



UDAAN



2026

Probability

MATHS

LECTURE-2

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Topics

to be covered



Important Questions

Badiyaaa Questions

$$0 \leq P(E) \leq 1$$

(i) 0.5 (F)

(ii) 0.00001 (T)

(iii) $1/2$ (T)

(iv) 1 (T)

(v) 1.00001 (F)

(vi) $99\% = \frac{99}{100} = 0.99$ (T)

R.E. → Rolling a die.
 $S = \{1, 2, 3, 4, 5, 6\}$

↑
 All possible outcomes.

Elementary event.

→ $E_1 = \text{even prime no.} = \{2\}$

Compound event.

→ $E_2 = \text{multiple of 2.}$
 $\{2, 4, 6\}$

★ The sum of probabilities of all elementary events in a Random Experiment is always 1.

#Q. A game consists of tossing a one rupee coin 3 times and noting its outcome each time. Hanif wins if all the tosses give the same result i.e. three heads or three tails, and loses otherwise. Calculate the probability that Hanif will lose the game.

All possible outcomes = {HHH, HHT, HTH, THH, TTH, THT, HTT, TTT}

CBSE 2016, 17, 19

total possible outcomes = 8

not E' $P(E) = \frac{2}{8} = \frac{1}{4}$

let $E = \text{Hanif wins}$

Outcomes favourable to $E = \{HHH, TTT\}$

$$P(E) = \frac{\text{no. of favourable outcomes}}{\text{Total no. of outcomes}}$$

$E' = \text{Hanif loses (Hanif does not win)}$

$$P(E) + P(E') = 1$$

$$\frac{1}{4} + P(E') = 1$$

$$P(E') = 1 - \frac{1}{4} = \frac{3}{4}$$

#Q. One card is drawn from a pack of 52 cards, each of the 52 cards being equally likely to be drawn. Find the probability that the card drawn is:

(i) an ace

$$\frac{4}{52} = \frac{1}{13}$$

(iii) either red or king

$$\frac{28}{52} = \frac{7}{13}$$

(v) a face card

$$\frac{12}{52} = \frac{3}{13}$$

(vii) '2' of spades

$$\frac{1}{52}$$

(ii) red

$$\frac{26}{52} = \frac{1}{2}$$

(iv) red and a king

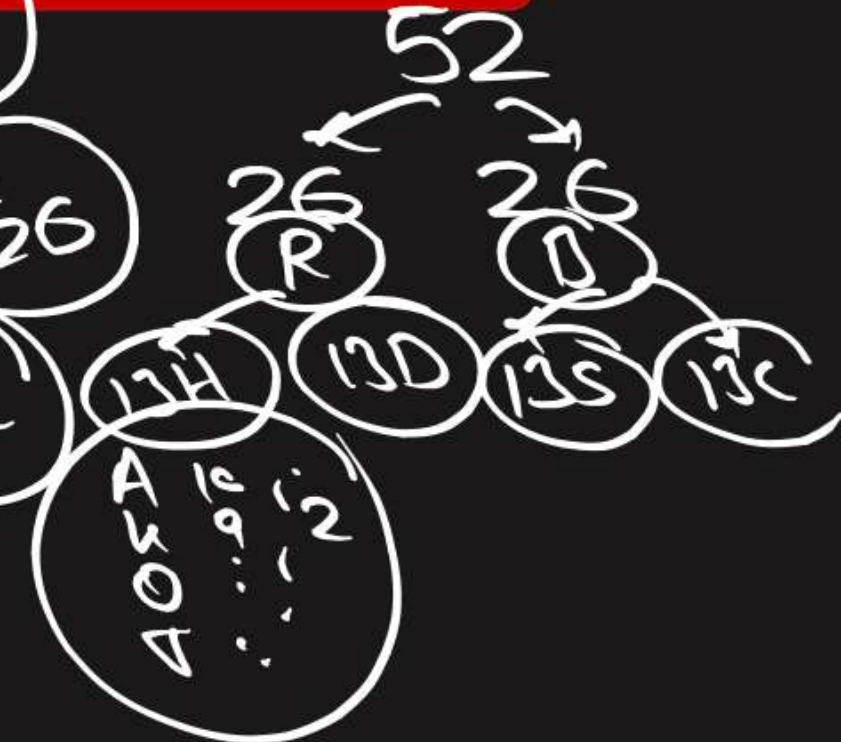
$$\frac{2}{52} = \frac{1}{26}$$

(vi) a red face card

$$\frac{6}{52}$$

(viii) '10' of a black suit

$$\frac{2}{52} = \frac{1}{26}$$



#Q. Five cards - ten, jack, queen, king, and an ace of diamonds are shuffled face downwards. One card is picked at random.

