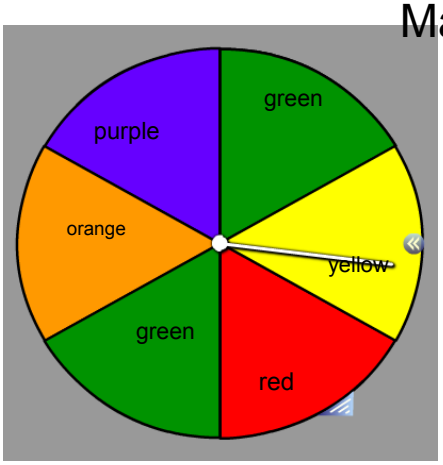
Warm Up Grade 8

May 10, 2017



1) What is the probability of spinning the spinner twice and getting red and a green?

P(Red and Green) = P(Red) x P(Green)

$\frac{1}{6} \times \frac{2}{6} = \frac{2}{36}$ Reduce

$= \frac{1}{6} \times \frac{1}{3}$

$= \frac{1}{18}$

2) What is the probability of spinning the spinner twice and getting red and a pink?

P(Red and Pink) = P(Red) x P(Pink)

$\frac{1}{6} \times \frac{0}{6}$

$\frac{0}{36}$

$= 0$

Not possible

Bag of marble

3 red

2 green

5 purple

Pick 3 marbles

P(red then green and purple) = P(red) x P(green) x P(purple)

$= \frac{3}{10} \times \frac{2}{10} \times \frac{5}{10}$

$= \frac{30}{1000} \div 10 \div 10$

$= \frac{3}{100}$

pg 410

1. Words suggesting Independent Events:
return, replace

2. $P(8) = \frac{1}{4}$

$P(\text{not } 8) = 1 - \frac{1}{4} = \frac{3}{4}$

Prob(8) and Prob(not 8) has to be 1.

3. $P(\text{blue}) = \frac{1}{2}$ $P(T) = \frac{1}{2}$

$P(\text{blue and } T) = \frac{1}{2} \times \frac{1}{2}$

$= \frac{1}{4}$

b) $P(B \text{ or } G) = 1$ $P(H) = \frac{1}{2}$

$P(B \text{ or } G \text{ and } H) = 1 \times \frac{1}{2}$

$= \frac{1}{2}$

4. a) $P(\text{red}) = \frac{2}{3}$

$\text{Prob}(\text{red and red}) = P(\text{red}) \times P(\text{red})$

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

$= \frac{4}{9}$

b) $P(1^{st} \text{ red and } 2^{nd} \text{ Black})$

$= P(\text{red}) \times P(\text{black})$

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

$= \frac{2}{9}$

c) $\text{Prob}(\text{both even}) = \text{Prob}(\text{even}) \times \text{Prob}(\text{even})$

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

$= \frac{4}{9}$

d) Prob(sum greater 8)

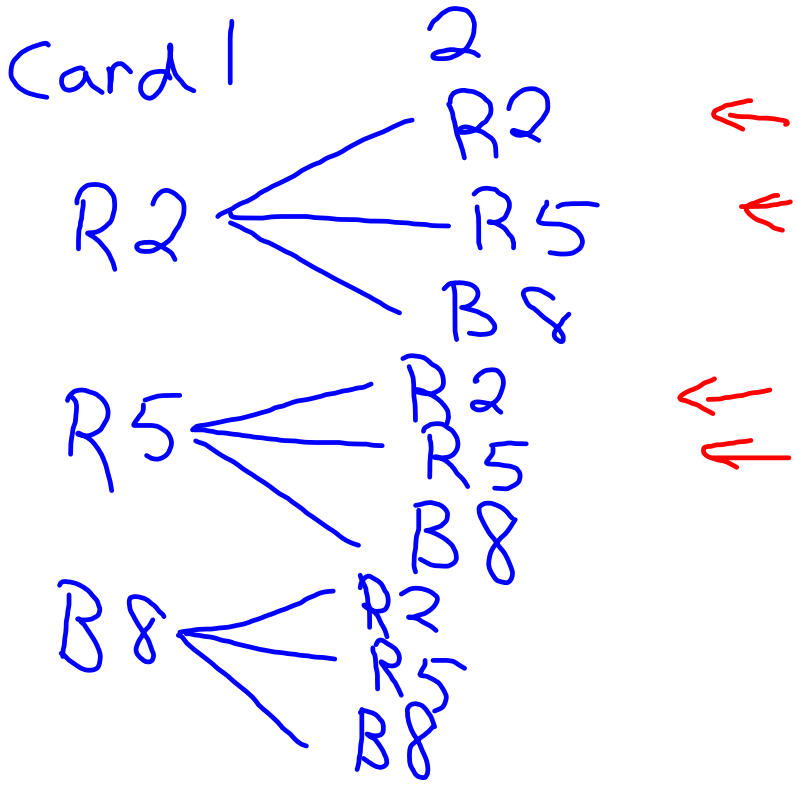
2, 8
5, 8
8, 8
5, 5

} 4 favorable outcomes

Possible outcomes

$3 \times 3 = 9$

$P(\text{sum} > 8) = \frac{4}{9}$



5.

