

Question ID a6782e11

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

ID: a6782e11

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: a6782e11 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: Medium

Question ID a19bcf30

Assessment	Test	Domain	Skill	Difficulty
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ID: a19bcf30

	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: a19bcf30 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: Medium

Question ID c6eafed7

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

ID: c6eafed7

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: c6eafed7 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: Medium

Question ID d2c6cb57

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

ID: d2c6cb57

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: d2c6cb57 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: Medium

Question ID ff60764c

Assessment	Test	Domain	Skill	Difficulty
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ID: ff60764c

$-11, -9, 26$

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: ff60764c 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: Medium

Question ID 97470cc0

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

ID: 97470cc0

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: 97470cc0 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: Medium