(i) What is the probability that the card is a queen?

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

CBSE 2014

(ii) If a king is drawn first and put aside, what is the probability that the second card picked up is the (i) ace? (ii) king?

$$\frac{1}{4} \quad \frac{0}{4} = 0$$

#Q. From a deck of 52 playing cards, Jack and King of red colour and Queen and Aces of black colour are removed. The remaining cards are mixed and a card is drawn at random. Find the probability that the drawn card is:

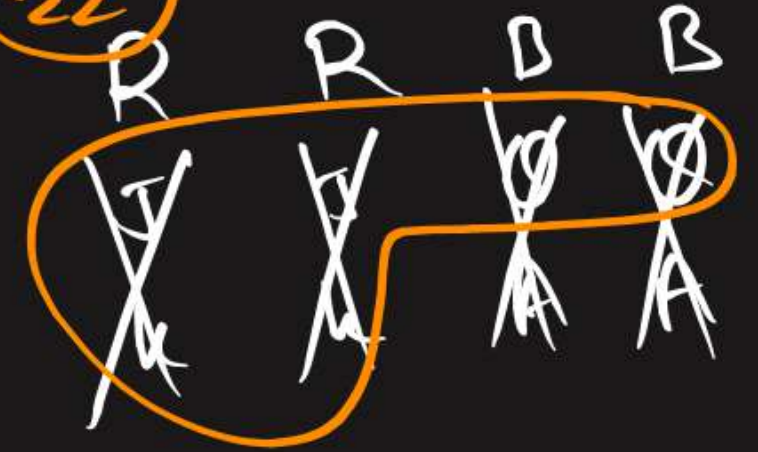
(i) A black Queen $0/44 = 0$

(ii) A card of red colour $\frac{22}{44} = \frac{1}{2}$

(iii) A Jack of black colour $\frac{2}{44} = \frac{1}{22}$

(iv) A face card. $\frac{6}{44} = \frac{3}{22}$

Remaining cards = total outcome = $52 - 8 = 44$



All possible outcomes

One die two times /
Two dice together.

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

#Q. Two dice are thrown simultaneously. Find the probability of getting:

CBSE 2008, 13, 18, 20

(i) an even number as the sum

$$\frac{18}{36} = \frac{1}{2}$$

(ii) the sum as a prime number

$$\frac{15}{36} = \frac{5}{12}$$

(iii) a total of at least 10

$$\frac{6}{36} = \frac{1}{6}$$

(iv) a doublet of even number

$$\frac{3}{36} = \frac{1}{12}$$

(v) a multiple of 2 on one dice and a multiple of 3 on the other.

$$\frac{6}{36} = \frac{1}{6}$$

(vi) same number on both dice i.e., a doublet.

$$\frac{6}{36} = \frac{1}{6}$$

(vii) a multiple of 3 as the sum.

Gp

doublet = don't
dice
main
same
no.

kam 800
kam 1000

#Q. Peter throws two different dice together and finds the product of the two numbers obtained. Rina throws a die and squares the number obtained. Who has the better chance to get the number 25?

CISSE 2017

Peter

2 dice

26

Product

$\frac{1}{36}$

Rina

a die

6

Square

$\frac{1}{6}$

$$\frac{1}{6} > \frac{1}{36}$$

\therefore Rina has a better chance.

#Q. 17 cards numbered 1, 2, 3, ..., 17 are put in a box and mixed thoroughly. One person draws a card from the box. Find the probability that the number on the card is:

(i) odd

$$\frac{9}{17}$$

(iii) divisible by 3

$$\frac{5}{17}$$

(ii) a prime

$$\frac{7}{17}$$

(iv) divisible by 3 and 2 both

$$\frac{2}{17}$$

#Q. A child has a block in the shape of a cube with one letter written on each face as shown below:

The cube is thrown once. What is the probability of getting (i) A? (ii) D?

