Order of operations

- Working out calculations that involve more than one operation
- Working out calculations that involve squares and square roots
- Working out calculations that involve brackets

Keywords

You should know

explanation 1 online

1 Work out each of these calculations.

a 12 + 9 + 8 **b** 16 − 3 − 11 **c** 4 × 5 × 6

d 50 ÷ 5 ÷ 5 **e** 200 ÷ 2 ÷ 10 **f** 3 × 10 × 10

2 Work out the following calculations.

a 16 × 2 ÷ 4 **b** 40 ÷ 4 × 7 **c** 27 − 11 + 30

d 19 + 6 − 12 + 9 **e** 2 × 2 × 2 × 2 **f** 81 ÷ 3 ÷ 3 ÷ 3

3 Copy and complete.

a ☐ × 3 × 2 = 24 **b** ☐ ÷ 2 ÷ 5 = 12 **c** ☐ × 100 ÷ 20 = 35

d 48 ÷ ☐ × 3 = 36 **e** 427 − ☐ − 99 = 327 **f** 1000 ÷ ☐ ÷ 5 = 8

explanation 2 online

4 Work these out.

a 4 + 6 × 3 **b** 24 − 3 × 7 **c** 20 − 7 + 3 × 4

d 11 − 21 ÷ 3 **e** 12 ÷ 4 + 36 ÷ 9 **f** 6 × 8 − 4 × 12

g 3 + 11 × 2 − 9 **h** 5 × 4 − 18 ÷ 6 **i** 4 + 7 − 40 ÷ 5

5 Copy and complete these calculations using the correct operations.

a 5 ☐ 7 × 2 = 19 **b** 21 ☐ 3 + 11 = 18 **c** 18 + 6 ☐ 2 = 21

d 12 ☐ 2 ☐ 4 × 5 = 26 **e** 45 ☐ 15 ☐ 2 − 11 = 4 **f** 24 ☐ 8 ☐ 5 = 15

explanation 3 online

6 Work out each total.

a $3 + 5^2$ **b** 2×3^2 **c** $4^2 + 5^2$

d $100 - 7^2$ **e** $12 - \sqrt{16}$ **f** $\sqrt{25} + \sqrt{100}$

g $26 - 2 \times \sqrt{81}$ **h** $6^2 - 5 \times \sqrt{49}$ **i** $8^2 + 3 \times 10^2$

7 Use each of the numbers 5, 7 and 9 once to build the calculation below.
Find the largest value that can be made.

$\square + \square \times \square^2$

explanation 4 online

8 Find each value.

a $17 - (21 - 10)$ **b** $3 \times (6 + 5)$ **c** $(10 - 3)^2$

d $4 \times (2 + 6)^2$ **e** $\sqrt{(9 + 5 \times 8)}$ **f** $16 - 5 \times (31 - 28)$

g $\sqrt{(3^2 + 4^2)}$ **h** $42 \div (5^2 - 6 \times 3)$ **i** $(9 + 11) \times (50 - 9 \times 5)$

9 Rewrite these statements and put in brackets where needed to make them true.

a $5 \times 4 + 3 = 35$ **b** $98 + 10 \div 12 = 9$ **c** $44 - 26 - 3 + 8 = 7$

d $48 \div 16 - 4 = 4$ **e** $7 + 24 \div 3 + 5 = 10$ **f** $11 + 21 \div 7 + 9 = 2$

g $18 \div 3 \times 2 = 3$ **h** $\sqrt{17} - 8 + 10 = 13$ **i** $\sqrt{25} + 5 \times 3 - 4 = 6$

explanation 5a explanation 5b

10 Write each set of instructions as a calculation. You don't have to work it out.
The first one is done for you.

a Add the square of 17 to 4 and find the square root. Answer: $\sqrt{4 + 17^2}$

b Divide the sum of 75 and 45 by 12.

c Divide the sum of 57 and 96 by the sum of 38 and 53.

d Add 67.2 to 19.9, multiply the answer by 8 and subtract from 1000.

e Divide the square root of the sum of the squares of 11 and 15 by 28.

f Square the sum of 4.9 and 7.38 and divide the answer by 9.