

7.SP.C.8 Sample Space and Probability Distribution

7.SP.C.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

- A coin is tossed. If a head appears, a spinner that can land on any of the numbers from 1 to 6 is spun. If a tail appears, the coin is tossed a second time instead of spinning the spinner. Which outcomes are possible?
[A] (T, H), (H, H), (H, 1), (H, 2), (H, 3), (H, 4), (H, 5), (H, 6)
[B] (T, H), (T, T), (H, 1), (H, 2), (H, 3), (H, 4), (H, 5), (H, 6)
[C] (T, H), (T, T), (T, 1), (T, 2), (T, 3), (T, 4), (T, 5), (T, 6)
[D] (T, H), (H, H), (T, 1), (T, 2), (T, 3), (T, 4), (T, 5), (T, 6)
- A spinner that has 3 sections of equal area, numbered from 1 to 3, is spun two times in succession. Find the sample space composed of equally likely events. Which of the following is/are not part of the sample space?
I. (1, 1) II. (3, 4) III. (2, 3) IV. (3, 2)
[A] All of the outcomes are possible.
[B] I only
[C] I and II only [D] II only
- A spinner that has 3 sections of equal area, numbered from 1 to 3, is spun two times in succession. Find the sample space composed of equally likely events.
- A spinner that has 4 sections of equal area, numbered from 1 to 4, is spun two times in succession. Find the sample space composed of equally likely events.
- A spinner that has 5 sections of equal area, numbered from 1 to 5, is spun two times in succession. Find the sample space composed of equally likely events.
- Marta has a bag filled with 5 red, 7 green, and 4 blue marbles. List the possible outcomes for drawing two marbles.
- A jar contains 3 dimes and 10 quarters. Two coins are removed from the jar, one after the other, without replacement, and the total value of the two coins is recorded. Find the appropriate sample space for this experiment and find the probability of each sample event in the sample space.

[A]	x_i	\$0.20	\$0.35	\$0.50
	P_i	0.333	0.333	0.333

[B]	x_i	\$0.20	\$0.35	\$0.50
	P_i	0.038	0.385	0.577

[C]	x_i	\$0.20	\$0.35	\$0.50
	P_i	0.115	0.5	0.385

[D]	x_i	\$0.20	\$0.35	\$0.50
	P_i	0.333	0.567	0.1

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8. If the sample space is $\{2, 15, 16, 25\}$, which function represents a probability distribution?
- [A] $P(2) = 0.15, P(15) = 0.15, P(16) = 0.55, P(25) = 0.25$
- [B] $P(2) = 0.15, P(15) = 0.15, P(16) = 0.45, P(25) = 0.2$
- [C] $P(2) = 0.2, P(15) = 0.15, P(16) = 0.55, P(25) = 0.1$
- [D] $P(2) = 0.15, P(15) = 0.15, P(16) = 0.5, P(25) = 0.1$
9. Which of the following could be a probability distribution for the sample space $\{\text{green, blue, yellow}\}$?
- [A] $P(\text{green}) = \frac{1}{2}, P(\text{blue}) = \frac{1}{3}, P(\text{yellow}) = \frac{1}{5}$
- [B] $P(\text{green}) = 0.4, P(\text{blue}) = 0.5, P(\text{yellow}) = 0.2$
- [C] $P(\text{green}) = 0.3, P(\text{blue}) = 0.4, P(\text{yellow}) = 0.3$
- [D] $P(\text{green}) = 0.8, P(\text{blue}) = 0.1, P(\text{yellow}) = 0.01$
10. Compare the quantity in Column A with the quantity in Column B.
This table shows the probability distribution for the sample space $\{1, 2, 3, 4, 5\}$.

e	1	2	3	4	5
$P(e)$	0.12	0.21	0.43	0.13	0.11

Column A Column B

$P(e < 3)$ $P(3)$

- [A] The quantity in Column A is greater. [B] The quantity in Column B is greater.
- [C] The two quantities are equal.
- [D] The relationship cannot be determined on the basis of the information supplied.

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Answer Key

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[1] B _____

[2] D _____

[3] $\{(1, 1), (1, 2), (1, 3), (2, 1), (2, 2), (2, 3), (3, 1), (3, 2), (3, 3)\}$ _____

[4] $\{(1, 1), (1, 2), (1, 3), (1, 4), (2, 1), (2, 2), (2, 3), (2, 4), (3, 1), (3, 2), (3, 3), (3, 4), (4, 1), (4, 2), (4, 3), (4, 4)\}$ _____

[5] $\{(1, 1), (1, 2), (1, 3), (1, 4), (1, 5), (2, 1), (2, 2), (2, 3), (2, 4), (2, 5), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5), (4, 1), (4, 2), (4, 3), (4, 4), (4, 5), (5, 1), (5, 2), (5, 3), (5, 4), (5, 5)\}$ _____

[6] red, red; red, green; red, blue; green, green; green blue; blue, blue _____

[7] B _____

[8] C _____

[9] C _____

[10] B _____