# Investigating perfect numbers

A perfect number is a whole number greater than zero. When you add up all of the factors less than that number, you get that number.

For example: The factors of 6 are 1,2,3,6. So the factors less than 6 are 1,2 and 3. So….

6=1+2+3. Hence 6 is a perfect number.

## Task

Is 28 a perfect number? The factors of 28 are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The numbers less than 28 are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

So… 28 = \_\_\_+\_\_\_\_+………………..

### Challenge

Find all of the perfect numbers less than 100.

Fun Fact Number One

Did you know all perfect numbers are triangular!

A triangular number makes a triangular dot pattern.



Draw a dot pattern, to represent the other perfect numbers less than 100.

### Fun Fact Number Two

Every perfect number, apart from 6, is the sum of a series of odd cubes.

Example: 28=$1^{3}+3^{3}$

496=$1^{3}+3^{3}+5^{3}+7^{3}$

#### Task

8128 is a perfect number.

Can you write 8128 as a sum of consecutive odd cubes?