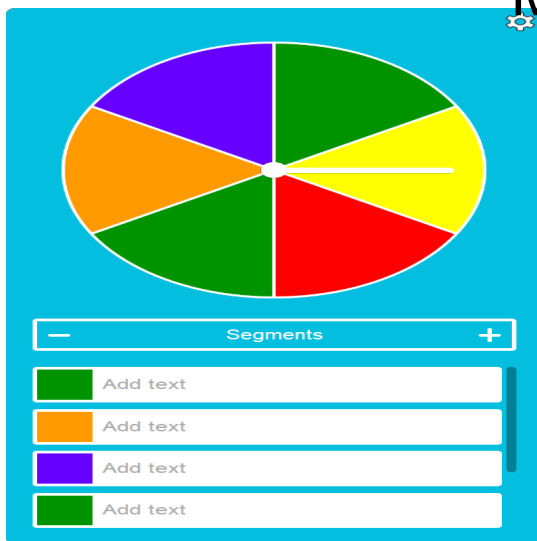


## Warm Up Grade 8

May 7, 2018



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

$$\begin{aligned}
 P(\underline{\text{Red and Green}}) &= P(\underline{\text{Red}}) \times P(\underline{\text{Green}}) \\
 &= \frac{\# \text{Red}}{\text{Total}} \times \frac{\# \text{Green}}{\text{Total}} \\
 &= \frac{1}{6} \times \frac{2}{6} \\
 &= \frac{2}{36} \\
 &= \frac{1}{18}
 \end{aligned}$$

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

Moved to Wed May 9

$$\begin{aligned}
 P(\underline{\text{Red and Pink}}) &= P(\underline{\text{Red}}) \times P(\underline{\text{Pink}}) \\
 &= \frac{\# \text{Red}}{\text{Total}} \times \frac{\# \text{Pink}}{\text{Total}} \\
 &= \frac{1}{6} \times \frac{0}{6} \\
 &= \frac{0}{36}
 \end{aligned}$$

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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.

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

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

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

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

$$P(\text{not a 4 on a die}) = \frac{5}{6}$$

or

$$1 - P(\text{of 4 on die})$$
$$\frac{6}{6} - \frac{1}{6}$$
$$\frac{5}{6}$$

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

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

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

$$\begin{aligned} &= P(\text{red}) \times P(\text{black}) \\ &= \frac{2}{3} \times \frac{1}{3} \\ &= \frac{2}{9} \end{aligned}$$

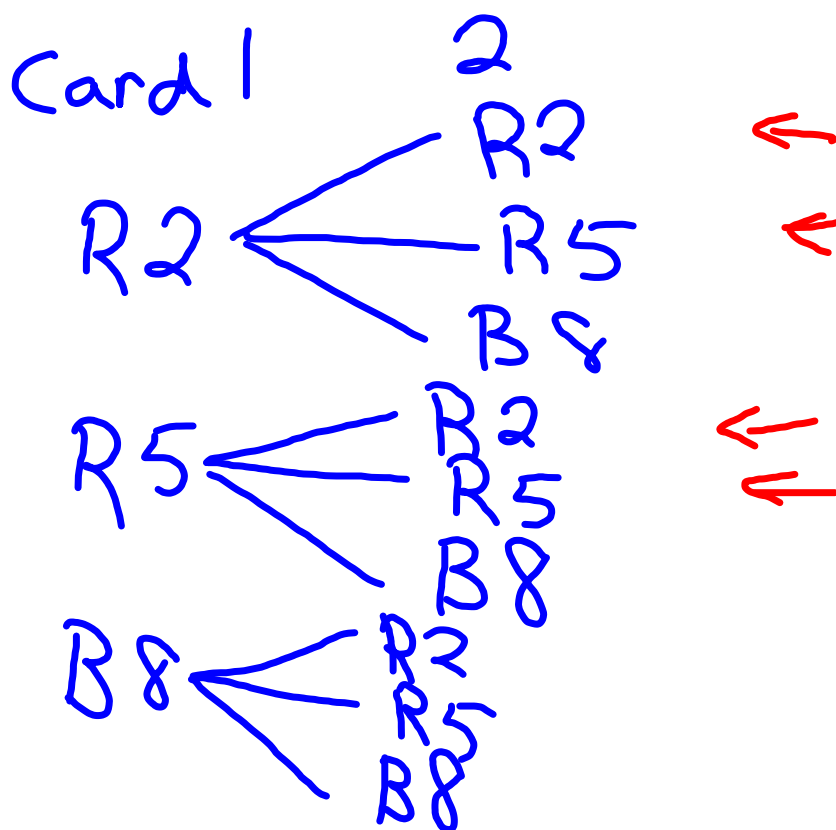
$$\begin{aligned} c) \text{Prob}(\text{both even}) &= P(\text{even}) \times P(\text{even}) \\ &= \frac{2}{3} \times \frac{2}{3} \\ &= \frac{4}{9} \end{aligned}$$

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

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

Possible outcomes  
 $3 \times 3 = 9$

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



$$\begin{aligned}
 \text{5. a) } P(G \text{ and } 2) &= P(G) \times P(2) \\
 &= \frac{1}{2} \times \frac{1}{3} \\
 &= \frac{1}{10}
 \end{aligned}$$

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

$$\begin{aligned}
 \text{c) } P(\text{green and prime}) &= P(\text{green}) \times P(\text{prime}) \\
 &= \frac{2}{5} \times \frac{3}{10} \\
 &= \frac{3}{25}
 \end{aligned}$$

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

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

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

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

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

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

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

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

$$\begin{aligned}
 d) P(\text{even then odd}) &= P(\text{even}) \times P(\text{odd}) \\
 &= \frac{3}{6} \times \frac{3}{6} \quad \text{or } \frac{1}{2} \times \frac{1}{2} \\
 &= \frac{9}{36} \text{ or } \frac{1}{4} \quad \frac{1}{4}
 \end{aligned}$$

