

# CLASS – 10

# MATHEMATICS

Chapter – 14

PROBABILITY

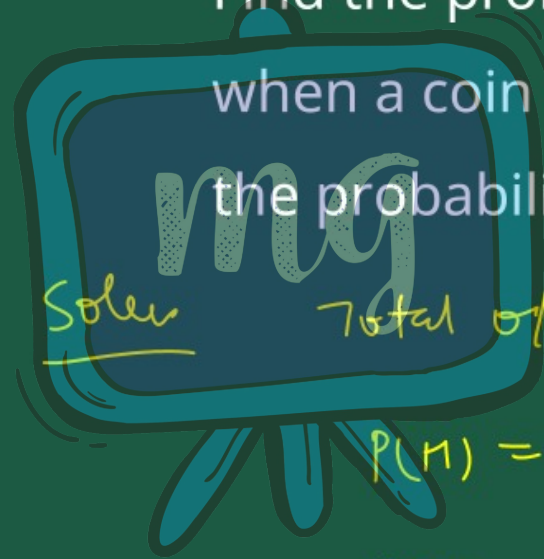
Part – 2  
Examples

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## Example : 1

Find the probability of getting a head when a coin is tossed once. Also find the probability of getting a tail.



Soln Total  $\omega = 2$  {H, T}

$$P(H) = \frac{1}{2}$$

$$P(T) = \frac{1}{2}$$

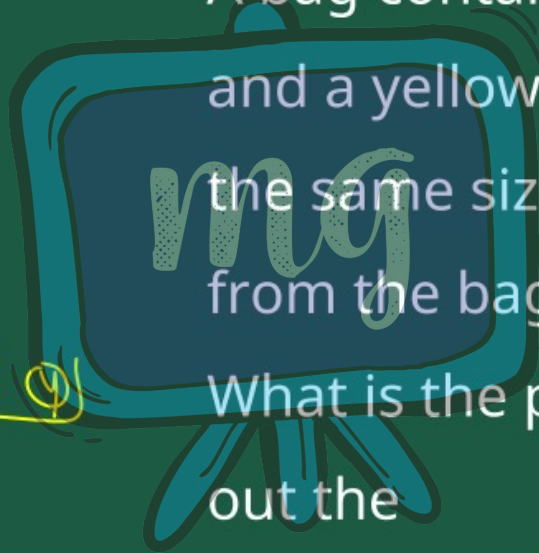
## Example : 2

A bag contains a red ball, a blue ball and a yellow ball, all the balls being of the same size. Kritika takes out a ball from the bag without looking into it.

What is the probability that she takes out the

(i) yellow ball?  $P(Y) = \frac{1}{3} = \frac{\text{Fav o/c}}{\text{Total o/c}}$

R  
B  
Y



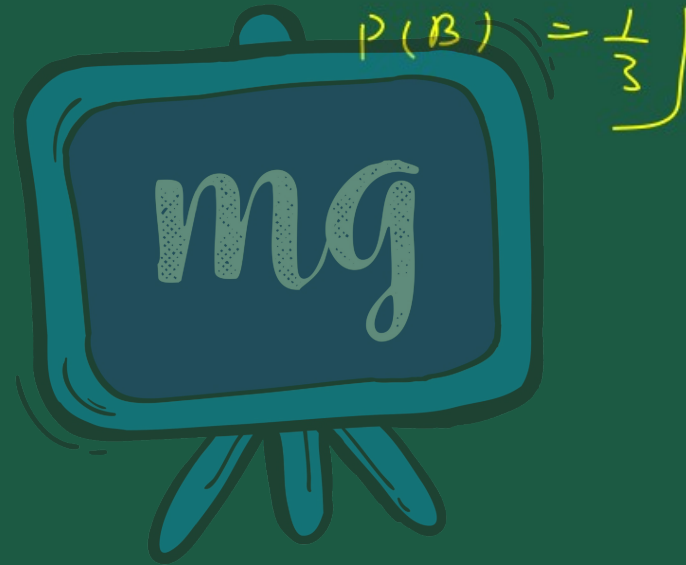
(ii) red ball?

$$P(R) = \frac{\text{Fav O/C}}{\text{Total O/C}} =$$

mg

$\frac{1}{3}$

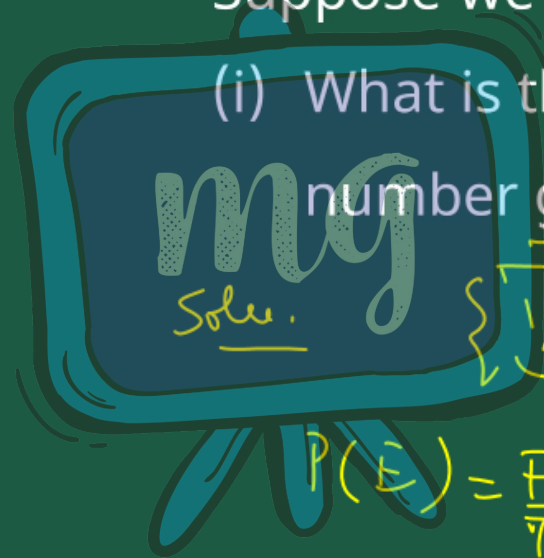
(iii) blue ball?



