WORDED QUADRATIC EQUATIONS

1. By solving a quadratic equation find two numbers that have a sum of 9 and a product of 20
2. By solving a quadratic equation find two numbers whose difference is 5 and whose product is 36
3. The sum of the squares of three consecutive even numbers is 56. Find the numbers
4. The sum of a number and the reciprocal of two more than the number is 4. Find the number.
5. The denominator of a fraction is greater than its numerator by 5. If one is subtracted from both the denominator and the numerator then the original fraction is decreased by $\frac{5}{42}$. Prove that $n^2 + 9n - 22 = 0$ and hence determine the numerator of the original fraction.
6. A rectangle is $5\ cm$ longer that its width. If its width is $x\ cm$ and its area is $14\ cm^2$, state the dimensions of the rectangle.
7. The base of a triangle $x\ cm$ and its altitude is quarter the length of the base. If the triangle has an area of $12.5\ cm^2$, state the altitude of the triangle.
8. A rectangular lawn of dimensions $30\ m$ and $50\ m$ is bordered on two adjacent sides by a uniform path of width $x\ m$. If the area of the path is $164\ m^2$, find the width of the path.
9. A circular pool if radius r $metres$ has a path $2\ metres$ wide around its perimeter. If the area of the pool is four-fifths that of the total area, show that $r^2 - 16r - 16 = 0$, hence find the radius of the pool.
10. The side of a square is x metres. The length of a rectangle is 5 metres more than the side of the square and its width is 4 metres more than the side of the square. The area of the rectangle is $47\ m^2$more than the area of the squares. Determine the area of the rectangle.
11. If each side of a square is increased by $5\ cm$, its area is increased by $125cm^2$. Find the length of the original square.
12. A rectangle has an area of $48cm^2$ and a perimeter of $28\ cm$, find its dimensions.
13. A vendor sold n oranges at $(2n - 15)$cents each and received $42.50. Find the number of oranges the vendor sold.
14. A dealer bought x toys for $\$27$. Write an expression for the price he paid for each toy. He proposed to sell each toy at a profit of 50 cents, show that his selling price for each toy was $\$\frac{54+x}{2x}$. He sold 8 toys at the price and sold the remaining toys at $\$2$ each. Given that the dealer received $\$30$ altogether, form an equation and show that it reduces to $x^2 + 21x + 108 = 0$. Find how many toys the dealer bought.
15. A car travels a distance of $3.6\ km$ at a speed of $(x + 10)$ metres/ second in $(2x - 8) seconds$. Find the time it took the car to complete this distance and the speed at which it travelled.
16. A cyclist travels from home to office $8\ km$ away at x km/hr and returns home along the same route at speed 3 km/hr slower than before. If the total time of travel is 1 hour and 12 minutes, find his speeds.
17. A jet travels $80km/hr$ faster than a liner and takes 1 hour less than the liner to complete a journey of $6280km$. If the speed od the liner is km/hr , show that $x^2 + 80x - 502400 = 0$. Hence find the speed of the aircrafts to the nearest km/hr.
18. Andy and Annette walk to school. Andy walks at an average speed of $x\ km/hr$; Annette walks at an average speed of $(x - 1)\ km/hr$. If the distance is $10km$ and Andy takes 20 minutes less than Annette, find their speeds.
19. Miami and Pittsburgh are 1000 miles apart. A plane flew into a 50-mph headwind from Miami to Pittsburgh. On the return flight the 50-mph wind became a tailwind. The plane was in the air a total of 4 ½ hours for the round trip. What would have been the plane's average speed without the wind?