Complementary events and probability: 10 practice questions

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Name: _____ Date: _____

Attempt all questions and show your working. Suggested time: 15 to 20 minutes.

Section A: Consolidating (Questions 1-4)

Question 1

The probability that it rains tomorrow is 0.3. What is the probability that it does not rain tomorrow?

Question 2

A fair six-sided die is rolled. What is the probability of not rolling a 6?

Question 3

Describe the complementary event for each of these.

(a) Rolling an even number on a six-sided die

(b) Drawing a red card from a standard deck of 52 playing cards

(c) Winning a tennis match (there are no draws in tennis)

(d) Getting at least one head when two coins are tossed

Question 4

For an event A, P(A) = ⅖. Find P(not A).

Section B: Standard (Questions 5-10)

Question 5

A bag contains 5 red, 3 blue and 4 green marbles. One marble is chosen at random. Find the probability that it is:

(a) not green

(b) not red

Question 6

The probability that Jack's train is late on any given day is 0.15. Over 200 days, on how many days would Jack expect his train not to be late?

Question 7

A spinner can land on red, blue or yellow only. The probability of red is 0.25 and the probability of blue is 0.4.

(a) Find the probability of yellow.

(b) Find the probability of not blue.

Question 8

A card is drawn at random from a standard deck of 52 playing cards. Find the probability, in simplest form, that the card is:

(a) not a heart

(b) not an ace

(c) not a picture card (a jack, queen or king)

Question 9

In a school raffle, 500 tickets are sold and there is one first prize. Ana buys 8 tickets. What is the probability that Ana does not win first prize? Give your answer as a fraction in simplest form and as a decimal.

Question 10

A fair six-sided die is rolled. For each pair of events, state whether they are complementary. Explain your answer.

(a) "Rolling a 1" and "rolling a 6"

(b) "Rolling an even number" and "rolling an odd number"

(c) "Rolling a number less than 3" and "rolling a number greater than 3"

(d) "Rolling at least 3" and "rolling less than 3"

Complementary events and probability: answers

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Question 1

Answer: 0.7 (1 - 0.3)

Question 2

Answer: ⅚

Question 3

Answer: (a) Rolling an odd number (1, 3 or 5) (b) Drawing a black card (c) Losing the match (d) Getting no heads (two tails)

Question 4

Answer: ⅗ (or 0.6)

Question 5

Answer: (a) 8/12 = ⅔ (b) 7/12

Question 6

Answer: 170 days (0.85 × 200)

Question 7

Answer: (a) 0.35 (1 - 0.25 - 0.4) (b) 0.6 (1 - 0.4)

Question 8

Answer: (a) 39/52 = ¾ (b) 48/52 = 12/13 (c) 40/52 = 10/13

Question 9

Answer: 492/500 = 123/125 = 0.984

Question 10

Answer: (a) Not complementary: rolling a 2, 3, 4 or 5 is in neither event. (b) Complementary: every outcome is in exactly one of the events. (c) Not complementary: rolling a 3 is in neither event. (d) Complementary: every outcome is in exactly one of the events.