A.S.20: Theoretical Probability: Calculate the probability of an event and its complement

1 Which inequality represents the probability, x, of any event happening?
1) $x \geq 0$
2) $0 < x < 1$
3) $x < 1$
4) $0 \leq x \leq 1$

2 Mary chooses an integer at random from 1 to 6. What is the probability that the integer she chooses is a prime number?
1) $\frac{5}{6}$
2) $\frac{3}{6}$
3) $\frac{2}{6}$
4) $\frac{4}{6}$

3 A bag contains eight green marbles, five white marbles, and two red marbles. What is the probability of drawing a red marble from the bag?
1) $\frac{1}{15}$
2) $\frac{2}{15}$
3) $\frac{2}{13}$
4) $\frac{13}{15}$

4 A box contains six black balls and four white balls. What is the probability of selecting a black ball at random from the box?
1) $\frac{1}{10}$
2) $\frac{6}{10}$
3) $\frac{4}{6}$
4) $\frac{6}{4}$

5 A six-sided number cube has faces with the numbers 1 through 6 marked on it. What is the probability that a number less than 3 will occur on one toss of the number cube?
1) $\frac{1}{6}$
2) $\frac{2}{6}$
3) $\frac{3}{6}$
4) $\frac{4}{6}$

6 When a fair coin was tossed ten times, it landed heads up the first seven times. What is the probability that on the eighth toss the coin will land with tails up?
1) $\frac{3}{10}$
2) $\frac{1}{2}$
3) $\frac{7}{10}$
4) $\frac{3}{7}$

7 As captain of his football team, Jamal gets to call heads or tails for the toss of a fair coin at the beginning of each game. At the last three games, the coin has landed with heads up. What is the probability that the coin will land with heads up at the next game? Explain your answer.

8 If the probability that it will rain on Thursday is $\frac{5}{6}$, what is the probability that it will *not* rain on Thursday?

1) 1
2) 0
3) $\frac{1}{6}$
4) $\frac{5}{6}$

9 Marilyn selects a piece of candy at random from a jar that contains four peppermint, five cherry, three butterscotch, and two lemon candies. What is the probability that the candy she selects is *not* a cherry candy?

1) 0
2) $\frac{5}{14}$
3) $\frac{9}{14}$
4) $\frac{14}{14}$

10 The faces of a cube are numbered from 1 to 6. What is the probability of not rolling a 5 on a single toss of this cube?

1) $\frac{1}{6}$
2) $\frac{5}{6}$
3) $\frac{1}{5}$
4) $\frac{4}{5}$

11 A box contains 6 dimes, 8 nickels, 12 pennies, and 3 quarters. What is the probability that a coin drawn at random is *not* a dime?

1) $\frac{6}{29}$
2) $\frac{8}{29}$
3) $\frac{12}{29}$
4) $\frac{23}{29}$

12 If the probability of a spinner landing on red in a game is $\frac{1}{5}$, what is the probability of it *not* landing on red?

1) 20%
2) 25%
3) 50%
4) 80%

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Answer Section

1 ANS: 4
An event that will not happen has a probability of 0. An event that will happen has a probability of 1. All other probabilities fall within this range.

REF: 060630a

2 ANS: 2
2, 3 and 5 are the prime numbers in this range.

REF: 060415a

3 ANS: 2 REF: 011002ia

4 ANS: 2
$\frac{6}{6+4} = \frac{6}{10}$

REF: 080011a

5 ANS: 2 REF: 060705a

6 ANS: 2 REF: 060712a

7 ANS:
$\frac{1}{2}$. A coin has no memory.

REF: 010832a

8 ANS: 3
$1 - \frac{5}{6} = \frac{1}{6}$

REF: 060202a

9 ANS: 3
$\frac{4+3+2}{4+5+3+2} = \frac{9}{14}$

REF: 080803a

10 ANS: 2
Between 1-6, there are 5 numbers that are not 5.

REF: 080604a

11 ANS: 4
$\frac{8+12+3}{6+8+12+3} = \frac{23}{29}$

REF: 010805a

12 ANS: 4

$1 - \frac{1}{5} = \frac{4}{5} = 80\%$

REF: 010907a