## Example : 3

Suppose we throw a die once.

(i) What is the probability of getting a number greater than 4?



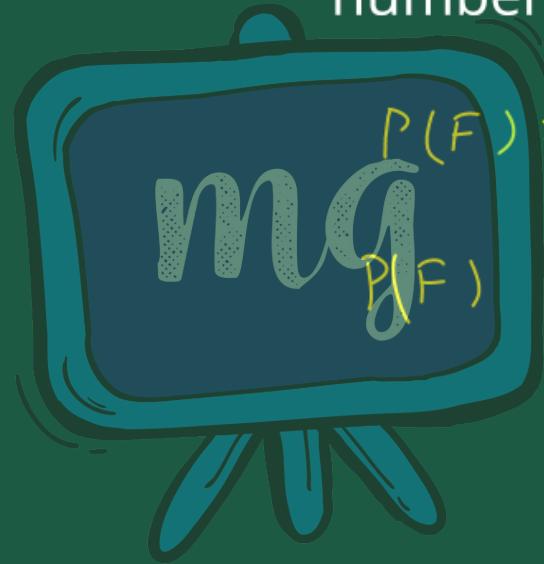
$\{1, 2, 3, 4, 5, 6\}$

$$P(\bar{E}) = \frac{Fav}{Total}$$

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

$E =$  a no. greater than 4

(ii) What is the probability of getting a number less than or equal to 4?



$$P(F) = \frac{4}{6}$$

$$P(F) = \frac{2}{3}$$

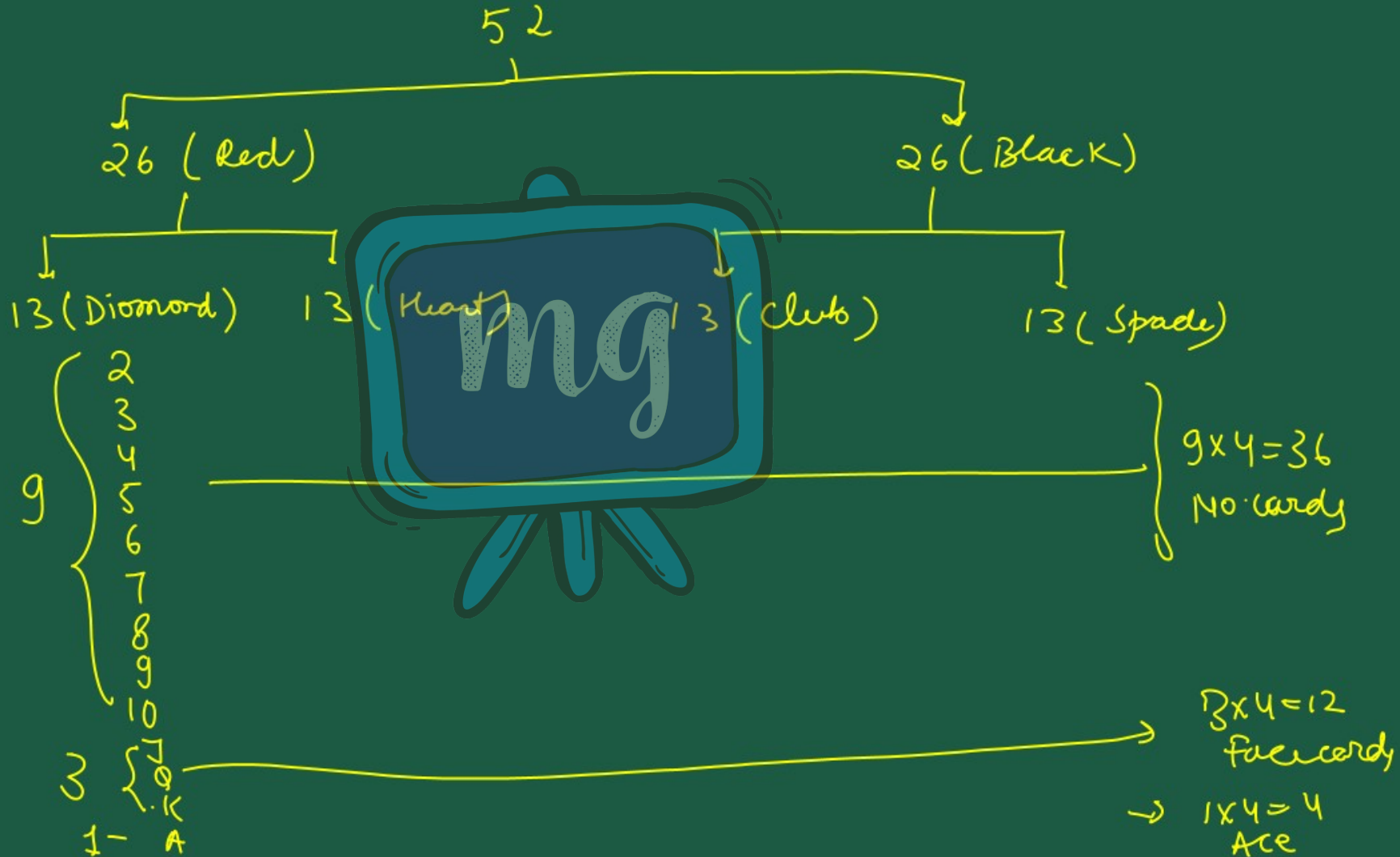
F = no less or equal to 4.

