Lesson 5

Year 6, Primary 6, Mathematics
Vulgar Fractions

Prime Numbers

Count Von Count explains that 24 has 8 factors
{Factors of 24} = {1, 2, 3, 4, 6, 8, 12, 24}
He asks, "Is 24 a prime number ?"

5.1 How many factors ?

In the lesson on ***Factor Rainbows*** we saw that 144 has the factors,

{Factors of 144} ={1, 2, 3, 4, 6, 8, 9, 12, 16, 18, 24, 36, 48, 72, 144}

The curly brackets indicate that this is a ***set***; a collection of numbers.
We can count how many factors are in this set.

$$n\{\text{Factors of } 144\} = 15$$

Notice the *n* stands for "*n*umber of".

5.2 Exercise

Marks available : 30

Question 1

What is $n\{\text{Factors of } 6\}$?

[2 marks]

Question 2

What is $n\{\text{Factors of } 30\}$?

[2 marks]

Question 3

The table below lists all of the integers between 1 and 100 (in black), giving each its own square. Also in each square is a smaller number (in red). What is the smaller number telling you about the bigger number ?

[2 marks]

1 1	2 2	3 2	4 3	5 2	6 4	7 2	8 4	9 3	10 4
11 2	12 6	13 2	14 4	15 4	16 5	17 2	18 6	19 2	20 6
21 4	22 4	23 2	24 8	25 3	26 4	27 4	28 6	29 2	30 8
31 2	32 6	33 4	34 4	35 4	36 9	37 2	38 4	39 4	40 8
41 2	42 8	43 2	44 6	45 6	46 4	47 2	48 10	49 3	50 6
51 4	52 6	53 2	54 8	55 4	56 8	57 4	58 4	59 2	60 12
61 2	62 4	63 6	64 7	65 4	66 8	67 2	68 6	69 4	70 8
71 2	72 12	73 2	74 4	75 6	76 6	77 4	78 8	79 2	80 10
81 5	82 4	83 2	84 12	85 4	86 4	87 4	88 8	89 2	90 12
91 4	92 6	93 4	94 4	95 4	96 12	97 2	98 6	99 6	100 9

Question 4

Use the table to write down,

(i) $n\{\text{Factors of } 93\}$

[1 mark]

(ii) $n\{\text{Factors of } 52\}$

[1 mark]

(iii) $n\{\text{Factors of } 66\}$

[1 mark]

(iv) $n\{\text{Factors of } 97\}$

[1 mark]

Question 5

It turns out that numbers with exactly 2 factors are of extraordinary importance.
So much so that they are given a special name.
They are the ***prime*** numbers.

(i) On the table shade out (get rid of) all the numbers that are NOT prime.

[6 marks]

(ii) How many prime numbers are there less than 100 ?

[1 mark]

(iii) Explain why 91 is NOT a prime number.

[1 mark]

(iv) Explain why 89 is a prime number.

[1 mark]

Question 6

(i) Draw a factor rainbow for 84

[9 marks]

(ii) Write in a list, all the factors of 84

[1 mark]

(iii) Write in a list, all the ***prime*** factors of 84

[1 mark]