UDAAN

2026

Pair of Linear Equation in Two Variables

MATHS LECTURE-5

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Topics *to be covered*

A Word Problems Part-1

#Q. 4 chairs and 3 tables cost ₹2100 and 5 chairs and 2 tables cost ₹1750. Find the cost of a chair and a table separately.

one

Let the cost of one chair = x RS

Let the " " " table = y RS

1 C = x RS
2 C = 2x RS
.....
11 C = 11x RS

1 C = 500 RS
2 C = (2×500) RS
3 C = (3×500) RS
.....
11 C = (11×500) RS

According to the question;

$4x + 3y = 2100$ ①

$5x + 2y = 1750$ ②

$x = 150$ RS

$y = 500$ RS

Ans: ∴ cost of a chair = 150 RS
and " " " table = 500 RS

#Q. 37 pens and 53 pencils together cost ₹320, while 53 pens and 37 pencils together cost ₹400. Find the cost of a pen and that of a pencil.

x RS

y RS

$37x + 53y = 320$

$53x + 37y = 400$

Ans: $x = 6.50$ RS

$y = 1.50$ RS

#Q. The cost of 4 pens and 4 pencil boxes is ₹ 100. Three times the cost of a pen is ₹ 15 more than the cost of a pencil box. Form the pair of linear equations for the above situation. Find the cost of a pen and a pencil box.

Let, cost of a pen = 'x' RS
cost of a pencil = 'y' RS.

$4x + 4y = 100$

Simplify →

$4(x+y) = 100$

$x + y = 25$ ①

three times the cost of a pen is ₹ 15 more than cost of a pencil box.

$3(x) = 15 + y$

$3x - y = 15$ ②

Ans: $x = ₹10$
$y = ₹15$

#Q. Reena has pens and pencils which together are 40 in number. If she has 5 more pencils and 5 less pens, then number of pencils would become 4 times the number of pens. Find the original number of pens and pencils.

Let, no. of pens = x

no. of pencil = y

Originally

$$x + y = 40 \quad \text{(1)}$$

Afterwards

no. of pens = $x - 5$

no. of pencils = $y + 5$

no of pencils would become 4 times the no. of pens.

$$y + 5 = 4(x - 5)$$

Simplified

$$y + 5 = 4x - 20$$

$$-4x + y = -25 \quad \text{(2)}$$

Ans: $x = 13$, $y = 27$

#Q. A and B each have certain number of oranges. A says to B, "if you give me 10 of your oranges, I will have twice the number of oranges left with you." B replies "if you give me 10 of your oranges, I will have the same number of oranges as left with you." Find the number of oranges with A and B separately.

