Types of Numbers

1. List the **first five** multiples of

a) 4 b) 7 c) 13
d) 14 e) 25 f) 30

2. List **all** the factors of

a) 10 (4 factors) b) 15 (4 factors) c) 12 (6 factors)
d) 16 (5 factors) e) 25 (3 factors) f) 100 (9 factors)

3. Copy and complete the list of the **first 10** square numbers
(draw square dot diagrams to go with the first 5 square numbers)
1×1=1
2×2=4
3×3=9
4×4=?
…

4. Copy and complete the list of the **first 10** triangle numbers
(draw triangle dot diagrams to go with the first 5 triangle numbers)
1
3=1+2
6=1+2+3
?=1+2+3+4
…

5. Copy and complete the list of all prime numbers **less than 30**
2, 3, 5, 7, __, __, __, __, __, __

6. **Without using a calculator**, work out the following

a) 2^3 b) 10^4 c) 5^3
d) 4^3 e) 2^6 f) 1^8

7. **Without using a calculator**, work out the following

a) $\sqrt{64}$ b) $\sqrt{100}$ c) $\sqrt{81}$
d) $\sqrt{144}$ e) $\sqrt{4}$ f) $\sqrt{169}$

8. Use the clues to identify the numbers described below (there may be more than one answer)
a) a prime number that is a factor of 16
b) a triangle number that is a multiple of 5
c) a square number greater than 10 with only 3 factors
d) a triangle number with 4 factors that is a multiple of 7
e) a square number that is also a triangle number but is not 1
f) a number which is equal to the sum of all its factors (apart from the number itself)
g) a power of 2 that has 5 factors
h) a power of 10 that is a multiple of 125

9. A formula to work out the nth triangle number is ½ × n × (n+1). So if I want to work out the 10^{th} triangle number I must work out ½ × 10 × 11 which would be 55. Use this formula to work out the following triangle numbers:

a) 12^{th} b) 20^{th} c) 50^{th}

10. Goldbach's conjecture states that every EVEN number (apart from 2) can be written as the sum of two prime numbers. This has never been proven since Goldbach stated it in 1742! e.g. 4=2+2, 12=5+7. **Show this is true for all even numbers between 4 and 30**