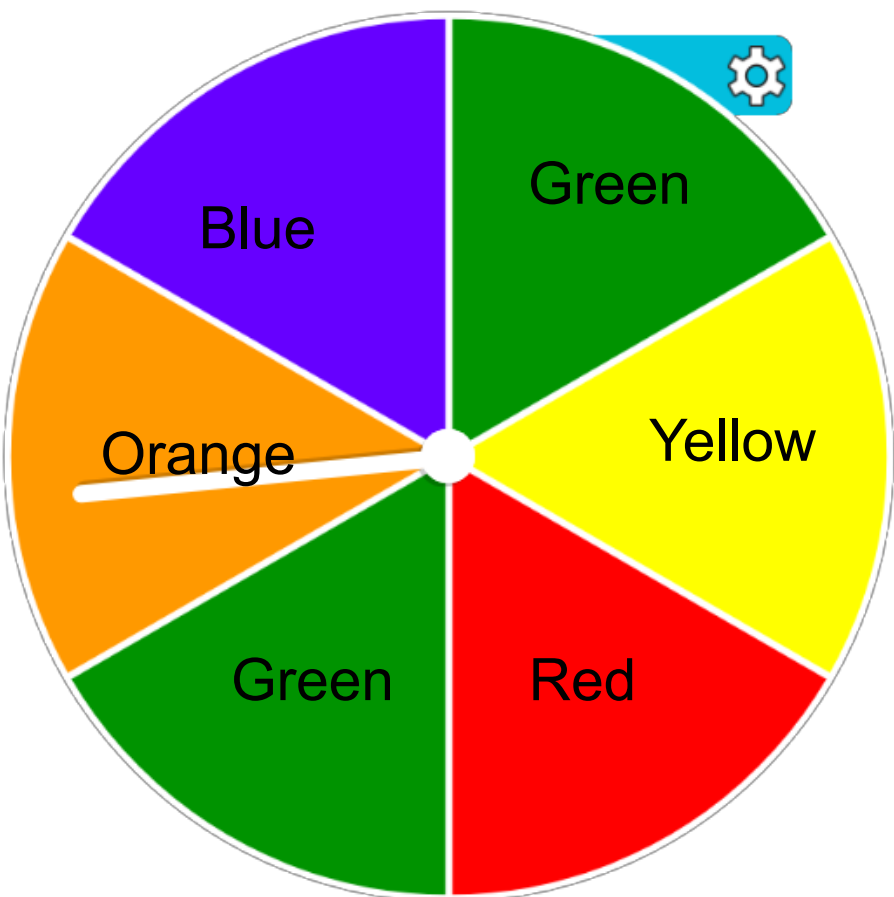


Warm Up Grade 8



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

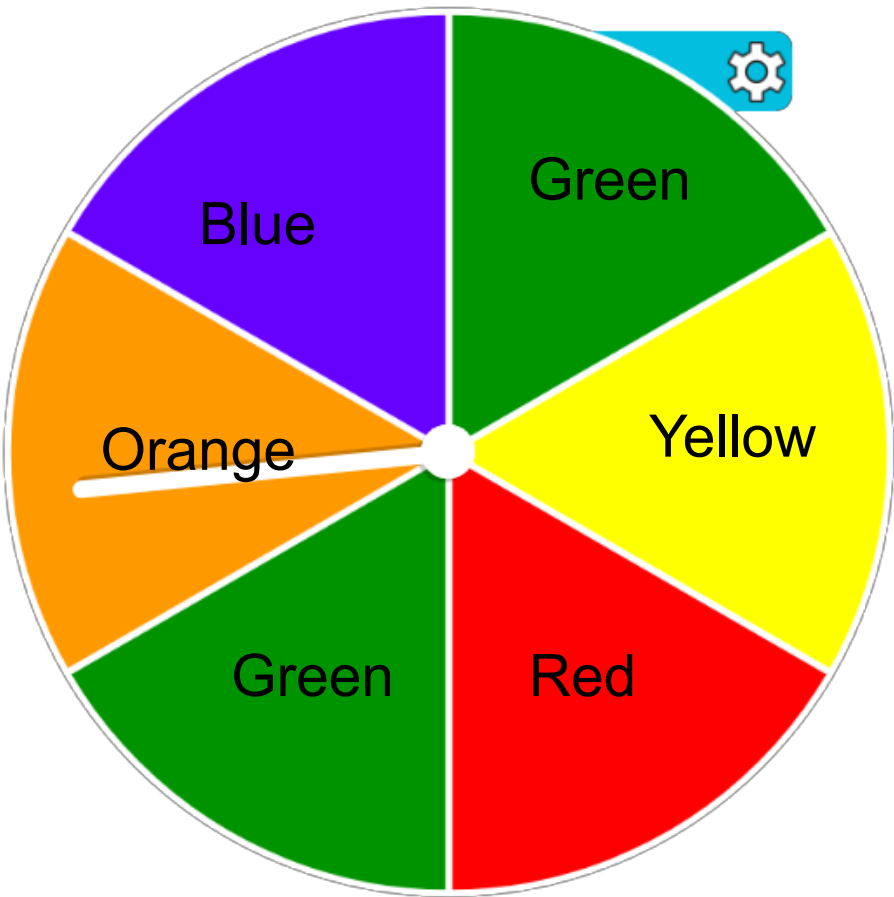
2) What is the probability of spinning the spinner twice and getting red and a pink?

