

Unit Review: Probability

1. Given that $P(A) = 0.4$, $P(B) = 0.5$, and $P(A \cup B)$ is 0.6, the value of $P(A \cap B)$ is _____.
Hint: (Use sets: Additive Principle)

2. If A and B are mutually exclusive events, then

- a. $P(A) + P(B) = 1$ c. $P(A \cap B) = P(A) + P(B)$
b. $P(A \cup B) = P(A) + P(B)$ d. $P(A \cup B) = 1$

3. A spinner is divided into 21 equal sectors, numbered 1 through 21. Determine the probability of spinning a number other than an even number.

4. A game show has three doors labelled A, B, and C behind which there may or may not be a prize. A group of contestants are asked behind which doors they think there is a prize. The results are: 18 people choose A, 19 people choose B, 19 people choose C, 4 people choose A and B, 7 people choose A and C, 10 people choose B and C, and 3 people choose all three. Determine the probability that a randomly asked person only chooses A.

Hint: (Use Sets: Venn Diagram)

5. A teacher of a class of 25 students is trying to decide whether her class will play hockey, soccer, or basketball. She surveys the class and finds out that 21 students like hockey, 18 like soccer, 15 like basketball, 16 like hockey and soccer, 10 like soccer and basketball, and 11 like hockey and basketball. Determine the probability that a student likes all three sports.

Hint: (Use Sets: Venn Diagram)

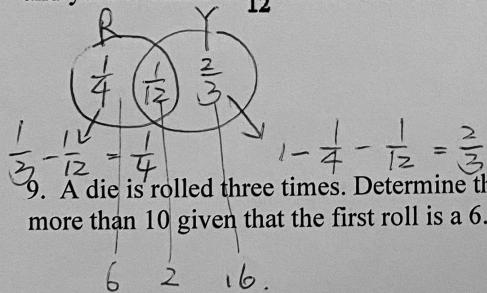
6. Gender	Mathematics	English
Males	4	9
Females	7	8

Hint: (Conditional Probability)

- a) A class is surveyed to determine whether they prefer mathematics or English. The table above shows the results. Given that a student is male, state the probability that mathematics is preferred.
- b) A class is surveyed to determine whether they prefer mathematics or English. The table above shows the results. State $P(\text{prefers English} | \text{female})$.

7. On a particular day, the probability that event A occurs is 0.7, that event B occurs is 0.6, and that event C occurs is 0.4. If all three events are independent of each other, determine the probability that at least one of events A and B will occur on a particular day, and that event C will not occur.

8. A box has a group of 24 blocks in it. Some are red, some are yellow, and some are a mixture of the two colors. The probability of drawing a red block is $\frac{1}{3}$. The probability of drawing a red and yellow block is $\frac{1}{12}$. Determine the number of blocks with yellow on them.



~~24/3 = 8~~

Red only $\frac{1}{4} \times 24 = 6$.

Both color: ~~24~~ $24 \times \frac{1}{12} = 2$

Yellow only: $24 - 6 - 2 = 16$.

\therefore Yellow on them = $2 + 16 = 18$.

9. A die is rolled three times. Determine the probability that the sum of the three rolls is no more than 10 given that the first roll is a 6.

6 2 16.

10. Determine the probability that if a pair of dice is rolled, the sum is less than 5.

11. A card is randomly drawn from a regular deck of cards and then replaced. A second card is then drawn. Determine the probability that the first card is a spade and the second one is the jack of clubs.

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Answers:

1. 0.3
2. B
3. $11/21$
4. $10/38$
5. $8/25$
6. a) $4/13$, b) $8/15$
7. 0.528
8. 18
9. $1/12$
10. $1/6$
11. $1/208$