

**Class.6 Maths solution(By:Prashant kr.)**

**10.Algebra**

**Ex-11.1**

1. Find the rule which gives the number of matchsticks required to make the following matchsticks patterns. Use a variable to write the rule.

(a) A pattern of letter T as



(b) A pattern of letter Z as



(c) A pattern of letter U as



(d) A pattern of letter V as



(e) A pattern of letter E as



(f) A pattern of letter S as



(g) A pattern of letter A as



**Solutions:**

(a)



From the figure we observe that two matchsticks are required to make a letter T. Hence, the pattern is  $2n$

(b)



From the figure we observe that three matchsticks are required to make a letter Z. Hence, the pattern is  $3n$

(c)



From the figure we observe that three matchsticks are required to make a letter U. Hence, the pattern is  $3n$

(d)



From the figure we observe that two matchsticks are required to make a letter V. Hence, the pattern is  $2n$

(e)



From the figure we observe that 5 matchsticks are required to make a letter E. Hence, the pattern is  $5n$

(f)



From the figure we observe that 5 matchsticks are required to make a letter S. Hence, the pattern is  $5n$

(g)



From the figure we observe that 6 matchsticks are required to make a letter A. Hence, the pattern is  $6n$

**2. We already know the rule for the pattern of letters L, C and F. Some of the letters from Q.1 (given above) give us the same rule as that given by L. Which are these? Why does this happen?**

**Solutions:**

We know that L require only two matchsticks. So, the pattern for letter L is  $2n$ . Among all the letters given in question 1, only L and V are the letters which require two matchsticks. Hence, (a) and (d).

**3. Cadets are marching in a parade. There are 5 cadets in a row. What is the rule which gives the number of cadets, given the number of rows? (Use  $n$  for the number of rows)**

**Solutions:**

Let  $n$  be the number of rows

Number of cadets in a row = 5

$$\begin{aligned}\text{Total number of cadets} &= \text{number of cadets in a row} \times \text{number of rows} \\ &= 5n\end{aligned}$$

**4. If there are 50 mangoes in a box, how will you write the total number of mangoes in terms of the number of boxes? (Use  $b$  for the number of boxes.)**

**Solutions:**

$$\begin{aligned}\text{Let } b &\text{ be the number of boxes} \\ \text{Number of mangoes in a box} &= 50 \\ \text{Total number of mangoes} &= \text{number of mangoes in a box} \times \text{number of boxes} \\ &= 50b\end{aligned}$$

**5. The teacher distributes 5 pencils per students. Can you tell how many pencils are needed, given the number of students? (Use  $s$  for the number of students.)**

**Solutions:**

$$\begin{aligned}\text{Let } s &\text{ be the number of students} \\ \text{Pencils given to each student} &= 5 \\ \text{Total number of pencils} &= \text{number of pencils given to each student} \times \text{number of students} \\ &= 5s\end{aligned}$$

**6. A bird flies 1 kilometer in one minute. Can you express the distance covered by the birds in terms of its flying time in minutes? (Use  $t$  for flying time in minutes.)**

**Solutions:**

$$\begin{aligned}\text{Let } t &\text{ minutes be the flying times} \\ \text{Distance covered in one minute} &= 1 \text{ km} \\ \text{Distance covered in } t \text{ minutes} &= \text{Distance covered in one minute} \times \text{Flying time} \\ &= 1 \times t \\ &= t \text{ km}\end{aligned}$$

**7. Radha is drawing a dot Rangoli (a beautiful pattern of lines joining dots) with chalk powder. She has 9 dots in a row. How many dots will her Rangoli have for  $r$  rows? How many dots are there if there are 8 rows? If there are 10 rows?**

