

Types of numbers – prime and composite numbers

A factor is a number that divides equally into another number.

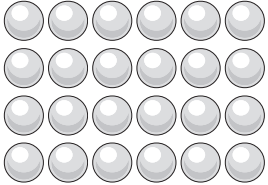
$$5 \times 4 = 20$$

20 arranged in 5 rows means 4 in each row.

5 and 4 are factors of 20.

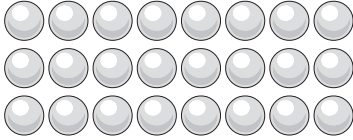
1 How many ways can 24 objects be arranged? Use the arrays below to complete the facts:

a



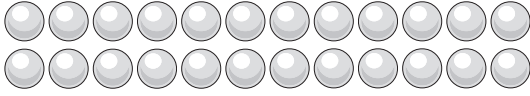
× = 24

b




× = 24

c



× = 24

d



× = 24

24 can be arranged in many different ways. The factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24.

Composite numbers are numbers with more than two factors.

24 is a composite number.

A prime number is only divisible by 1 so has only two factors: 1 and itself. 7 is a prime number.

2 How many ways can 12 objects be arranged?



Draw all the combinations you can think of:

Types of numbers – prime and composite numbers

Eratosthenes (276 BC – 194 BC) was a Greek mathematician who developed a clever way to find prime numbers.

3 Find all the prime numbers in the hundred grid below. (Do not shade the number itself as it is not a multiple.)

- a Cross out 1 since it is not prime.
- b Shade all the multiples of 2.
- c Shade all the multiples of 3.
- d Shade all the multiples of 5.
- e Shade all the multiples of 7.
- f The remaining numbers are prime numbers, apart from 1 which is a special case. List them:

The Sieve of Eratosthenes

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



4 Circle the prime numbers. Use the Sieve of Eratosthenes to help you.

65	89	47	94	25	43
11	27	32	19	21	65
7	53	99	87	26	13

Types of numbers – mixed practice

1 Work out what the secret numbers are. Assume all numbers are positive, unless stated otherwise.

- a I am the only even prime number. I am _____.
 - b I am one of the two numbers that are neither prime nor composite. I am not zero.
I am _____.
 - c I am a 2 digit number. I am less than 40. I am a prime number and my second digit is smaller than my first number. I am _____.
 - d I am the negative number closest to positive numbers. I am _____.
 - e I am the 5 digit negative number furthest from zero. I am _____.
 - f I am the largest 5 digit number where no number is repeated. I am _____.
 - g I am the largest 4 digit number that uses the 4 smallest prime numbers. I am _____.
 - h I am a prime number. My digits add to total the smallest prime number. I am _____.
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2 In these next questions, there is more than 1 possible answer.

- a Look at the number 1 000 855.

Write 5 numbers that are larger than this with the same number of digits.

Write 5 numbers that are smaller.

- b Rounded to the nearest 100 km, my train trip was 3 000 km long. How long could it have been?
How many answers to this question can you find?