

Question ID f57616fa

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

ID: f57616fa

	Site A	Site B	Total
Tulip	35	15	50
Daffodil	31	21	52
Total	66	36	102



The table shows the distribution of two types of flowers at two different sites. If a flower represented in the table is selected at random, what is the probability of selecting a flower from site A, given that the flower is a tulip? (Express your answer as a decimal or fraction, not as a percent.)

ID: f57616fa Answer

Correct Answer: 0.7, 7/10

Rationale

The correct answer is $\frac{35}{50}$. Based on the table, there are a total of **50** tulips, and **35** of these tulips are from site A. The probability of selecting at random a flower from site A, given that the flower is a tulip, is equal to the number of tulips from site A divided by the total number of tulips, which can be written as $\frac{35}{50}$, or $\frac{7}{10}$. Note that 35/50, 7/10, and .7 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID 9b0fb532

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

ID: 9b0fb532

A grove has **6** rows of birch trees and **5** rows of maple trees. Each row of birch trees has **8** trees **20** feet or taller and **6** trees shorter than **20** feet. Each row of maple trees has **9** trees **20** feet or taller and **7** trees shorter than **20** feet. A tree from one of these rows will be selected at random. What is the probability of selecting a maple tree, given that the tree is **20** feet or taller?

- A. $\frac{9}{164}$
- B. $\frac{3}{10}$
- C. $\frac{15}{31}$
- D. $\frac{9}{17}$

ID: 9b0fb532 Answer

Correct Answer: C

Rationale

Choice C is correct. If a tree from one of these rows is selected at random, the probability of selecting a maple tree, given that the tree is **20** feet or taller, is equal to the number of maple trees that are **20** feet or taller divided by the total number of trees that are **20** feet or taller. It's given that there are **6** rows of birch trees, and each row of birch trees has **8** trees that are **20** feet or taller. This means that there are a total of **6(8)**, or **48**, birch trees that are **20** feet or taller. It's given that there are **5** rows of maple trees, and each row of maple trees has **9** trees that are **20** feet or taller. This means that there are a total of **5(9)**, or **45**, maple trees that are **20** feet or taller. It follows that there are a total of **48 + 45**, or **93**, trees that are **20** feet or taller. Therefore, the probability of selecting a maple tree, given that the tree is **20** feet or taller, is $\frac{45}{93}$, or $\frac{15}{31}$.

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

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

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

Question Difficulty: Hard

Question ID 132aefb3

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

ID: 132aefb3

The table summarizes the distribution of age and assigned group for **90** participants in a study.

	0–9 years	10–19 years	20+ years	Total
Group A	5	17	8	30
Group B	6	8	16	30
Group C	19	5	6	30
Total	30	30	30	90

One of these participants will be selected at random. What is the probability of selecting a participant from group A, given that the participant is at least 10 years of age?

- A. $\frac{5}{18}$
- B. $\frac{5}{12}$
- C. $\frac{17}{30}$
- D. $\frac{5}{6}$

ID: 132aefb3 Answer

Correct Answer: B

Rationale

Choice B is correct. Since the participant will be selected at random, the probability of selecting a participant from group A, given that the participant is at least **10** years of age, is equal to the number of participants from group A who are at least **10** years of age divided by the total number of participants who are at least **10** years of age. Based on the table, in group A, there are **17** participants who are **10–19** years of age and **8** participants who are **20+** years of age. Therefore, there are a total of **17 + 8**, or **25**, participants in group A who are at least **10** years of age. Based on the table, of the total number of participants, there are **30** participants who are **10–19** years of age and **30** participants who are **20+** years of age. Therefore, a total of **30 + 30**, or **60**, of the participants are at least **10** years of age. Thus, the probability of selecting a participant from group A, given that the participant is at least **10** years of age, is $\frac{25}{60}$, or $\frac{5}{12}$.

Choice A is incorrect. This is the number of participants from group A who are at least **10** years of age divided by the total number of participants, rather than divided by the number of participants who are at least **10** years of age.

Choice C is incorrect. This is the probability of randomly selecting a participant from group A, given that the participant is **10–19** years of age, rather than given that the participant is at least **10** years of age.

Choice D is incorrect. This is the probability of randomly selecting a participant who is at least **10** years of age, given that the participant is in group A.

Question ID 91ac409a

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

ID: 91ac409a

The table summarizes the distribution of age and assigned group for **90** participants in a study.

	0–9 years	10–19 years	20+ years	Total
Group A	7	14	9	30
Group B	6	4	20	30
Group C	17	12	1	30
Total	30	30	30	90

One of these participants will be selected at random. What is the probability of selecting a participant from group A, given that the participant is at least **10** years of age? (Express your answer as a decimal or fraction, not as a percent.)

ID: 91ac409a Answer

Correct Answer: .3833, 23/60

Rationale

The correct answer is $\frac{23}{60}$. It's given that one of the participants will be selected at random. The probability of selecting a participant from group A given that the participant is at least **10** years of age is the number of participants in group A who are at least **10** years of age divided by the total number of participants who are at least **10** years of age. The table shows that in group A, there are **14** participants who are **10–19** years of age and **9** participants who are **20+** years of age. Therefore, there are **14 + 9**, or **23**, participants in group A who are at least **10** years of age. The table also shows that there are a total of **30** participants who are **10–19** years of age and **30** participants who are **20+** years of age. Therefore, there are a total of **30 + 30**, or **60**, participants who are at least **10** years of age. It follows that the probability of selecting a participant from group A given that the participant is at least **10** years of age is $\frac{23}{60}$. Note that 23/60, .3833, and 0.383 are examples of ways to enter a correct answer.

Question Difficulty: Hard