A	B	C	D	E	A
---	---	---	---	---	---

$$\frac{2}{6}$$

$$\frac{1}{6}$$

#Q. A bag contains 5 red balls, 8 white balls, 4 green balls and 7 black balls. If one ball is drawn at random, find the probability that it is:

- (i) black $\rightarrow \frac{7}{24}$
 (ii) red $\rightarrow \frac{5}{24}$
 (iii) not green

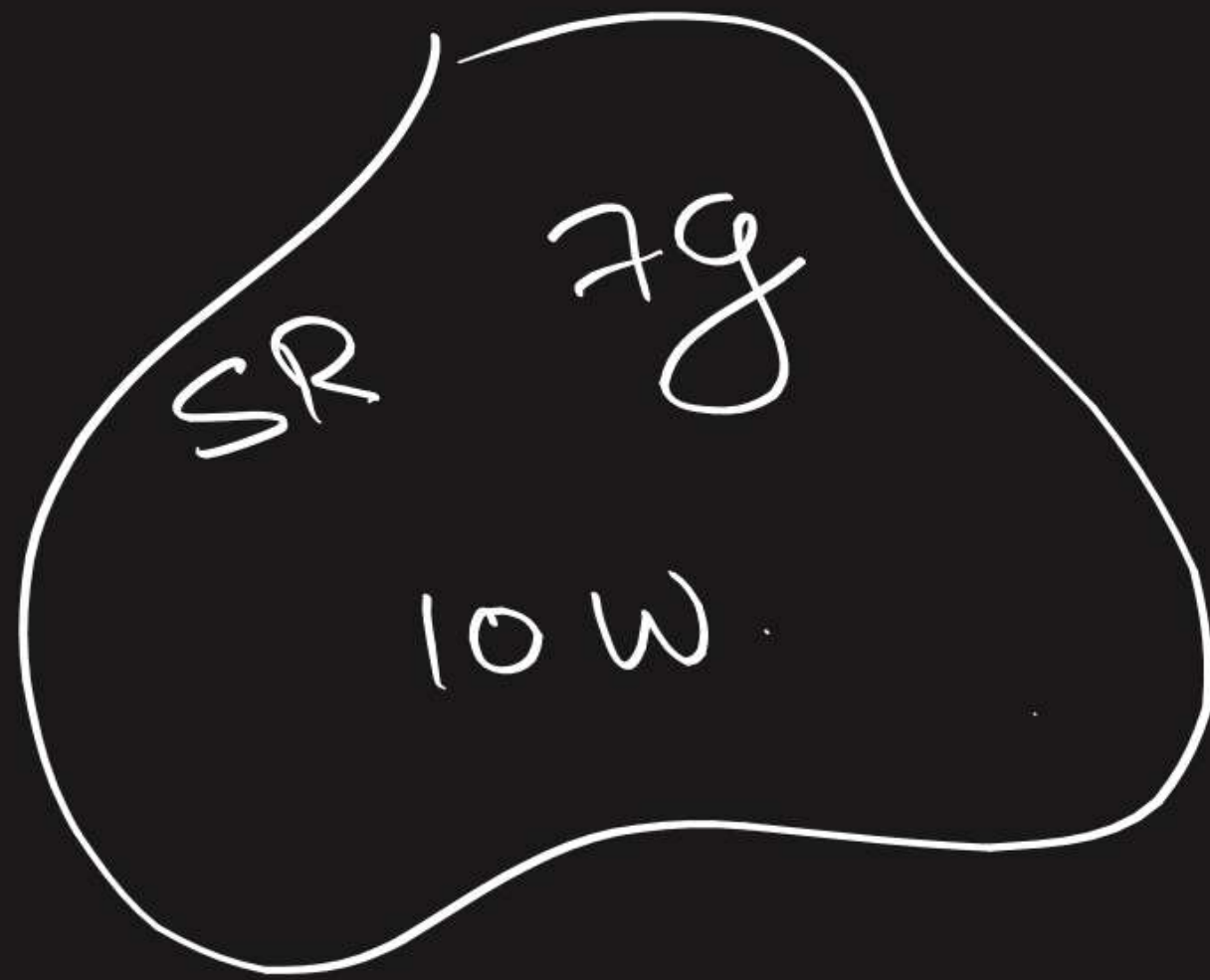
H.I
 $\frac{20}{24} = \frac{5}{6}$

$$P(g) + P(g') = 1$$

$$\frac{4}{24} + P(g') = 1$$

$$P(g') = 1 - \frac{4}{24}$$

$$= \frac{20}{24} = \frac{5}{6}$$



$$P(R) = \frac{S}{22}$$

$$P(g) = \frac{7}{22}$$

$$P(W) = \frac{10}{22}$$

$$P(R) + P(g) + P(W) = 1$$

Ex:

$$P(R) = 1 - P(g) - P(W)$$

#Q. A jar contains 24 marbles some are green are others are blue. If a marble is drawn at random from the jar, the probability that it is green is $\frac{2}{3}$. Find the number of blue marbles in the jar.

$$\text{Total marbles} = 24$$

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

$$P(B) = ?$$

$$P(g) + P(B) = 1$$

$$P(B) = 1 - \frac{2}{3}$$

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

$$\frac{\text{no. of blue marbles}}{\text{Total no. of marbles}} = \frac{1}{3}$$

$$\frac{x}{24} = \frac{1}{3}$$

$$x = 8$$

$$\therefore \text{no. of blue marbles} = 8$$

#Q. A jar contains 54 marbles each of which is blue, green or white. The probability of selecting a blue marble at random from the jar is $\frac{1}{3}$, and the probability of selecting a green marble at random is $\frac{4}{9}$. How many white marbles does the jar contain?

Total marbles = 54.

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

$$P(G) = \frac{4}{9}$$

$$P(B) + P(G) + P(W) = 1$$

$$P(W) = 1 - \frac{1}{3} - \frac{4}{9}$$

$$= \frac{9 - 3 - 4}{9} = \frac{2}{9}$$

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

$$\frac{\text{no. of white marbles}}{\text{Total no. of marbles}} = \frac{2}{9}$$