## Example : 4

One card is drawn from a well-shuffled deck of 52 cards. Calculate the probability that the card will

(i) be an ace.


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



(ii) not be an ace.

$$P(A) + P(\bar{A}) = 1$$
$$\frac{1}{13} + P(\bar{A}) = 1$$
$$P(\bar{A}) = 1 - \frac{1}{13} = \frac{12}{13}$$

## Example : 5

Two players, Sangeeta and Reshma, play a tennis match. It is known that the probability of Sangeeta winning the match is 0.62. What is the probability of Reshma winning the match?

Soln:  $P(S) = 0.62$

$$= P(\bar{S}) = 1 - P(S)$$
$$= 1 - 0.62$$
$$P(\bar{S}) = 0.38$$

$P(R) = P(\bar{S})$

$$P(R) = 0.38$$

## Example : 6

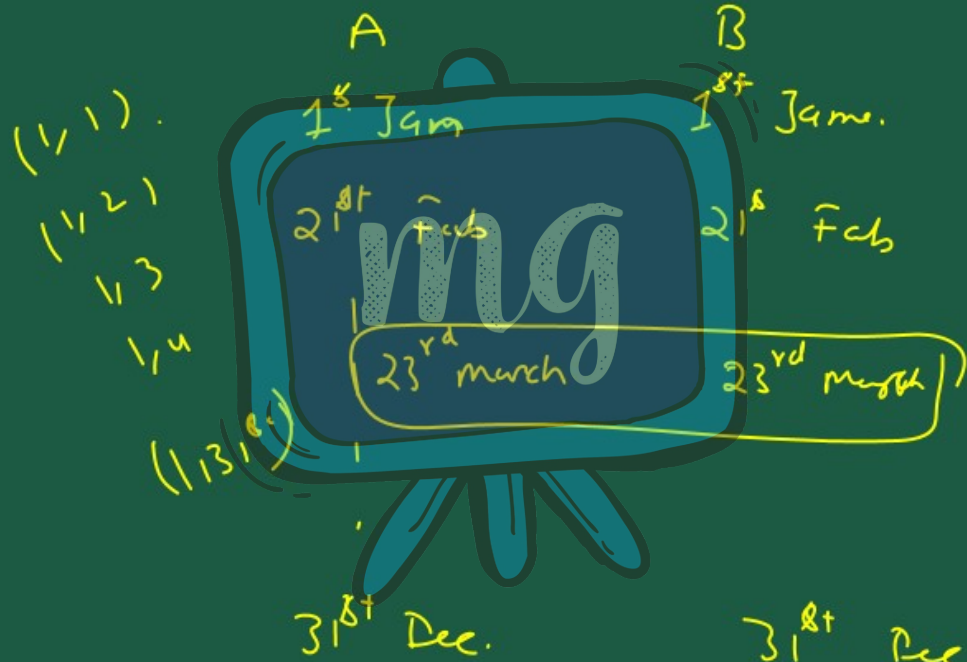
Savita and Hamida are friends. What is the probability that both will have

(i) different birthdays?

