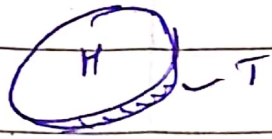
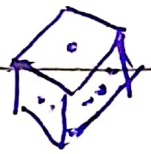
probability :-



$$P(H) = \frac{\#\text{ of possibilities that meet my condition}}{\#\text{ of equally likely possibilities}}$$

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



1
2
3
4
5
6

$$P(1) = \frac{1}{6}$$

$$P(1 \text{ or } 6) = \frac{2}{6}$$

$$P(2 \text{ and } 3) = \frac{0}{6}$$

, 2 and 3 are mutually exclusive events

$$P(\text{even}) = \frac{3}{6}$$

probability with cards and Venn diagrams

4 Suits ♠ ♦ ♣ ♥

Each suit has 13 types of cards.

A, 2, 3, 4, 5, 6, 7, 8, 9, 10, J, Q, K

Total = $4 \times 13 = 52$

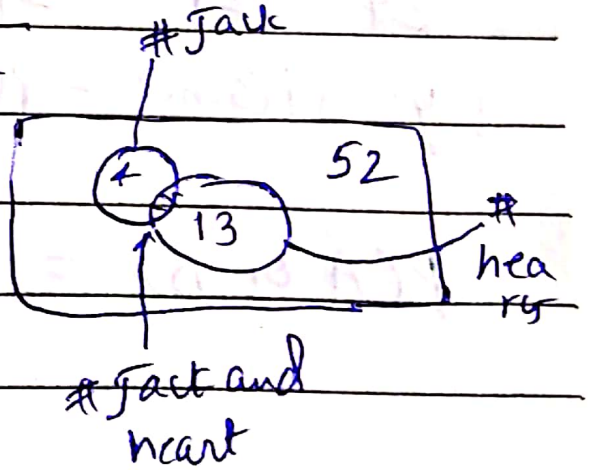
$$P(\text{Jack}) = \frac{4}{52} = \frac{1}{13}$$

$$P(\text{heart}) = \frac{13}{52} = \frac{1}{4}$$

$$P(\text{Jack and hearts}) = \frac{1}{52}$$

$$P(\text{J OR H}) = \frac{4+13-1}{52}$$

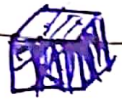
$$= \frac{16}{52} = \frac{4}{13}$$



Addition rule for probability:

G  × 8

G  × 9

y  × 5

y  × 7

29

$P(\text{cubes}) = \frac{13}{29}$

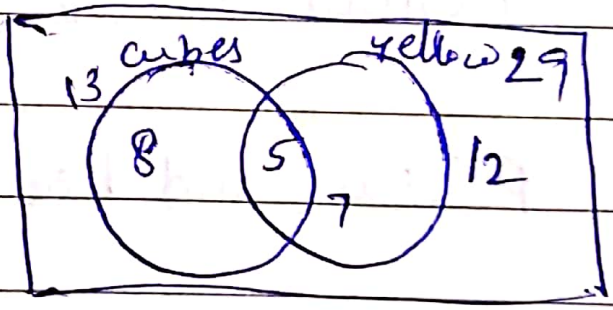
$P(\text{yellow}) = \frac{12}{29}$

$P(\text{yellow cubes}) = \frac{5}{29}$

$P(\text{y or cube}) = \frac{12 + 13 - 5}{29} = \frac{20}{29}$

$= \frac{12}{29} + \frac{13}{29} - \frac{5}{29}$

P(y) + P(cube) − P(y and cube)

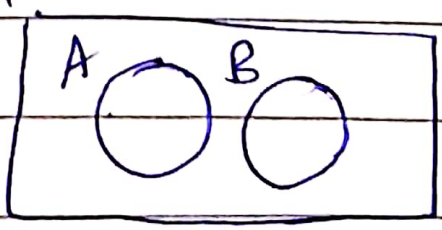


$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

mutually exclusive

$P(A \text{ or } B) = P(A) + P(B)$

$P(A \cap B) = 0$



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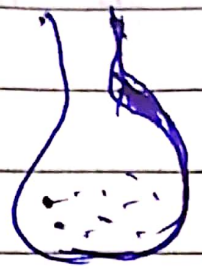
probability example 2:

a bag with 9 red marbles, 2 blue marbles 3 green marbles.

probability of randomly selecting a non-blue marble from the bag?

9 R
2 B
3 G



P(non blue) =

$$\frac{9+3}{14} = \frac{12}{14} = \frac{6}{7}$$

$$(\text{OR}) = \frac{14-2}{14} = \frac{12}{14} = \frac{6}{7}$$

If a no is randomly chosen from the following list, what is the probability that number is a multiple of 5?

[32, 49, 55, 30, 56, 28, 50, 40, 40, 45, 3, 25]

total possibilities = 12

multiples of 5 = 7

$$p = \frac{7}{12}$$

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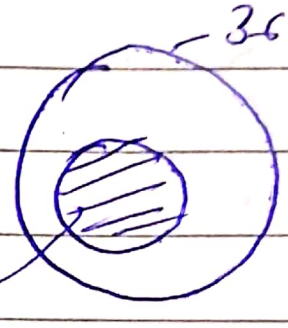
Circumference of a circle is 36π conitained in that circle is a smaller circle with area 16π.

A point is selected at random from inside the larger circle. What is the probability that the point also lies in the smaller circle?



$C = 2\pi r$

$36\pi = 2\pi r$

$r = 18$

$A = \pi r^2 = \pi \times 18 \times 18 = 324\pi$

For smaller circle

$C = 2\pi r = 16\pi$

$r = 8$

$A = \pi r^2 = \pi \times 8 \times 8 = 64\pi$

$A = 16\pi$

$$P = \frac{64\pi}{324\pi} = \frac{16\pi}{324\pi} = \frac{16}{324}$$

$$P = \frac{4}{81}$$