let, no. of oranges A has = x

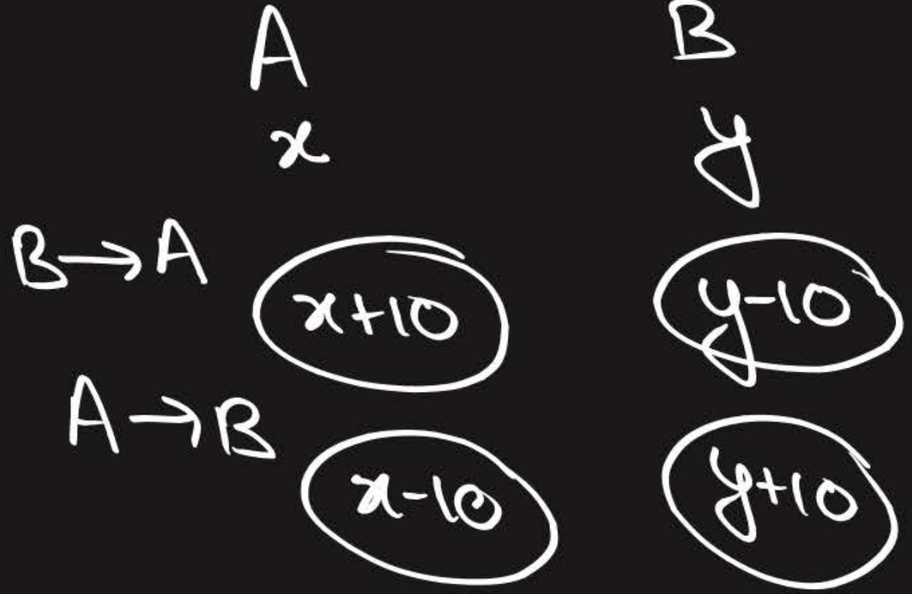
no. of " B has = y

$$x+10 = 2(y-10) \quad \text{①}$$

$$y+10 = x-10 \quad \text{②}$$

$x+10 = 2y-20$, $y+10 = x-10$

$x-2y = -30$, $-x+y = -20$



$x - 2y = -30$

$-x + y = -20$

$-y = -50$

$y = 50$

$x - 2(50) = -30$

$x - 100 = -30$

$x = -30 + 100$

$x = 70$

A → 70

B → 50

Check:

A

70

B → A

80

A → B

60

B

50

40

60

#Q. One says, "Give me a hundred, friend! I shall then become twice as rich as you." The other replies, "If you give me ten, I shall be six times as rich as you." Tell me what is the amount of their respective capital?

$x+100 = 2(y-100)$

$y+10 = 6(x-10)$

A	B
x	y
$x+100$	$y-100$
$x-10$	$y+10$

Ans: ₹40, ₹170

total money.

50 RS → 1 note = 50 RS

50 RS → 5 note = (50 × 5) RS

50 RS → 11 note = (50 × 11) RS

50 RS → 'x' notes = (50x) RS

50 RS

100 RS → 4 note = (100 × 4) RS

100 RS → 12 note = (100 × 12) RS

100 RS → y notes = (100y) RS.

#Q. Meena went to a bank to withdraw ₹2000. She asked the cashier to give her ₹50 and ₹100 notes only. Meena got 25 notes in all. Find how many notes ₹50 and ₹100 she received.

Let, no. of 50 Rs notes = x

no. of '100' Rs notes = y

$$x + y = 25 \quad (1)$$

$$50x + 100y = 2000 \quad (2)$$

Ans: 10, 15

1 Rs = 100 paisa

2 Rs = (2 × 100) paisa = 200 paisa

3 Rs = (3 × 100) paisa = 300 paisa

11.25 Rs = (11.25 × 100) paisa = 1125 paisa

#Q. A man has only 20paisa coins and 25 paisa coins in his purse (wallet). If he has 50 coins in all totaling ₹11.25, how many coins of each kind does he have?

Let, no. of coins of 20paisa = x

no. of coins of 25paisa = y

$x + y = 50$ ①

$20x + 25y = 1125$ ②

20 paisa → 1 coin → (20×1) paisa

20 paisa → 3 coins → (20×3) paisa

20 paisa → x coins → $20x$ paisa

Ans: 25, 25

Two digit no.

$87 = 8 \times 10 + 7 \times 1$

87 → tens place, ones' place / unit's place

digits reverse.

$92 = 9 \times 10 + 2 \times 1$

$\rightarrow 29 = 2 \times 10 + 9 \times 1$

$yx = 10y + x$ → Two digit no.

tens place, unit's place.

original no.

digits interchange → $xy = 10x + y$

digit

Unit's place $= x$

ten's place $= y$

Two digit no. $= 10y + x$

Reversed / Interchanged no. $= 10x + y$

#Q. In a two digit number, the unit's digit is twice the ten's digit. If 27 is added to the number, the digits interchange their places. Find the number.

$x = 2y$ — (1)

$10y + x + 27 = 10x + y$

$10y + x + 27 - 10x - y = 0$

$9y - 9x + 27 = 0$

$9(y - x + 3) = 0$

$y - x + 3 = 0$ — (2)

$y - 2y + 3 = 0$

$-y + 3 = 0$

$-y = -3$

$y = 3$

$x = 2y$

$x = 6$

$\therefore$ two digit no. $= 10y + x$

$= 36$

let,

unit's digit $= x$

ten's digit $= y$

two digit no. $= 10y + x$

Reversed no. $= 10x + y$

#Q. In a two digit number, the ten's digit is three times the unit's digit. When the number is decreased by 54, the digits are reversed. Find the number.

