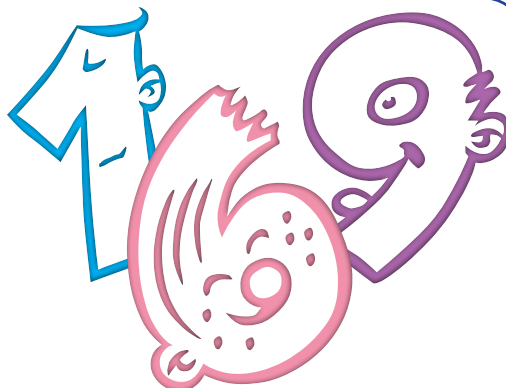


19 HAPPY NUMBERS

Some numbers are called **happy numbers**.

To see if a number is happy follow these steps.



Examples 24 and 19

Step 1 Square each digit of a number and add the squares together.

$$\begin{array}{r} 24 \\ 2^2 + 4^2 = 4 + 16 \\ = 20 \end{array}$$

$$\begin{array}{r} 19 \\ 1^2 + 9^2 = 1 + 81 \\ = 82 \end{array}$$

Step 2 Keep squaring the digits and finding the sum until you get a single digit.

$$\begin{array}{r} 24 \\ 2^2 + 0^2 = 4 + 0 \\ = 4 \end{array}$$

$$\begin{array}{r} 19 \\ 8^2 + 2^2 = 64 + 4 = 68 \\ 6^2 + 8^2 = 36 + 64 = 100 \\ 1^2 + 0^2 + 0^2 = 1 \end{array}$$

Step 3 If the single digit is 1 then the number is a happy number.

24 is **not** a happy number.
19 is a happy number.

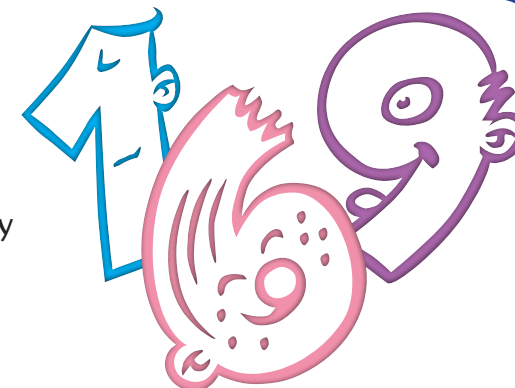
Investigate to see what numbers in your life are happy numbers.

Examples house number, birthdays of your family (whanau), telephone numbers etc .

19 HAPPY NUMBERS

Some numbers are called **happy numbers**.

To see if a number is happy follow these steps.



Examples 24 and 19

Step 1 Square each digit of a number and add the squares together.

$$\begin{array}{r} 24 \\ 2^2 + 4^2 = 4 + 16 \\ = 20 \end{array}$$

$$\begin{array}{r} 19 \\ 1^2 + 9^2 = 1 + 81 \\ = 82 \end{array}$$

Step 2 Keep squaring the digits and finding the sum until you get a single digit.

$$\begin{array}{r} 24 \\ 2^2 + 0^2 = 4 + 0 \\ = 4 \end{array}$$

$$\begin{array}{r} 19 \\ 8^2 + 2^2 = 64 + 4 = 68 \\ 6^2 + 8^2 = 36 + 64 = 100 \\ 1^2 + 0^2 + 0^2 = 1 \end{array}$$

Step 3 If the single digit is 1 then the number is a happy number.

24 is **not** a happy number.
19 is a happy number.

Investigate to see what numbers in your life are happy numbers.

Examples house number, birthdays of your family (whanau), telephone numbers etc .