Probability and two-way tables

Math / Problem-Solving and Data Analysis / Probability and conditional probability

Prerequisites: Fractions, proportions and reading row and column totals

Level: Foundational to intermediate instruction

Coverage: 12 original questions: 1 diagnostic, 3 worked examples, 3 guided, 3 independent, 1 exit ticket and 1 extension. Selected skill coverage, not the complete SAT syllabus.

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Student worksheet

Select one answer per question. Explain the supporting equation, context clue or evidence. Questions 1-10 are practice, 11 is the exit ticket, and 12 is an extension.

Question 1

A fair six-sided die has faces 1 through 6. What is the probability of an even result?

A. 1/6

B. 1/3

C. 1/2

D. 2/3

Reasoning: _____

Question 2

A table has Grade 11: club 12, no club 8; Grade 12: club 6, no club 14. One student is selected randomly from all 40. What is P(Grade 11 and club)?

A. 12/20

B. 12/18

C. 12/40

D. 20/40

Reasoning: _____

Question 3

Using that table, a club member is selected randomly. What is P(Grade 11 given club)?

A. 12/40

B. 12/18

C. 18/40

D. 12/20

Reasoning: _____

Question 4

Using that table, what is P(Grade 11 or club) for a random student from all 40?

A. 38/40

B. 26/40

C. 12/40

D. 18/40

Reasoning: _____

Question 5

A bag contains 3 red and 7 blue marbles. One is selected randomly. What is P(not red)?

A. 3/10

B. 7/10

C. 3/7

D. 7/3

Reasoning: _____

Question 6

A table records walkers: helmet 9, no helmet 3; cyclists: helmet 16, no helmet 2. Among cyclists, what is P(helmet)?

A. 16/30

B. 16/25

C. 16/18

D. 18/30

Reasoning: _____

Question 7

A fair coin is tossed twice. What is P(exactly one head)?

A. 1/4

B. 1/2

C. 3/4

D. 1

Reasoning: _____

Question 8

A bag has 2 red and 3 blue marbles. Two are selected without replacement. What is P(both red)?

A. 4/25

B. 1/10

C. 2/5

D. 1/5

Reasoning: _____

Question 9

P(A) = 0.4, P(B) = 0.5 and P(A and B) = 0.2. What is P(A or B)?

A. 0.2

B. 0.7

C. 0.9

D. 1.1

Reasoning: _____

Question 10

In a group of 50, 20 play chess. Of the chess players, 8 also play music. What is P(music given chess)?

A. 8/50

B. 20/50

C. 8/20

D. 20/8

Reasoning: _____

Question 11 - Exit ticket

A spinner has 8 equally likely sections, 3 purple. What is P(not purple)?

A. 3/8

B. 5/8

C. 3/5

D. 5/3

Reasoning: _____

Question 12 - Extension

A table has morning class: pass 15, fail 5; afternoon class: pass 10, fail 10. Among students who passed, what is P(morning)?

A. 15/40

B. 15/20

C. 15/25

D. 20/40

Reasoning: _____