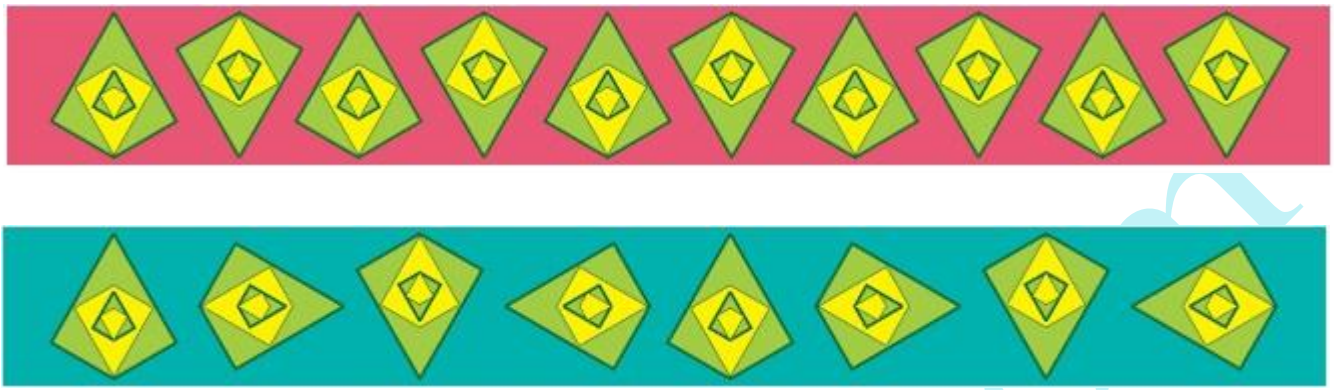
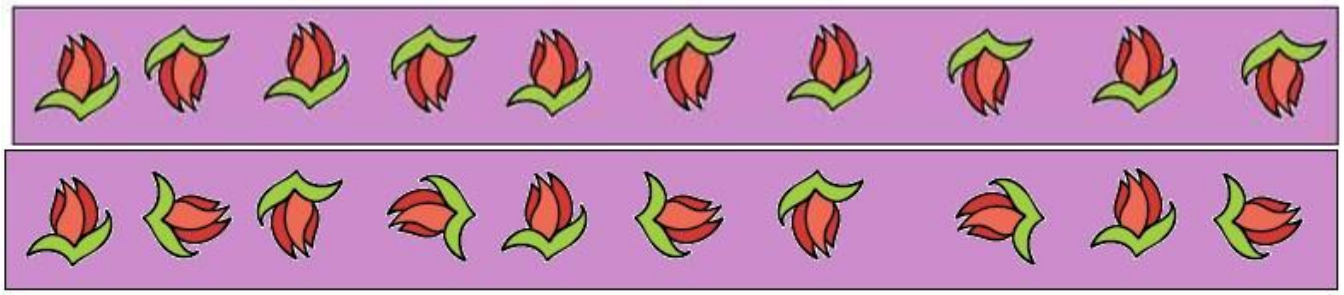
PAGE: 99

1.



Now you use these two rules to make patterns with this block.

Solution:-



2. What should come next?

(a)

Solution:-

(b)

Solution:-

(c)

Solution:-

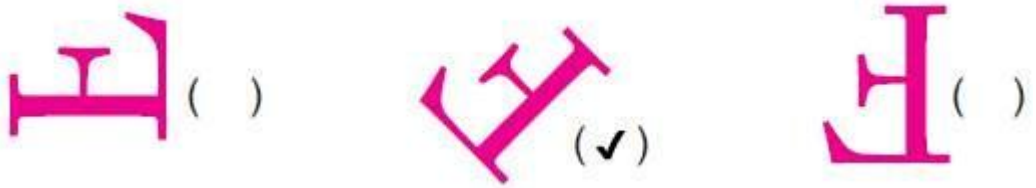
(d)

Solution:-

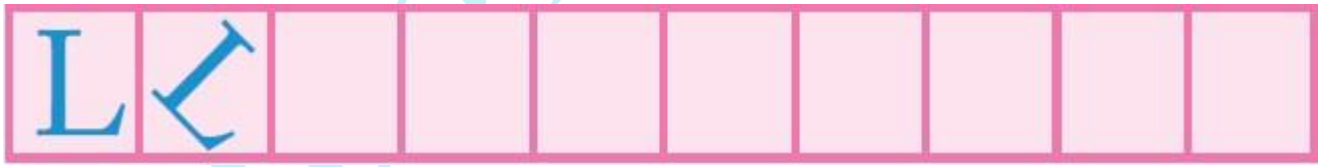
3. See this pattern (a)

The rule of the pattern is turning by 45° each time. Which will be the next? Tick (✓) the right one.

