Planner

Order of operations

- Working out more complex calculations involving brackets and powers

Keywords

You should know

explanation 1

online

1 Calculate these without using a calculator.

a $4 + 5^2$ **b** $(4 + 5)^2$ **c** $4^2 + 5^2$

d $\frac{13 - 3^2}{5}$ **e** $\frac{(13 - 3)^2}{5}$ **f** $\left(\frac{13 - 3}{5}\right)^2$

g $16 - 2 \times 4$ **h** $(16 - 2) \times 4$ **i** $24 \div 3 + 5$

j $24 \div (3 + 5)$ **k** $(36 \div 6 + 12) \div 4$ **l** $36 \div (6 + 12 \div 4)$

m $36 \div 6 + 12 \div 4$ **n** $36 \div (6 + 12) \div 4$ **o** $(36 \div 6) + (12 \div 4)$

2 Calculate these without using a calculator.

a $12 - 3 \times 2$ **b** $(12 - 3) \times 2$ **c** $8^2 - 14 \div 2$

d $(8^2 - 14) \div 2$ **e** $(15 - 5)^2 \times 2 + 8$ **f** $15 - 5^2 \times (2 + 8)$

g $15 - 5^2 \times 2 + 8$ **h** $15 - (5^2 \times 2 + 8)$ **i** $(15 - 5^2) \times 2 + 8$

3 If necessary insert brackets in the following calculations in order to make them correct.

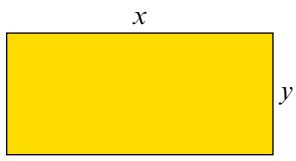
a $6 + 24 \div 6 + 4 = 14$ **b** $6 + 24 \div 6 + 4 = 9$

c $6 + 24 \div 6 + 4 = 3$ **d** $6 + 24 \div 6 + 4 = 8.4$

e $16 + 4^2 \times 8 - 3 = 3197$ **f** $16 + 4^2 \times 8 - 3 = 141$

g $16 + 4^2 \times 8 - 3 = 96$ **h** $16 + 4^2 \times 8 - 3 = 160$

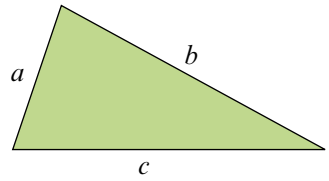
4 The perimeter, P, of the rectangle shown is given by this formula.
$P = 2x + 2y$.



a Write the formula for the perimeter of the rectangle using brackets.

b Calculate the perimeter when $x = 6\,\text{cm}$ and $y = 3.5\,\text{cm}$.

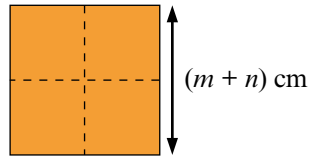
5 The perimeter, P, of this triangle is given by the formula $P = a + b + c$.



a Write, using brackets, the formula for the perimeter of a triangle whose sides are double the length of these.

b If $a = 3\,\text{cm}$, $b = 5\,\text{cm}$ and $c = 6\,\text{cm}$, calculate the perimeter of the triangle described in part **a**.

6 This square has edges of length $(m + n)\,\text{cm}$.



a Using brackets, write a formula for the perimeter, P, of the square.

b Using brackets, write a formula for the area, A, of the square.

c The square is divided into four equal parts as shown.
Write an expression, using brackets, for the perimeter of each of the smaller squares.

d Write an expression for the area of each of the smaller squares.

e When $m = 6$ and $n = 8$, calculate the values of each of the perimeters or areas in parts **a**–**d** above.