1. Completing the squares on $5x^2 - 30x + 49 = 0$ gives $(x+a)^2 = b$ where $a.b$ equal to
   $\cdots$

2. The length of a rectangle is 20 feet more than twice its width. If the perimeter of the rectangle is 220 feet, then the length is equal to

   (a) 80 feet
   (b) 65 feet
   (c) 105 feet
   (d) 90 feet
   (e) 70 feet

3. Let k be non-zero real constants, then the equation $2x^2 + 2kx + 5k^2 = 0.$ has

   (a) two complex solutions.
   (b) one real double solution.
   (c) two real distinct solutions.
   (d) more than two solutions.

4. The equation $3x^2 + 4x = 5$ has

   (a) two rational solutions. change the others
   (b) one real double solution.
   (c) two real distinct solutions.
   (d) more than two solutions.

5. Solve $4x^2 - 3x + 9 = x - 6$ by completing the squares.

6. The solution of the equation

   $$\frac{3}{4}x^2 - \frac{3}{2}x + \frac{9}{4} = 0.$$

7. If the equation

   $$9x^2 + (3x + 1)k = 0$$

   has two equal roots, where $k \neq 0$ then $k = \cdots$.

8. If the expression $3x^2 + 5x + 2$ is written in the form $3(x+a)^2 + b$ then the product ab is equal to $\cdots$.

9. Let $f(x) = 5x^2 - 6x - 4$. Find all values of x for which $f(x) = -5$.

10. Use the discriminant to determine that the equation

    $$\frac{1}{3}x^2 - \frac{1}{4}x + \frac{1}{5} = 0$$

    has

11. The sum of the solutions for the quadratic equation $\sqrt{3}x^2 + 3x + \sqrt{2} = 0$ is $\cdots$.

12. Solve $9x^2 - 12x - 1 = 0$ by completing the squares method.

13. If -4 is a solution for the equation

$$kx^2 - 10x - 8 = 0$$

then

- Find k
- Using k find the other solution.

14. If the sum of the squares of the three consecutive positive integers a, b and c is 149 then $a + b + c = \cdots$

15. If $x^2 - kx + 1 = 0$ has two distinct real roots then k belongs to

(a) $[-1, 3]$

(b) $(\infty, -1) \cup (3, \infty)$

(c) $(-\infty, -3) \cup (1, \infty)$

(d) $(3, \infty)$

(e) $(-3, 1)$

16. Solve $2x^2 - x = -4$

17. If $ax^2 + bx + c$ has roots 0 and -2 then $a + b + c = \cdots$.

18. Find all values of k for which

$$kx^2 + (2k + 6)x + 16 = 0$$

has two equal roots.

19. The side length of a cube is given by 3cm. If we double the side length then the volume of the new cube will be $\cdots$.

20. If the circumference of a circle is 10 meters, then the area of the circle is equal to:

(a) $\frac{25}{\pi}$ square meters

(b) 25π square meters

(c) $\frac{\pi}{25}$ square meters

(d) 50π square meters

21. The sum of the length and the width of a rectangle is $\frac{9}{2}$ cm. Find the length and width if the area of the rectangle is 5 sq. cm.