3) A bag of marbles has 5 marbles: blue, purple, white, black, gold. What is the probability of picking 2 marbles and getting any color the first time and the same color the second time?

Warm Up Grade 8

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

$$\frac{\#A}{\text{Total}} \times \frac{\#B}{\text{total}}$$



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

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

3) A bag of marbles has 5 marbles: blue, purple, white, black, gold. What is the probability of picking 2 marbles and getting any color the first time and the same color the second time?

$$1) P(\text{Red and Green}) = P(\text{Green}) \times P(\text{Red})$$

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

Reduce

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

$$= \frac{1}{18}$$

$$= 0.0\bar{5}$$

$$= 5\%$$

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

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

$$= 0$$

$$= 0\%$$

$$3) P(\text{Any color And Same color}) = P(\text{Any color}) \times P(\text{Same color})$$

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

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

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

$$= 0.20$$

$$= 20\%$$

$$\frac{5}{25}$$

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

pg 4/0

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.

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

$$P(\text{blue and } T) = \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$$

$$b) P(\text{BorG}) = 1 \quad P(H) = \frac{1}{2}$$

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

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

$$\begin{aligned} \text{Prob}(\text{red and red}) &= P(\text{red}) \times P(\text{red}) \\ &= \frac{2}{3} \times \frac{2}{3} \\ &= \frac{4}{9} \end{aligned}$$

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

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

$$\begin{aligned} &\frac{2}{3} \times \frac{1}{3} \\ &= \frac{2}{9} \end{aligned}$$

