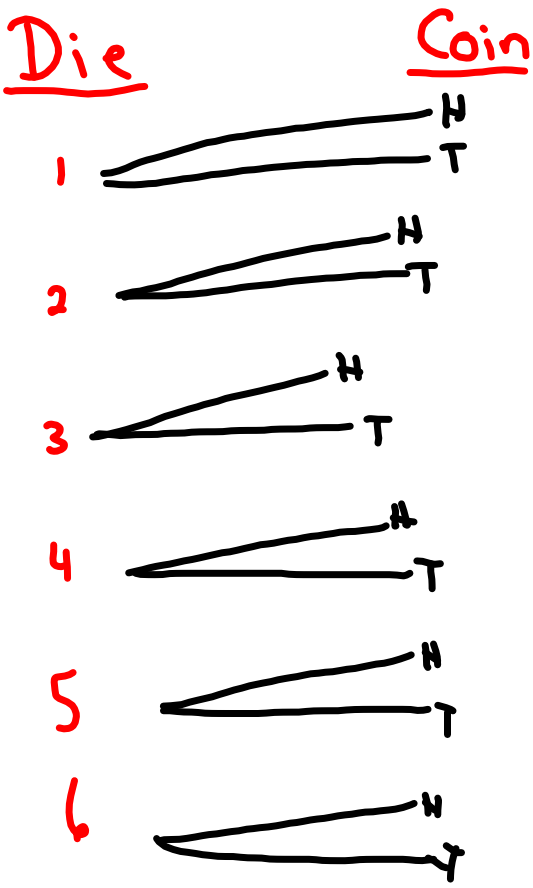
Warm up Grade 8

May 2, 2018

Test Moved to Wed May 9

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? $P(\text{odd and tails}) = \frac{\#\text{odd and Tails}}{\text{total}} = \frac{3}{12} = \frac{1}{4} = 25\%$



Outcomes

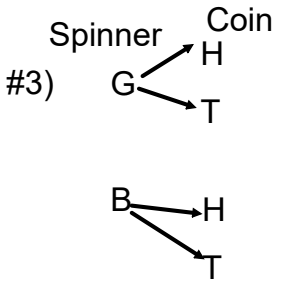
1 H
1 T ✓
2 H
2 T
3 H
3 T ✓
4 H
4 T
5 H
5 T ✓
6 H
6 T

12 out-comes

Homework Solutions

Page 411 #3, 4, 5

#3)



Possibilities

GH

GT

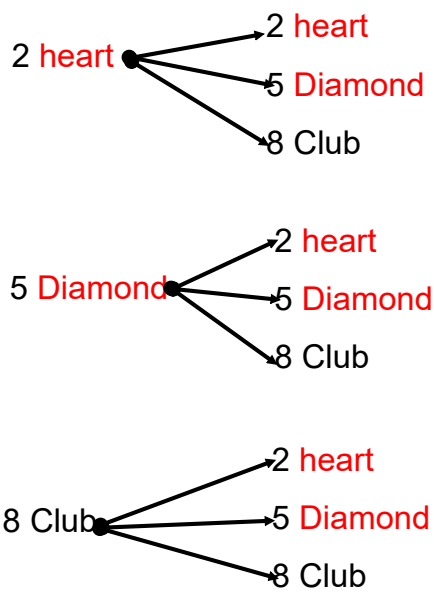
BH

BT

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

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

4)



possibilities

2♡ 2♡

2♡ 5♦

2♡ 8♣ 10

5♦ 2♡

5♦ 5♦ 10

5♦ 8♣ 13

8♣ 2♡ 10

8♣ 5♦ 13

8♣ 8♣ 14

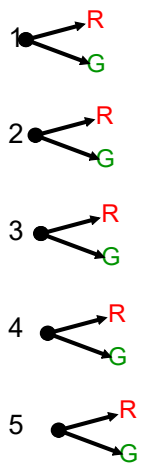
a) P(both red)= $\frac{4}{9}$

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 #) = $\frac{6}{10} = \frac{3}{5}$

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?

