**AP Stat Quiz #5.2 Name:**

Answer each to the best of your ability. Be sure that you **CLEARLY** mark your answer.

1. An experiment has 3 mutually exclusive outcomes, A, B, and C. If P(A) = 0.12, P(B) = 0.61 and P(C) = 0.27, which of the following must be true?
2. A and C are independent
3. P(A and B) = 0
4. P(B or C) = P(B) + P(C)
5. I only
6. I and II only
7. I and III only
8. II and III only
9. I, II and III
10. If two fair dice are rolled, what is the probability of getting a sum greater than 4?
    1. 0.167 b. 0.333 c. 0.500 d. 0.667 e. 0.833
11. Which of the following is a correct statement?



* 1. An event that is certain not to happen has a probability of 1.0
  2. Probabilities are numbers whose values can by any number from -1 to 1.
  3. The total of all probabilities assigned to all outcomes in a sample space must be exactly 1.0
  4. Probabilities are always whole numbers
  5. If two events are dependent, then the probability that both events occur is the product of their individual probabilities.

1. A survey of families revealed that 58% of all families eat turkey at holiday meals, 44% eat ham, and 16% have both turkey and ham to eat at holiday meals.
   1. Draw and clearly label a Venn diagram to represent the sample space of this scenario.
   2. What is the probability that a randomly chosen family eats turkey or ham?
   3. What is the probability that a randomly chosen family eats neither turkey nor ham?

1. A company has 400 employees. Their mean income is $20,500, and the standard deviation of their incomes is $3,750. The distribution of incomes is normally distributed. How many of the 400 employees do you expect to have an income of between $13,000 and $28,000?

a. 50 b. 100 c. 200 d. 390 e. 400

1. Students at the University of New Harmony received 10,000 course grades last semester. The table below breaks down these grades by which school of the university taught the course. The schools are Liberal Arts, Engineering and Physical Sciences, and Health and Human Services. See the table below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Grade Level** | | |  |
| **A** | **B** | **Below B** | **Total** |
| **School** | **Liberal Arts** | 2,142 | 1,890 | 2,268 | **6,300** |
| **Engineering/Physical Sciences** | 368 | 432 | 800 | **1,600** |
| **Health and Human Services** | 882 | 630 | 588 | **2,100** |
| **Total** | **3,392** | **2,952** | **3,656** | **10,000** |

* 1. What is the probability that a randomly selected grade was an A?
  2. What is the probability that a randomly selected grade came from the Liberal Arts School?
  3. What is the probability that a randomly selected grade was a B or Below B?
  4. What is the probability that a randomly selected grade was an A or from the Engineering/Physical Sciences School?
  5. Are the events of grades from the Liberal Arts School and grades from the Health and Human Services School mutually exclusive? Explain.
  6. Are the events of grades from the Liberal Arts School and Grade Levels of a B mutually exclusive? Explain.

1. The most important advantage of experiments over observational studies is that
   1. Experiments are usually easier to carry out
   2. Experiments can give better evidence of causation
   3. Confounding cannot happen in experiments
   4. An observational study cannot have a response variable
   5. Observational studies cannot use random samples