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

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

$$= \frac{4}{9}$$

$$d) \text{Prob}(\text{sum greater } 8)$$

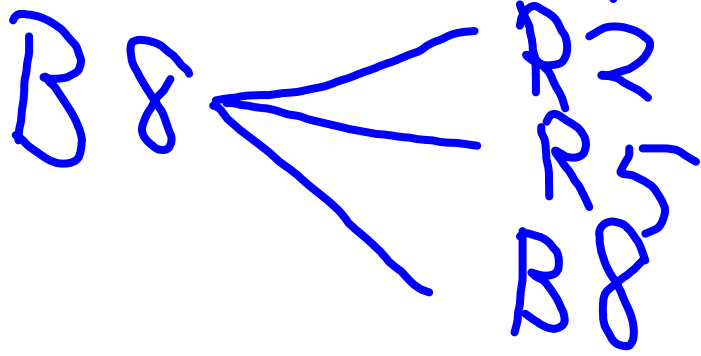
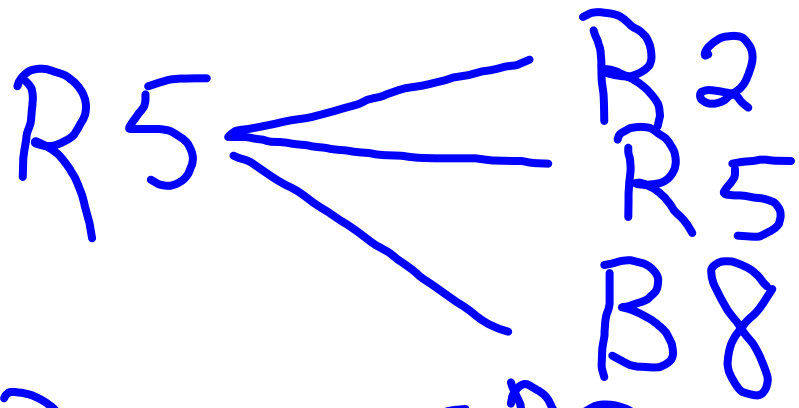
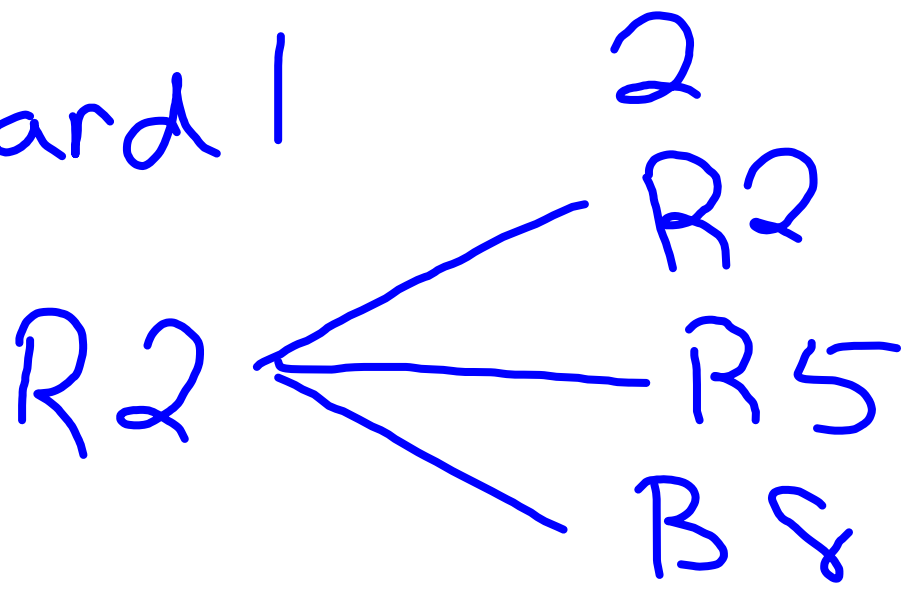
$\left. \begin{array}{l} 2, 8 \\ 5, 8 \\ 8, 8 \\ 5, 5 \end{array} \right\} 4 \text{ favorable outcomes}$

Possible outcomes

$$3 \times 3 = 9$$

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

Card 1




★ 5.

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

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

$$\begin{aligned}
 c) P(\text{green and prime}) &= P(\text{green}) \times P(\text{prime}) \\
 &= \frac{2}{5} \times \frac{3}{10}
 \end{aligned}$$

↑ 2, 3, 5, 7


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

$$\begin{aligned}
 6. \quad a) & P(\text{blue spotted, then solid red}) \\
 &= P(B_s) \times P(S_r) \\
 &= \frac{1}{10} \times \frac{3}{10} \\
 &= \frac{3}{100}
 \end{aligned}$$

$$\begin{aligned}
 b) & P(\text{red then spotted}) \\
 &= P(\text{red}) \times P(\text{spotted}) \\
 &= \frac{5}{10} \times \frac{3}{10} \\
 &= \frac{15}{100} \text{ or } \frac{3}{20}
 \end{aligned}$$

$$\begin{aligned}
 c) & P(\text{red striped, then solid blue}) \\
 &= P(\text{striped}) \times P(\text{blue solid}) \\
 &= \frac{3}{10} \times \frac{1}{10} \\
 &= \frac{3}{100}
 \end{aligned}$$

$$\begin{aligned}
 d) & P(\text{blue or red sector, then spotted}) \\
 &= P(\text{blue or red}) \times P(\text{spotted}) \\
 &= \frac{8}{10} \times \frac{3}{10} \\
 &= \frac{24}{100} \text{ or } \frac{6}{25}
 \end{aligned}$$

$$\begin{aligned}
 \star \rightarrow \text{Prob}(6 \text{ and } 6) &= P(6) \times P(6) \\
 &= \frac{1}{6} \times \frac{1}{6} \\
 &= \frac{1}{36}
 \end{aligned}$$

$$\begin{aligned}
 \text{b) } P(6 \text{ then } 4) &= P(6) \times P(4) \\
 &= \frac{1}{6} \times \frac{1}{6} \\
 &= \frac{1}{36}
 \end{aligned}$$

