Name: ..... Class: .....

Probability of dependent and independent events

1. Larry flips a coin twice. What is the probability of Larry getting tails and then getting heads?

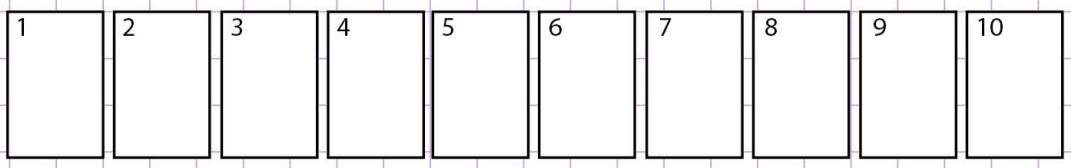
2. You roll a die twice. What is the probability of landing on a 5 and then landing on a number less than 5?

3. You roll a 6-sided die twice. What is P (1, odd)?

4. If you spin the spinner twice, what is P(5, even)?

5. Jerry has a bag of candy. The bag contains Five blue candies, eight green candies, and seven red candies. If he randomly picks a candy twice without putting the first candy back, what is the P (green, green)?

6. Ken picks a card at random and then puts it back. He then picks the second card at random. What is the probability of picking an even number and then picking an even number?



7. Jannis has a bag of marbles. The bag contains Five blue marbles, eight green marbles, and seven red marbles. If he randomly picks a marble twice without putting the first marble back, what is the P (blue, blue)?

Solution

Name: ..... Class: .....

Probability of dependent and independent events

1. Larry flips a coin twice. What is the probability of Larry getting tails and then getting heads?

The tail and the head events are independent since the first flip does not affect the. second filp. So, there are only 2 possibilities.
That is P(tails) and P(heads).
Furthermore, the probability of getting tails and then getting heads or vice versa is

P(tails) x P(heads).

$$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$$

So, the probability of Larry getting tails and then getting heads is $\frac{1}{4}$.

2. You roll a die twice. What is the probability of landing on a 5 and then landing on a number less than 5?

The events 5 and less than 5 are independent.
A die has 6 sides, 1, 2, 3, 4, 5, and 6.
Lets first of all find P(5)

$$P(5) = \frac{1}{6}$$

Secondly, lets also find P(less than 5).
There are 4 numbers less than 5; 4, 3, 2, and 1.

$$P(\text{ less than } 5) = \frac{4}{6}$$

Finally find the probability of landing on a 5 and then landing on a number less than 5.
To do this we multiply P(5) and P(less than 5).

$$\frac{1}{6} \times \frac{4}{6} = \frac{4}{36} = \frac{4}{4x9}$$

$$= \frac{1}{9}$$

So, the probability of getting 5 and then getting a number less than 5 is $\frac{1}{9}$.