$y = 3x$

$10y + x - 54 = 10x + y$

Let,
unit's digit = x
ten's digit = y
two digit no. = $10y + x$
Reversed no. = $10x + y$

Ans: 93

#Q. The sum of the digits of a two digit number is 8 and the difference between the number and that formed by reversing the digits is 18. Find the number.

$x + y = 8$

$(10y + x) - (10x + y) = 18$

$u = x$

$t = y$

$T \cdot D \cdot N = 10y + x$

$R \cdot N = 10x + y$

Ans: 53

Ans: 64

#Q. The sum of a two digit number and the number formed by interchanging its digits is 110. If 10 is subtracted from the first number, the new number is 4 more than 5 times the sum of the digits in the first number. Find the first number.

CBSE 2002

$10y+x+10x+y=110$

$10y+x-10=4+5(x+y)$

$11y+11x=110$

$11(y+x)=110$

$y+x=\frac{110}{11}$

$y+x=10$ (1)

$10y+x-10=4+5x+5y$

$-4x+5y=14$ (2)

let,

$x=x$

$t=y$

T.D.N $=10y+x$

R.N $=10x+y$

#GPY

#Q. The sum of a two-digit number and the number obtained by reversing the order of its digits is 165. If the digits differ by 3, find the number.

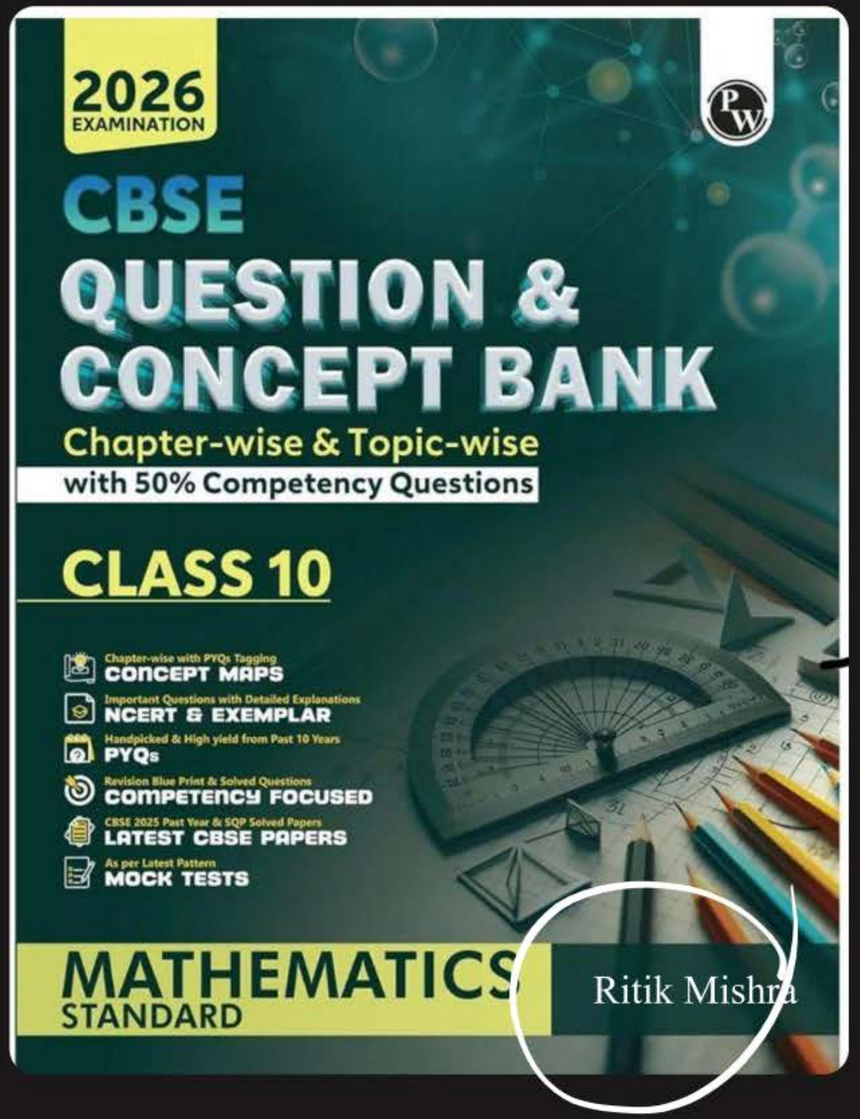
#OT

CBSE 2002

#QT #Grp

#Q. A two-digit number is 4 times the sum of its digits and twice the product of the digits. Find the number.

CBSE 2005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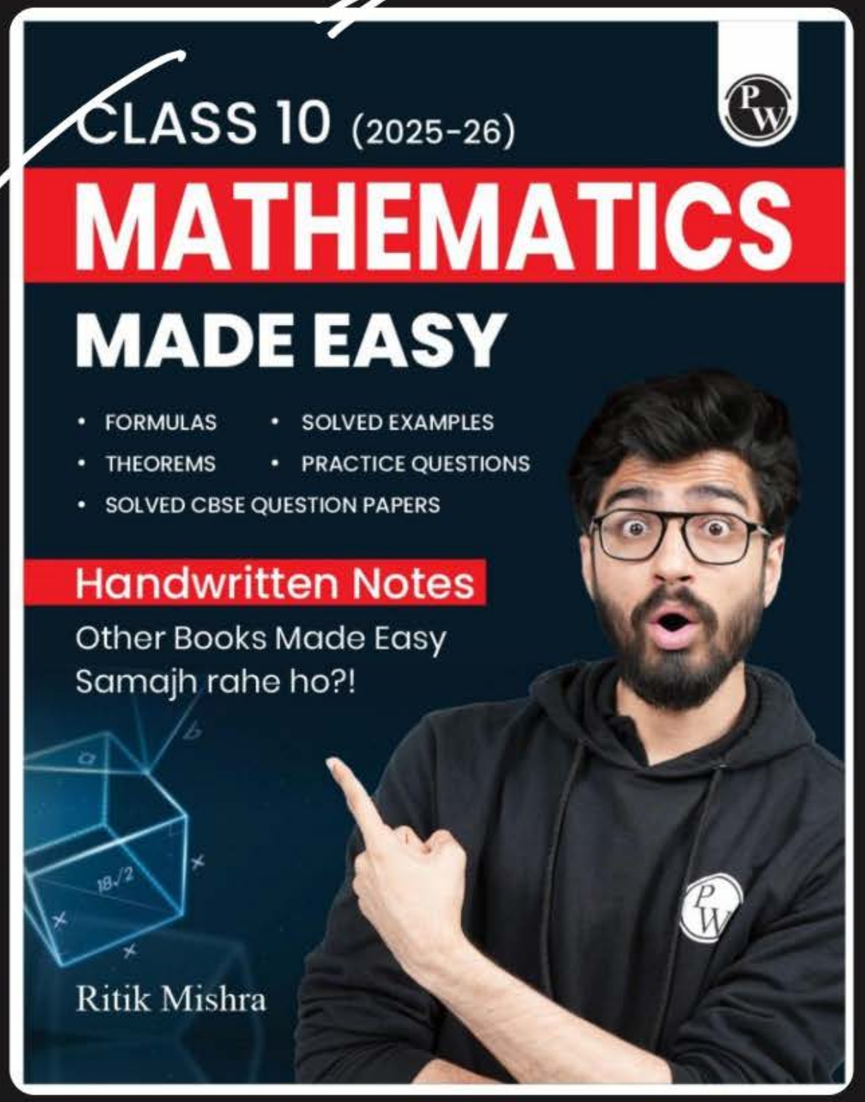
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