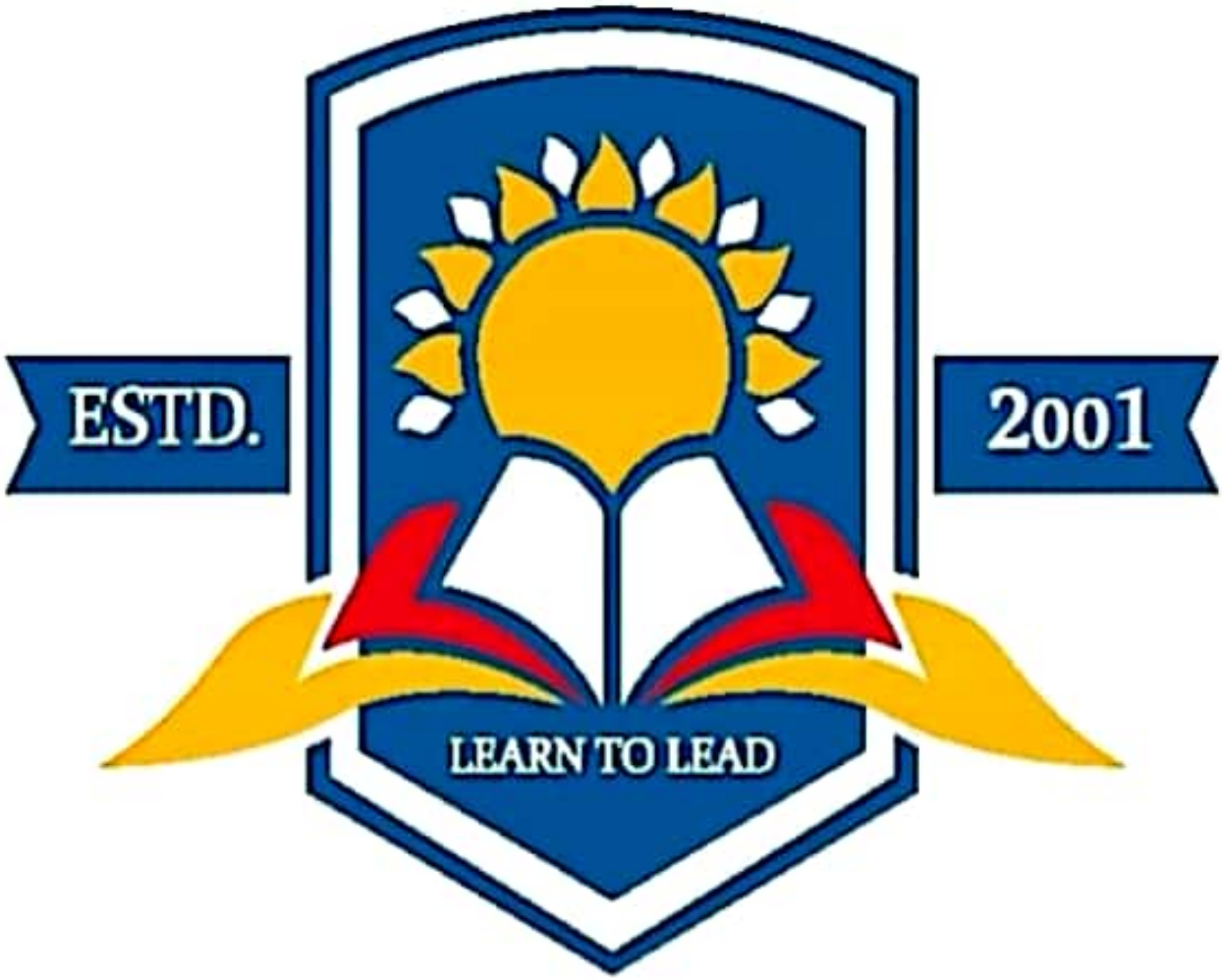

STEPPING STONE SCHOOL (HIGH)

WORKSHEET – 12 . CLASS – X . 28.05.20
Sub – MATHEMATICS . Time – 1 HOUR
Topic – PROBLEMS ON QUADRATIC EQUATIONS

Problems: EXAMPLES:

Q1. Mr. Mehra sends his servant to the market to buy oranges worth Rs. 15. The servant having eaten three oranges on the way, Mr. Mehra pays 25 paise per orange more than the market price. How many oranges did Mr. Mehra receive?

Ans: Let the no. of oranges Mr. Mehra received be 'x'. So the servant bought actually $(x+3)$ oranges. Hence C.P. for Mr. Mehra per orange is $\frac{15}{x}$ and actual C.P. is $\frac{15}{x+3}$. Hence by condition, $\frac{15}{x} - \frac{15}{x+3} = \frac{1}{4}$.

$$\Rightarrow \frac{15[x+3-x]}{x^2+3x} = \frac{1}{4} \Rightarrow \frac{45}{x^2+3x} = \frac{1}{4}.$$

P.T.O →

$\Rightarrow x^2 + 3x = 180 \Rightarrow x^2 + 3x - 180 = 0$

$\Rightarrow x^2 + 15x - 12x - 15 \times 12 = 0 \Rightarrow (x+15)(x-12) = 0$

$\Rightarrow x = 12, -15$. Taking the +ve value Mr. Mehra got 12 oranges.

EXERCISES: 1) Some students planned a picnic. The budget for the food was Rs. 480. As 8 of them failed to join the party, the cost of the food for each member increased by Rs. 10. Find how many students went for the picnic?

2) An aeroplane travelled a distance of 400 km. at an average speed of x kmph. On the return journey, the speed was increased by 40 kmph. If the return journey took 30 minutes less than the onward journey. Find x.

Q3) In a certain positive fraction, the denominator is greater than the numerator by 3. If 1 is subtracted from the numerator and the denominator both, the fraction reduced by $\frac{1}{14}$. Find the fraction.

P.T.O →

Q4) Mohan takes 16 days less than Manoj to a piece of work. If both are working together, they can finish it in 15 days. In how many days Mohan alone can do the work?

Q5) A goods train leaves a station at 6 p.m. followed by an express train which leaves at 8 p.m. and travels 20 kmph faster than the goods train. The express train arrives at a station, 1040 km away, 36 minutes before the goods train. Assuming the speeds of both the trains remain constant between the two stations; calculate their speeds.

[Note: Kmph = kilometre per hour.]

Q6) Five years ago, a woman's age was the square of her son's age. Ten years hence her age age will be twice that of her son's age. Find the age of the son five years ago and the present age of the woman.

→ END ←