$$\frac{x}{54} = \frac{2}{9}$$

$$x = 12 //$$

#Q. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball, find the number of blue balls in the bag.

CBSE 2007

$$\text{no. of 'R' balls} = 5$$

$$\text{no. of 'B' balls} = x$$

$$\text{Total balls} = 5 + x$$

$$P(B) = 2 \cdot P(R)$$

$$\frac{x}{5+x} = 2 \cdot \frac{5}{5+x}$$

$$x = 10$$

#Q. A bag contains 12 balls out of which x are white.

(i) If one ball is drawn at random, what is the probability that it will be a

white ball?

$$\frac{x}{12}$$

~~(ii)~~ If 6 more white balls are put in the bag, the probability of drawing a

white ball will be double than that in (i). Find x .

(ii) Total balls = $12 + 6 = 18$

no. of white balls = $x + 6$

P of white ball in (ii) = $2 \times$ P of white ball in (i)

$$\frac{x+6}{18} = 2 \times \frac{x}{12}$$

$$x+6 = \frac{18 \cdot x}{6}$$

$$x+6 = 3x$$

$$6 = 2x$$

$$x = 3 \text{ Ans.}$$

#Q. It is known that a box of 600 electric bulbs contains 12 defective bulbs. One bulb is taken out at random from this box. What is the probability that it is a non-defective bulb?

A 0.53

☒ B 0.98

C 0.26

D NOTA

Total bulbs = 600

defective bulbs = 12

non-defective bulbs = $600 - 12 = 588$

$P(\text{non-defective bulb}) = \frac{\text{no. of non-defective bulb}}{\text{total no. of bulbs}}$

$$= \frac{588}{600} = \frac{98}{100} = 0.98$$

#Q. The probability of getting a bad apple in a box of 400 apples is 0.035. The total number of bad apples is

$$P(\text{bad apple}) = 0.035$$

$$\frac{\text{no. of bad apples}}{\text{total no. of apples}} = \frac{35}{1000}$$

$$\frac{x}{400} = \frac{35}{1000}$$

$$x = \frac{35 \times 4}{10}$$

$$x = \frac{140}{10} = 14$$

A 7

☒ B 14

C 21

D 28

#Q. A girl calculates that the probability of her winning the first prize in a lottery is 0.06. If 8000 tickets are sold, then how many tickets has she bought?

