

CLASS NOTES

Class: V

Topic: Ch.- 7

Subject: Mathematics

Can You See The Pattern?

PALINDROMES

→ MALAYALAM ← → ARORA ←

- ◆ Palindromes are numbers that read the same whether you read them from left to right or right to left.
- ◆ You can change any number into a palindrome by reversing it and adding it.

Example	425		653		
	+ 524 (Reverse)	+	356 (Reverse)		
PALINDROME	949		1009		
			+ 9001 (Reverse)		
			10010		
			+ 01001 (Reverse)		
PALINDROME			11011		

A. Convert the following numbers into palindromes. You may need more than one step.

(a) 52
 + 25 (Reverse)

 77

(b) 78
 + 87 (Reverse)

 165
 + 561 (Reverse)

 726
 + 627 (Reverse)

(c) 132
 + 231 (Reverse)

 363

.....
 1353
 + 3531 (Reverse)

 4884

(d) 683
 + 383 (Rev)
 1069 61105
 + 9601 (Rev) + 50116 (Rev)
 10670
 + 07601 (Rev) 111221
 18271 + 122111 (Rev)
 + 17281 (Rev) 233332
 35552
 + 25553 (Rev)

(e) 904
 + 409 (Rev)
 1313
 + 3131 (Rev)


 4444

(f) 852
 + 258 (Rev)
 1110
 + 0111 (Rev)

 1221

CALENDAR PATTERNS

OCTOBER 2008					
Mon.		7	14	21	28
Tue.	1	8	15	22	29
Wed.	2	9	16	23	30
Thu.	3	10	17	24	31
Fri.	4	11	18	25	
Sat.	5	12	19	26	
Sun.	6	13	20	27	

1. Choose any 3×3 grid in the calendar.  (Both yellow & blue)
2. Add 8 to the smallest number ($2 + 8 = 10$)
3. Multiply the answer by 9 ($10 \times 9 = 90$). This is the total of all numbers in the grid.
4. Check = $2 + 3 + 4 + 9 + 10 + 11 + 16 + 17 + 18 = 90$

Choose any three 3×3 grids from the calendar. Find their totals. Record your answer in the table give below.

3×3 grid	Smallest number of the grid	Add 8	Multiply 9	Total
1. (green)	4	$(4+8=12)$	$(12 \times 9=108)$	108
2. (blue)	15	$(15+8=23)$	$(23 \times 9=207)$	207
3. (yellow)	1	$(1+8=9)$	$(9 \times 9=81)$	81

NUMBER PATTERNS

Study the number pattern to come up with the answer

(a) $4 \times 4 = 16$
 $34 \times 34 = 1,156$
 $334 \times 334 = 1,11,56$
 $3334 \times 3334 = 1,11,156$
 $33,334 \times 33,334 = 11,11,156$

(b) $1 \times 1 = 1$
 $11 \times 11 = 121$
 $111 \times 111 = 12321$
 $1111 \times 1111 = 1234321$
 $11,111 \times 11,111 = 123454321$
 $1, 11, 111, \times 1,11,111 = 12345654321$

(c) $37 \times 3 = 111$
 $37 \times 6 = 222$
 $37 \times 9 = 333$
 $37 \times 12 = 444$
 $37 \times 15 = 555$
 $37 \times 18 = 666$

(d) $1 \times 9 - 1 = 08$
 $21 \times 9 - 1 = 188$
 $321 \times 9 - 1 = 2888$
 $4321 \times 9 - 1 = 38888$
 $54321 \times 9 - 1 = 488888$
 $654321 \times 9 - 1 = 5888888$

(e) $1 \times 1 = 1$
 $2 \times 2 = 1 + 2 + 1 = 4$
 $3 \times 3 = 1 + 2 + 3 + 2 + 1 = 9$
 $4 \times 4 = 1 + 2 + 3 + 4 + 3 + 2 + 1 = 16$

$5 \times 5 = 1+2+3+4+5+4+3+2+1=25$

$6 \times 6 = 1+2+3+4+5+6+5+4+3+2+1= 36$

$7 \times 7 = 1+2+ 3+4+5+6+7+6+5+4+3+2+1 =49$

(f) $15873 \times 7 \times 1 = 111111$
 $15873 \times 7 \times 2 = 222222$
 $15873 \times 7 \times 3 = 333333$
 $15873 \times 7 \times 4 = 444444$
 $15873 \times 7 \times 5 = 555555$

