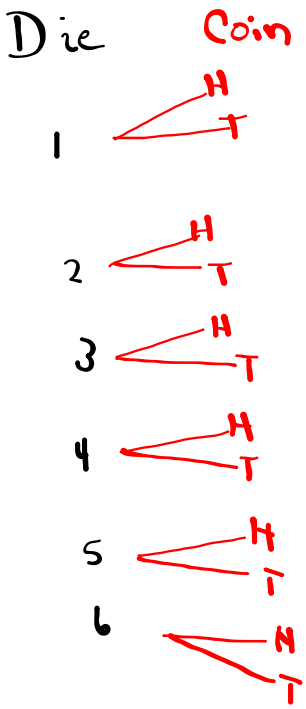
Warm up Grade 8

May 9, 2017

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?

a)



Outcomes

1 H
1 T *

2 H
2 T

3 H
3 T *

4 H
4 T

5 H
5 T *

6 H
6 T

12 total outcomes

b) P(odd # and tails)

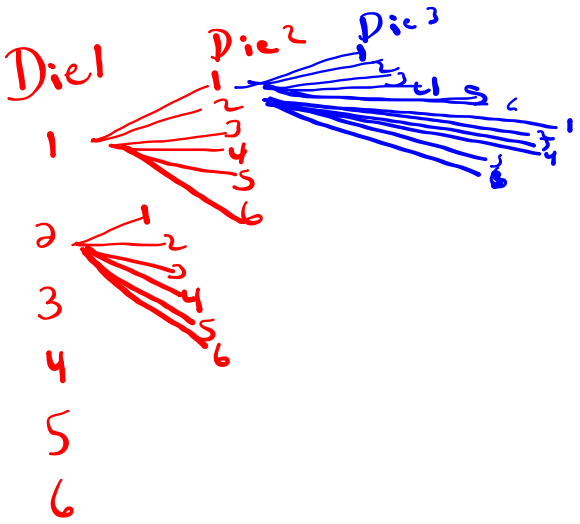
$= \frac{3}{12}$

Reduce fraction

$= \frac{1}{4}$

$= 0.25$

$= 25\%$


Die1
Die2
Die3
1
2
3
4
5
6

Homework Solutions

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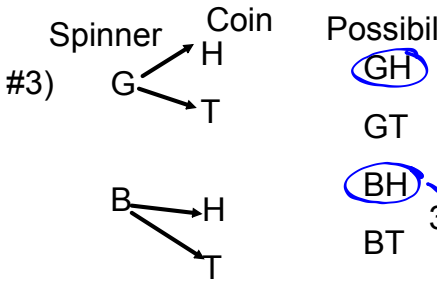
#3)



Possibilities

GH

GT

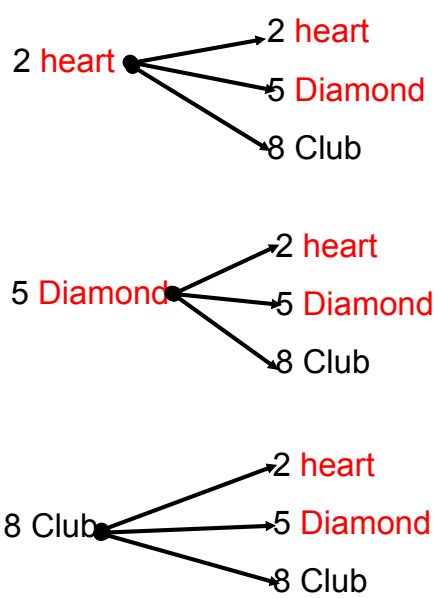
BH

BT

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

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

4)



possibilities

		Sum
2♥	2♥	4
2♥	5♦	7
2♥	8♣	10
5♦	2♥	7
5♦	5♦	10
5♦	8♣	13
8♣	2♥	10
8♣	5♦	13
8♣	8♣	16

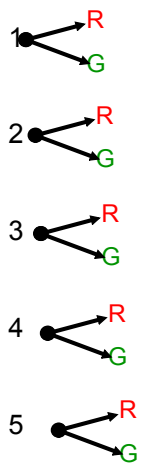
a) P(both red)= $\frac{4}{9}$

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

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

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

5)



Possibilities

1 R

1 G

2 R

2 G

3 R

3 G

4 R

4 G

5 R

5 G

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

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

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

divisible by 1 and itself

2, 3, 5, 7, 11, 13

Independent Events

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

For example) the probability of rolling a 6 is 1/6. The probability of flipping a head is 1/2. What is the probability of rolling a 6 and flipping a head?

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

Prob (6) = 1/6 Prob (H) = 1/2 Prob(6 and H) = 1/12

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

It is often written as: P(A and B) = P(A) x P(B)

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

on die

on coin

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

$= \frac{1}{12}$

The rule for two independent events:

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

$$= \frac{\#\text{ of } A}{\text{total outcomes on object}} \times \frac{\#\text{ of } B}{\text{total outcomes of object}}$$

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.

a) * P(Tossing Heads And rolling an 8) = P(heads) X P(rolling an 8)

$= \frac{\#\text{ heads on coin}}{\text{total sides on coin}} \times \frac{\#\text{ of 8 on die}}{\text{total sides on die}}$

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

$* = \frac{1}{8}$

P(H or Tails And Even #) = P(H or T) X P(Even # on the Die)

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

$= \frac{4}{8}$

Reduce

$= \frac{1}{2}$

Study great test question

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?

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

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

$= \frac{4}{24}$

$= \frac{1}{6}$

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?

$P(\text{Green And Blue And Tails}) = P(G) \times P(B) \times P(\text{Tails})$

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

$= \frac{20 \div 4}{288 \div 4} = \boxed{\frac{5}{72}}$

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?

$P(\text{Not orange 3 times}) = P(\text{Not orange}) \times P(\text{Not orange}) \times P(\text{Not orange})$

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

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

$\frac{27}{64}$

Reduced first

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

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

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

$= \frac{0}{1728}$

$= 0$

Class / Homework

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Similar to test

7) a) $P(\text{Bart } 6 \text{ and Beth } 6) = P(\text{Bart } 6) \times P(\text{Beth } 6)$

$= \frac{\text{\# of "6s" on Die}}{\text{total sides}} \times \frac{\text{\# of "6s" on die}}{\text{total}}$

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

$= \frac{1}{36}$

* on test

a) Tetrahedron → Red, Blue, orange, green

Roll die twice need same color both times

$P(\text{Any color and Same color}) = P(\text{Any}) \times P(\text{Same})$

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

$= \frac{4}{16}$ Reduce

$= \frac{1}{4}$

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.