a) $P(G \text{ and } 2) = P(G) \times P(2)$
$= \frac{1}{2} \times \frac{1}{5}$
$= \frac{1}{10}$

b) $P(\text{red and even}) = P(\text{red}) \times P(\text{even})$
$= \frac{1}{2} \times \frac{2}{5}$
$= \frac{2}{10}$ or $\frac{1}{5}$

c) $P(\text{green and prime}) = P(\text{green}) \times P(\text{prime})$
$= \frac{1}{2} \times \frac{3}{5}$
$= \frac{3}{10}$

Spinner	Counter	Outcomes
1	R	1R
	G	1G
2	R	2R
	G	2G
3	R	3R
	G	3G
4	R	4R
	G	4G
5	R	5R
	G	5G

6.
a) P(blue spotted, then solid red)
$= P(Bs) \times P(Sr)$
$= \frac{1}{10} \times \frac{3}{10}$
$= \frac{3}{100}$

b) Prob(Some red then spotted)
$= P(\text{red}) \times P(\text{spotted})$
$= \frac{5}{10} \times \frac{3}{10}$
$= \frac{15}{100}$ or $\frac{3}{20}$

c) Prob(striped, then solid blue)
$= P(\text{striped}) \times P(\text{blue solid})$
$= \frac{3}{10} \times \frac{1}{10}$
$= \frac{3}{100}$

d) P(Some blue or red sector, then spotted)
P(blue or red) x P(spotted)
$\frac{8}{10} \times \frac{3}{10}$
$\frac{24}{100}$ or $\frac{6}{25}$

7. Prob(6 and 6) $= P(6) \times P(6)$
$= \frac{1}{6} \times \frac{1}{6}$
$= \frac{1}{36}$

b) P(6 then 4) $= P(6) \times P(4)$
$= \frac{1}{6} \times \frac{1}{6}$
$= \frac{1}{36}$

c) P(not 4 then even) $= P(\text{not } 4) \times P(\text{even})$
$= \frac{5}{6} \times \frac{3}{6}$
$= \frac{15}{36}$ or $\frac{5}{12}$

d) Prob(even then odd)
$= \text{Prob}(\text{even}) \times P(\text{odd})$
$= \frac{3}{6} \times \frac{3}{6}$ or $\frac{1}{2} \times \frac{1}{2}$
$= \frac{9}{36}$ or $\frac{1}{4}$ $\frac{1}{4}$

e) P(greater than 3, then less than 4)
$P(>3) \times P(<4)$
$\frac{3}{6} \times \frac{3}{6}$
$\frac{9}{36}$ or $\frac{1}{4}$

8 a) Prob(6 and spade) = P(6) x P(spade)

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

$= \frac{1}{24}$

ii) Prob(not 4 and ace) = P(not 4) x P(A)

$= \frac{5}{6} \times \frac{4}{52}$

$= \frac{5}{6} \times \frac{1}{13}$

$= \frac{5}{78}$

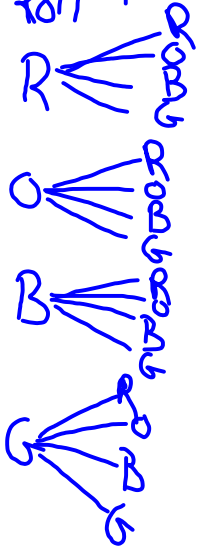
b)

c) Prob(AS and 5) = P(AS) x P(5)

$= \frac{1}{52} \times \frac{1}{6}$

$= \frac{1}{312}$

9. Roll 1 #12



4 ways to get the same colour out of 16 possibilities

$\frac{4}{16}$ or $\frac{1}{4}$

P(1st colour and 2nd colour the same)

= P(1st colour) x P(same as 1st)

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

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

$\frac{1}{4}$

pg 412

10. a) Prob(black) $= \frac{1}{5}$

b) Prob (Green and Green) $= P(G) \times P(G)$
$= \frac{1}{5} \times \frac{1}{5}$
$= \frac{1}{25}$

c) Assumption
→ replaced socks after first try

11. a) Prob(2 boys) $= P(b) \times P(b)$
$= \frac{1}{2} \times \frac{1}{2}$
$= \frac{1}{4}$

