

TARGET To identify common factors and prime numbers.

Examples

Factors of 16 1, 2, 4, 8, 16

Factors of 40 1, 2, 4, 5, 8, 10, 20, 40

Common factors 1, 2, 4, 8

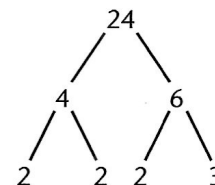
Highest common factor 8

Prime numbers – 2 factors only e.g. 23

Composite numbers – more than 2 factors e.g. 24

Prime factors can be found by using a factor tree.

Prime factors of 24: $2 \times 2 \times 2 \times 3$



A

Find all the factors of each number. The number of factors is shown in brackets.

- | | |
|----------|------------|
| 1 12 (6) | 7 55 (4) |
| 2 28 (6) | 8 18 (6) |
| 3 25 (3) | 9 100 (9) |
| 4 30 (8) | 10 54 (8) |
| 5 32 (6) | 11 49 (3) |
| 6 27 (4) | 12 60 (12) |

Write down the number(s) in each group which are not prime numbers.

- 13 7 8 9 10
 14 17 18 19 20
 15 23 24 25 26
 16 31 32 33 34
 17 46 47 48 49
 18 56 57 58 59
 19 70 71 72 73
 20 88 89 90 91

- 21 The first five prime numbers are:
 2, 3, 5, 7, 11
 Write down the next ten prime numbers.

B

For each pair of numbers find:

- a) the common factors
 b) the highest common factor.

- | | |
|----------|-----------|
| 1 6, 15 | 7 36, 96 |
| 2 16, 24 | 8 40, 100 |
| 3 45, 60 | 9 28, 70 |
| 4 12, 18 | 10 32, 72 |
| 5 8, 12 | 11 18, 30 |
| 6 27, 36 | 12 24, 60 |

- 13 List all the prime numbers below 100.
 There are 25.

Explain why these numbers are composite numbers.

- | | |
|--------|---------|
| 14 738 | 18 1990 |
| 15 273 | 19 177 |
| 16 415 | 20 301 |
| 17 119 | 21 143 |

Find all the prime factors of:

- | | |
|-------|--------|
| 22 50 | 26 52 |
| 23 36 | 27 132 |
| 24 28 | 28 90 |
| 25 60 | 29 72. |

C

For each group of numbers find:

- a) the common factors
 b) the highest common factor.

- | |
|-----------------|
| 1 20, 32, 60 |
| 2 225, 450, 600 |
| 3 32, 64, 80 |
| 4 9, 27, 33 |
| 5 56, 96, 120 |
| 6 36, 54, 108 |
| 7 30, 48, 84 |
| 8 45, 72, 135 |

Explain why these numbers are composite numbers.

- | | |
|--------|---------|
| 9 253 | 11 1923 |
| 10 221 | 12 361 |

Find all the prime numbers between:

- | |
|-----------------|
| 13 100 and 110 |
| 14 130 and 140 |
| 15 150 and 160 |
| 16 190 and 200. |

Find the prime factors of:

- | | |
|--------|---------|
| 17 200 | 21 182 |
| 18 144 | 22 375 |
| 19 162 | 23 252 |
| 20 264 | 24 440. |