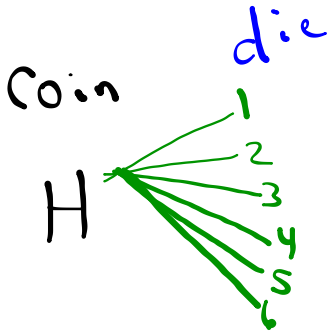
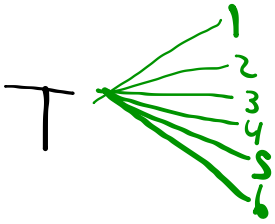
Warm up Grade 8

April 12, 2016

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?





H1 T1
H2 T2
H3 T3
H4 T4
H5 T5
H6 T6

12 outcomes

b) $P(\text{odd and tails}) = \dfrac{\#\text{ odd Tails}}{\text{total outcomes}}$ (1, 3, 5)

$= \dfrac{3}{12}$

$= \dfrac{1}{4}$

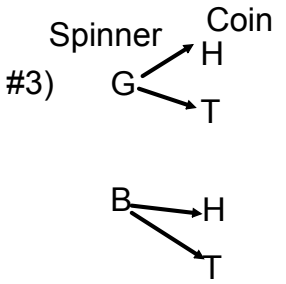
$= 0.25$

$= 25\%$

Homework Solutions

Page 411 #3, 4, 5

#3)



Possibilities

GH

GT

BH

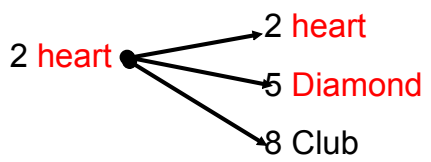
BT

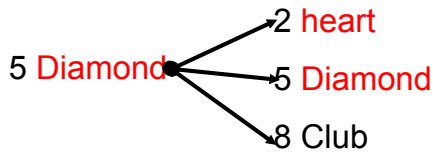
$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

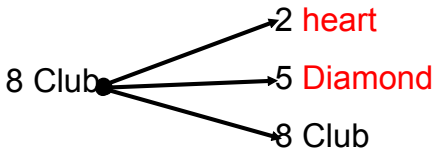
3a) P(of Blue & Heads) = $\frac{1}{4}$

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

4)







possibilities

2♡ 2♡ a c

2♡ 5♦ a

2♡ 8♣ b c

5♦ 2♡ a

5♦ 5♦ a

5♦ 8♣ b

8♣ 2♡ c

8♣ 5♦

8♣ 8♣ c

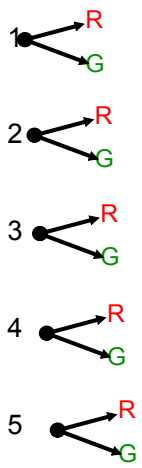
a) P(both red)= $\frac{4}{9}$

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 b

2 G a c

3 R

3 G c

4 R b

4 G

5 R

5 G c

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

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

2, 3, 5, 7, 11

c) P(green & a prime #) = $\frac{3}{10} = \frac{3}{5}$ 30%

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)

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

$= \frac{1}{12}$

The rule for two independent events:

X

$$P(A \text{ and } B) = \underbrace{P(A)}_{\frac{\#\text{ of } A}{\text{total outcome of first object}}} \times P(B)$$

Study

$$\frac{\#\text{ of } B}{\text{total outcome of } 2^{nd} \text{ object}}$$

2 options
H, T

# of outcomes = 2 × 4 = 8

4 options

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.

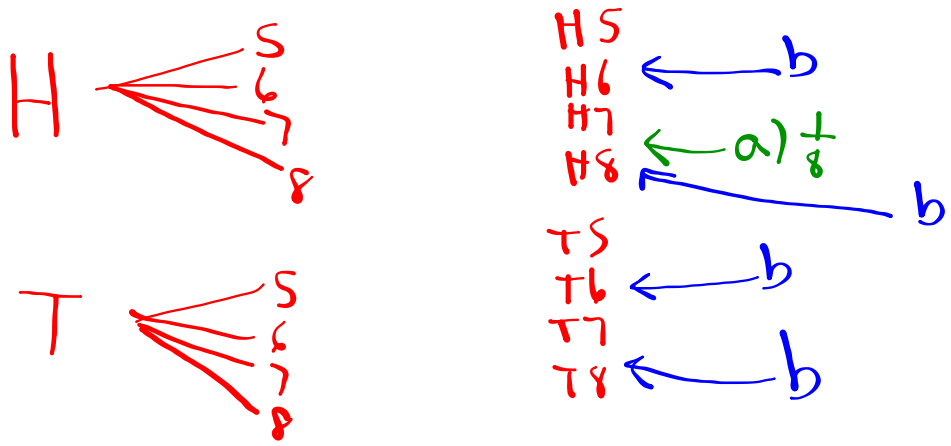
b) Find the probability of tossing heads or tails and rolling an even number.

Use a tree diagram to verify your answers.

a) $P(H \text{ and } 8) = P(H) \times P(8)$

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

$= \frac{1}{8}$



b) $P(H \text{ or } T \text{ and even } \#) = P(H \text{ or } T) \times P(\text{even } \#)$

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

$= \frac{4}{8}$

$= \frac{1}{2} = 0.5 = 50\%$

$3+4+5=$ 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?

Must Reduce

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

$= \frac{4}{12} \times \frac{1}{2} = \frac{4}{24} = \frac{1}{6}$

$= \frac{1}{3} \times \frac{1}{2}$

$= 1/6$

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?

$P(\text{Green and Blue and tails}) = P(G) \times P(B) \times P(T)$

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

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

$= \frac{5}{72}$

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?

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

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

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

$= \frac{27}{64}$

Reduce

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

$\rightarrow P(\overset{\text{green}}{G}, \overset{\text{black}}{B}, \overset{\text{orange}}{O}) = P(G) \times P(\text{Black}) \times P(\text{orange})$

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

$= \frac{0}{1728}$

$= 0$

Class / Homework

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

7a) P(Bart 6, and Beth 6) = P(Bart 6) x P(Beth 6)

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

$= \frac{1}{36}$

Test on Friday, April 15

P(Not 4 and Even) = P(Not 4) x P(Even)

$= \frac{5}{6} \times \frac{3}{6}$ Reds

$\frac{5}{6} \times \frac{1}{2}$

$\frac{5}{12}$

9) Bl, or, R, G

Once Second

16 outcomes

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.