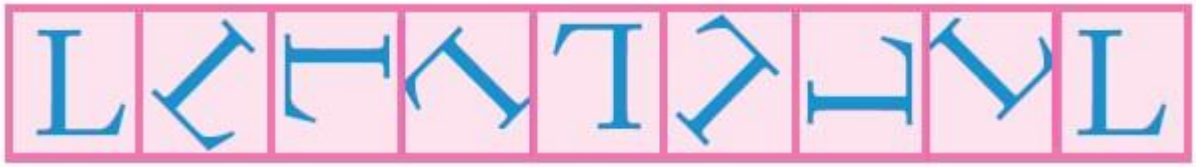
Solution:-



4. Using the same rule take it forward till you get back to what you started with. (a)



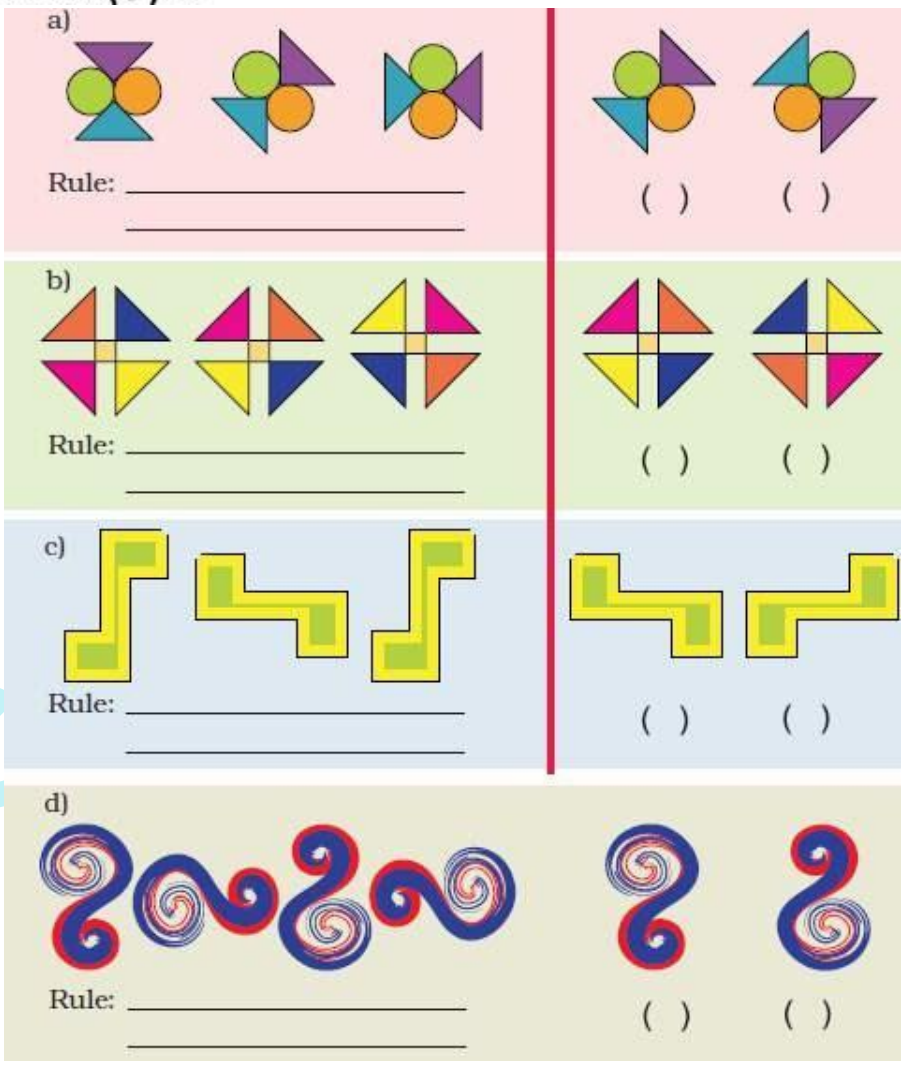
Solution:-



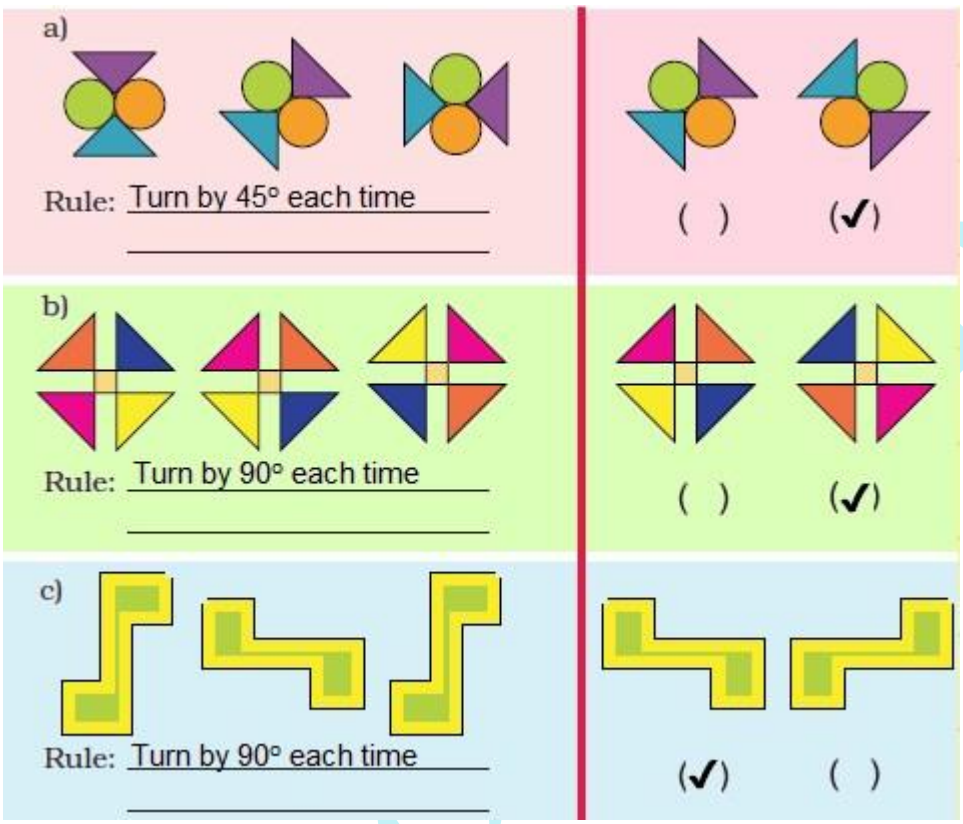
(b)

Solution:-

5. Some patterns are given below on the left side of the red line. For each pattern, write the rule. Then choose what comes next from the right side of the line and tick (✓) it.



Solution:-



6. Mark that picture which is breaking the rule. Also correct it.

(a)

Solution:-

The below marked picture is breaking the rule.

The correct rule is as shown in the picture below.

(b)

Solution:-

The below marked picture is breaking the rule.

The correct rule is as shown in the picture below.

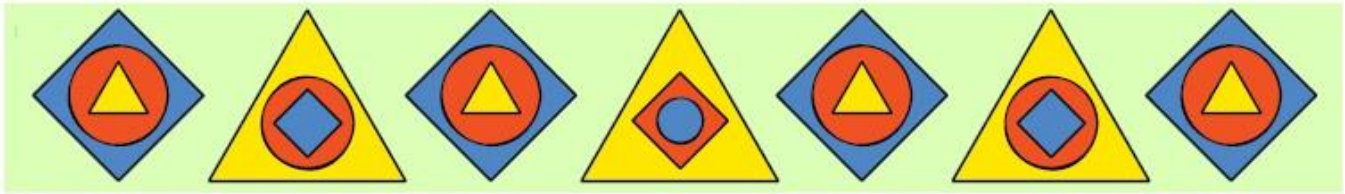
(c)

Solution:-

The below marked picture is breaking the rule.

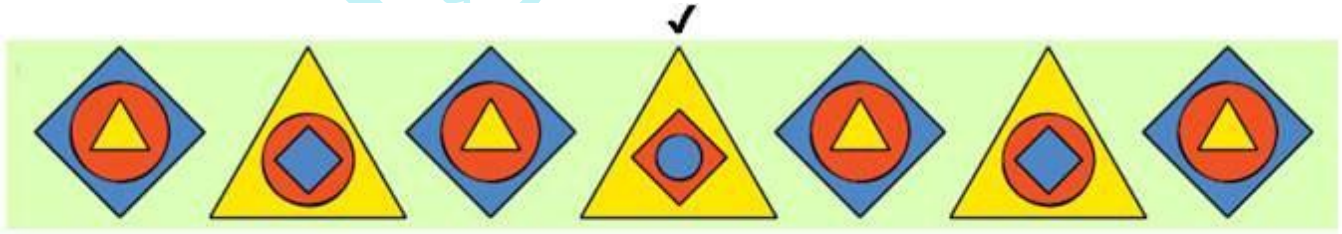
The correct rule is as shown in the picture below.

