1. Solve for x: $10x - \dfrac{1}{x} = 3, x \neq 0$

2. Determine the positive values of $'k'$ for which the equation $x^2 + kx + 64 = 0$ and $x^2 - 8x + k = 0$ will both have real and equal roots.

3. Solve for x: $9x^2 + (4a^2 - 3b)x - 12ab = 0$

4. The length of the sides forming right angle of a right triangle are $5x$ cm and $(3x - 1)$ cm. If the area of the triangle is 60 cm^2. Find the hypotenuse.

5. Rs. 6500 were divided equally among a certain number of persons. Had there been 15 more persons, each would have got Rs. 30 less. Find the original number of persons.

6. Find the values of k for which the following equation has equal roots:
   $(k - 12)x^2 + 2(k - 12)x + 2 = 0$

7. If (-5) is a root of the quadratic equation $2x^2 + px - 15 = 0$ and the quadratic equation $p(x^2 + x) + k = 0$ has equal roots, find the value of k.

8. Solve for value of x: $4x^2 - 2(a^2 + b^2)x + a^2b^2 = 0$

9. A two digit number is such that the product of its digits is 18. When 63 is subtracted from the number, the digits interchange their places. Find the number.

10. The denominator of a fraction is one more than twice the numerator. If the sum of the fraction and its reciprocal is $2\dfrac{16}{21}$, find the fraction.