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

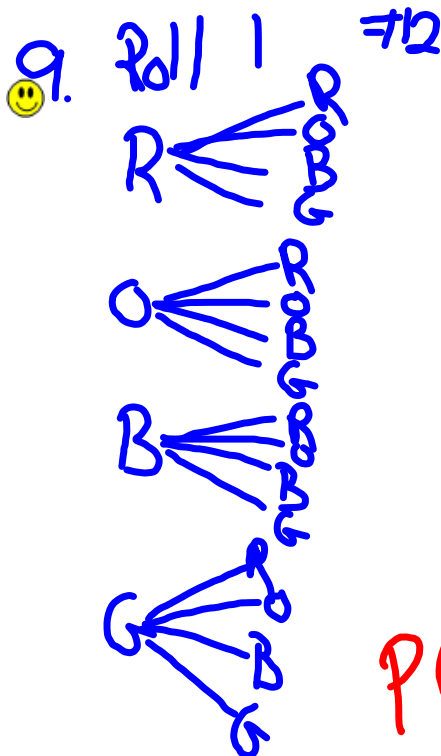


$$\begin{aligned}
 8 \text{ a) Prob}(6 \text{ and spade}) &= P(6) \times P(\text{spade}) \\
 &= \frac{1}{6} \times \frac{1}{4} \\
 &= \frac{1}{24}
 \end{aligned}$$

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

b)

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



4 ways to get the same colour out of 16 possibilities

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

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

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

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

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

c) Assumption  
 $\rightarrow$  replaced socks after first try

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

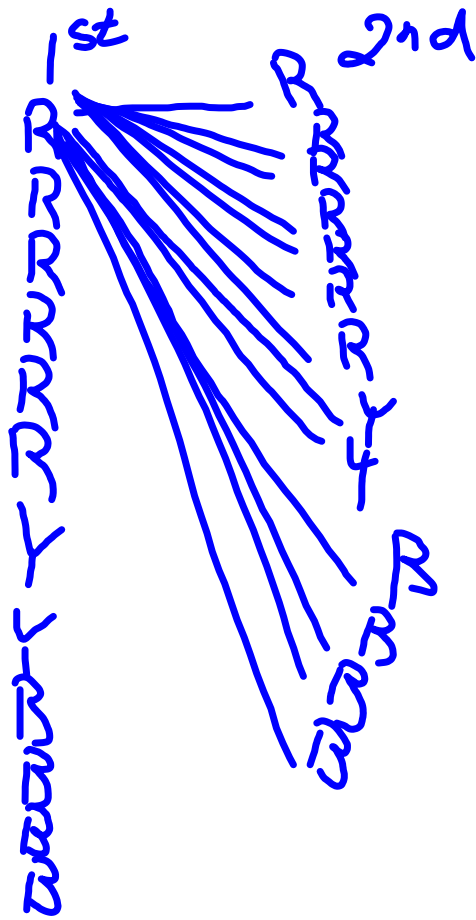
$$\begin{array}{l} \text{b) 1st} \quad \quad \quad \text{2nd} \\ \begin{array}{l} B \quad \diagdown \quad B \\ \quad \quad \quad G \\ G \quad \diagdown \quad B \\ \quad \quad \quad G \end{array} \quad \begin{array}{l} BB \\ BG \\ GB \\ GG \end{array} \end{array} \quad P(2B) = \frac{1}{4}$$

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

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

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

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?

$$\begin{aligned}
 P(2 \text{ from deck and Red } 5) &= P(2 \text{ from deck}) \times P(\text{Red } 5) \\
 &= \frac{4}{52} \times \frac{2}{52} \\
 &= \frac{2}{26} \times \frac{1}{26} \\
 &= \frac{1}{13} \times \frac{1}{26} \\
 &= \frac{1}{378}
 \end{aligned}$$

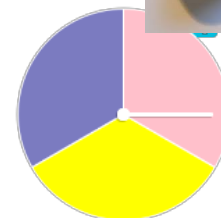
The rule for independent events applies when you have more than 2 events,

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



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?

$$P(\text{Head AND 2 AND Purple}) \\ \text{coin} \quad \text{die} \quad \text{spinner} \\ = P(H) \times P(2) \times P(\text{purple}) \\ = \frac{1}{2} \times \frac{1}{6} \times \frac{1}{3} \\ = \frac{1}{36}$$



# Class/Homework

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Page 425 #3, #7,

Test Moved to Wed May 9

Part A

8 Multiple Choice

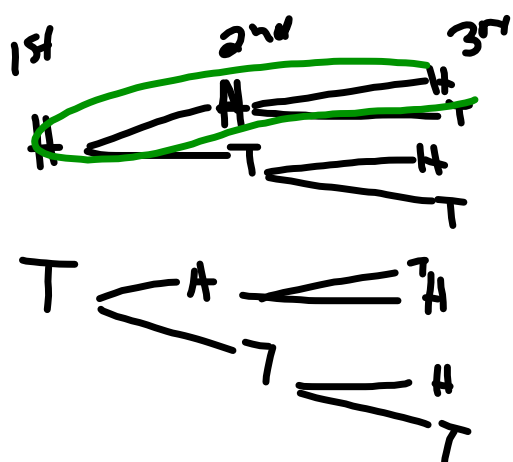
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Part B

- 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

42)

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





$$\begin{aligned}P(\underline{H} \text{ and } \underline{H} \text{ and } \underline{H}) &= P(\underline{H}) \times P(\underline{H}) \times P(\underline{H}) \\ &= \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \\ &= \frac{1}{8}\end{aligned}$$