**Solutions:**

$$\begin{aligned}\text{Number of dots in a row} &= 9 \\ \text{Number of rows} &= r \\ \text{Total number of dots in } r \text{ rows} &= \text{Number of dots in a row} \times \text{number of rows} \\ &= 9r \\ \text{Number of dots in 8 rows} &= 8 \times 9 \\ &= 72 \\ \text{Number of dots in 10 rows} &= 10 \times 9 \\ &= 90\end{aligned}$$

**8. Leela is Radha's younger sister. Leela is 4 years younger than Radha. Can you write Leela's age in terms of Radha's age? Take Radha's age to be  $x$  years.**

**Solutions:**

$$\begin{aligned}\text{Let Radha's age be } x &\text{ years} \\ \text{Leela's age} &= 4 \text{ years younger than Radha}\end{aligned}$$

$$= (x - 4) \text{ years}$$

9. Mother has made laddus. She gives some laddus to guests and family members; still 5 laddus remain. If the number of laddus mother gave away is 1, how many laddus did she make?

Solutions:

Number of laddus mother gave = 1

Remaining laddus = 5

Total number of laddus = number of laddus given away by mother + number of laddus remaining  
 = (1 + 5) laddus

10. Oranges are to be transferred from larger boxes into smaller boxes. When a large box is emptied, the oranges from it fill two smaller boxes and still 10 oranges remain outside. If the number of oranges in a small box are taken to be  $x$ , what is the number of oranges in the larger box?

Solutions:

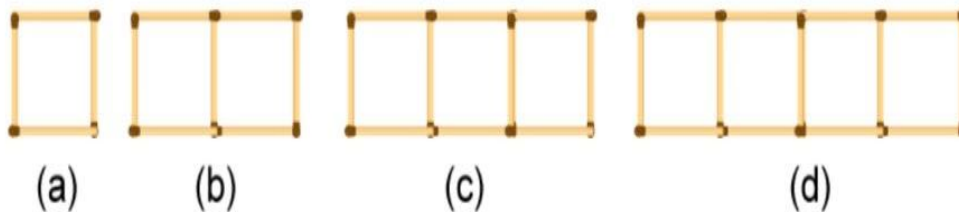
Number of oranges in a small box =  $x$

Number of oranges in two small boxes =  $2x$

Number of oranges remained = 10

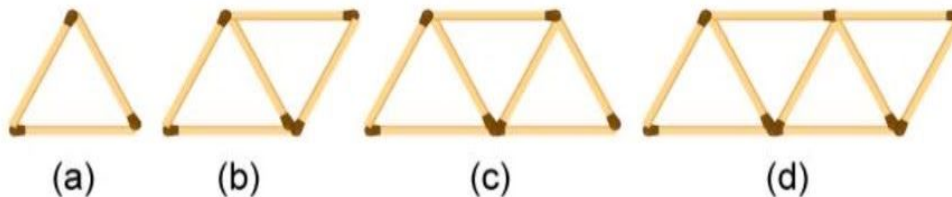
Number of oranges in large box = number of oranges in two small boxes + number of oranges remained  
 =  $2x + 10$

11. (a) Look at the following matchstick pattern of squares (Fig 11.6). The squares are not separate. Two neighbouring squares have a common matchstick. Observe the patterns and find the rule that gives the number of matchsticks



in terms of the number of squares. (Hint: If you remove vertical stick at the end, you will get a pattern of Cs)

(b) Fig 11.7 gives a matchstick pattern of triangles. As in Exercise 11 (a) above, find the general rule that gives the number of matchsticks in terms of the number of triangles.



Solutions:

(a) We may observe that in the given matchstick pattern, the number of matchsticks are 4, 7, 10 and 13, which is 1 more than the thrice of the number of squares in the pattern  
 Therefore the pattern is  $3x + 1$ , where  $x$  is the number of squares

(b) We may observe that in the given matchstick pattern, the number of matchsticks are 3, 5, 7 and 9 which is 1 more than the twice of the number of triangles in the pattern.

Therefore the pattern is  $2x + 1$ , where  $x$  is the number of triangles.