= The probability to have diff. Birthday.

$$P(D) = \frac{364 \times 365}{(365)^2} = \frac{364}{365}$$

(1) Same Birthday

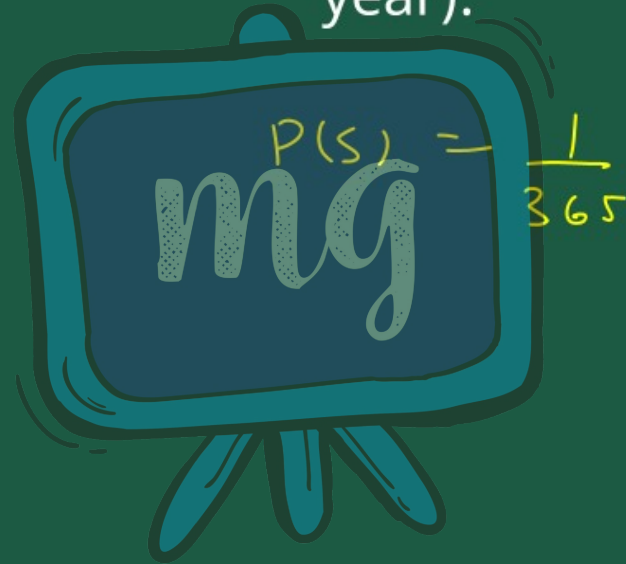


$$\frac{365}{(365)^2} = \frac{1}{365}$$

$$\frac{1}{(365)^2}$$

$$\frac{364 \times 365}{(365)^2} = \frac{364}{365}$$

(ii) the same birthday? (ignoring a leap year).


$$P(S) = \frac{1}{365}$$

## Example : 7

$$G = 25$$
$$B = 15$$

There are 40 students in Class X of a school of whom 25 are girls and 15 are boys. The class teacher has to select one student as a class representative.

She writes the name of each student on a separate card, the cards being identical.

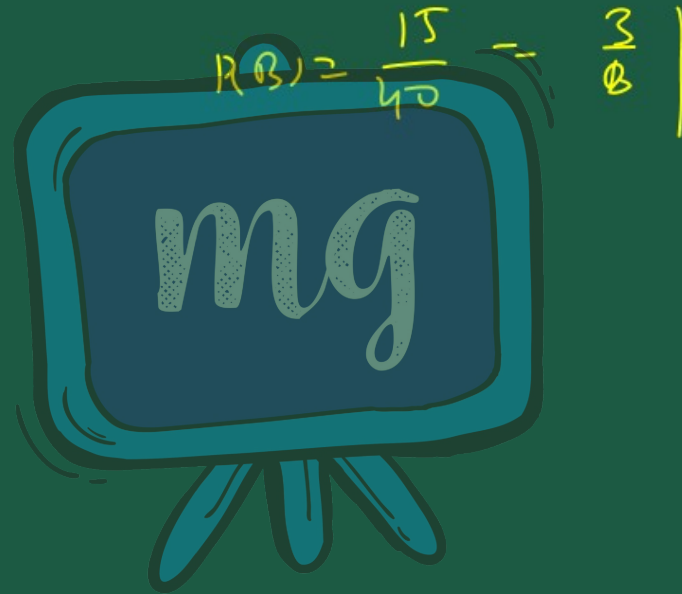
Then she puts cards in a bag and stirs them thoroughly. She then draws one card from the bag. What is the probability that the name written on the card is the name of

(i) a girl?

$$\text{Total Student} = 25 + 15 = 40$$

$$P(G) = \frac{25}{40} = \frac{5}{8}$$

(ii) a boy?



## Example : 8

$$B = 3$$

$$W = 2$$

$$R = 4$$

A box contains 3 blue, 2 white, and 4 red marbles. If a marble is drawn at random from the box, what is the probability that it will be

(i) white?

Total no of Marbles :- 9

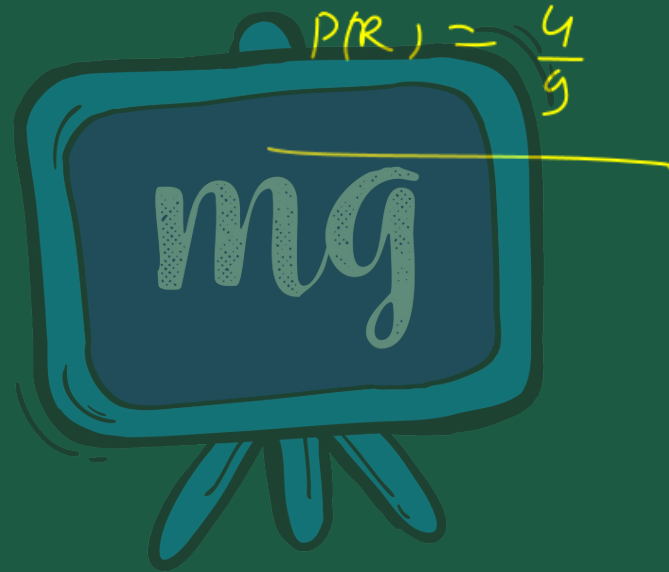
$$P(W) = \frac{2}{9}$$

(ii) blue?

$$P(B) = \frac{3}{9} = \frac{1}{3}$$



(iii) red?



## Example : 9

Harpreet tosses two different coins simultaneously (say, one is of ₹1 and other of 2). What is the probability that she gets at least one head?

