

Push Tasks



Every question requires reasoning or justification. Combine sample-space counting with careful reasoning.

1. A standard deck has 52 cards. Find $P(\text{a heart OR a King})$, explaining why you must not double-count the King of Hearts.

2. A die is rolled twice. Find the total number of possible outcomes, and $P(\text{both rolls show the same number})$.

3. A bag has 20 counters, some red and some blue. $P(\text{red}) = 0.35$. How many red counters are there?

4. Explain why rolling a die 6 times does not guarantee you will see each face exactly once.

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Every question requires reasoning or justification. Reason about dependent events and unexpected results.

5. A spinner has 5 sections:
 $P(\text{red}) = 0.2$, $P(\text{blue}) = 0.3$,
 $P(\text{green}) = x$, $P(\text{yellow}) = 0.1$,
 $P(\text{purple}) = 0.15$. Find x .

6. A card is drawn from a deck and not replaced, then a second card is drawn. Explain why $P(\text{King on the second draw})$ depends on the first draw.

7. An experiment rolling a die 600 times records only 60 sixes (expected 100). Suggest one reason for this, other than bad luck.

8. Explain the difference between an independent event and a dependent event, giving one example of each.

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Every question requires reasoning or justification. Combine events, and justify why a probability is valid.

9. A game claims: "You have a 100% chance of winning if you play twice." Each play has an independent $P(\text{win}) = 0.5$. Is this claim correct? Explain using ~~$P(\text{win at least once in two plays})$~~ .

11. Two mutually exclusive events A and B have $P(A) = 0.3$ and $P(B) = 0.45$. Find $P(A \text{ or } B)$.

10. Explain why a probability can never be negative, using the definition of probability as a proportion of a sample space.

12. A die is rolled and a coin is flipped. Find $P(\text{rolling a 6 AND flipping heads})$.