

**The University of Portland
Donald P. Shiley School of Engineering**

**EGR361
Analysis of Engineering Data**

HOMEWORK 1—Finding Probabilities Using Pascal's Triangle

Assigned: Monday, January 15, 2018

Due: Monday, January 22, 2018

Problems:

Solve each problem using only the numbers in Pascal's triangle. Provide a Pascal triangle for each problem and box the numbers you are using in Pascal's triangle for your solution. Also, box the answer(s) for each problem.

- 1) Find the number of possible outcomes if one tosses a fair coin:
 - a) 2 times
 - b) 4 times
 - c) 8 times

- 2) Portland Pilots men's and women's basketball teams currently have a total of 16 and 14 players, respectively.
 - a) How many different combinations of 5 starting players are possible for the men's team?
 - b) How many different combinations of 5 starting players are possible for the women's team?

- 3) Blaise tosses a fair coin ten times.
 - a) How many different possibilities could five of the ten outcomes be tails?
 - b) What is the probability that three of the ten outcomes are tails?
 - c) What is the probability that seven of the ten outcomes are the same?

- 4) Find the probability that all outcomes are the same when Pierre tosses a fair coin
 - a) 3 times
 - b) 9 times

- 5) If a family has eight children:
 - a) What is the probability that the number of boys and girls in this family differ by one?
 - b) What is the probability that the number of boys and girls in this family differ by two?
 - c) What is the probability that at least four of the children are the same sex?
 - d) What is the probability that at most three of the children are boys?

Resources for further reading:

<http://www.mathsisfun.com/pascals-triangle.html>

http://www.maths.surrey.ac.uk/explore/amandhispages/quizpage_7a.html