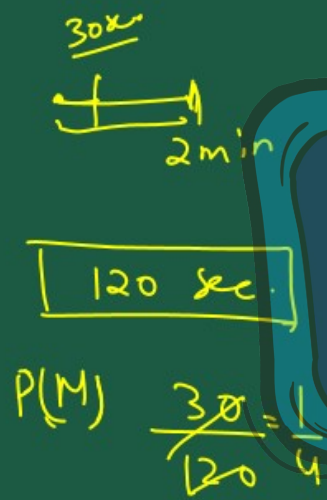
Solu:

2	1
H	H
H	T
T	H
T	T

$$P(H) = \frac{3}{4}$$

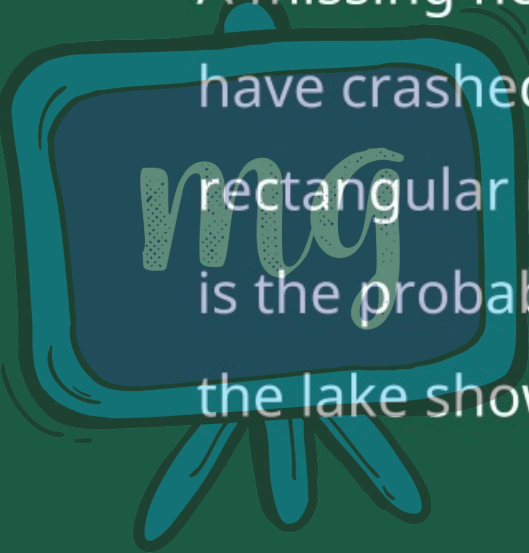
## Example : 10

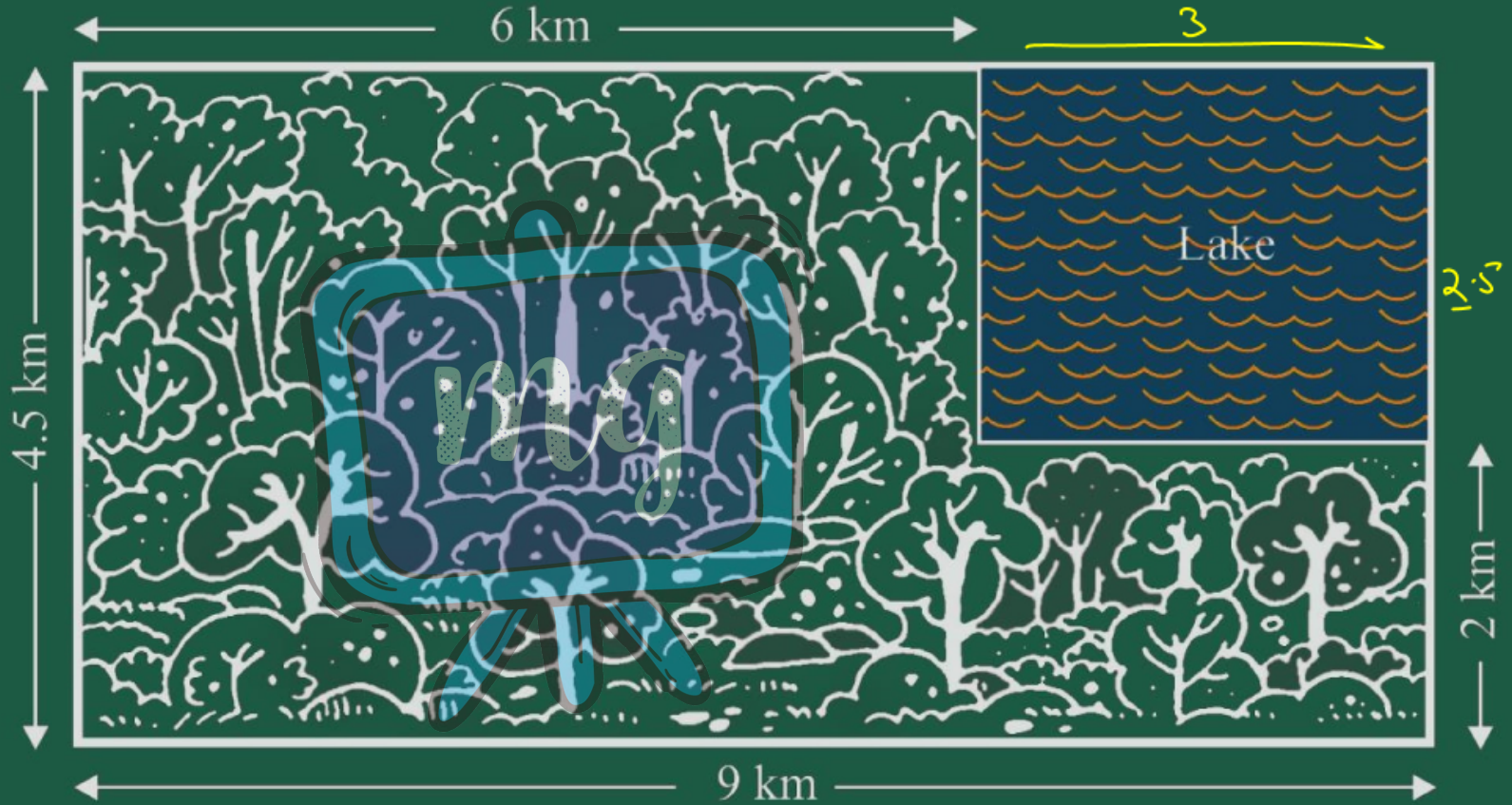
In a musical chair game, the person playing the music has been advised to stop playing the music at any time within 2 minutes after she starts playing. What is the probability that the music will stop within the first half-minute after starting?



