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

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