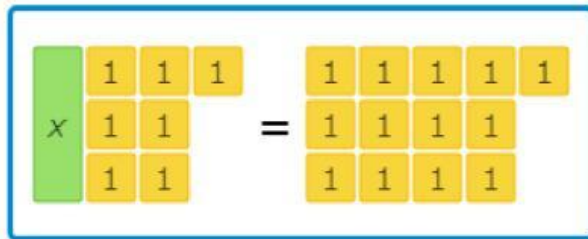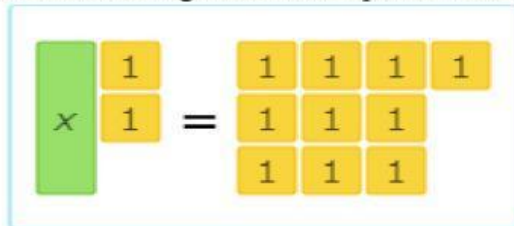Worksheet on pattern and algebra

Question 1(ANSWER ALL QUESTIONS)
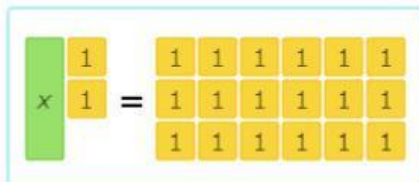
1. The coefficient of xy in $3x^2zy + 7xyz - 2z^2x$ is
   a) 3z
   b) -2
   c) 7yz
   d) 7z

2. Find the value of the expressions: $a^2 + b^2 + 3ab$, where a = 1 and b = –2
   a) -1
   b) 1
   c) 2
   d) -2

3. The length of a side of square is given as $2x + 3$. Which expression represents the perimeter of the square?
   a) $2x + 16$
   b) $6x + 9$
   c) $8x + 3$
   d) $8x + 12$

4. The following algebraic tiles represents
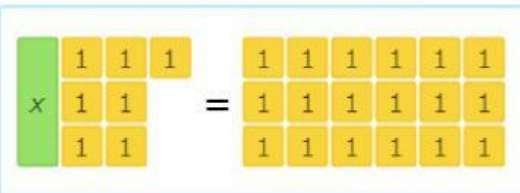

   a) $x + 6 = 13$
   b) $x - 6 = 13$
   c) $x + 7 = 13$
   d) $x - 7 = 13$

5. Which set of algebra tiles represents the equation $x + 7 = 10$?
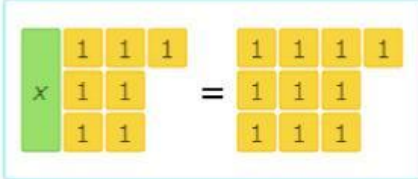

   a)

   b)

   c)

d)

6. Solve for s, $2 = s - 1$
   a) 1
   b) 2
   c) 3
   d) 4

7. Solve for q, $3q = 6$
   a) 1
   b) 2
   c) 3
   d) 4

8. What is the inverse operation of addition?
   a) Multiplication
   b) Division
   c) Subtraction
   d) None of the above

9. An equation is
   a) A statement expressing a relationship between two variables
   b) A mathematical expression containing an in-equality sign
   c) A mathematical statement that shows two expressions are equal
   d) A function that maps inputs to outputs

10. Which of the following represents a real-life situation that can be modelled using a linear equation?
    a) Calculating the area of a rectangle
    b) Estimating the population growth of a city over time
    c) Determining the total cost of groceries at a supermarket
    d) Predicting the trajectory of a rocket launch

11. The purpose of creating a table of values is
    a) To organize data in alphabetical order
    b) To represent mathematical relationships between variables
    c) To calculate the mean, median, and mode of a dataset
    d) To determine the area and perimeter of geometric shapes

12. The pattern rule from the table is

Figure No	No, of shapes
1	2
2	4
3	6
4	8
5	10

a) $2x$

b) $-2x$

c) $2x + 1$

d) $2x - 1$

13. This graph shows the distance driven over different numbers of hours.

From the graph, predict how long the car has travelled in 3 hours?

a) 1 hour

b) 2 hours

c) 3 hours

d) 4 hours

14. The value of x in $3x + 5 = 2$

a) -1

b) 1

c) -2

d) 2

15. The result of subtracting 5 from two times an unknown number is 13.
Determine the value of the number.

a) 16

b) 17

c) 18

d) 19

Question 2 (Answer all the questions)

Formulate an equation based on the provided word problem

    I.   The difference of 3 and a number squared

   II.   5 less than twice a number squared

  III.   Five minus twice the square of a number

 IV.   Four minus a number multiplied by 2

   V.   Seven times the sum of a number and 1