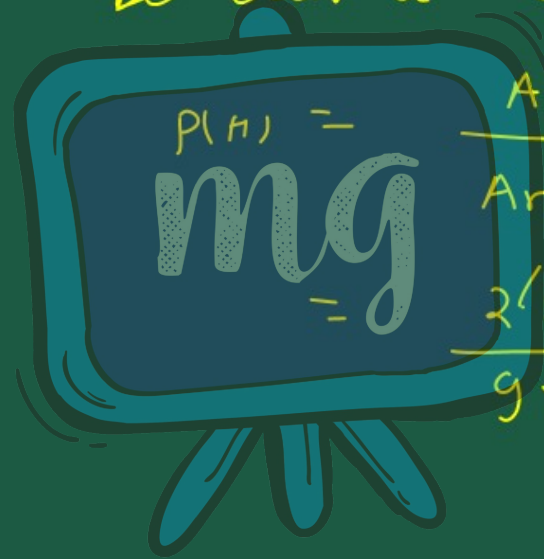
## Example : 11

A missing helicopter is reported to have crashed somewhere in the rectangular region shown in Fig. What is the probability that it crashed inside the lake shown in the figure?





Probability of the hull of the boat to be crashed inside the lake.



$$P(H) =$$

mg

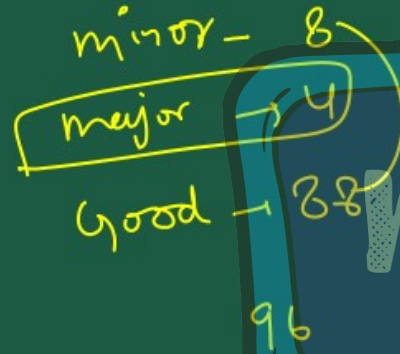
$$=$$

Area of the lake

Area of the Rectangle

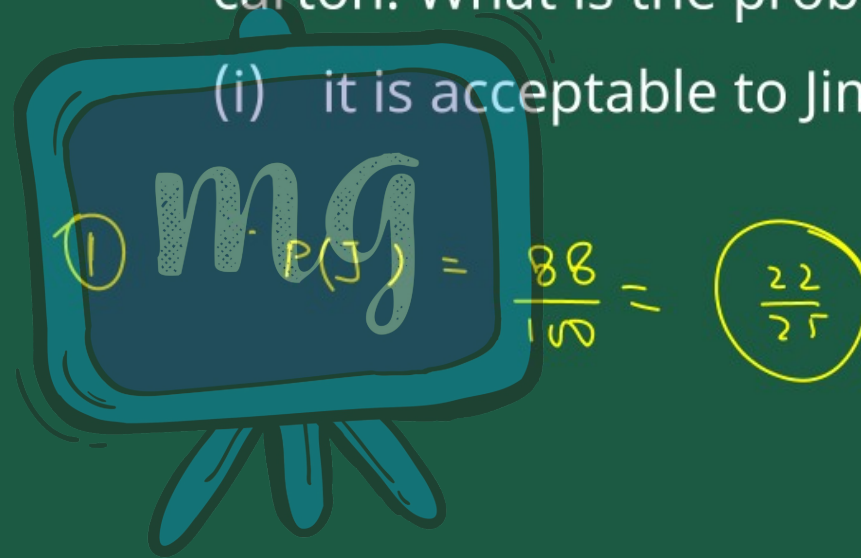
$$\frac{25 \times 3}{9 \times 45} = \frac{5}{27} = \frac{5}{27}$$