(d)

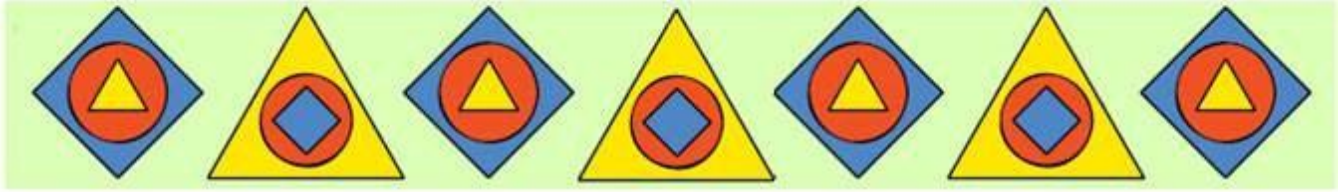


Solution:-

The below marked picture is breaking the rule.



The correct rule is as shown in the picture below.

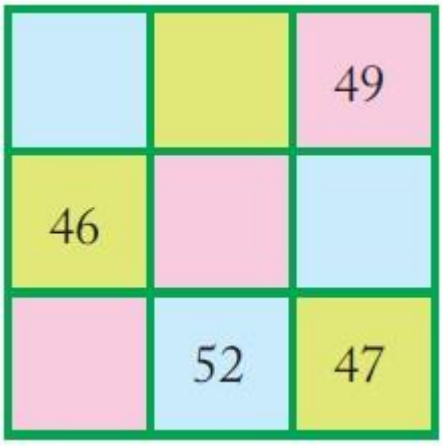


7. Magic Squares

Do you remember magic triangles? Come now, let's make some magic squares.

(i) Fill this square using all the numbers from 46 to 54. Rule:

The total of each line is 150.



Solution:-

From the question it is give that, total of each line is equal to 150.

So, let us take third row,

From the rule, _____ + 52 + 47 = 150

_____ + 99 = 150

_____ = 150 – 99

Therefore, number in the first box in third row = 51

Now, let us take first column,

From the rule, _____ + 46 + 51 = 150

_____ + 97 = 150

_____ = 150 – 97

Therefore, number in the first box in first column = 53

Let us take first row,

From the rule, 53 + _____ + 49 = 150

_____ + 102 = 150

_____ = 150 – 102

Therefore, number in the second box in first row = 48

Let us take second column,

From the rule, 48 + _____ + 52 = 150

_____ + 100 = 150

_____ = 150 – 100

edugross.com

Therefore, number in the second box in second column = 50

Let us take third column,

From the rule, 49 + _____ + 47 = 150

_____ + 96 = 150

_____ = 150 – 96

Therefore, number in the second box in third column = 54

53	48	49
46	50	54
51	52	47

(ii) Fill this square using all the numbers from 21 to 29. Rule: The total of each side is 75.

	25	

Solution:-

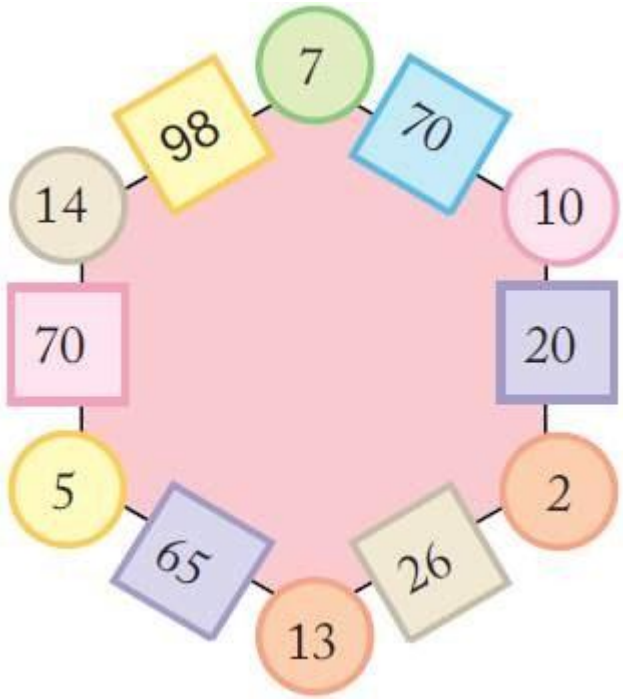
From the question it is give that, total of each line is equal to 75.

24	23	28
29	25	21
22	27	26

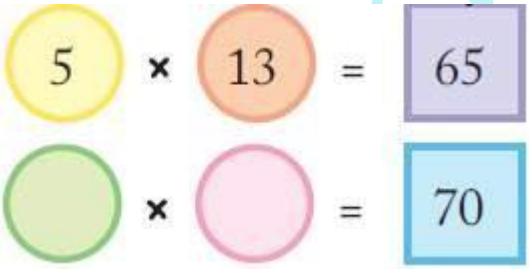
edugross.com

8. Magic Hexagons

Look at the patterns of numbers in hexagons. Each side has 2 circles and 1 box.



Look at the number 65 in the box. Which are the circles next to it? Can you see how the rule works?



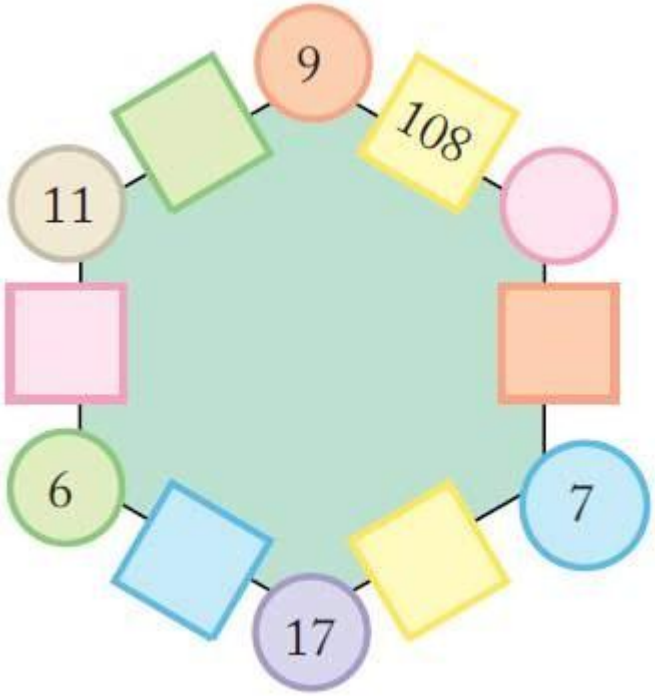
Solution:-

The circles next to 65 are 5 and 13.

The rule of this method is we get the number in each box by multiplying the numbers in the circles next to it.

