

Question ID d5004dde

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: d5004dde

	1 visit	2 or more visits	Total
Less than 40 years old	15	15	30
At least 40 years old	20	85	105
Total	35	100	135

The table summarizes customers who visited a car dealership in the last month by age and number of visits they made to the dealership. If a customer from the last month is selected at random, what is the probability that the selected customer is at least 40 years old?

- A. $\frac{30}{135}$
- B. $\frac{35}{135}$
- C. $\frac{100}{135}$
- D. $\frac{105}{135}$

ID: d5004dde Answer

Correct Answer: D

Rationale

Choice D is correct. Based on the table, there are a total of 135 customers who visited the car dealership in the last month, and 105 of these customers are at least 40 years old. If a customer from the last month is selected at random, the probability that the selected customer is at least 40 years old is equal to the number of customers who are at least 40 years old divided by the total number of customers. Therefore, the probability that the selected customer is at least 40 years old is $\frac{105}{135}$.

Choice A is incorrect. This is the probability that the selected customer is less than 40 years old.

Choice B is incorrect. This is the probability that the selected customer visited the dealership 1 time in the last month.

Choice C is incorrect. This is the probability that the selected customer visited the dealership 2 or more times in the last month.

Question Difficulty: Easy

Question ID 17be5300

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 17be5300

On a street with **7** houses, **2** houses are blue. If a house from this street is selected at random, what is the probability of selecting a house that is blue?

- A. $\frac{1}{7}$
- B. $\frac{2}{7}$
- C. $\frac{5}{7}$
- D. $\frac{7}{7}$

ID: 17be5300 Answer

Correct Answer: B

Rationale

Choice B is correct. If a house from the street is selected at random, the probability of selecting a house that is blue is equal to the number of houses on the street that are blue divided by the total number of houses on the street. Since there are **2** blue houses on a street with **7** total houses, the probability of selecting a house that is blue from this street is $\frac{2}{7}$.

Choice A is incorrect. This is the probability of selecting a house that is blue from a street on which **1** of the **7** houses is blue.

Choice C is incorrect. This is the probability of selecting a house that is not blue from this street.

Choice D is incorrect. This is the probability of selecting a house that is blue from a street on which all the houses are blue.

Question Difficulty: Easy

Question ID 13375d43

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 13375d43

For a particular machine that produces beads, **29** out of every **100** beads it produces have a defect. A bead produced by the machine will be selected at random. What is the probability of selecting a bead that has a defect?

- A. $\frac{1}{2,900}$
- B. $\frac{1}{29}$
- C. $\frac{29}{100}$
- D. $\frac{29}{10}$

ID: 13375d43 Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that **29** out of every **100** beads that the machine produces have a defect. It follows that if the machine produces k beads, then the number of beads that have a defect is $\frac{29}{100}k$, for some constant k . If a bead produced by the machine will be selected at random, the probability of selecting a bead that has a defect is given by the number of beads with a defect, $\frac{29}{100}k$, divided by the number of beads produced by the machine, k . Therefore, the probability of selecting a bead that has a defect is $\frac{\frac{29}{100}k}{k}$, or $\frac{29}{100}$.

Choice A is incorrect and may result from conceptual or computational errors.

Choice B is incorrect and may result from conceptual or computational errors.

Choice D is incorrect and may result from conceptual or computational errors.

Question Difficulty: Easy

Question ID b69ba137

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: b69ba137

A band with **45** members has **11** members who play saxophone. If one band member is selected at random, what is the probability of selecting a band member who plays saxophone?

- A. $\frac{1}{45}$
- B. $\frac{11}{45}$
- C. $\frac{34}{45}$
- D. $\frac{45}{45}$

ID: b69ba137 Answer

Correct Answer: B

Rationale

Choice B is correct. The probability of an event occurring is the ratio of the number of favorable outcomes to the total number of possible outcomes. It's given that there are **45** band members, which is the total number of possible outcomes. It's also given that there are **11** band members who play saxophone. Therefore, the number of favorable outcomes is **11**. Thus, the probability of selecting a band member who plays saxophone is $\frac{11}{45}$.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect. This is the probability of selecting a band member who does not play saxophone.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 6d585d08

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 6d585d08

There are **20** buttons in a bag: **8** white buttons, **2** orange buttons, and **10** brown buttons. If one of these buttons is selected at random, what is the probability of selecting a white button?

- A. $\frac{2}{20}$
- B. $\frac{8}{20}$
- C. $\frac{10}{20}$
- D. $\frac{12}{20}$

ID: 6d585d08 Answer

Correct Answer: B

Rationale

Choice B is correct. It’s given that there are **20** buttons in a bag and **8** of the buttons are white. If one button from the bag is selected at random, the probability of selecting a white button is the number of white buttons in the bag divided by the total number of buttons in the bag. Therefore, if one button from the bag is selected at random, the probability of selecting a white button is $\frac{8}{20}$.

Choice A is incorrect. This is the probability of selecting an orange button from the bag.

Choice C is incorrect. This is the probability of selecting a brown button from the bag.

Choice D is incorrect. This is the probability of selecting a button that isn't white from the bag.

Question Difficulty: Easy

Question ID 3aec1679

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 3aec1679

−13, 4, 23

A data set of three numbers is shown. If a number from this data set is selected at random, what is the probability of selecting a negative number?

- A. 0
- B. $\frac{1}{3}$
- C. $\frac{2}{3}$
- D. 1

ID: 3aec1679 Answer

Correct Answer: B

Rationale

Choice B is correct. If a number from the data set is selected at random, the probability of selecting a negative number is the count of negative numbers in the data set divided by the total count of numbers in the data set. It's given that a data set of three numbers is shown. It follows that the total count of numbers in the data set is **3**. In the data set shown, **−13** is the only negative number. It follows that the count of negative numbers in the data set is **1**. Therefore, if a number from the data set is selected at random, the probability of selecting a negative number is $\frac{1}{3}$.

Choice A is incorrect. This is the probability of selecting a negative number from a data set that doesn't contain any negative numbers.

Choice C is incorrect. This is the probability of selecting a positive number, not a negative number, from the data set.

Choice D is incorrect. This is the probability of selecting a negative number from a data set that contains only negative numbers.

Question Difficulty: Easy