## Example : 12

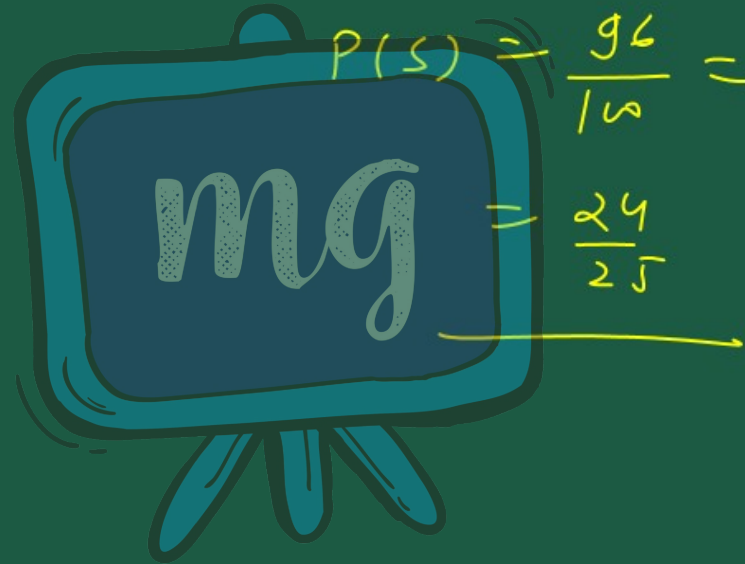


A carton consists of 100 shirts of which 88 are good, 8 have minor defects and 4 have major defects. Jimmy, a trader, will only accept the shirts which are good, but Sujatha, another trader, will only reject the shirts which have major defects.

One shirt is drawn at random from the carton. What is the probability that  
(i) it is acceptable to Jimmy?


$$\textcircled{1} \quad P(J) = \frac{88}{150} = \textcircled{\frac{22}{25}}$$

(ii) it is acceptable to Sujatha?


$$P(S) = \frac{96}{100} =$$
$$= \frac{24}{25}$$

## Example : 13


Two dice, one blue and one grey, are thrown at the same time. Write down all the possible outcomes. What is the probability that the sum of the two numbers appearing on the top of the dice is

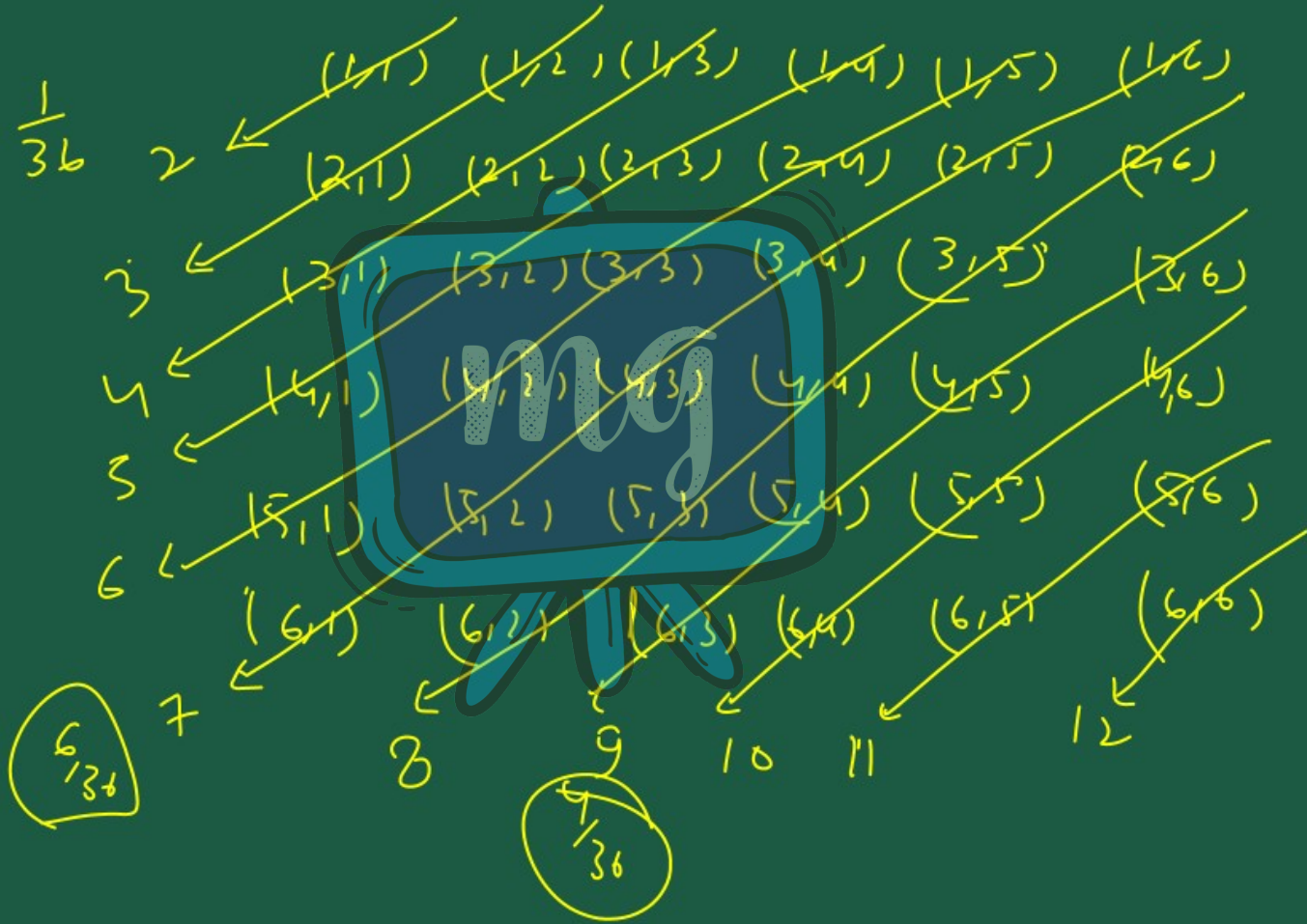
(i) 8?

