**Probability 1 Measuring Uncertainty**

1. If there are two possible outcomes of a chance situation, A and NOT A, which of the following statements is not true?
   1. P(A) may equal 0.5
   2. P(A) = 1 – P(NOT A)
   3. P(A) must equal 0.5
   4. P(A) + P(NOT A) = 1
2. If one card is selected at random from a standard deck of cards, what is the probability that it is a queen?
   1. 1/13
   2. 1/4
   3. 1/26
   4. 1/52
3. Which of the following is not a common way of finding the probability of an event?
   1. measuring the relative frequency that the event occurred in the past
   2. calculating the likelihood of the event
   3. developing a subjective opinion of the likelihood of the event
   4. analysing the occurrence of unrelated events

1. Which of the following are complementary events?
   1. I will see a fox tomorrow, I will be see a deer tomorrow
   2. I will see a fox tomorrow, I will not see a fox tomorrow
   3. I will not see a fox tomorrow, I will see a deer tomorrow
   4. I will see a fox today, I will see a fox tomorrow
2. What is the probability that one of three complementary events will occur?
   1. 0
   2. 1/3
   3. 1
   4. it depends on circumstances
3. A person throws a die and defines:

Event A: the die lands with 6 on the uppermost face

Event B: the die lands with 3 on the uppermost face.

Which of the following statements is true?

* 1. A and B are exhaustive events
  2. P(A) = 1/3
  3. P(A) = 1 – P(B)
  4. A and B are mutually exclusive events

1. What does a Venn diagram of two mutually exclusive events look like?
   1. a single circle
   2. two separate circles
   3. two overlapping circles
   4. three overlapping circles
2. If two events, A and B, are mutually exclusive what is the probability of both of them occurring?
   1. 0
   2. 0.25
   3. 0.5
   4. 1
3. If two events, A and B, are not mutually exclusive, what is the probability that A or B occurs?
   1. P(A) + P(B)
   2. P(A) + P(B) + P(A AND B)
   3. P(A) + P(B) - P(A AND B)
   4. P(A) + P(B) – 2×P(A AND B)
4. 10 people work in an office. 3 of the 10 are women, 2 of the 10 produce sub-standard work and 4 of the 10 are either women or produce sub-standard work or both. How many men are there whose work is satisfactory?
   1. 6
   2. 7
   3. 5
   4. 4
5. Which of the following pairs of events are independent?
   1. I pass an exam, I obtain a mark of 90% in the exam
   2. I am vegetarian, I eat pork
   3. I roll a die twice and my first score is a 1, the sum of my two scores is 8
   4. I select a club from a pack of cards, then I select a heart from a pack
6. For independent events A and B, what is the probability that both occur?
   1. P(A) × P(B)
   2. P(A) + P(B)
   3. P(A OR B)
   4. P(A OR B) × P(B)
7. What does P(A│B) mean?
   1. the conditional probability of A occurring given that B has already occurred
   2. the conditional probability that both A and B occur
   3. the conditional probability that B occurs after A
   4. the unconditional probability that both A and B occur
8. If A and B are independent, P(A) is equal to which of the following?
   1. P(B)
   2. P(B│A)
   3. P( A AND B)
   4. P(A│B)
9. If A and B are dependent, P(A) is equal to which of the following?
   1. P(B│A)
   2. P( A AND B)
   3. P(A│B)
   4. None of these
10. What is the general formula for finding P(A│B)?
    1. P(A AND B)
    2. P(B│A) × P(A)
    3. P(A AND B) × P(B)
    4. P(A AND B) / P(B)
11. There are 4 people in an office. Anna receives twice as many calls as Ben. Between them Claire and Ben receive half of all calls. Ten percent of calls are for Del. If the telephone rings what is the probability it is for Anna?
    1. 0.25
    2. 0.4
    3. 0.3
    4. 0.2
12. A wine seller sells red and white wine. He sells three times as much white as red. 20% of the white wine sales and 50% of the red wine sales are French. What is the probability that some wine sold is French?
    1. 0.75
    2. 0.5
    3. 0.275
    4. 0.125
13. A wine seller sells red and white wine. He sells three times as much white as red. 20% of the white wine sales and 50% of the red wine sales are French. If some French wine is sold, what is the probability it is red?
    1. 0.5
    2. 0.45
    3. 0.25
    4. 0.125
14. To ascertain how many 16 year olds have taken drugs a survey was carried out involving 200 students at a particular school. They were asked to think of (but not say) a number between 1 and 10 (inclusive). If the number were divisible by 3 they were to answer the question ‘ Is your number even? If not, they were to answer the question ‘ have you ever taken drugs?’ In the survey, 50 students answered ‘ yes’. What is an estimate for the number of 16 year olds who have taken drugs?
    1. 1/8
    2. 3/20
    3. 3/14
    4. ¼

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| Question | Answer |
| 1 | C |
| 2 | A |
| 3 | D |
| 4 | B |
| 5 | C |
| 6 | D |
| 7 | B |
| 8 | A |
| 9 | C |
| 10 | A |
| 11 | D |
| 12 | A |
| 13 | A |
| 14 | A |
| 15 | D |
| 16 | D |
| 17 | B |
| 18 | C |
| 19 | B |
| 20 | D |