CBSE 2023

$$P(w) = 0.06$$

$$\frac{\text{no. of tickets bought}}{\text{Total no. of tickets}} = \frac{6}{100}$$

$$\frac{x}{8000} = \frac{6}{100}$$

$$x = 480 //$$

A 420

☒ B 480

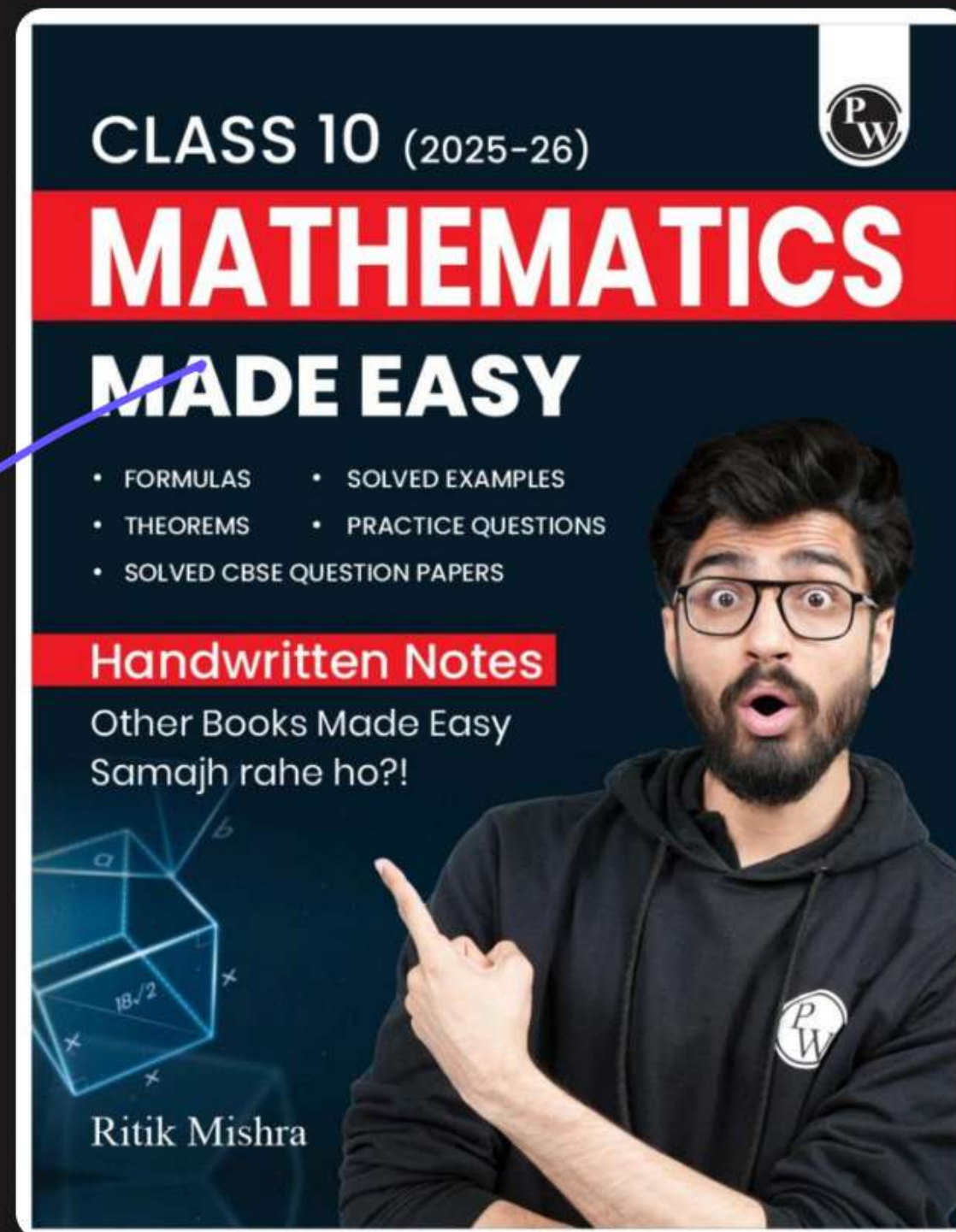
C 840

D 48

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