

PROBABILITY

Fraction - Ratio — compare 2 values (count)

of possible outcomes \longrightarrow DENOMINATOR
Roll a die \rightarrow 6 outcomes

Roll 2 dice? $\rightarrow 36 = (6 \cdot 6)$

of successful outcomes \longrightarrow NUMERATOR
Roll even # $\{2, 4, 6\} \rightarrow 3$

$$P(\text{Even}) = \frac{3}{6} = \left(\frac{1}{2}\right) = 50\% = 0.5$$

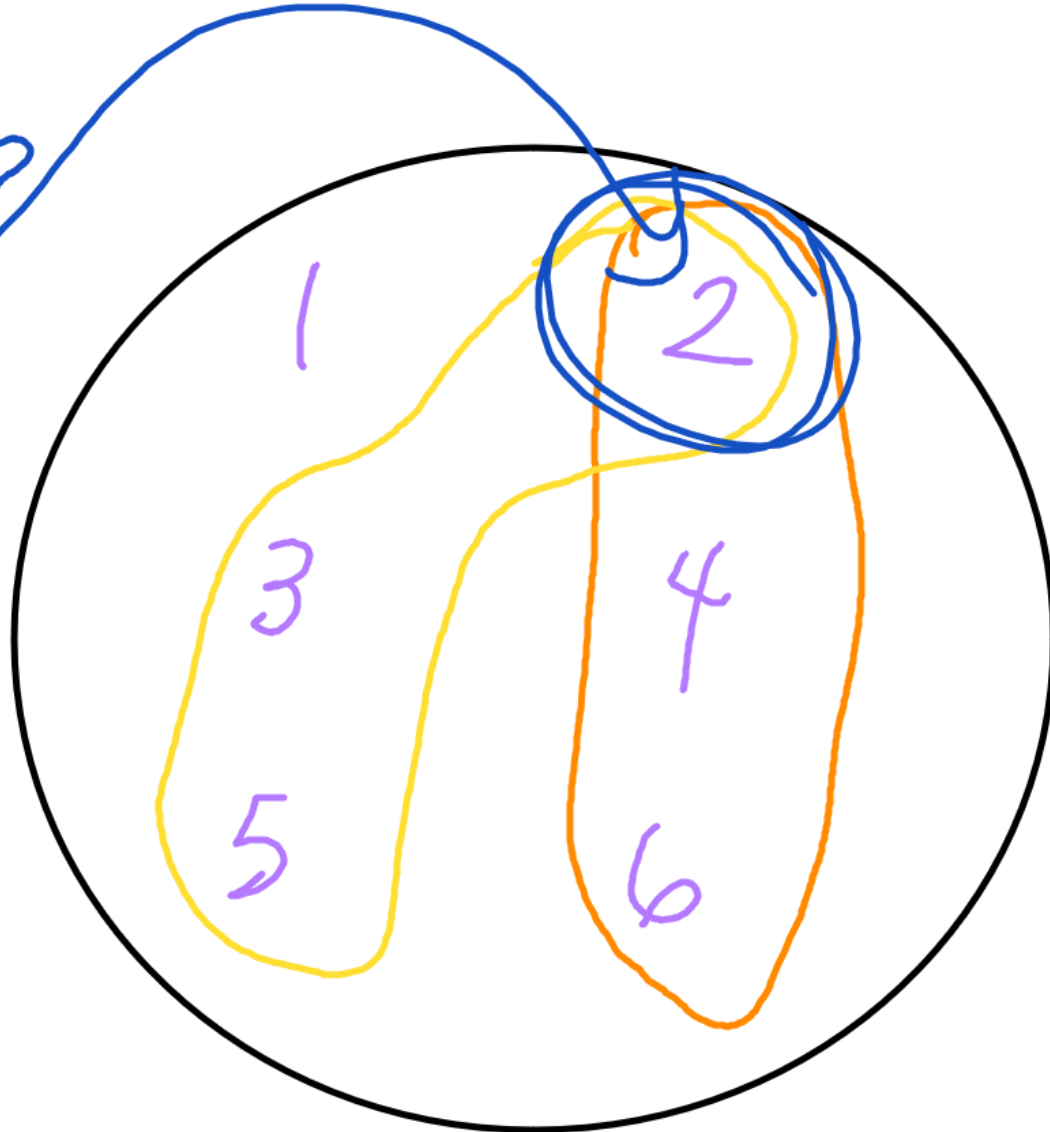
Event A = / roll an even number {2, 4, 6}

Event B = / roll a prime number {2, 3, 5}

"MUTUALLY EXCLUSIVE"

MUTUALLY
EXCLUSIVE?

