

Math 2168: Homework 7

Due: Friday, March 8th

1) Suppose that Fermat and Pascal are playing a game by tossing a chocolate coin. When the coin shows heads, Fermat gets a point. When the coin shows tails, Pascal gets a point. Fermat and Pascal have each contributed \$50 to a pot of money and have agreed to play to n points—whoever gets n points first wins \$100. Somewhere during the game (say after m turns) Pacioli comes along, and eats the chocolate coin. Fermat and Pascal are now miffed—how is the money divided?

- (a) Pacioli suggests that Fermat gets

$$100 \cdot \frac{\text{Fermat's points}}{\text{Total Points Played}} \quad \text{dollars}$$

and Pascal gets

$$100 \cdot \frac{\text{Pascal's points}}{\text{Total Points Played}} \quad \text{dollars}$$

Fermat and Pascal think this idea is totally bogus. Explain why this is **not** a reasonable solution. Hint: Consider various values for n .

- (b) Give a general (and correct!) method of dividing the money assuming that Fermat and Pascal were playing to 3 points. Justify why your solution make sense.