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

$$\begin{aligned}
 \text{d) } P(\text{even then odd}) &= P(\text{even}) \times P(\text{odd}) \\
 &= \frac{3}{6} \times \frac{3}{6} \\
 &= \frac{9}{36} \text{ or } \frac{1}{4}
 \end{aligned}$$

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

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

$$\begin{aligned}
 8 \text{ a) Prob}(6 \text{ and spade}) &= P(6) \times P(\text{spade}) \\
 &= \frac{1}{6} \times \frac{1}{4} \\
 &= \frac{1}{24}
 \end{aligned}$$

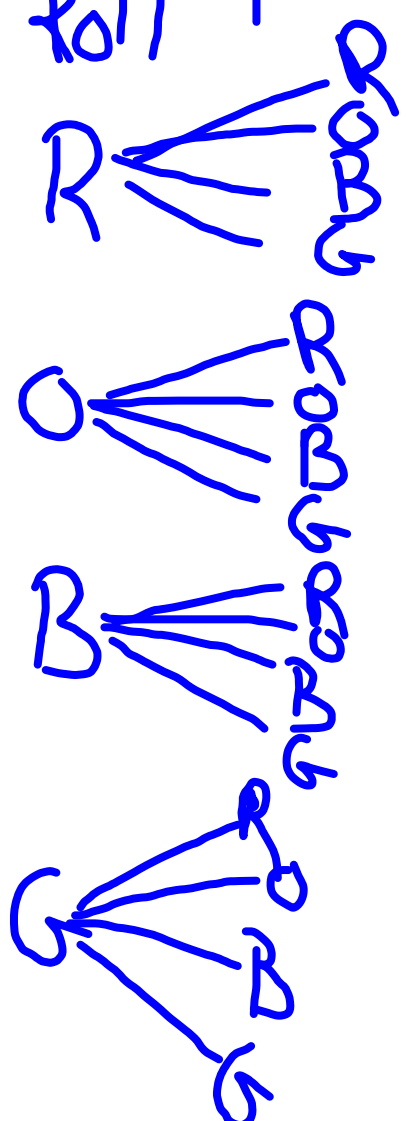
$$\begin{aligned}
 \text{(ii) Prob(not 4 and ace)} &= P(\text{not 4}) \times P(A) \\
 &= \frac{5}{6} \times \frac{4}{52} \\
 &= \frac{5}{6} \times \frac{1}{13} \\
 &= \frac{5}{78}
 \end{aligned}$$

b)

$$\begin{aligned}
 \text{c) Prob(AS and 5)} &= P(AS) \times P(5) \\
 &= \frac{1}{52} \times \frac{1}{6} \\
 &= \frac{1}{312}
 \end{aligned}$$



Roll 1 = 12



4 ways to get the same colour out of 16 possibilities

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

$$\begin{aligned}
 &P(\text{1st colour and 2nd colour the same}) \\
 &= P(\text{1st colour}) \times P(\text{same as 1st}) \\
 &= \frac{4}{4} \times \frac{1}{4} \\
 &= 1 \times \frac{1}{4}
 \end{aligned}$$

$$\frac{1}{4}$$

pg 412

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

$$\begin{aligned} b) \text{Prob}(\text{Green and Green}) &= P(G) \times P(G) \\ &= \frac{1}{5} \times \frac{1}{5} \\ &= \frac{1}{25} \end{aligned}$$

c) Assumption

→ replaced socks after first try

$$\begin{aligned} 11. a) \text{Prob}(2 \text{ boys}) &= P(b) \times P(b) \\ &= \frac{1}{2} \times \frac{1}{2} \\ &= \frac{1}{4} \end{aligned}$$

