

Name _____ Date: _____

Based on the definition of independence, determine if events A and B are independent in each case.

_____ 1. $P(A) = 0.2$ $P(B) = 0.14$ $P(A \cap B) = 0.028$

_____ 2. $P(A) = 0.32$ $P(B) = 0.16$ $P(A \cap B) = 0.48$

_____ 3. $P(A) = \frac{1}{3}$ $P(B) = \frac{3}{5}$ $P(A \cap B) = \frac{4}{15}$

_____ 4. $P(A) = \frac{7}{8}$ $P(B) = \frac{2}{5}$ $P(A \cap B) = \frac{7}{20}$

Paola is playing a word game in which she draws letter tiles from a bag without looking. The bag contains 7 tiles: 2 As, 3 Es, and 2 Rs.

Find the probability of getting an E first and getting an E second. In each problem, state whether the events are independent, and find the probabilities.

_____ 5. Paola takes a tile, then replaces it, and then takes a second tile.

_____ 6. Paola takes a tile, does not replace it, and then takes a second tile.

Using the letters in the state ARKANSAS:

_____ 7. Find the probability of picking an S and then an A without replacement.

_____ 8. Find the probability of picking a K and then a N without replacement.

_____ 9. Find the probability of picking a R and then a S without replacement.

_____ 10. Two students are chosen at random from a class of 30. What is the probability that both you and your friend are chosen?

_____ 11. A test includes several multiple choice questions, each with 5 choices. Suppose you don't know the answers for three of these questions, so you guess. What is the probability of getting all three correct?

The following chart shows favorite subjects of students based on their gender.

| | Math | Science | English | History | |
|--------|------|---------|---------|---------|--|
| Male | 46 | 42 | 13 | 25 | |
| Female | 12 | 21 | 45 | 36 | |
| | | | | | |

_____ 12. What is the probability that a randomly chosen student likes history the most?

_____ 13. What is the probability that a randomly chosen student is a female?

_____ 14. What is the probability that a randomly chosen student is a male or likes Math?

_____ 15. What is the probability that a randomly chosen student both likes science and is a male?

_____ 16. What is the probability that a randomly chosen student likes history given that they are a female?

_____ 17. Does the probability of liking a subject depend on whether the students are male or female? Use calculations.
