Factors

Factors are just "The Numbers that Divide into Something"

How to Find Factors

1) Use a calculator.
2) Starting with 1, try all the numbers in turn, up to half the size of the number, to see if they divide exactly.
3) If they do, they're factors.
4) As well as these, there's always the number itself.

The Eggs Factor

EXAMPLE: Find the factors of 16.

ANSWER: Using a calculator, divide 16 by each number in turn:

16 ÷ 1 = 16	Yes, 1 is a factor.
16 ÷ 2 = 8	Yes, 2 is a factor.
16 ÷ 3 = 5.3	No, 3 is NOT.
16 ÷ 4 = 4	Yes, 4 is a factor.
16 ÷ 5 = 3.2	No, 5 is NOT.
16 ÷ 6 = 2.6	No, 6 is NOT.
16 ÷ 7 = 2.29	No, 7 is NOT.
16 ÷ 8 = 2	Yes, 8 is a factor.

This is now halfway (because 8 is half of 16) so we can STOP. So the factors of 16 are 1, 2, 4, 8, and 16 itself don't forget.

EXAMPLE: Find all the factors of 15.

ANSWER: Divide 15 by each number in turn:

15 ÷ 1 = 15	Yes, 1 is a factor.
15 ÷ 2 = 7.5	No, 2 is NOT.
15 ÷ 3 = 5	Yes, 3 is a factor.
15 ÷ 4 = 3.75	No, 4 is NOT.
15 ÷ 5 = 3	Yes, 5 is a factor.
15 ÷ 6 = 2.5	No, 6 is NOT.
15 ÷ 7 = 2.143	No, 7 is NOT.

You don't need to go any further — that would take you over halfway, because 7.5 is half of 15.
So the factors of 15 are 1, 3, 5 and 15.

You Can Write Factors as Factor Pairs

Factor pairs multiply together to give the number. The smallest factor makes a pair with the biggest one, the second smallest makes a pair with the second biggest, and so on. If there are an odd number of factors, you have to multiply the middle factor by itself — so it's not part of a factor pair.

EXAMPLE: The factors of 15 are 1, 3, 5 and 15.
So the factor pairs for 15 are 1 and 15, and 3 and 5.
Check they're factor pairs by multiplying them: $1 \times 15 = 15$, $3 \times 5 = 15$

Dividing — it's just a factor life...

1) a) List all the multiples of 4 up to 60. b) List all the multiples of 9 up to 100.
   c) What is the first number that is a multiple of both 4 and 9?
2) a) Find all the factors of 6. b) Find all the factors of 21.
   c) What two numbers are factors of both 6 and 21?