it very difficult to disprove as well as very difficult to detect. It might be a thing, but probably not as much as people think.