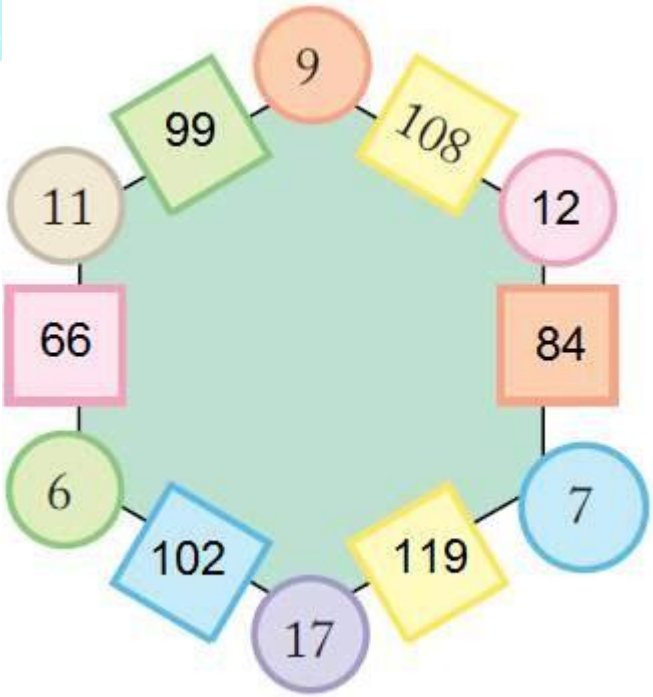
(i) Use the same rule to fill the hexagons below.

(a)



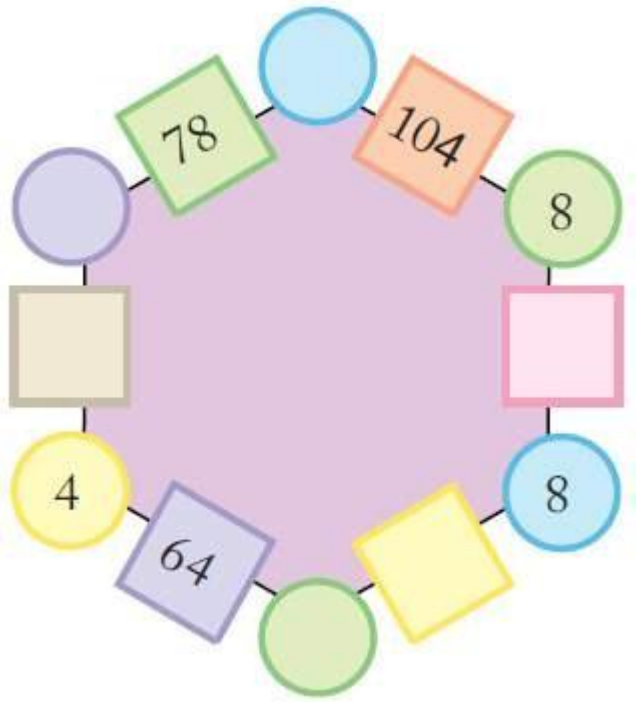
Solution:-

11 × 9 = 99
11 × 6 = 66
6 × 17 = 102
17 × 7 = 119
9 × 12 = 108
12 × 7 = 84



edugrooss.com

(b)



Solution:-

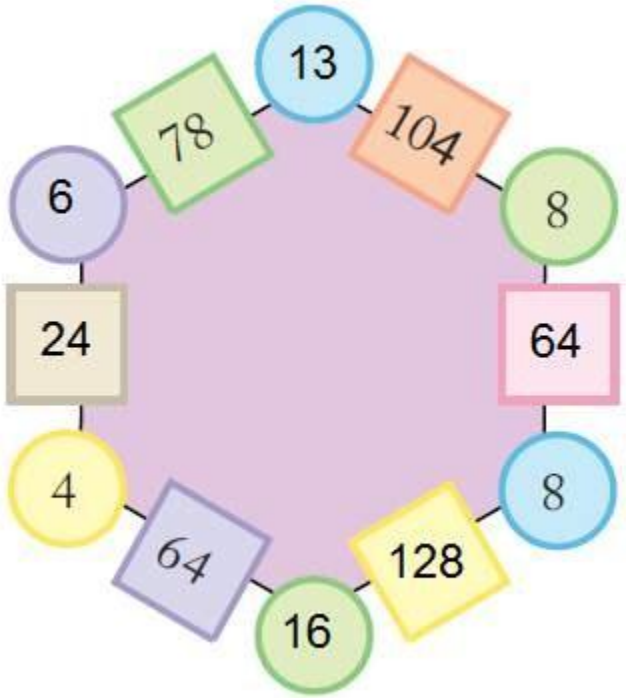
4 × 16 = 64

16 × 8 = 128

8 × 8 = 64

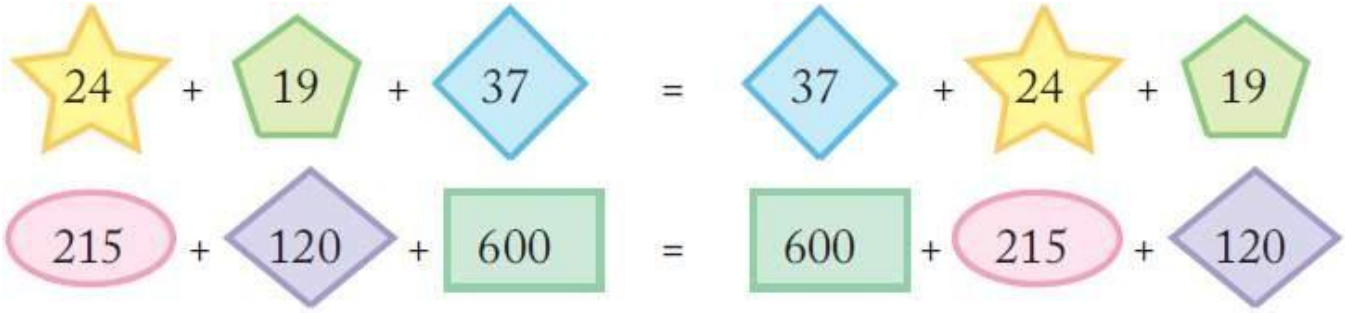
13 × 8 = 104

13 × 6 = 78



edugrooss.com

9. Numbers and Numbers



(i) Are they equal?

Solution:-

Yes, the mentioned equation are equal.