(g) $1 = 1 \times 1$
 $1 + 3 = 4 = 2 \times 2$
 $1 + 3 + 5 = 9 = 3 \times 3$
 $1 + 3 + 5 + 7 = 16 = 4 \times 4$
 $= 25 = 5 \times 5$

$1 + 3+5+7+ 9 + 11 = 36$
 $= 6 \times 6$
 $1 + 3 + 5+7+9 11 + 13 = 7 \times 7$
 $= 49$

(h) $1 \times 7 - 7 = 0$
 $2 \times 6 - 5 = 7$
 $3 \times 5 - 3 = 12$
 $4 \times 4 - 5 = 15$
 $5 \times 3 - 3 = 12$
 $6 \times 2 - 5 = 7$
 $7 \times 1 - 7 = 0$

(i) $1 \times 2 - 0 = 2$
 $2 \times 3 - 1 = 5$
 $3 \times 4 - 2 = 10$
 $4 \times 5 - 3 = 17$
 $5 \times 6 - 4 = 26$

$$\begin{aligned} \text{(j)} \quad & 9 \times 9 - 8 \times 8 = 9 + 8 = 17 \\ & 19 \times 19 - 18 \times 18 = 19 + 18 = 37 \\ & 28 \times 28 - 27 \times 27 = 28 + 27 = 55 \\ & 42 \times 42 - 41 \times 41 = 42 + 41 = 83 \\ & 136 \times 136 - 135 \times 135 = 136 + 135 = 271 \end{aligned}$$

$$\begin{aligned} \text{(k)} \quad & 1 \times 9 + 2 = 11 \\ & 12 \times 9 + 3 = 111 \\ & 123 \times 9 + 4 = 1111 \\ & 1234 \times 9 + 5 = 11111 \\ & 12345 \times 9 + 6 = 1,11,111 \\ & 123456 \times 9 + 7 = 1,11,111 \\ & 1234567 \times 9 + 8 = 11,11,111 \end{aligned}$$

WHICH NUMBER AM I ?

A. I have only 2 factors.

I am a 2 digit number.

I come between 50 and 60.

I am an odd number.

I am less than 5 times 11.

I am the number. 53

B. I have many factors.

I am a 2 digit number.

I am the square of a number.

I am an even number.

I come between 60 and 70.

I am the number : 64

NUMBER RIDDLES

A. Write 6 three times. Use 'x' and '-' signs. The answer should be 30.

sol:
 $6 \times 6 - 6 = 30$



B. Write 5 three times. Use x and + signs. The answer should be 30.

sol:
 $5 \times 5 + 5 = 30$

C. Write 3 three times. Use - sign. The answer should be 30.

sol:
 $33 - 3 = 30$

D. Ask your friend to think of a 2 digit number.

2 multiply by 2

3 add 4

4 multiply by 5

5 Add 12

6 Multiply by 10

7 Subtract 320

8 Tell your answer

* Drop the zeros. The remaining numeral is the number your friend thought of.

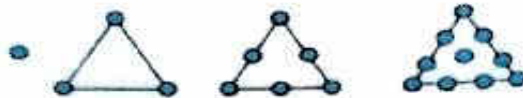
$$\begin{array}{r}
 24 \\
 \times 2 \\
 \hline
 48 \\
 + 4 \\
 \hline
 52 \\
 \times 5 \\
 \hline
 260 \\
 + 12 \\
 \hline
 272 \times 10 \\
 = 2720 \\
 - 320 \\
 \hline
 2400 \\
 \hline
 2400 \\
 = 24
 \end{array}$$

TRIANGULAR AND SQUARE NUMBERS

A. Triangular numbers

When we join the dots on the boundary, we get a triangle as shown such numbers are called triangular numbers.

Example



The next number will be $10 + 5 = 15$
 then $15 + 6 = 21$

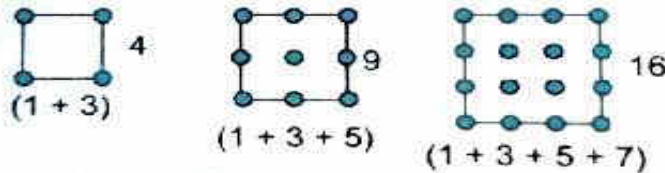
Find, write and show the next 5 triangular numbers after 10.



B. Square numbers

When we join the dots on the boundary and we get a square as shown, such numbers are called square numbers.

Example



Find, write and show the next 4 square numbers:

