DAY-7

5-
6- Polynomials
7-

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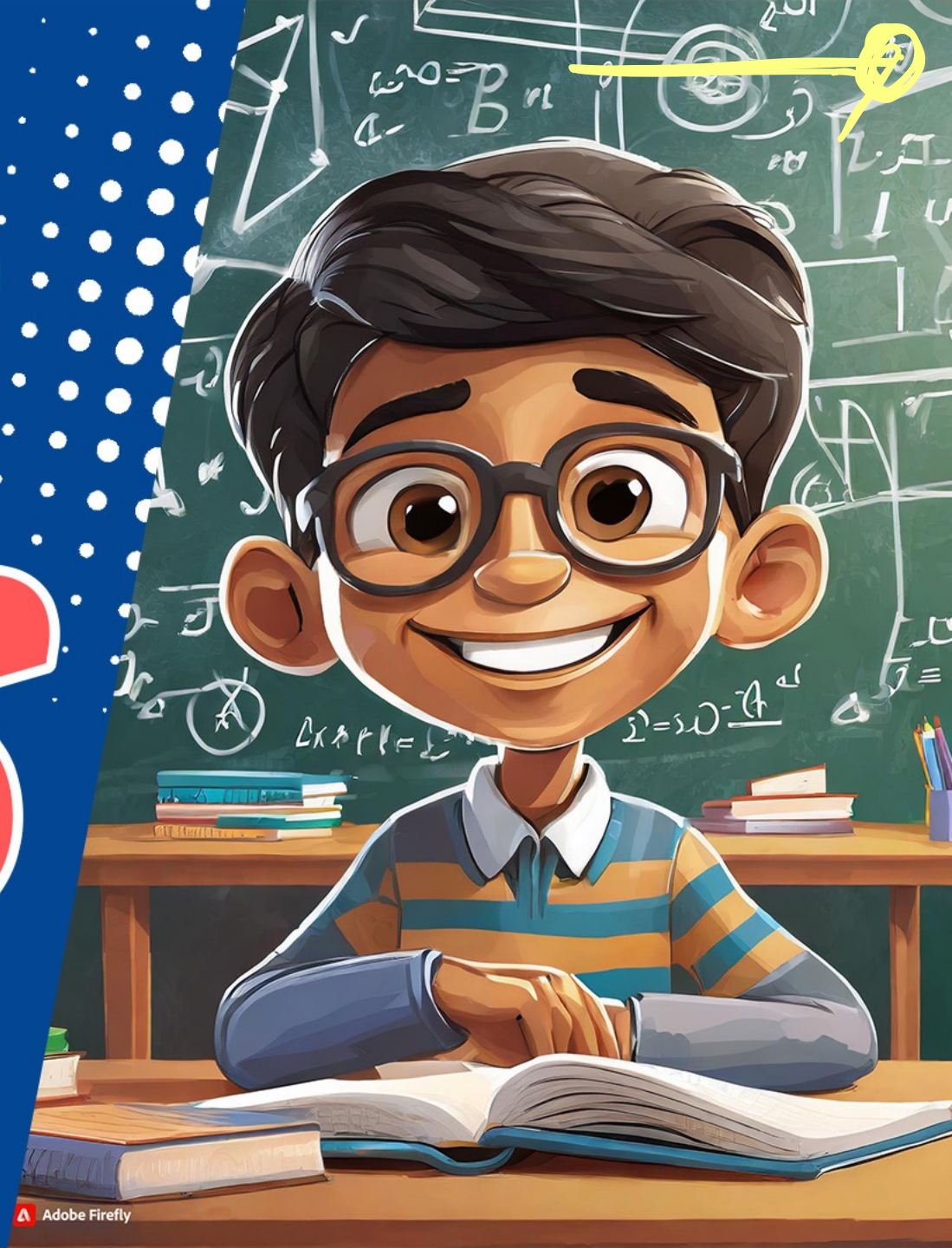
Basic MATHS

EQN. IN 2 VARIABLE



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L b

minus

L X b = 9 X 17 = (153)

1. The area of a rectangle gets reduced by 9 square units, if its length is reduced by 5 units and breadth is increased by 3 units. If we increase the length by 3 units and the breadth by 2 units, the area increases by 67 square units. The original area of the rectangle is?

$\Rightarrow$ Area of rectangle = L X b = Lb

$3L - 5b = 6$ — (1) ×2

$2L + 3b = 61$ — (2) ×3

$6L - 10b = 12$

$-\ 6L + 9b = 183$

$12 - 183$

$+19b = +171$

$b = \frac{171}{19}$ (9)

$3L - 5(9) = 6$

$3L - 45 = 6$

$3L = 6 + 45 = \frac{51}{3}$ (17)

$L = 17$

$'xy' \longrightarrow 10x+y \xrightarrow{\text{I.}} \underline{10y+x}$

2. The sum of the digits of a two-digit number is 12. The number obtained by interchanging its digits exceeds the given number by 18. Then, the number is ?

$x+y=12$ ——— (1)

$xy = \boxed{57}$

$10y+x = 10x+y+18$

$-10x+x \quad +10y-y = 18$

$-9x+9y = 18$

$-x+y = 2$ ——— (2)

$x+y=12$

$-x+y=2$

$2y=14$

$\boxed{y=7}$

$x+7=12$

$x=12-7$

$\boxed{x=5}$

Fraction = $\frac{x}{y}$ ← Num. ← Den.

3. The sum of numerator and denominator of a fraction is 3 less than twice the denominator. If each of the numerator and denominator is decreased by 1, the fraction becomes ½. Find the fraction.

$x + y = 2y - 3 \Rightarrow x + y - 2y = -3$

$x - y = -3$ — (1)

$\frac{x-1}{y-1} = \frac{1}{2} \Rightarrow 2(x-1) = 1(y-1) \Rightarrow 2x - 2 = y - 1$

$2x - y = -1 + 2$

$2x - y = 1$ — (2)

$x - y = -3$

$-\ 2x - y = -1$

$-x = -4$

$x = 4$

$4 - y = -3$

$-y = -3 - 4$

$y = 7$

4
7

$xy \longrightarrow 10x+y \longrightarrow 10y+x$

4. A number consists of two digits. When the number is divided by the sum of its digits, the quotient is 7. If 27 is subtracted from the number, the digits interchange their places. Find the number.

$$\frac{10x+y}{x+y} = 7 \Rightarrow 10x+y = 7x+7y$$

$$10x-7x+y-7y=0$$

$$3x-6y=0 \Rightarrow x-2y=0 \quad (1)$$

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

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

$$9x-9y = 27 \Rightarrow x-y=3 \quad (2)$$

$$\begin{array}{r} x-2y=0 \\ -\quad x-y=3 \\ \hline -y=-3 \end{array}$$

$$y=3$$

$$x-3=3$$

$$x=3+3$$

$$x=6$$

63

AGE's.

Sachin = x Son = y PRESENT AGES

5. Five years from present, the age of Sachin will be three times that of his son. Five years ago, Sachin's age was seven times that of his son.

x years ⇒ After 5 ⇒ $x+5$ yrs

y years ⇒ After 5 ⇒ $y+5$ yrs.

