

FRS– Combinatorics and Problem Solving  
D. A. Kouba  
More Counting Problems

- 1.) How many distinct factors does each integer have ?  
a.) 6    b.) 100    c.) 1815    d.) 105,840
  
- 2.) Let's count donuts.
  - a.) How many different ways can your roommate buy 12 donuts from Dunkin' Donuts if she picks from only
    - i.) plain donuts ?
    - ii.) maple and vanilla donuts ?
    - iii.) maple, vanilla, chocolate, sprinkles, and coconut donuts ?
  
  - b.) How many different ways can your roommate buy 24 donuts from Winchel's Donuts if he picks from only
    - i.) glazed, cake, and plain donuts ?
    - ii.) maple, apple fritter, bear claw, and vanilla donuts ?
  
  - c.) How many different ways can you buy 16 donuts from Fluffy Donuts if you pick
    - i.) exactly 5 caked donuts from among glazed, cake, and plain donuts ?
    - ii.) at least 3 maple donuts from among maple, apple fritter, bear claw, and vanilla donuts ?
    - iii.) at most 14 apple fritters from among maple, apple fritter, bear claw, and vanilla donuts ?
  
- 3.) How many different ways can 7 identical blue marbles be placed in a row of 12 slots ?
  
- 4.) How many different ways can 4 identical red and 3 identical green marbles be placed in a row of
  - a.) 12 slots ?
  - b.) 12 slots and all the green marbles must be adjacent to each other ?
  - c.) 12 slots and no two green marbles can be adjacent to each other ?
  
- 5.) How many different ways can 4 Nigerian women and 3 Swedish men be seated in a row of
  - a.) 12 chairs ?
  - b.) 12 chairs and all the Nigerian women must be seated adjacent to each other ?
  - c.) 12 chairs and no two Nigerian women can be seated adjacent to each other ?
  
- 6.) There are 50 women and 30 men working in an office. How many different ways can a committee of 25 people be created if the committee must have at least 2 men ?