b) 1st 2nd
B < B BB
G BG
G < B GB
G GG

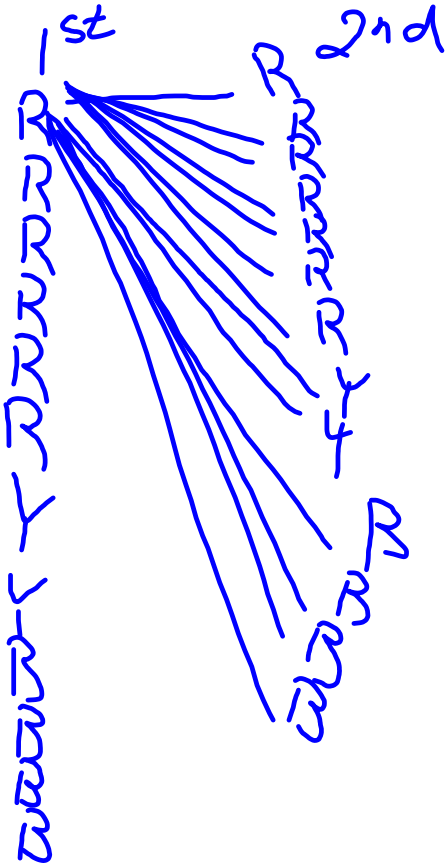
$P(2B) = \frac{1}{4}$

12. a) i) P(red then yellow) $= P(r) \times P(y)$
$= \frac{6}{12} \times \frac{2}{12}$
$= \frac{12}{144}$ or $\frac{1}{12}$

ii) P(2 blue) $= P(b) \times P(b)$
$= \frac{4}{12} \times \frac{4}{12}$
$= \frac{16}{144}$ or $\frac{1}{3} \times \frac{1}{3}$
$= \frac{1}{9}$ $\frac{1}{9}$

iii) P(not blue, then yellow) $= P(\text{not blue}) \times P(y)$
$= \frac{8}{12} \times \frac{2}{12}$
$= \frac{2}{3} \times \frac{1}{6}$
$= \frac{2}{18}$ or $\frac{1}{9}$

b) If the marbles are not replaced the events are not independent, therefore you can not use the rule.



In word problems some words that can be used to suggest an event is INDEPENDENT is:

Replace or returned

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

Ex) What is the probability of drawing a 2 from a deck of cards then replacing the card and drawing a red 5 from a deck of cards?

Deck of Cards (52 cards)

4 suits ♥ ♦ ♠ ♣

A 2 3 4 5 6 7 8 9 10 Jack Queen King

$P(2 \text{ and } 5) = P(2) \times P(\text{Red } 5)$

$= \frac{\#\text{ of } 2\text{'s in Deck}}{\text{total cards}} \times \frac{\#\text{ of Red "5"s}}{\text{total cards}}$

$= \frac{4 \div 4}{52 \div 4} \times \frac{2 \div 2}{52 \div 2}$

= huge #'s so reduce first

$= \frac{1}{13} \times \frac{1}{26}$

$= \frac{1}{338}$

$$P(\text{4 Aces}) = P(A) \times P(A) \times P(A) \times P(A)$$

$$= \frac{4}{52} \times \frac{4}{52} \times \frac{4}{52} \times \frac{4}{52}$$

$$= \frac{1}{13} \times \frac{1}{13} \times \frac{1}{13} \times \frac{1}{13}$$

$$= \frac{1}{28561}$$

Lotto 649

pick 6 # from 49 #'s

$$P(6\#) = \frac{1}{49}{}^{1st} \times \frac{1}{48}{}^{2nd} \times \frac{1}{47}{}^{3rd} \times \frac{1}{46}{}^{4th} \times \frac{1}{45}{}^{5th} \times \frac{1}{44}{}^{6th}$$

$$= \frac{1}{13983816}$$

The rule for independent events applies when you have more than 2 events,

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

Ex) What is the probability of tossing a head on a coin, rolling a 2 on a die and spinning a spinner that lands on purple?

$$P(\text{toss H on Coin and Roll 2 on Die and Spinner on purple}) = P(\text{H on Coin}) \times P(\text{2 on Die}) \times P(\text{purple on spinner})$$

$$= \frac{1}{2} \times \frac{1}{6} \times \frac{1}{3}$$

$$= \frac{1}{36}$$

Class/Homework

Page 420 #4, #5, #6,#7, ~~#8, #11, #14~~

Page 425 #3, #7,

open book

Test Thursday

Part A

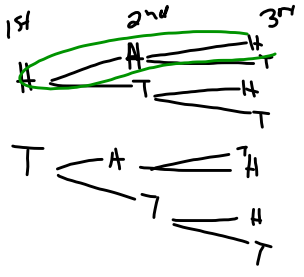
8 Multiple Choice /33

Part B

1) 3 thing you can read off of graph or Not
2) Which is misleading and Why?
3) Probability using spinners
4) Probability of more than one event

4c)

$$P(H \text{ and } H \text{ and } H) = P(H) \times P(H) \times P(H) = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$$



$$P(3\text{ Heads}) = P(H) \times P(H) \times P(H)$$
$$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$$
$$= \frac{1}{8}$$