

5. The probability that a resident of a housing community opposes spending money for community improvement on plumbing issues is 0.8. The probability that a resident favors spending money on improving walkways given that the resident opposes spending money on plumbing issues is 0.85. Determine the probability that a randomly selected resident opposes spending money on plumbing issues and favors spending money on walkways.

6. Data collected about jogging from students with two older siblings are shown in the table below.

	Neither Sibling Jogs	One Sibling Jogs	Both Siblings Jogs
Student Does Not Jog	1168	1823	1380
Student Jogs	188	416	400

Using these data, determine whether a student with two older siblings is more likely to jog if one sibling jogs or if both siblings jog. Justify your answer.

7. On a given school day, the probability that Nick oversleeps is 48% and the probability he has a pop quiz is 25%. Assuming these two events are independent, what is the probability that Nick oversleeps and has a pop quiz on the same day?

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|--------|--------|
| 1) 73% | 3) 23% |
| 2) 36% | 4) 12% |

8. Suppose events A and B are independent and $P(A \text{ and } B)$ is 0.2. Which statement could be true?

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|---|-------------------------------|
| 1) $P(A) = 0.4, P(B) = 0.3, P(A \text{ or } B) = 0.5$ | 3) $P(A B) = 0.2, P(B) = 0.2$ |
| 2) $P(A) = 0.8, P(B) = 0.25$ | 4) $P(A) = 0.15, P(B) = 0.05$ |

9. A fast-food restaurant analyzes data to better serve its customers. After its analysis, it discovers that the events D , that a customer uses the drive-thru, and F , that a customer orders French fries, are independent. The following data are given in a report:

$$P(F) = 0.8$$

$$P(F \cap D) = 0.456$$

Given this information, $P(F|D)$ is

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|-----------|---------|
| 1) 0.344 | 3) 0.57 |
| 2) 0.3648 | 4) 0.8 |

10. A student is chosen at random from the student body at a given high school. The probability that the student selects Math as the favorite subject is $\frac{1}{4}$. The probability that the student chosen is a junior is $\frac{116}{459}$. If the probability that the student selected is a junior or that the student chooses Math as the favorite subject is $\frac{47}{108}$, what is the exact probability that the student selected is a junior whose favorite subject is Math? Are the events "the student is a junior" and "the student's favorite subject is Math" independent of each other? Explain your answer.

11. The probability that Gary and Jane have a child with blue eyes is 0.25, and the probability that they have a child with blond hair is 0.5. The probability that they have a child with both blue eyes and blond hair is 0.125. Given this information, the events blue eyes and blond hair are

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|-------------------------|---------------|
| I: dependent | |
| II: independent | |
| III: mutually exclusive | |
| 1) I, only | 3) I and III |
| 2) II, only | 4) II and III |