Multiples, Factors and Prime Factors

If you think 'factor' is short for 'fat actor', I suggest you give this page a read.
Stop thinking about fat actors now. Stop it...

Multiples and Factors

The MULTIPLES of a number are just its times table.

EXAMPLE: Find the first 8 multiples of 13.

You just need to find the first 8 numbers in the 13 times table:

13 26 39 52 65 78 91 104

The FACTORS of a number are all the numbers that divide into it.

There's a method that guarantees you'll find them all:

1) Start off with 1 × the number itself, then try 2 ×, then 3 × and so on, listing the pairs in rows.
2) Try each one in turn. Cross out the row if it doesn't divide exactly.
3) Eventually, when you get a number repeated, stop.
4) The numbers in the rows you haven't crossed out make up the list of factors.

EXAMPLE: Find all the factors of 24.

Increasing by 1 each time

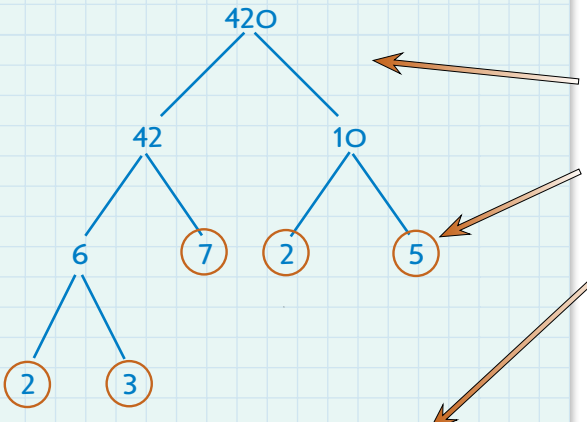
1 × 24
2 × 12
3 × 8
4 × 6
~~5 × —~~
6 × 4

So the factors of 24 are: 1, 2, 3, 4, 6, 8, 12, 24

Finding Prime Factors — The Factor Tree

Any number can be broken down into a string of prime numbers all multiplied together — this is called 'expressing it as a product of prime factors'.

EXAMPLE: Express 420 as a product of prime factors.



So 420 = 2 × 2 × 3 × 5 × 7

To write a number as a product of its prime factors, use the mildly entertaining Factor Tree method:

1) Start with the number at the top, and split it into factors as shown.
2) Every time you get a prime, ring it.
3) Keep going until you can't go further (i.e. you're just left with primes), then write the primes out in order.

Takes me back, scrumping prime factors from the orchard...

Make sure you know the Factor Tree method inside out, then give these Exam Practice Questions a go...

Q1 Express 990 as a product of its prime factors. [2 marks]

Q2 Express 160 as a product of its prime factors. [2 marks]