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

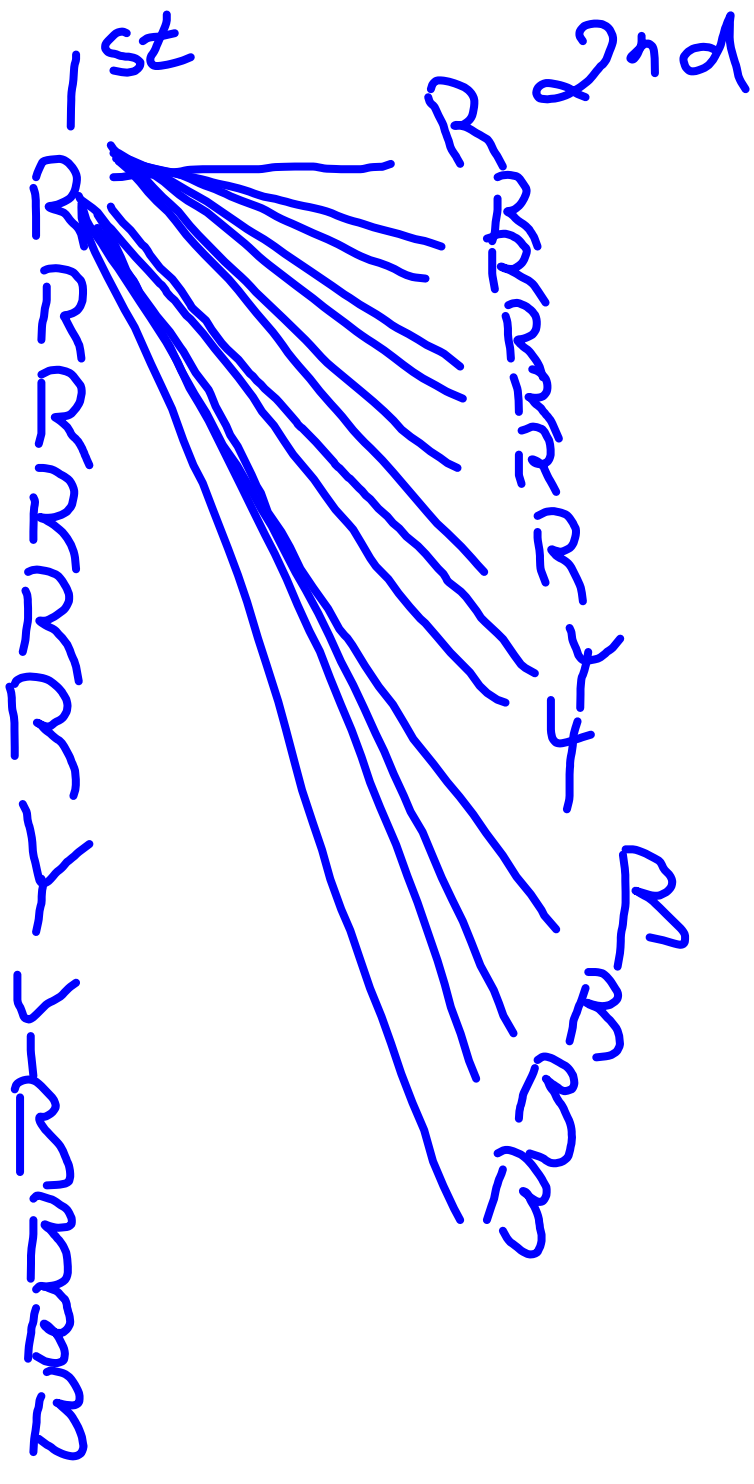
$P(2B) = \frac{1}{4}$

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

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

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

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

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



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?

$$\begin{aligned} P(\text{Draw a 2 and Draw Red 5}) &= P(\text{Draw 2}) \times P(\text{Draw Red 5}) \\ &= \frac{4}{52} \times \frac{2}{52} \\ &= \frac{1}{13} \times \frac{1}{26} \\ &= \frac{1}{338} \\ &= 0.00295 \\ &= 0.295\% \end{aligned}$$

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?



$P(\text{Head AND } 2 \text{ AND Purple})$

$$= P(H) \times P(2) \times P(\text{purple}) \\ = \frac{1}{2} \times \frac{1}{6} \times \frac{1}{3} \\ = \frac{1}{36}$$



Class/Homework

Page 412-413 #10 & 12

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

Page 425 #3, #7,

Test in 2 days

Part A

8 Multiple Choice

/33

Part B

- 1) 3 things 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)

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