$P(6 \text{ on die}) = \frac{\#\text{ of 6 on die}}{\text{total outcomes of die}} = \frac{1}{6}$

$P(\text{Heads on coin}) = \frac{\#\text{ Heads}}{\#\text{ of sides}} = \frac{1}{2}$

$P(6 \text{ and Head}) = \frac{\#\text{ 6 and H}}{\text{Total}} = \frac{1}{12}$

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)

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

$= \frac{1}{12}$

The rule for two independent events:

$$P(A \text{ and } B) = \underbrace{P(A)}_{\frac{\#A}{\text{total outcomes}}} \times \underbrace{P(B)}_{\frac{\#B}{\text{total outcomes}}}$$

- Multiply fraction

Recall how to multiply fraction

$$\frac{7}{9} \times \frac{4}{10}$$

top x top
Bottom x Bottom
> Reduce

$$= \frac{28}{90}$$

$$= \frac{14}{45}$$

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.

$$P(\text{heads and an 8}) = \overset{\text{coin}}{P(\text{Head})} \times \overset{\text{tetrahedron}}{P(8)}$$

$$\frac{\#\text{ of H on coin}}{\text{total outcome of coin}} \times \frac{\#\text{ of 8 on die}}{\text{total outcomes die}}$$

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

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

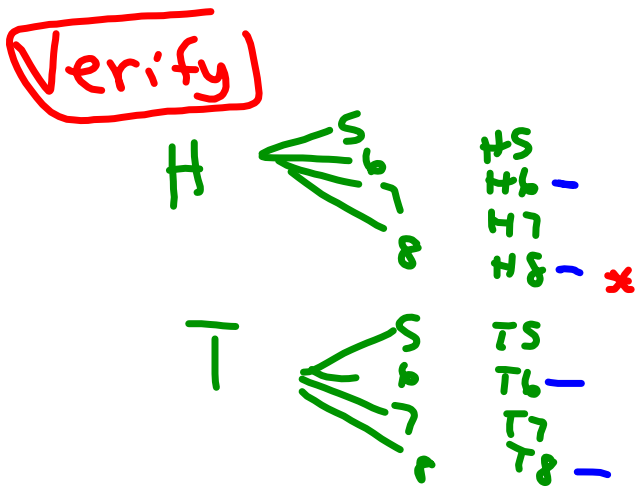
b) $$P(\text{Head or Tails and Even \#}) = \overset{\text{coin}}{P(\text{Head or tail})} \times \overset{\text{Die}}{P(\text{Even \#})}$$

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

$$= \frac{4}{8}$$

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

Verify



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(Blue and Heads) = P(Blue marble) X P(Head on coin)

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

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

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(Green and Blue and tails) = P(G) x P(B) x P(T)

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

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

$\frac{5}{72}$

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(Not orang and Not or and Not or) = P(Not or) x P(Not or) x P(Not or)

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

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

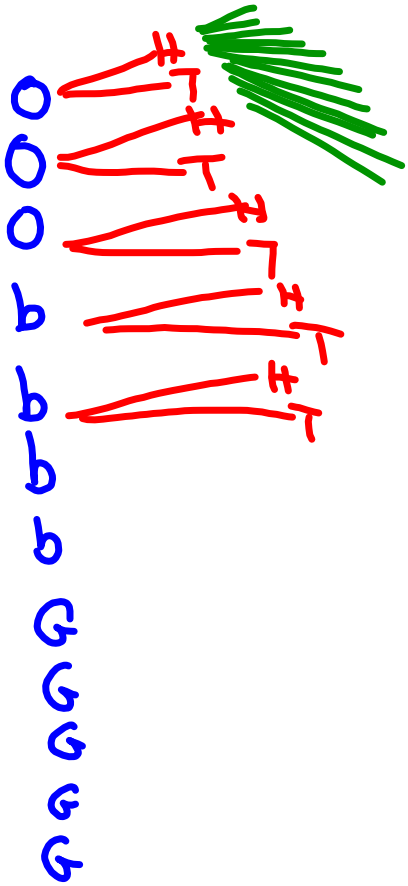
$\frac{27}{64}$

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

P(G, Black and oran) = P(G) x P(Black) x P(orang)

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

0


O
O
O
b
b
b
b
G
G
G
G
G
H
T
H
T
H
T
H
T
H
T

Class / Homework

a) $P(\text{Black}) = \frac{\#\text{ of Black}}{\text{totals}}$

$= \frac{1}{5}$

Page 411 -413 #7 #9 #10 #11 #12

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

$= \frac{1}{5} \times \frac{1}{5}$

$= \frac{1}{25}$

Test Moved to Wed May 9

7

Bert Bethan

$P(6 \text{ Bert}, 6 \text{ Beth}) = P(6 \text{ Bert}) \times P(6 \text{ Beth})$

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

$\frac{1}{36}$

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.