

## THE DIVINE NINE

Math skills: Addition and multiplication

You will need: Pencil and paper

Difficulty level: 1

Introduction:

- Ask your students to do the multiplication in the next table.
- Now ask them to add the sums together and write the total under the "add" column. It's a great way to learn about patterns.

| Multiply          | Add     |
|-------------------|---------|
| $1 \times 9 = 9$  | $9$     |
| $2 \times 9 = 18$ | $1+8=9$ |
| $3 \times 9 = 27$ | $2+7=9$ |
| $4 \times 9 =$    |         |
| $5 \times 9 =$    |         |
| $6 \times 9 =$    |         |
| $7 \times 9 =$    |         |
| $8 \times 9 =$    |         |
| $9 \times 9 =$    |         |

- Ask them if they think that it is also going to work for large numbers.

| MULTIPLY            | ADD                | MULTIPLY        | ADD |
|---------------------|--------------------|-----------------|-----|
| $29 \times 9 = 261$ | $2+6+1=9$          | $34 \times 9 =$ |     |
| $30 \times 9 = 270$ | $2+7=9$            | $35 \times 9 =$ |     |
| $31 \times 9 = 279$ | $2+7+9=18 / 1+8=9$ | $36 \times 9 =$ |     |
| $32 \times 9 =$     |                    | $37 \times 9 =$ |     |
| $33 \times 9 =$     |                    | $38 \times 9 =$ |     |

How (and why) it works:

The series  $9 \times 1$ ,  $9 \times 2$ ,  $9 \times 3$ ,  $9 \times 4$  can be written as a series of addition:  $9$ ,  $9+9$ ,  $9+9+9$ ,  $9+9+9+9$  i.e. the series is generated by adding 9 to the previous number. This is the same as adding 10 and subtracting 1. This will result in no change, and since the first number in the series is 9 the other numbers in the series will be 9 as well.



Math + Fun =  
**ARITHMETICKLES**

ARITHMETICKLES  
**MATH**  
*NIGHT*