



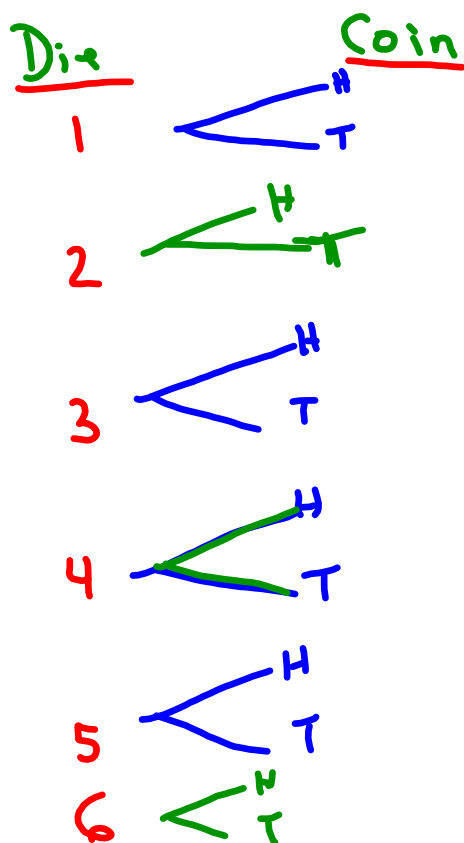
Warm up Grade 8

May 15, 2019



a) Use a tree diagram to find all the possibilities of rolling a die and flipping a coin.

b) What is the probability of rolling an odd number and getting a tail's?



Outcomes

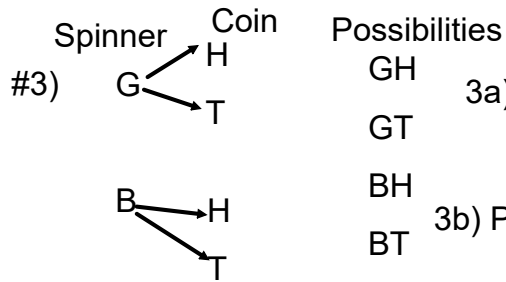
1H
1T
2H
2T
3H
3T
4H
4T
5H
5T
6H
6T

12 outcomes

$$\begin{aligned}
 \text{b) } P(\text{odd Tails}) &= \frac{\# \text{ odd tails}}{\text{Total}} \\
 &= \frac{3}{12} \\
 &= \frac{1}{4}
 \end{aligned}$$

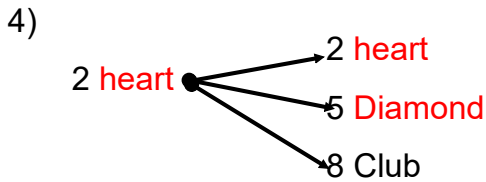
Homework Solutions

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3a) $P(\text{of Blue \& Heads}) = \frac{1}{4}$

3b) $P(\text{of Blue or Green \& Heads}) = \frac{2}{4} = \frac{1}{2}$



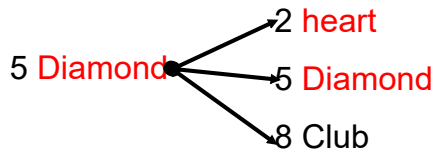
possibilities

2♥ 2♥

2♥ 5♦

2♥ 8♣

a) $P(\text{both red}) = \frac{4}{9}$

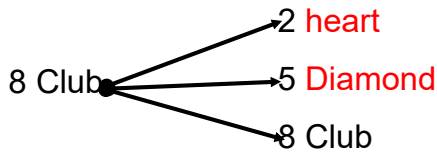


5♦ 2♥

5♦ 5♦

5♦ 8♣

b) $P(\text{first read \& second Black}) = \frac{2}{9}$



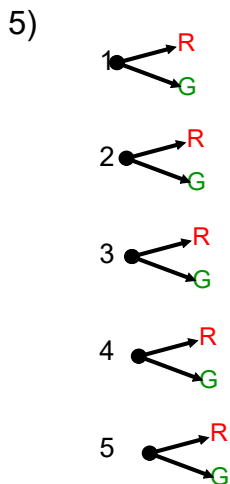
8♣ 2♥

8♣ 5♦

8♣ 8♣

c) $P(\text{both even}) = \frac{4}{9}$

d) $P(\text{Sum of Numbers greater than 8}) = \frac{6}{9} = \frac{2}{3}$



Possibilities

1 R

1 G

2 R

2 G

3 R

3 G

4 R

4 G

5 R

5 G

a) $P(\text{green \& a 2}) = \frac{1}{10}$






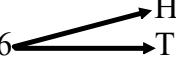
b) $P(\text{red \& an even \#}) = \frac{2}{10} = \frac{1}{5}$

c) $P(\text{green \& a prime \#}) = \frac{6}{10} = \frac{3}{5}$

Independent Events

Two events are Independent events when one event does not affect the other.