Because, let us consider left hand side (LHS) of first equation = 24 + 19 + 37

LHS = 80

Now, Right hand side (RHS) = 37 + 24 + 19

RHS = 80

By comparing LHS and RHS,

LHS = RHS

Then consider second equation, LHS = 215 + 120 + 600

LHS = 935

Now, RHS = 600 + 215 + 120

= 935

By comparing LHS and RHS,

LHS = RHS

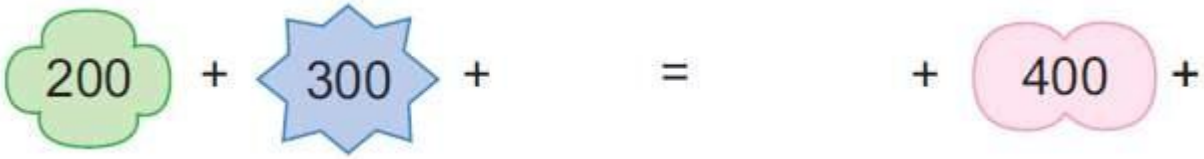
(ii) Fill in the blank spaces in the same way. (a)

Solution:-

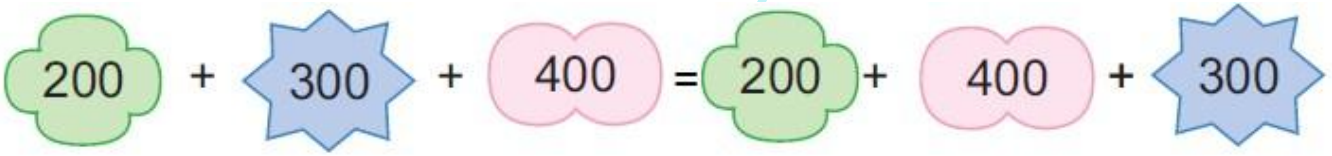
(b)

Solution:-

(c)



Solution:-



(iii) Now,look at this-

Check if it is true or not.

Solution:-

First consider the left hand side (LHS) = 48 × 13

LHS = 624

Now consider right hand side (RHS) = 13 × 48

RHS = 624

By comparing LHS and RHS,

LHS = RHS

(iv) Now you try and change these numbers into special numbers (a) 28 Solution:-

Take another number 28
Now turn it back to front 82
Then add them together 110 Is this a special number? No! Why not?
OK, carry on with the number 110
Again turn it back to front 011
Then add the two together 121 Ah!
121 is a special number.

(b) 132 Solution:-

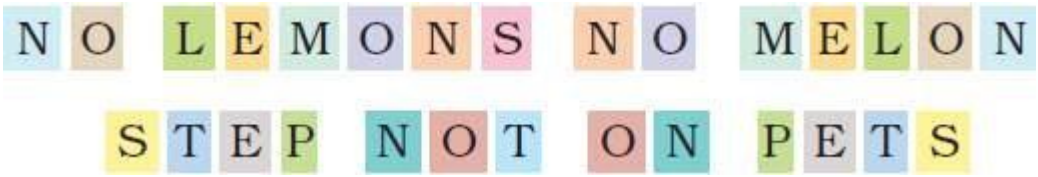
Take another number 132
Now turn it back to front 231
Then add them together 363 Ah!
363 is a special number.

(c) 273 Solution:-

Take another number 273
Now turn it back to front 372
Then add them together 645 Is this a special number? No! Why not?
OK, carry on with the number 645
Again turn it back to front 546
Then add the two together 1191 Is this a special number? No! Why not?
OK, carry on with the number 1191
Again turn it back to front 1911
Then add the two together 3102 Is this a special number? No! Why not?
OK, carry on with the number 3102
Again turn it back to front 2013
Then add the two together 5115 Ah!
5115 is a special number.

edugross.com

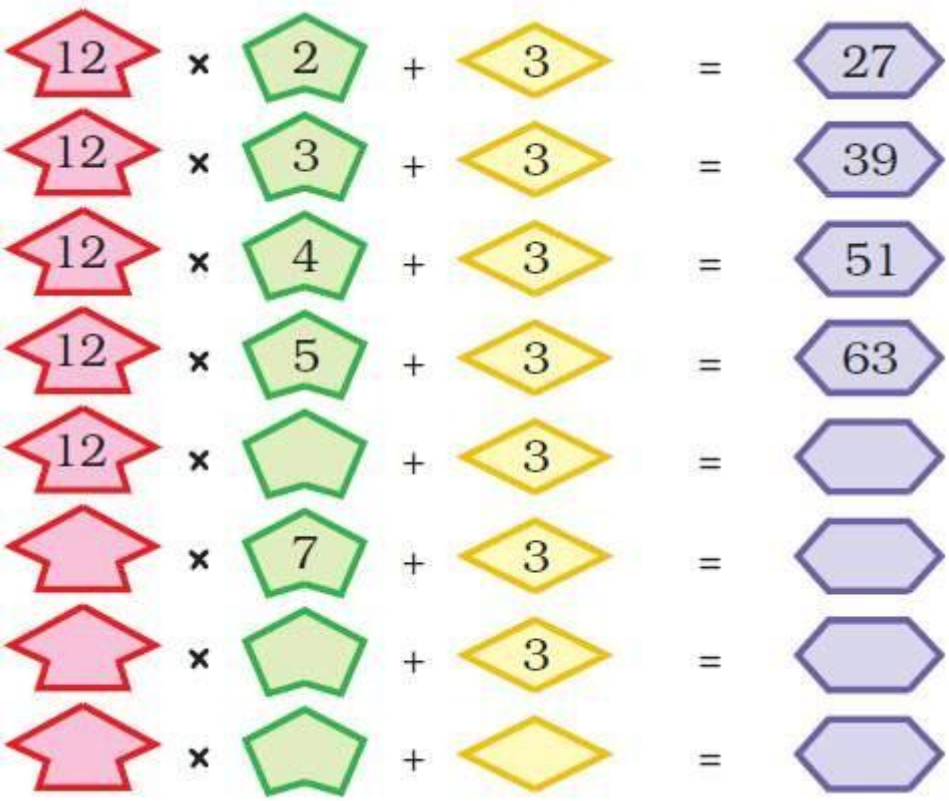
(v) Now let's use words in a special way.