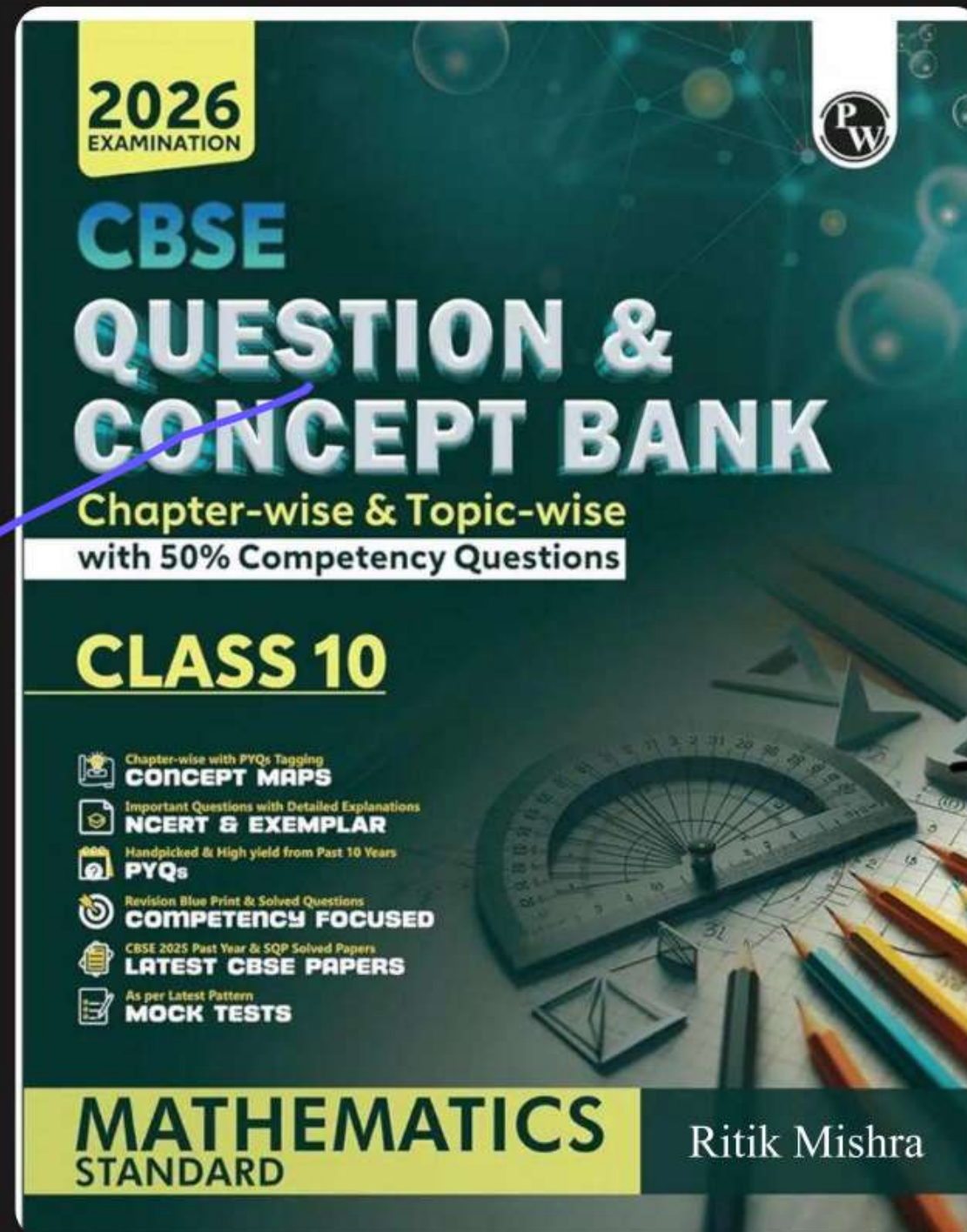
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201. 





WORK HARD

DREAM BIG

NEVER GIVE UP





RITIK SIR

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Thank You Babuaas ❤️👥



**Work Hard
Dream Big
Never Give Up**