For example) the probability of rolling a 6 is $\frac{1}{6}$. The probability of flipping a head is $\frac{1}{2}$. What is the probability of rolling a 6 and flipping a head?

Die	Coin	Outcomes
1		1H 1T
2		2H 2T
3		3H 3T
4		4H 4T
5		5H 5T
6		6H 6T

$$\text{Prob}(6) = \frac{1}{6}$$

$$\text{Prob}(H) = \frac{1}{2}$$

$$\text{Prob}(6 \text{ and } H) = \frac{1}{12}$$

$$\frac{1}{6} \times \frac{1}{2} = \frac{1}{12}$$

It is often written as: $P(A \text{ and } B) = P(A) \times P(B)$

So in the example above, the Prob(6 and Head) = Prob(6) x Prob(head)

$$\begin{aligned}
 &= \frac{1}{6} \times \frac{1}{2} \\
 &= \frac{1}{12}
 \end{aligned}$$

The rule for two independent events:

$$P(A \text{ and } B) = P(A) \times P(B)$$

→ multiply fractions
Top x Top
Bottom x Bottom
Redi



us:tes

A coin is tossed and regular tetrahedron labelled 5, 6, 7, 8 is rolled.

- a) Find the probability of tossing heads and rolling an 8.
- b) Find the probability of tossing heads or tails and rolling an even number.

Use a tree diagram to verify your answers.

$$\begin{aligned}
 \text{a) } P(\text{Heads and } 8) &= P(H) \times P(8) \\
 &= \frac{\text{\# of H}}{\text{total sides}} \times \frac{\text{\# 8 on tetra}}{\text{Total Sides}} \\
 &= \frac{1}{2} \times \frac{1}{4} \\
 &= \frac{1}{8}
 \end{aligned}$$

coin tetra

$$\begin{aligned}
 \text{b) } P(\text{Head or Tails And even \#}) &= P(H \text{ or } T) \times P(\text{even \#}) \\
 &= \frac{2}{2} \times \frac{2}{4} \\
 &= \frac{4}{8} \text{ Reduce} \\
 &= \frac{1}{2}
 \end{aligned}$$



Total of 12 Marbles

A bag contains 3 orange marbles, 4 blue marbles and 5 green marbles.

1) Tim removes 1 marble without looking record the colour, then return the marble to the bag and flips a coin.

a) What is the probability the he picks a blue marble and flips a head?

$$P(\text{Blue and Heads}) = P(\text{Blue}) \times P(\text{Heads})$$

$$\frac{\# \text{ Blue}}{\text{Total Mar}} \times \frac{\# \text{ Head}}{\text{Total side}}$$

$$\frac{4}{12} \times \frac{1}{2}$$

$$\frac{4}{24} = \frac{1}{6}$$

b) If he were to pick two marbles and flip the coin once then what is the probability that he picks a green and blue marble and flips a tails?

$$P(\text{G and B and Tails}) = P(\text{G}) \times P(\text{B}) \times P(\text{Tails})$$

$$\frac{5}{12} \times \frac{4}{12} \times \frac{1}{2}$$

$$\frac{5}{12} \times \frac{1}{3} \times \frac{1}{2}$$

$$= \frac{5}{12}$$

2) Same bag of marbles but picks 3 marbles each time

a) What is the probability of picking 3 marbles and all are not orange?

$$P(\text{Not orange and Not or and Not or}) = P(\text{Not or}) \times P(\text{Not or}) \times P(\text{Not or})$$

$$= \frac{\# \text{ of Not or}}{\text{Tot}} \times \frac{\# \text{ of Not or}}{\text{Total}} \times \frac{\text{Not or}}{\text{Total}}$$

$$= \frac{9}{12} \times \frac{9}{12} \times \frac{9}{12}$$

$$= \frac{3}{4} \times \frac{3}{4} \times \frac{3}{4}$$

d) What is the probability of a green, black and orange?

$$P(\text{G and Black and Orange}) = \frac{27}{64}$$

$$= P(\text{G}) \times P(\text{Black}) \times P(\text{orange})$$

$$= \frac{5}{12} \times \frac{0}{12} \times \frac{3}{12}$$

$$= \frac{5}{12} \times \frac{0}{12} \times \frac{1}{4}$$

$$= 0$$

Class / Homework

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Use a table to determine the outcomes for rolling a die twice.

1. Find the probability of rolling a sum greater than 10.
2. Find the probability of rolling 2 even numbers.