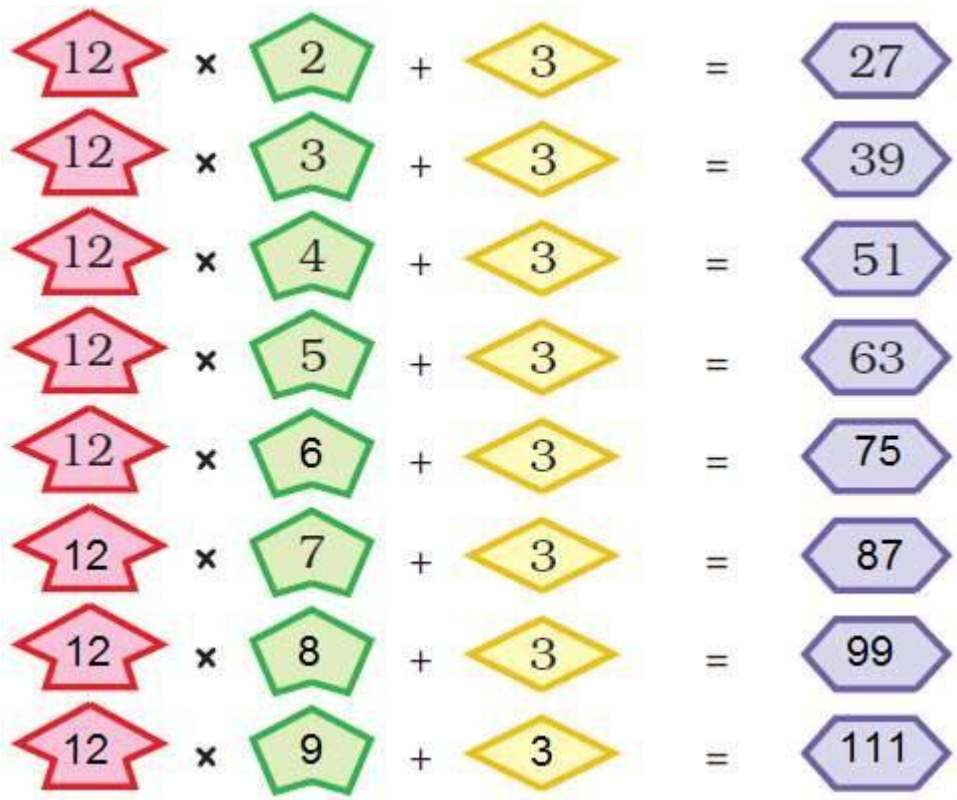
Did you notice that it reads the same from both sides — right to left and left to right?
Solution:-
EYE, LEVEL, ROTATOR, NOON, REFER, TOP SPOT etc.

10. Some more Number Patterns

(i) Take any number. Now multiply it by 2, 3, 4 ..... at every step. Also add 3 to it at each step. Look at the difference in the answer. Is it the same at every step?



Solution:-



Let us check difference in the answer, 39 – 27 = 12, 51 – 39 = 12, 63 – 51 = 12, 75 – 63 = 12, 87 – 75 = 12, 99 – 87 = 12, 111 – 99 = 12.
Therefore, the difference in the answer are same at every step.

(ii) Look at the numbers below. Look for the pattern. Can you take it forward?

