Activity 11.1: Counting & Probability

A

Name: _____ Partner's name: _____ Date: _____

Directions: Answer each question. Give probabilities as fractions or decimals.

Work alone, then compare after each problem. If answers differ, find the mistake together.

1

Find ${}_5P_2$, the number of permutations of 5 objects taken 2 at a time.

Answer: _____ Match? ☐ Yes ☐ No

2

Find ${}_7C_2$, the number of combinations of 7 objects taken 2 at a time.

Answer: _____ Match? ☐ Yes ☐ No

3

How many different arrangements are there of the letters in the word MATH?

Answer: _____ Match? ☐ Yes ☐ No

4

Two fair dice are rolled. What is the probability that the sum is 7?

Answer: _____ Match? ☐ Yes ☐ No

5

Events A and B are independent with $P(A) = 0.5$ and $P(B) = 0.4$. Find $P(A \text{ and } B)$.

Answer: _____ Match? ☐ Yes ☐ No

6

$P(A) = 0.5$, $P(B) = 0.4$, and $P(A \text{ and } B) = 0.2$. Find $P(A \text{ or } B)$.

Answer: _____ Match? ☐ Yes ☐ No

7

$P(A \text{ and } B) = 0.2$ and $P(B) = 0.4$. Find $P(A \mid B)$.

Answer: _____ Match? ☐ Yes ☐ No

8

A game pays \$10 with probability 0.2 and costs you \$2 with probability 0.8. Find the expected value.

Answer: _____ Match? ☐ Yes ☐ No

Activity 11.1: Counting & Probability

B

Name: _____ Partner's name: _____ Date: _____

Directions: Answer each question. Give probabilities as fractions or decimals.

Work alone, then compare after each problem. If answers differ, find the mistake together.

1

A club with 5 members elects a president and a vice president. In how many ways can this be done?

Answer: _____ Match? ☐ Yes ☐ No

2

A pizza shop has 7 toppings. How many ways are there to choose 2 different toppings?

Answer: _____ Match? ☐ Yes ☐ No

3

In how many ways can 4 friends stand in a line for a photo?

Answer: _____ Match? ☐ Yes ☐ No

4

A bag has 12 marbles, 2 of which are red. One marble is drawn at random. What is the probability it is red?

Answer: _____ Match? ☐ Yes ☐ No

5

Events A and B are independent with $P(A) = 0.25$ and $P(B) = 0.8$. Find $P(A \text{ and } B)$.

Answer: _____ Match? ☐ Yes ☐ No

6

$P(A) = 0.6$, $P(B) = 0.3$, and $P(A \text{ and } B) = 0.2$. Find $P(A \text{ or } B)$.

Answer: _____ Match? ☐ Yes ☐ No

7

$P(A \text{ and } B) = 0.15$ and $P(B) = 0.3$. Find $P(A \mid B)$.

Answer: _____ Match? ☐ Yes ☐ No

8

A game pays \$4 with probability 0.4 and costs you \$2 with probability 0.6. Find the expected value.

Answer: _____ Match? ☐ Yes ☐ No