

# Balls and Urns

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Suppose you have  $b$  balls and  $u$  urns. Consider the 12 possible varieties of problems:

1. The balls can be:
  - a) labeled
  - b) unlabeled
2. The urns can be:
  - a) labeled
  - b) unlabeled
3. There can be
  - a) **no** restrictions on the balls in the urns
  - b) **at most** one ball per urn
  - c) **at least** one ball per urn

We will approach these for the specific cases of 7 balls and 3 urns and 4 balls and 8 urns.