edugrooss.com

(9 – 1) ÷ 8 = 1

(98 – 2) ÷ 8 = 12

(987 – 3) ÷ 8 = 123

(9876 – 4) ÷ 8 = ____

(98765 – 5) ÷ 8 = ____

(_____ – __) ÷ 8 = ____

(_____ – __) ÷ 8 = ____

Solution:-

(9 – 1) ÷ 8 = 1

(98 – 2) ÷ 8 = 12

(987 – 3) ÷ 8 = 123

(9876 – 4) ÷ 8 = 1234

(98765 – 5) ÷ 8 = 12345

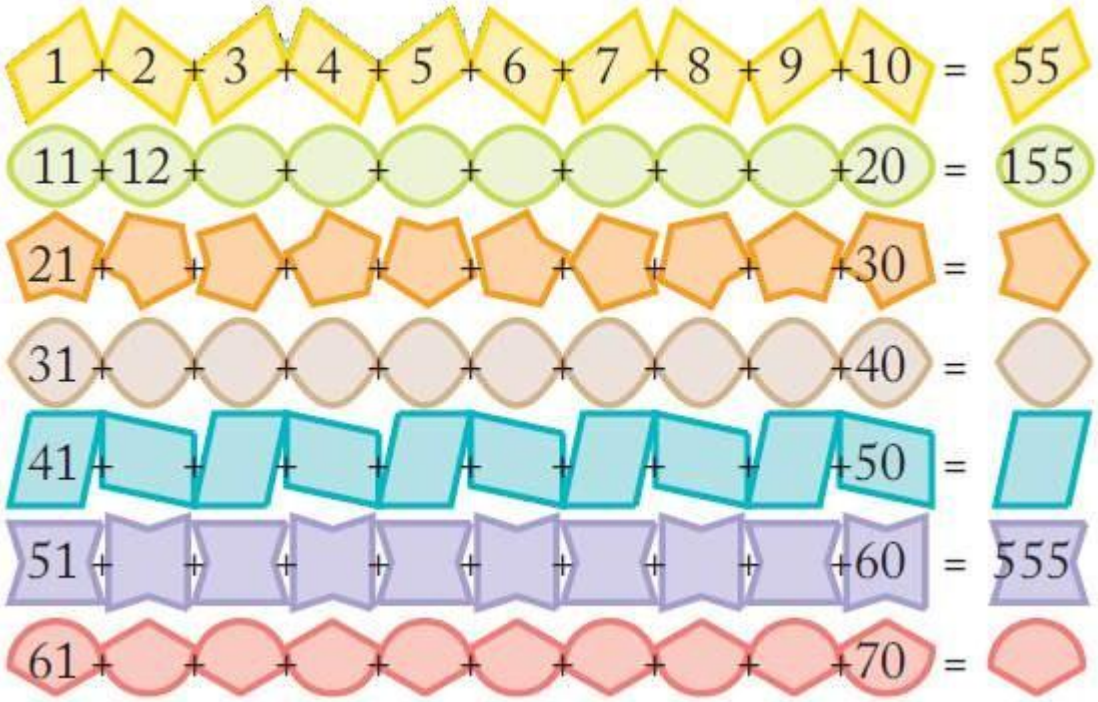
(987654 – 6) ÷ 8 = 123456

(9876543 – 7) ÷ 8 = 1234567

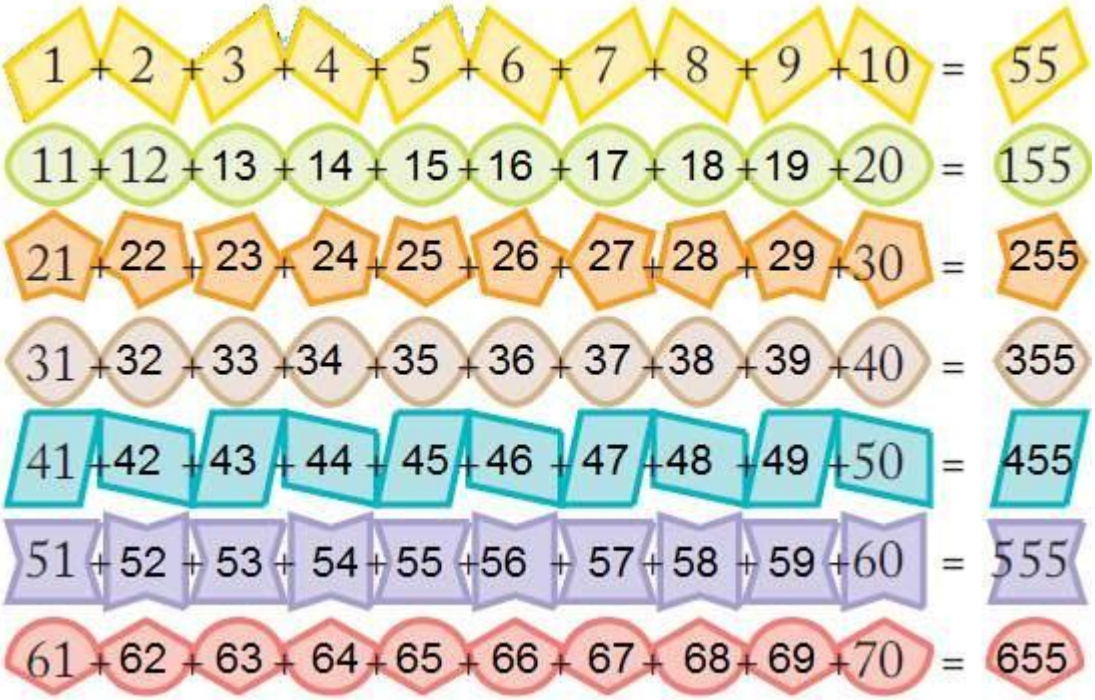
(98765432 – 8) ÷ 8 = 12345678

(987654321 – 9) ÷ 8 = 123456789

11. Smart Adding



Solution:-



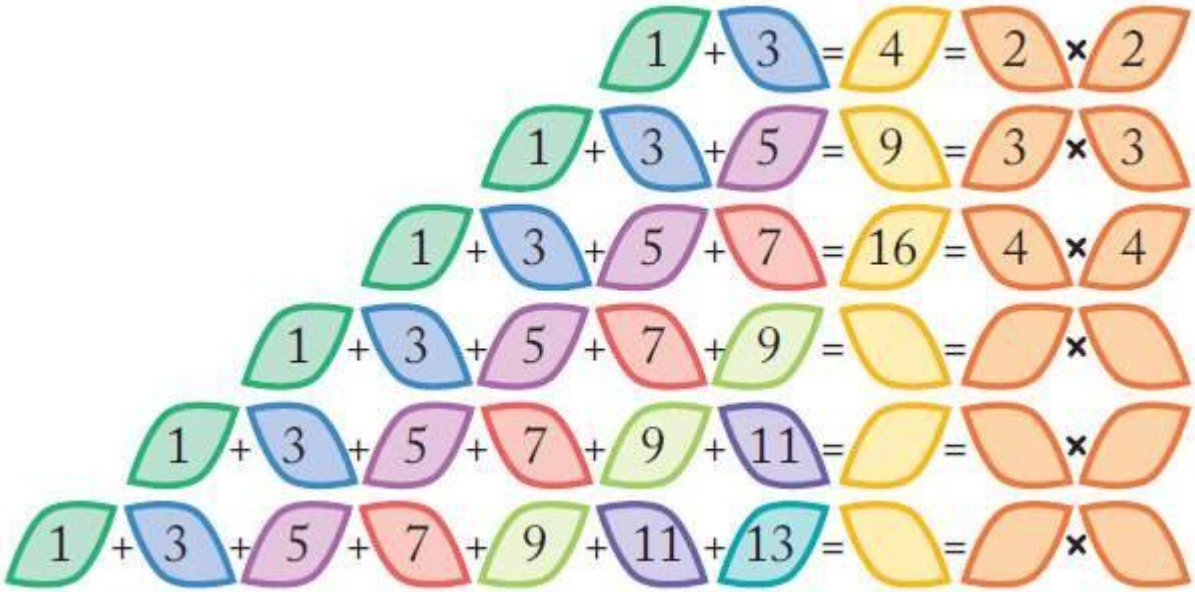
(ii) Did you notice some pattern in the answers?

Solution:-

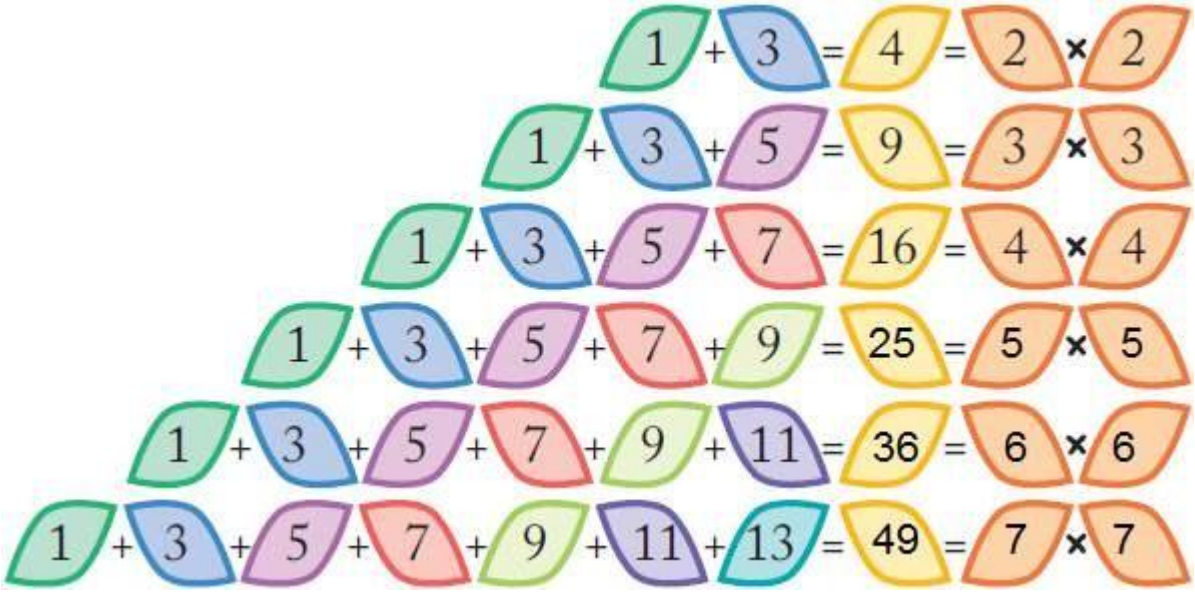
Yes, I found that the difference in the answer are same i.e. 100 at every step.

12. Fun with Odd Numbers

Take the first two odd numbers. Now add them, see what you get. Now, at every step, add the next odd number. How far can you go on?



Solution:-



We can't predict, because there are infinite numbers.

13. Secret Numbers

Banno and Binod were playing a guessing game by writing clues about a secret number. Each tried to guess the other's secret number from the clues. Can you guess their secret numbers?

