

1) Calculate  $C(10, 8) + P(11, 10)$ :

- a) 135
- b) 190
- c) 100
- d) 200
- e) 155
- f) None of the above.

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2) **Find** the number of ways in which a club with 9 members can select a president and treasurer.

- a) 72
- b) 17
- c) 18
- d) 56
- e) 81
- f) None of the above.

3) A cellular phone company offers 2 types of service (digital and analog), along with 3 calling plans for each type of service, and 4 styles of phones available with each type of service, and regardless of the plan. A complete package consists of a calling plan, a type of service, and a phone. **Find** the total number of complete packages.

- a) 28
- b) 18
- c) 24
- d) 106
- e) 9
- f) None of the above.

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4) Suppose an experiment has a sample space of outcomes  $S = \{s_1, s_2, s_3, s_4, s_5\}$  with associated weights (probabilities)  $w_1 = .20$ ,  $w_2 = .15$ ,  $w_3 = .30$ ,  $w_4 = .25$ , and  $w_5 = .10$ . If  $E_1 = \{s_1, s_2\}$ ,  $E_2 = \{s_2, s_3, s_4\}$ .

**Find**  $Pr[E_1' \cap E_2]$ .

- a) .35
- b) .25
- c) .45
- d) .55
- e) .30
- f) None of the above.

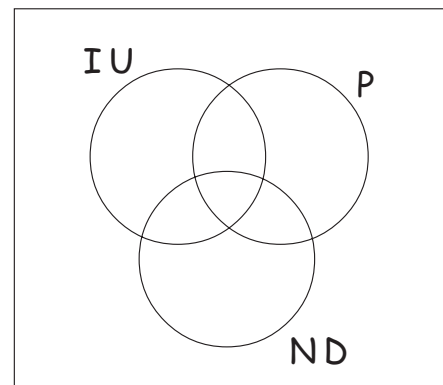
- 5) One hundred students are surveyed. Sixty say they want a room in a dorm, 55 want a meal plan at a dorm, and 45 want both. **Determine** how many students want neither a room nor a meal plan?
- 20
  - 25
  - 15
  - 10
  - 30
  - None of the above.

- 6) Sports fans in the state were polled and the following data obtained.

- 42% followed Indiana University sports
- 40% followed Purdue University sports
- 41% followed Notre Dame University sports
- 20% followed both Indiana and Notre Dame
- 25% followed both Purdue and Notre Dame
- 10% followed both Indiana and Purdue
- 5% followed all three.

**Find** the percentage of those polled who follow Indiana but neither Purdue, nor Notre Dame.

- 10%
- 17%
- 35%
- 37%
- 7%
- None of the above.



7) There are 21 cans of cola in a cooler. Eight of them are diet colas, and the rest are regular colas. If two cans are pulled from the cooler at random, **find** the probability that both are diet.

a)  $\frac{2}{15}$

b)  $\frac{7}{20}$

c)  $\frac{8}{21}$

d)  $\frac{3}{17}$

e)  $\frac{1}{16}$

f) None of the above.

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8) Five cards are drawn at random from standard deck of 52. **Determine** the probability that three aces and two kings were drawn.

a)  $\frac{C(4,3) \cdot C(4,2)}{C(52,5)}$

b)  $\frac{C(5,3) \cdot C(5,2)}{C(52,5)}$

c)  $\frac{C(4,3) \cdot C(48,2)}{C(52,5)}$

d)  $\frac{C(4,3) + C(48,2)}{C(52,5)}$

e)  $\frac{C(4,3) + C(4,2)}{C(52,5)}$

f) None of the above.

9) How many subsets with exactly 3 elements are there for a set of 9 elements?

- a) 128
- b) 15
- c) 21
- d) 70
- e) 84
- f) None of the above.

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10) The music school has 4 women and 3 men audition for solo performances. In deciding on an evening program the director must choose 4 different soloists performing *in a particular order*. If a program is selected at random, **determine** the probability that the program consists of two women followed by two men.

- a)  $\frac{8}{35}$
- b)  $\frac{6}{35}$
- c)  $\frac{17}{35}$
- d)  $\frac{18}{35}$
- e)  $\frac{3}{35}$
- f) None of the above.

- 11) **Determine** the number of six-letter code words that can be formed from the word *REEKER*.

Examples: EEERKR ERREKE KEERER

- a) 24
- b) 20
- c) 60
- d) 120
- e) 48
- f) None of the above.

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- 12) Suppose that a student walking through the Sample Gates is asked to take an Ad Sheet with probability .7, is asked to answer a survey with probability .3, and is asked to do both with probability .05. **Determine** the probability that a student will be asked to do neither.

- a) .20
- b) .15
- c) .10
- d) .25
- e) .05
- f) None of the above.

- 13) A judiciary committee of 5 is to be selected from a group of 5 Democrats and 6 Republicans, in such a way that there are at least two members from each party on the subcommittee. **Determine** the number of ways that this subcommittee can be chosen.

Example: Select Democrats 1, 3, 4 and Republicans 2 and 6.

- a) 340
- b) 310
- c) 350
- d) 330
- e) 320
- f) None of the above.

- 14) A hat contains 4 slips of paper, numbered 1, 2, 3, and 3. One slip after another is drawn out from the hat without replacement until either all the slips are drawn out or the sum of the numbers drawn out is even. An outcome is a record of the numbers drawn in the order that they were drawn. How many possible outcomes\* are there?

\*Example A: 323  $\Leftrightarrow$  a 3 was drawn, then a 2 was drawn, then a 3. The sum is 8 so the process is terminated.

\*Example B: 2  $\Leftrightarrow$  a 2 was drawn. The sum is 2 so the process is terminated.

- a) 9
- b) 8
- c) 6
- d) 7
- e) 11
- f) None of the above.