**Factors and HCF**

Objective: to be able to find factors of a number and the highest common factor of a pair of numbers

Starter questions

Work out:

1. 56 ÷8=
2. 72 ÷9=
3. 121 ÷ 11=
4. 28 ÷ 4=
5. 42 ÷ 6=

**Work out:**

1. **132 ÷6=**
2. **155 ÷ 5=**
3. **161 ÷ 7=**
4. **152 ÷ 8=**
5. **117 ÷ 3=**

Work out:

1. 180 ÷9=
2. 490 ÷ 7=
3. 440 ÷ 4=
4. 1440 ÷ 12=
5. 3600 ÷ 6=
6. Find all the factors of the following numbers:
   1. 20
   2. 24
   3. 27
   4. 32
   5. 40
   6. 50
   7. 56
   8. 120
   9. 200
7. 2 only has 2 factors (1 and 2), how many numbers can you find between 1 and 30 which have exactly 2 factors? (these are called prime numbers)
8. Find the highest common factors of the following pairs of numbers:
   1. 18 and 54
   2. 25 and 45
   3. 12 and 18
   4. 27 and 108
   5. 30 and 75
9. Find the HCF of these pairs of numbers:
   1. 90 and 450
   2. 96 and 480
   3. 39 and 195

**Main questions**

**Star questions**

Think about the number of factors different numbers have, find out which numbers have an odd number of factors and which numbers have an even number of factors. Can you explain anything you have spotted?

**Answers**

**Starter A**

1. 7
2. 8
3. 11
4. 7
5. 7

**Starter B**

1. 20
2. 70
3. 110
4. 120
5. 600

**Starter C**

1. 22
2. 31
3. 23
4. 19
5. 39

**Main**

1. 1. **1,2,4,5,10,20**
   2. **1,2,3,4,6,8,12,24**
   3. **1,3,9,27**
   4. **1,2,4,8,16,32**
   5. **1,2,4,5,8,10,20,40**
   6. **1,2,5,10,25,50**
   7. **1,2,4,6,7,8,14,28,56**
   8. **1,2,3,4,5,6,10,12,20,24,30,40,60,120**
   9. **1,2,4,5,10,20,40,50,100,200**
   10. **2,3,5,7,11,13,17,19,23,29 (10 of them)**
   11. **18**
   12. **5**
   13. **6**
   14. **27**
   15. **15**
   16. **90**
   17. **96**
   18. **39**

**Extention**

**All the square numbers will have an odd number of factors**