

Year 5 Multiplication and Division

Factors and Multiples

A multiple is a number that can be divided evenly by a given number.

For example, $12 \times 1 = 12$,
 $12 \times 2 = 24$, $12 \times 3 = 36$

The multiples of 12 include: 12, 24, 36, 48...

A factor is a number that is multiplied by another number to get a product.

For example, $12 \div 1 = 12$,
 $12 \div 2 = 6$, $12 \div 3 = 4$

The factors of 12 are: 1, 2, 3, 4, 6 and 12.

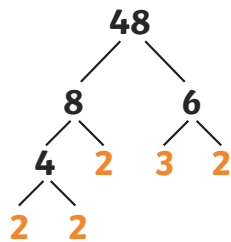
Prime Numbers

A natural number greater than 1 with no divisors other than 1 and itself.

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

Prime Factors

Prime factors are the factors of a number that are prime. They can be found using a diagram like this:



Common Factors

A common factor is a number which is a factor of two or more other numbers. For example, 3 is a common factor of 6 and 9.

Multiplying and Dividing by 10, 100 and 1000

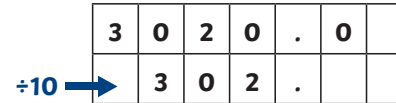
When dividing a number by 10, 100 or 1,000 the value of each digit is divided, sometimes giving a decimal point.

$$3020 \div 10 = 302$$

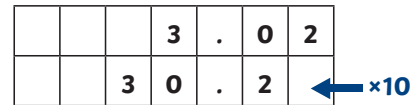
When multiplying a decimal number by 10, 100 or 1000, the value of each digit is multiplied.

$$3.02 \times 10 = 30.2$$

Each digit moves the necessary number of places to the right because dividing by 10 decreases the number.



Each digit moves the necessary number of places left because multiplying by 10, 100, or 1000 increases the number.



4-digit × 2-digit carrying not shown

$$\begin{array}{r}
 5368 \\
 \times 24 \\
 \hline
 5368 \\
 \times 24 \\
 \hline
 21472 \\
 \hline
 5368 \\
 \times 24 \\
 \hline
 21472 \\
 \hline
 107360 \\
 \hline
 21472 \\
 + 107360 \\
 \hline
 128832
 \end{array}$$

Write the numbers above each other in columns.

Multiply 5368×4

Multiply 5368×20

Add the products

Square and Cube Numbers

$1^2 1 \times 1 = 1$	$1^3 1 \times 1 \times 1 = 1$
$2^2 2 \times 2 = 4$	$2^3 2 \times 2 \times 2 = 8$
$3^2 3 \times 3 = 9$	$3^3 3 \times 3 \times 3 = 27$
$4^2 4 \times 4 = 16$	$4^3 4 \times 4 \times 4 = 64$
$5^2 5 \times 5 = 25$	$5^3 5 \times 5 \times 5 = 125$
$6^2 6 \times 6 = 36$	$6^3 6 \times 6 \times 6 = 216$
$7^2 7 \times 7 = 49$	$7^3 7 \times 7 \times 7 = 343$
$8^2 8 \times 8 = 64$	$8^3 8 \times 8 \times 8 = 512$
$9^2 9 \times 9 = 81$	$9^3 9 \times 9 \times 9 = 729$
$10^2 10 \times 10 = 100$	$10^3 10 \times 10 \times 10 = 1000$
$11^2 11 \times 11 = 121$	$11^3 11 \times 11 \times 11 = 1331$
$12^2 12 \times 12 = 144$	$12^3 12 \times 12 \times 12 = 1728$

Short Division

$$84 \div 6$$

1 Partition 84 into tens and ones.

Work out how many 6s divide into 80 so that the answer is a multiple of 10. In this case, the highest multiple of 10 divisible by 6 is 60. Partition 84 into 60 and 24 then divide each number by 6.

2 Combine the totals.

$$\begin{array}{r}
 10 + 4 \\
 6 \overline{) 60 + 24}
 \end{array}$$

3 This can be shortened to:

$$\begin{array}{r}
 14 \\
 6 \overline{) 84}
 \end{array}$$