Question ID 68ce71ce

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 68ce71ce

The table gives the distribution of votes for a new school mascot and grade level for 80 students.

Mascot	Grade level			
	Sixth	Seventh	Eighth	Total
Badger	4	9	9	22
Lion	9	2	9	20
Longhorn	4	6	4	14
Tiger	6	9	9	24
Total	23	26	31	80

If one of these students is selected at random, what is the probability of selecting a student whose vote for new mascot was for a lion?

A. $\frac{1}{9}$

B. $\frac{1}{5}$

C. $\frac{1}{4}$

D. $\frac{2}{3}$

ID: 68ce71ce Answer

Correct Answer: C

Rationale

Choice C is correct. If one of these students is selected at random, the probability of selecting a student whose vote for the new mascot was for a lion is given by the number of votes for a lion divided by the total number of votes. The given table indicates that the number of votes for a lion is 20 votes, and the total number of votes is 80 votes. The table gives the distribution of votes for 80 students, and the table shows a total of 80 votes were counted. It follows that each of the 80 students voted exactly once. Thus, the probability of selecting a student whose vote for the new mascot was for a lion is $\frac{20}{80}$, or $\frac{1}{4}$.

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 319d549a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 319d549a

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: 319d549a 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 8c3dbdc3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 8c3dbdc3

$$-13, 4, 23$$

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: 8c3dbdc3 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

Question ID e1c12384

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: e1c12384

Each of 157 gemstones can be classified as one of three classifications, as shown in the frequency table.

Classification	Frequency
color X	119
color Y	3
color Z	35

If one of the gemstones is selected at random, what is the probability of selecting a gemstone of color Y?

A. $\frac{3}{157}$

B. $\frac{35}{157}$

C. $\frac{119}{157}$

D. $\frac{154}{157}$

ID: e1c12384 Answer

Correct Answer: A

Rationale

Choice A is correct. If one of the gemstones is selected at random, the probability of selecting a gemstone of color Y is equal to the number of gemstones of color Y divided by the total number of gemstones. According to the table, there are 3 gemstones of color Y, and it's given that the total number of gemstones is 157. Therefore, if one of the gemstones is selected at random, the probability of selecting a gemstone of color Y is $\frac{3}{157}$.

Choice B is incorrect. This is the probability of selecting a gemstone of color Z.

Choice C is incorrect. This is the probability of selecting a gemstone of color X.

Choice D is incorrect. This is the probability of selecting a gemstone that's not of color Y.

Question Difficulty: Easy

Question ID 3d477649

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 3d477649

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: 3d477649 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 6d37f1b4

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 6d37f1b4

	Live east of the river	Live west of the river	Total
Less than 40 years old	17	11	28
At least 40 years old	18	89	107
Total	35	100	135

The table summarizes members of a local organization by age and whether they live east or west of the river. If a member of the organization is selected at random, what is the probability that the selected member is at least 40 years old?

A. $\frac{28}{135}$

B. $\frac{35}{135}$

C. $\frac{100}{135}$

D. $\frac{107}{135}$

ID: 6d37f1b4 Answer

Correct Answer: D

Rationale

Choice D is correct. If a member of the organization is selected at random, the probability that the selected member is at least 40 years old is equal to the number of members who are at least 40 years old divided by the total number of members. According to the table, there are a total of 135 members of the organization, and 107 of these members are at least 40 years old. Therefore, the probability that the selected member is at least 40 years old is $\frac{107}{135}$.

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

Choice B is incorrect. This is the probability that the selected member lives east of the river.

Choice C is incorrect. This is the probability that the selected member lives west of the river.

Question Difficulty: Easy

Question ID 07aa4624

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 07aa4624

Each face of a fair 14-sided die is labeled with a number from 1 through 14, with a different number appearing on each face. If the die is rolled one time, what is the probability of rolling a 2?

A. $\frac{1}{14}$

B. $\frac{2}{14}$

C. $\frac{12}{14}$

D. $\frac{13}{14}$

ID: 07aa4624 Answer

Correct Answer: A

Rationale

Choice A is correct. The total number of possible outcomes for rolling a fair 14-sided die is 14. The number of possible outcomes for rolling a 2 is 1. The probability of rolling a 2 is the number of possible outcomes for rolling a 2 divided by the total number of possible outcomes, or $\frac{1}{14}$.

Choice B is incorrect. This is the probability of rolling a number no greater than 2.

Choice C is incorrect. This is the probability of rolling a number greater than 2.

Choice D is incorrect. This is the probability of rolling a number other than 2.

Question Difficulty: Easy

Question ID ff02ccf9

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: ff02ccf9

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: ff02ccf9 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 614e5d4f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 614e5d4f

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: 614e5d4f 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 30f650d7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 30f650d7

$$-11, -9, 26$$

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 positive number?

A. 0

B. $\frac{1}{3}$

C. $\frac{2}{3}$

D. 1

ID: 30f650d7 Answer

Correct Answer: B

Rationale

Choice B is correct. The probability of selecting a positive number is the number of positive numbers in the data set divided by the total number of numbers in the data set. There is 1 positive number in this data set. There are 3 total numbers in this data set. Thus, if a number from this data set is selected at random, the probability of selecting a positive number is $\frac{1}{3}$.

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

Choice C is incorrect. This is the probability of selecting a negative number from this data set.

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

Question Difficulty: Easy

Question ID 85e8cb3f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Probability and conditional probability	Easy

ID: 85e8cb3f

Each rock in a collection of 70 rocks was classified as either igneous, metamorphic, or sedimentary, as shown in the frequency table.

Classification	Frequency
igneous	10
metamorphic	33
sedimentary	27

If one of these rocks is selected at random, what is the probability of selecting a rock that is igneous?

A. $\frac{10}{27}$

B. $\frac{10}{33}$

C. $\frac{10}{60}$

D. $\frac{10}{70}$

ID: 85e8cb3f Answer

Correct Answer: D

Rationale

Choice D is correct. If one of the rocks in the collection is selected at random, the probability of selecting a rock that is igneous is equal to the number of igneous rocks in the collection divided by the total number of rocks in the collection. According to the table, there are 10 igneous rocks in the collection, and it's given that there's a total of 70 rocks in the collection. Therefore, if one of the rocks in the collection is selected at random, the probability of selecting a rock that is igneous is $\frac{10}{70}$.

Choice A is incorrect. This is the number of igneous rocks in the collection divided by the number of sedimentary rocks in the collection, not divided by the total number of rocks in the collection.

Choice B is incorrect. This is the number of igneous rocks in the collection divided by the number of metamorphic rocks in the collection, not divided by the total number of rocks in the collection.

Choice C is incorrect. This is the number of igneous rocks in the collection divided by the number of rocks in the collection that aren't igneous, not divided by the total number of rocks in the collection.

Question Difficulty: Easy