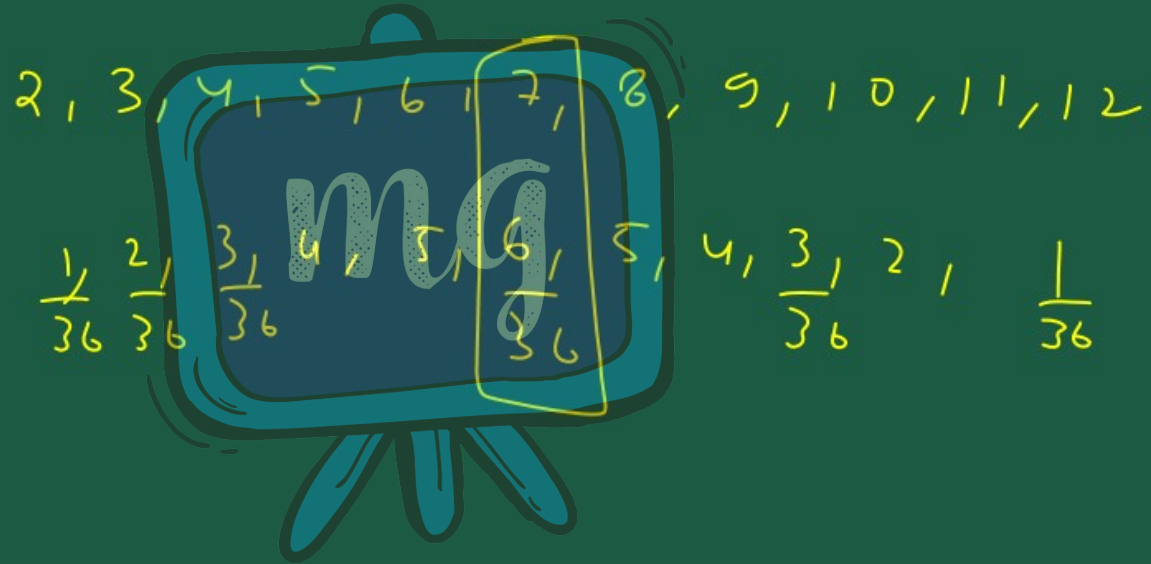
$$P(8) = \frac{5}{36}$$

$E =$  To get a sum of (8)

(2,6), (6,2), (3,5), (5,3), (4,4)


$$P(E) = \frac{\text{Fav o/c}}{\text{Tot o/c}} = \frac{5}{36}$$

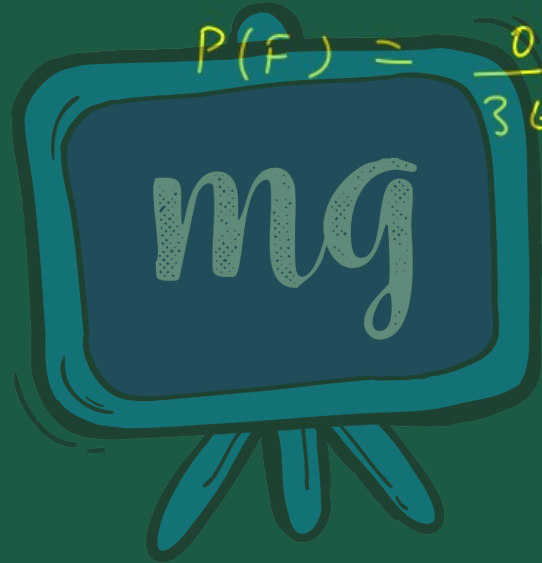




(ii) 13 ?

$F = \text{Sum of } 13.$

$$P(F) = \frac{0}{36} = 0$$



(iii) <sup>(4) -</sup> less than or equal to 12?

$$P(4) = \frac{86}{36} = 1$$