$y = 10$

$x - 3(10) = 10$

$x - 30 = 10$

$x = 10 + 30$

$\boxed{x = 40}$

$(x+5) = 3(y+5) \Rightarrow x+5 = 3y+15$

$x - 3y = 15 - 5$

$x - 3y = 10$ — (1)

$(x-5) = 7(y-5)$

$x - 5 = 7y - 35 = x - 7y = -35 + 5$

$x - 7y = -30$ — (2)

$x - 3y = 10$

$-x + 7y = +30$

$4y = 40$

$y = \frac{40}{4} = 10$

40 yrs
10 yrs

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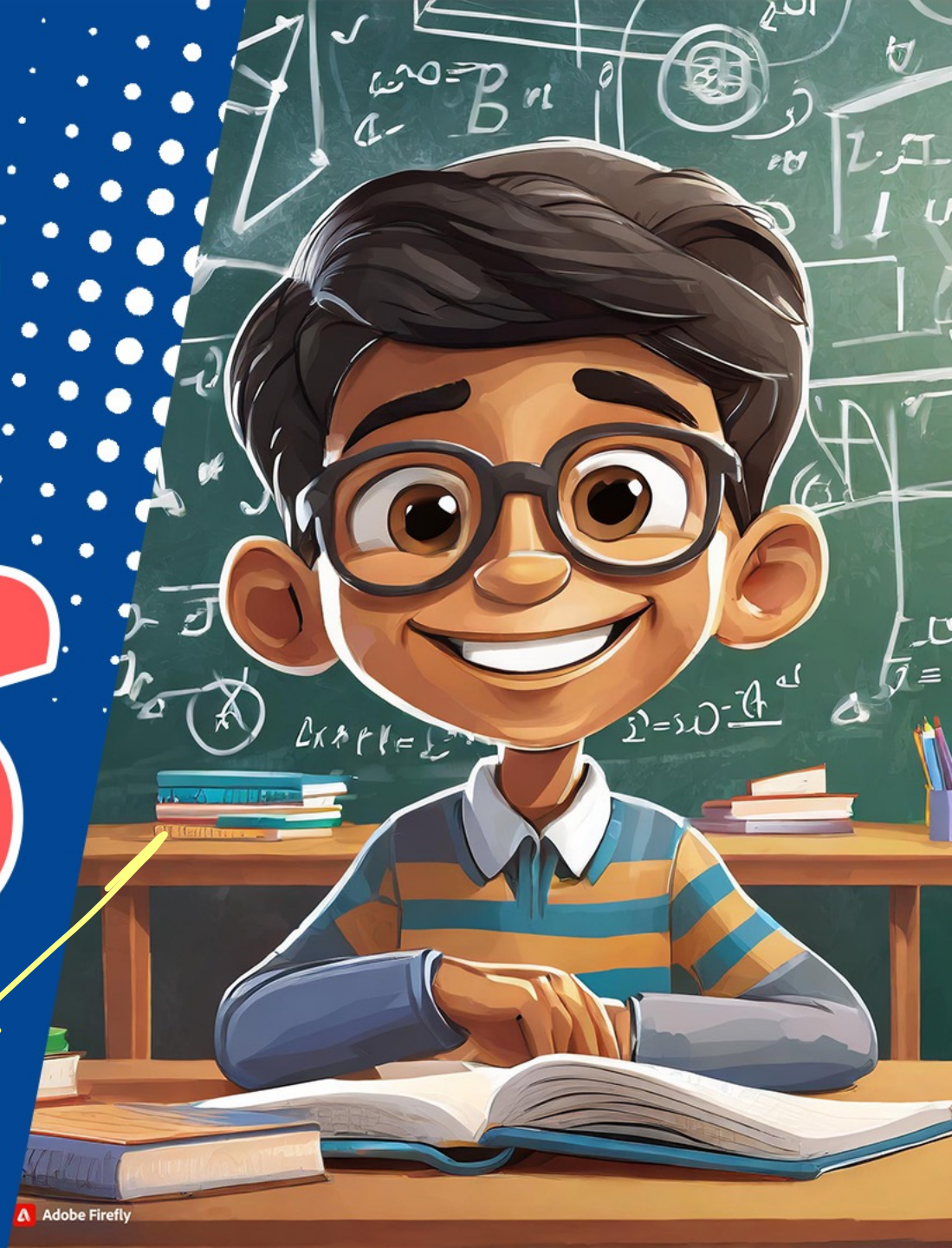

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