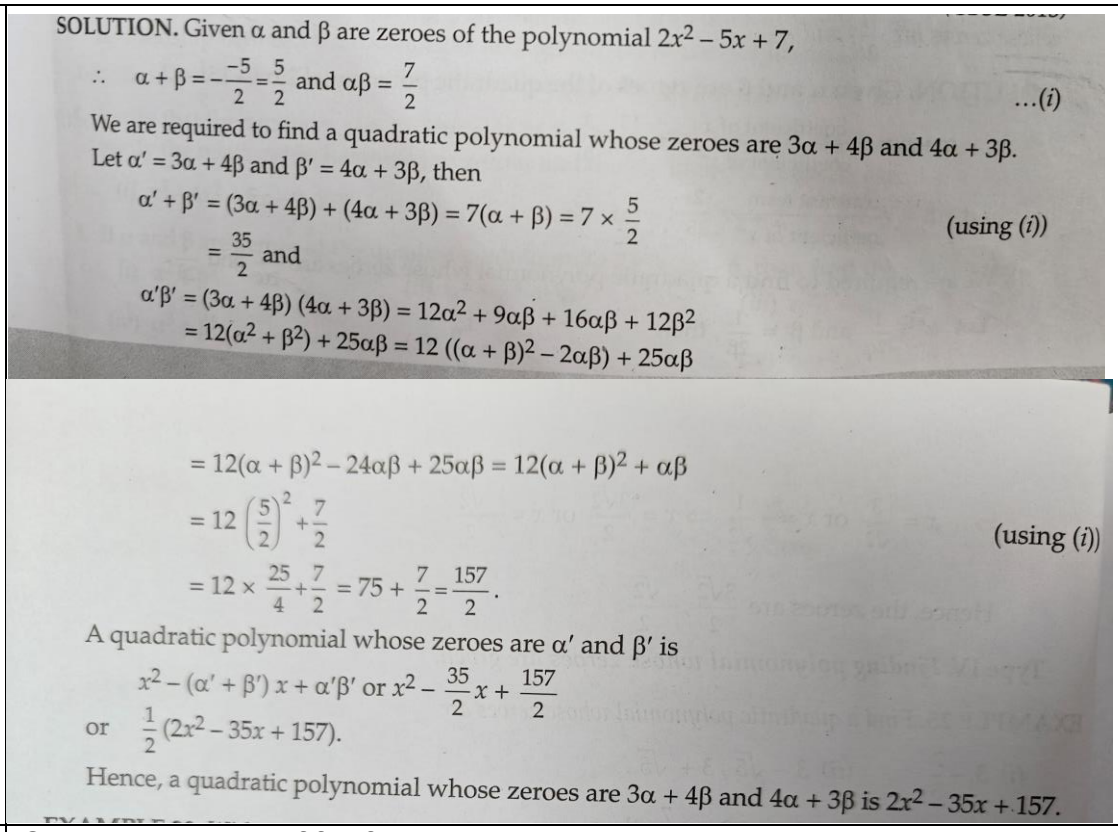
BCM SCHOOL, BASANT AVENUE, DUGRI, LUDHIANA.
APRIL ASSIGNEMENT- ANSWER KEY
CLASS- X (MATHEMATICS)
TOPICS: REAL NUMBERS, POLYNOMIALS & PAIR OF LINEAR EQUATIONS IN TWO VARIABLES.

SECTION –A (MULTIPLE CHOICE QUESTIONS)	
1.	(b) 35
2.	(c) $2x^2 - x - 6$
3.	(c) 150
SECTION – B(2 MARKS QUESTIONS)	
4.	Consider x and y as the number of students in halls A and B. x - 10 = y + 10 => x - y = 20----------(1) (x + 20) = 2(y - 20) => x - 2y = -60----------(2) x = 100. y = 80. Therefore, 100 students are in hall A and 80 students are in hall B.
5.	p, q are the zeroes of x2 + px + q. ⇒ p + q = – p …… (i) and pq = q …… (ii) ⇒ pq – q = 0 ⇒ (p – 1)q = 0 ⇒ either p = 1 or q = 0 When p = 1 ⇒ 1 + q = – 1 ⇒ q = – 2 When p = 0 ⇒ p + 0 = – p ⇒ 2p = 0 ⇒ p = 0
SECTION – C (3 MARKS QUESTIONS)	
6.	If $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$, then So, $a_1/a_2 = 4/(2p + 7q)$ $b_1/b_2 = 5/(p + 8q)$ $c_1/c_2 = 2/(2q - p + 1)$ So, $4/(2p + 7q) = 5/(p + 8q) = 2/(2q - p + 1)$ On solving,the values of p and q are -1 and 2
7.	Time = Distance / Speed For A: Time_A = 1980 m / 330 m/min = 6 minutes. For B: Time_B = 1980 m / 198 m/min = 10 minutes. For C: Time_C = 1980 m / 220 m/min = 9 minutes. Now, find the LCM of 6, 10, and 9. The LCM is 90 minutes.
SECTION – D (5 MARKS QUESTIONS)	

8.	 SOLUTION. Given α and β are zeroes of the polynomial $2x^2 - 5x + 7$, $\therefore \quad \alpha + \beta = -\frac{-5}{2} = \frac{5}{2}$ and $\alpha\beta = \frac{7}{2}$ ...(i) We are required to find a quadratic polynomial whose zeroes are $3\alpha + 4\beta$ and $4\alpha + 3\beta$. Let $\alpha' = 3\alpha + 4\beta$ and $\beta' = 4\alpha + 3\beta$, then $\alpha' + \beta' = (3\alpha + 4\beta) + (4\alpha + 3\beta) = 7(\alpha + \beta) = 7 \times \frac{5}{2}$ (using (i)) $= \frac{35}{2}$ and $\alpha'\beta' = (3\alpha + 4\beta)(4\alpha + 3\beta) = 12\alpha^2 + 9\alpha\beta + 16\alpha\beta + 12\beta^2$ $= 12(\alpha^2 + \beta^2) + 25\alpha\beta = 12((\alpha + \beta)^2 - 2\alpha\beta) + 25\alpha\beta$ $= 12(\alpha + \beta)^2 - 24\alpha\beta + 25\alpha\beta = 12(\alpha + \beta)^2 + \alpha\beta$ $= 12\left(\frac{5}{2}\right)^2 + \frac{7}{2}$ (using (i)) $= 12 \times \frac{25}{4} + \frac{7}{2} = 75 + \frac{7}{2} = \frac{157}{2}$. A quadratic polynomial whose zeroes are α' and β' is $x^2 - (\alpha' + \beta')x + \alpha'\beta'$ or $x^2 - \frac{35}{2}x + \frac{157}{2}$ or $\frac{1}{2}(2x^2 - 35x + 157)$. Hence, a quadratic polynomial whose zeroes are $3\alpha + 4\beta$ and $4\alpha + 3\beta$ is $2x^2 - 35x + 157$.
9.	Consider the cost of full first class be ₹x Consider the cost of half first class to be ₹ x/2. The reservation charges are ₹ y per ticket. Case I : From station A to B, one reserved first class ticket cost = ₹2530 x + y = 2530----------(1) Case II : From stations A to B, one reserved first class ticket and one reserved first class half ticket cost = ₹3810 x + y + x/2 + y = 3810 3x/2 + 2y = 3810 3x + 4y = 7620----------(2) x = 2500. y = 30.
SECTION – E (CASE STUDY)	
10.	(a) x+y = 30 and y-x = 10 (b) 40 (c) 10 (d) 50