Homework

Perpetual Calendar

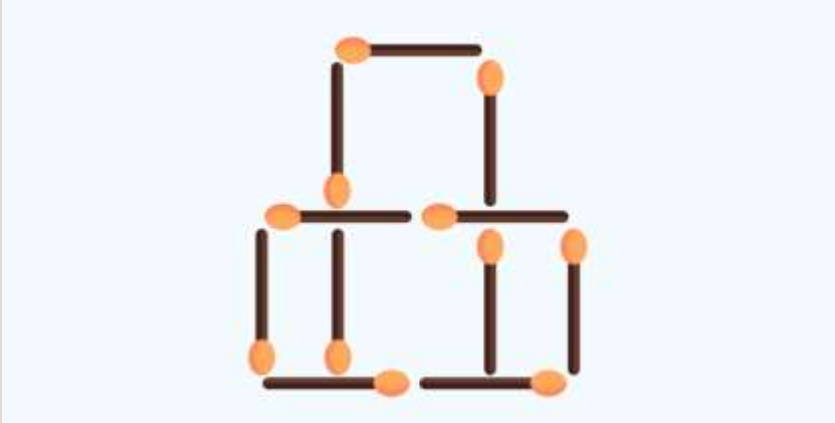
In 1957 John Singleton patented a desk calendar that could represent any date from 01 to 31 using two cubes, but he let the patent lapse in 1965. Each cube bears six digits, one on each face.

A two-cube calendar, and two of the days it can represent.

The picture shows how such a calendar represents the 5th and the 25th day of the month. I have intentionally omitted any other numbers from the faces. You are allowed to place the cubes with any of the six faces showing, and you can also put the grey one on the left and the white one on the right.

What are the numbers on the two cubes?

Move 3 matches to get 11 squares



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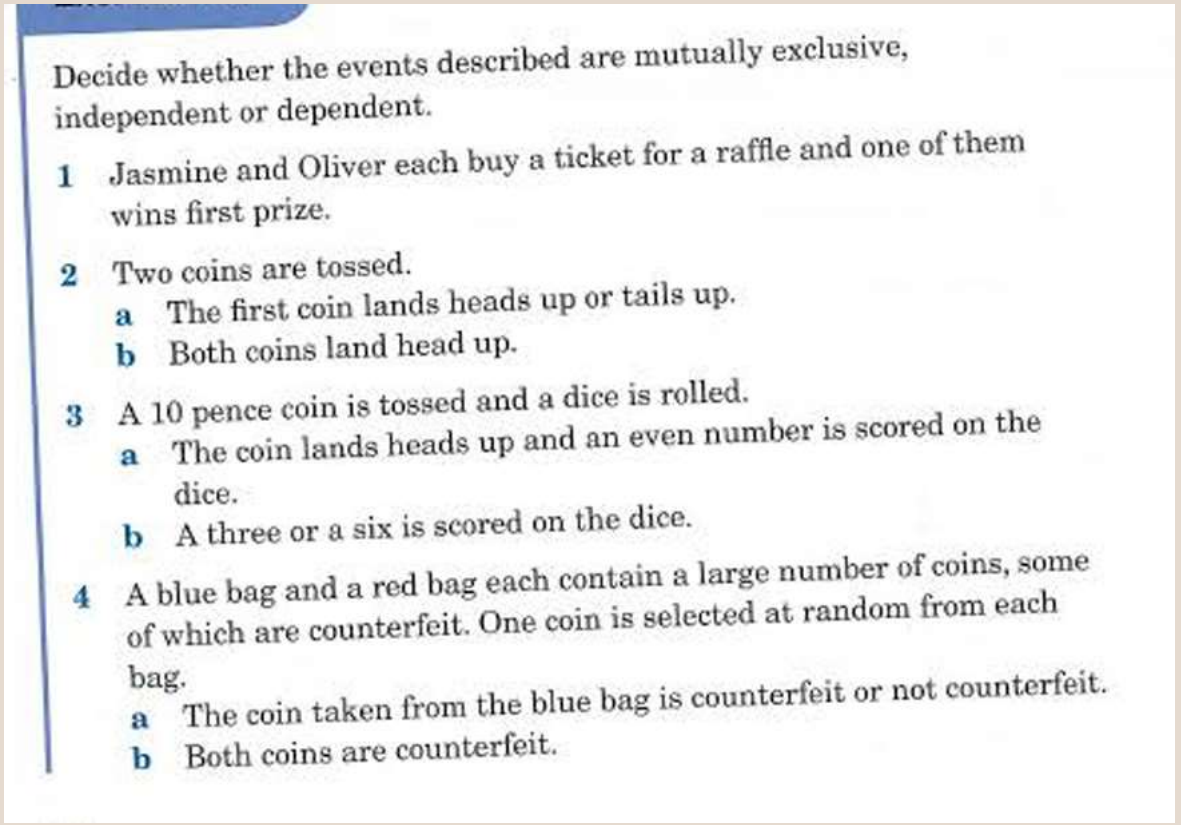

Decide whether the events described are mutually exclusive, independent or dependent.

1 Jasmine and Oliver each buy a ticket for a raffle and one of them wins first prize.

2 Two coins are tossed.
- **a** The first coin lands heads up or tails up.
- **b** Both coins land head up.

3 A 10 pence coin is tossed and a dice is rolled.
- **a** The coin lands heads up and an even number is scored on the dice.
- **b** A three or a six is scored on the dice.

4 A blue bag and a red bag each contain a large number of coins, some of which are counterfeit. One coin is selected at random from each bag.
- **a** The coin taken from the blue bag is counterfeit or not counterfeit.
- **b** Both coins are counterfeit.

- Harder problem:

Alice has some red balls and some blue balls in a bag. All together she has 25 balls. Alice picks one ball from the bag. The probability that Alice picks a red ball is x and the probability that Alice picks a blue ball is 4x. Work out how many blue balls are in the bag