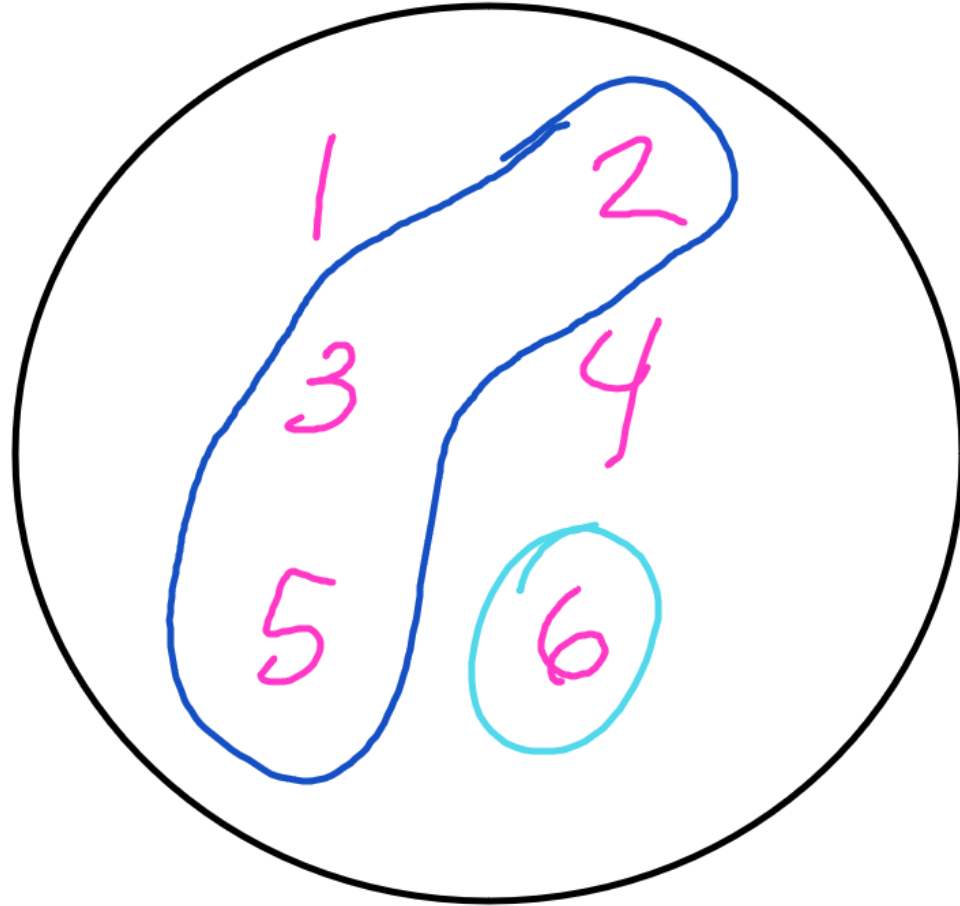
NO



$A = \text{Prime}$

$B = 6$

Yes, are Mutually
Exclusive



INDEPENDENT

↳ If knowing one event has happened ~~changes~~
the prob. that the second event happens...

DEPENDENT

10 marbles

Want 2 GREEN
marbles

$$P(\text{Green \#1}) = \frac{4}{10}$$

$$= \frac{2}{5} = .4$$

~~DEPENDENT~~

(I don't replace it)

$$P(\text{Green \#2}) = \frac{3}{9}$$

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

(I DO REPLACE)

$$P(\text{Green \#2}) = \frac{4}{10}$$

$$= \frac{2}{5}$$

~~INDEPENDENT~~

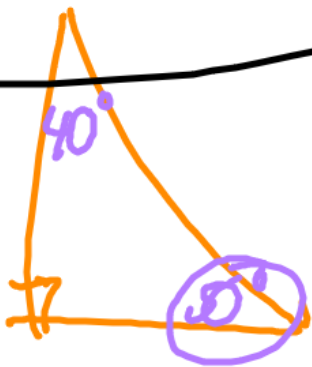
Miss wins WS / Russ wins WHP

$\frac{1}{300}$ $\frac{1}{13}$

$$P(\text{Both}) = \frac{1}{300} \cdot \frac{1}{13} = \frac{1}{3900}$$

COMPLEMENT

COMPLETES.



"everything else"

B = "rolling a prime number"

2, 3, 5

C $\rightarrow B^c$ = "rolling anything BUT a

prime number" 1, 4, 6

$$P(B) + P(B^c) = 1$$

100%

- 1) p 504 5-9, 16-21
- 2) Mutually Exclusive
- 3) Independence

F May 29