

State whether the given events are mutually exclusive and explain your reasoning.

1. Drawing a red card and drawing a jack on one draw from a standard deck of 52 playing cards.
2. Rolling a 3 and rolling a number greater than 4 on one toss of a fair die.
3. Drawing a red marble and drawing a green marble in one draw from a bag containing 7 black marbles, 6 green marbles, and 10 red marbles.
4. Rolling an odd number and rolling a number less than 3 on one roll of a fair die.

Use the following formula to calculate the following:  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ . Determine if the events are mutually exclusive.

5.  $P(A) = 0.5, P(B) = 0.3, P(A \text{ and } B) = 0.06$       |      6.  $P(A) = 0.4, P(B) = 0.1, P(A \text{ and } B) = 0.05$

7.  $P(A) = \frac{4}{52}, P(B) = \frac{13}{52}, P(A \text{ and } B) = \frac{1}{52}$       |      8.  $P(A) = \frac{3}{8}, P(B) = \frac{5}{8}, P(A \text{ and } B) = 0$