(i) It is larger than half of 100 It is more than 6 tens and less than 7 tens The tens digit is one more than the ones digit Together the digits have a sum of 11 Solution:-

It is larger than half of 100, i.e. number > 100

It is more than 6 tens and less than 7 tens = so, number lies between 70 and 60

The tens digit is one more than the ones digit = 6 – 1 = 5

Together the digits have a sum of 11 = 6 + 5 = 11

Therefore the number is 65

(ii) It is smaller than half of 100 It is more than 4 tens and less than 5 tens The tens digit is two more than the ones digit Together the digits have a sum of 6 Solution:-

It is smaller than half of 100 = number > 100

It is more than 4 tens and less than 5 tens = number lies between 40 and 50

The tens digit is two more than the ones digit = 4 - 2 = 2

Together the digits have a sum of 6 = 4 + 2 = 6

Therefore the number is 42

14. Number Surprises

a) Ask your friend rite — W down your age. Add 5 to it. Multiply the sum by 2. Subtract 10 from it. Next divide it by 2. What do you get? Is your friend surprised?

Solution:-

Let us assume the age be 11,

Then, adding 5 to it we get = 16

Multiply by 2 we get = 32

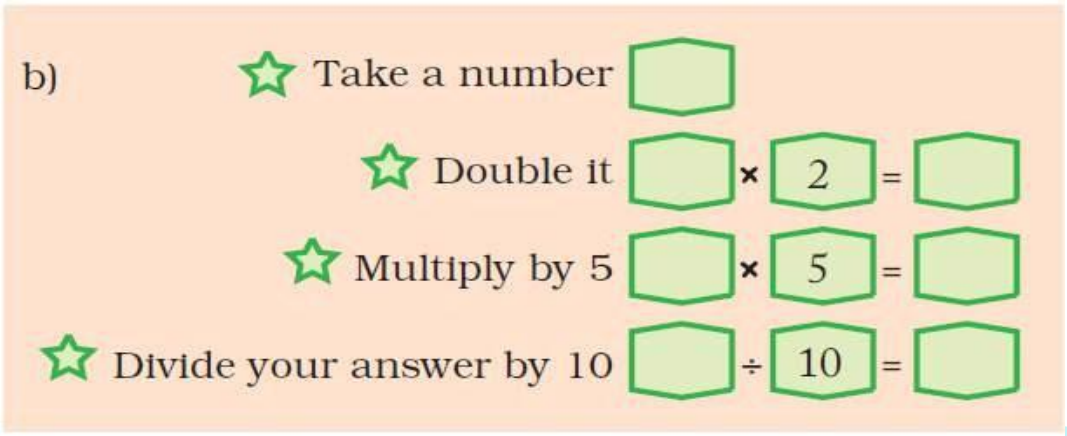
Subtract from 10 we get = 22

Divided by 2 we get = 11

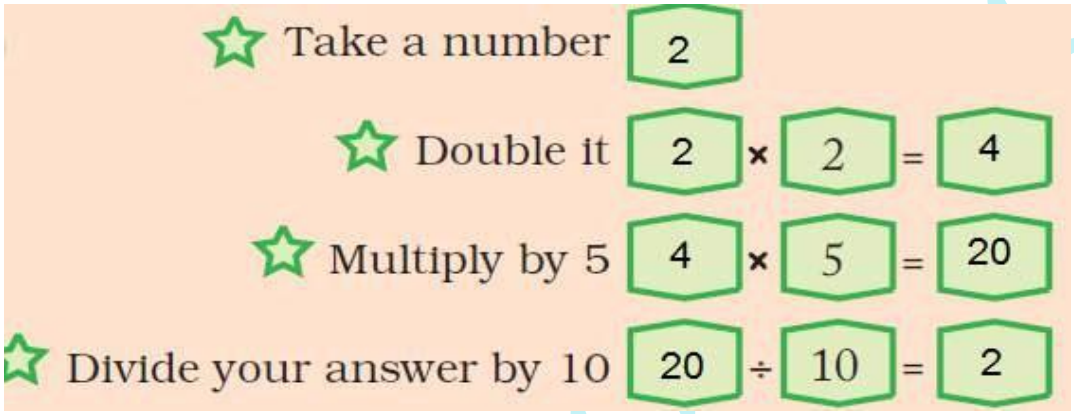
Yes, my friend was really surprised.

edugross.com

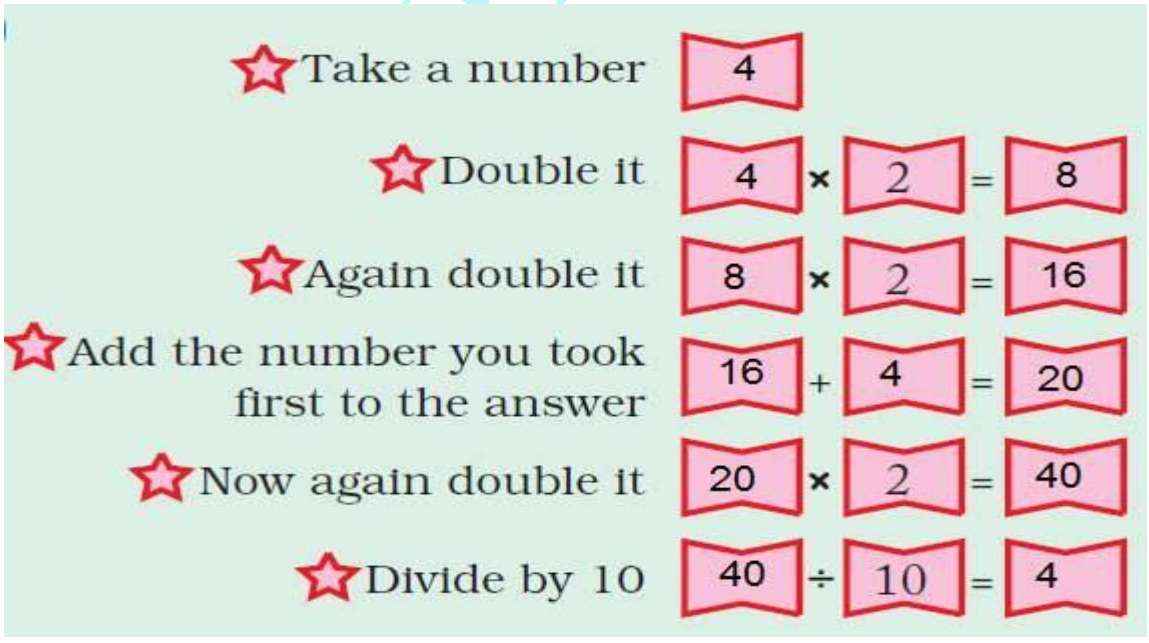
b)



Solution:-



Solution:-



d) Look at this pattern of numbers and take it forward.

$1 = 1 \times 1$

$121 = 11 \times 11$

$12321 = 111 \times 111$

$1234321 = ?$

Solution:- 1

= 1 × 1

121 = 11 × 11

12321 = 111 × 111

1234321 = 1111 × 1111

123454321 = 11111 × 11111

12345654321 = 111111 × 111111

1234567654321 = 1111111 × 1111111

edugross.co