

Multiplication and Division

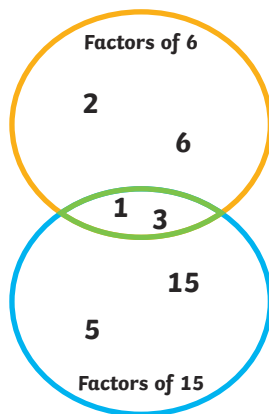
Knowledge Organiser

Key Vocabulary

- multiply
- groups of
- lots of
- times
- divide
- share
- remainder
- factor
- multiple
- product

Factors

A factor is a number that divides into another number exactly, without leaving a remainder.



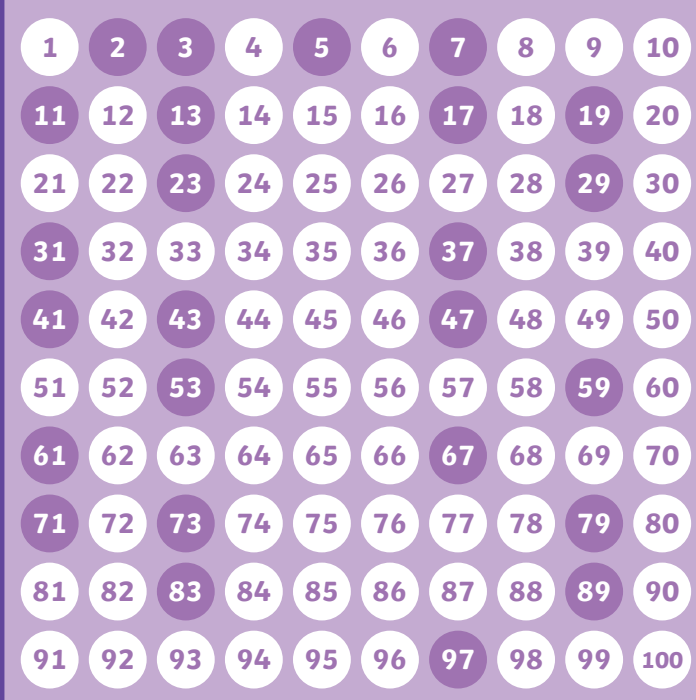
The factors of 20 are 1, 2, 4, 5, 10 and 20.

The factor pairs are:


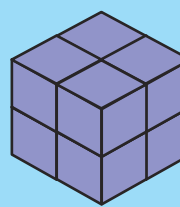
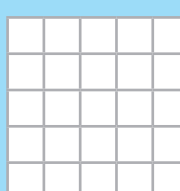
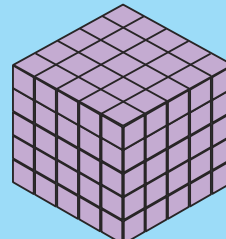
- 1 and 20
- 2 and 10
- 4 and 5

A common factor is a factor of 2 or more numbers.

Prime Numbers



Squared² and Cubed³ Numbers

| | | | |
|---|--|--|--|
|  <p>$2^2 = 4$ $2 \times 2 = 4$</p> |  <p>$2^3 = 8$ $2 \times 2 \times 2 = 8$</p> |  <p>$5^2 = 25$ $5 \times 5 = 25$</p> |  <p>$5^3 = 125$ $5 \times 5 \times 5 = 125$</p> |
|---|--|--|--|

Related Calculations

| | |
|---------------------|---------------------|
| $8 \times 9 = 72$ | $9 \times 8 = 72$ |
| $80 \times 9 = 720$ | $90 \times 8 = 720$ |
| $72 \div 9 = 8$ | $72 \div 8 = 9$ |
| $720 \div 9 = 80$ | $720 \div 8 = 90$ |

Short Multiplication

$$2543 \times 7 = 17801$$

| | | | | |
|----------|----------|----------|----------|----------|
| | 2 | 5 | 4 | 3 |
| × | | | | 7 |
| 1 | 7 | 8 | 0 | 1 |
| 1 | 3 | 3 | 2 | |

Remember to move any regrouped digits into the next column. After the next multiplication, add the regrouped number to the answer.

Long Multiplication

$$2543 \times 67 = 170381$$

| | | | | | | |
|----------|----------|----------|----------|----------|----------|---|
| | | 2 | 5 | 4 | 3 | |
| | × | | | 6 | 7 | |
| | | 1 | 7 | 8 | 0 | 1 |
| | | 1 | 3 | 3 | 2 | |
| 1 | 5 | 2 | 5 | 8 | 0 | |
| 1 | 3 | 2 | 1 | | | |
| 1 | 7 | 0 | 3 | 8 | 1 | |
| 1 | 1 | | | | | |

Before multiplying by the number in the tens column, remember to use zero as a placeholder because the 6 in 67 is 6 tens (60).

Division

$$136 \div 4 = 34$$

| | | | | |
|---|---|----------|----------|----------|
| | | 3 | 4 | |
| 4 | 1 | 3 | 6 | |
| - | 1 | 2 | 0 | → 30 × 4 |
| | | 1 | 6 | |
| | - | 1 | 6 | → 4 × 4 |
| | | | 0 | |



Short Division

| | | | |
|---|---|----------------|----------------|
| | | 3 | 8 |
| 4 | 1 | ¹ 5 | ³ 2 |

15 ÷ 4 = 3 remainder 3
Remember to regroup any remainders and move them into the next column.

| | | | | | | |
|---|---|----------|----------------|----------------|----------|----------|
| | | 4 | 5 | 5 | r | 3 |
| 5 | 2 | 2 | ² 7 | ² 8 | | |

28 ÷ 5 = 5 remainder 3
If your calculation has a remainder, remember to record it in the answer using the letter **r**.