Order of operations (2)

Use knowledge of the order of operations to carry out calculations involving the four operations

For each calculation, estimate the answer before you work it out. Then compare your actual answer with your estimate to check your working.

Challenge 1

1 Use the BODMAS rule to work out the answers to these calculations.

a $45 + 16 \times 2$ b $25 + 32 \div 4$

c $40 - 30 \div 5$ d $32 - (5 + 7)$

e $22 \div (15 - 4)$ f $30 \times (8 + 12)$

**2** Work out each pair of calculations to see the effect of using brackets.

a $(14 - 3) + 2$
$14 - (3 + 2)$

b $(4 + 8) \times 5$
$4 + (8 \times 5)$

c $(25 - 4) \times 6$
$25 - (4 \times 6)$

d $(24 + 16) \div 8$
$24 + (16 \div 8)$

e $(75 - 15) \div 5$
$75 - (15 \div 5)$

f $(36 \div 6) + 3$
$36 \div (6 + 3)$

Rule

BODMAS
The order for operations is:
 B Brackets
 O Orders (e.g. 4^2)
DM Division and Multiplication
AS Addition and Subtraction
The way to remember this is:
BODMAS

Challenge 2

1 Use the BODMAS rule to work out the answers to these calculations.

a $297 \div 9 \times 3 + 450$ b $22 \times (3 + 5) - 42$ c $302 + (48 - 23) \times 5$

d $250 + 3 \times (8 + 4)$ e $350 - (57 + 23) \div 10$ f $23 \times 6 - (123 - 94)$

g $95 \div 5 - (99 - 83)$ h $909 - (823 - 21) + 99$ i $285 \div 3 - (98 - 23)$

j $62 + 15 \times 5 \div 3$ k $856 - (232 + 68) \div 10$ l $200 - (36 + 27) \times 2$

2 Using the numbers and the operations below, with either one or two sets of brackets, make ten calculations. Each calculation must have a different answer and use three operations.

| $=$ | 8 | $\times$ | 36 | 41 |

352 $-$ 4 648 $\div$ $+$
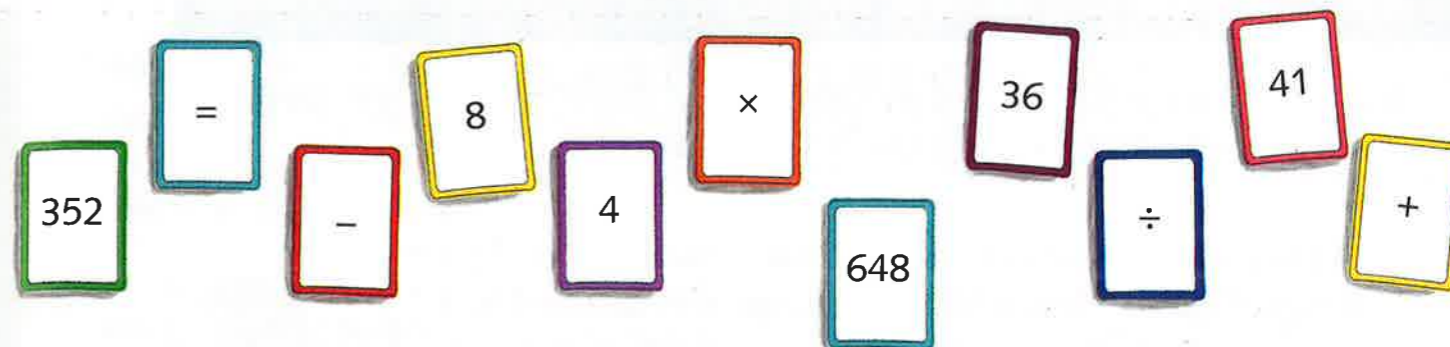
Challenge 3

1 Use brackets to make two different answers for each calculation: the lowest possible answer and the highest possible answer.

Example

$58 + 60 \div 10 - 4$
lowest answer: $(58 + 60) \div 10 - 4 = 7 \cdot 8$
highest answer: $58 + 60 \div (10 - 4) = 68$

a $422 - 239 + 52 - 50$ b $25 + 30 \times 2 + 38$

c $64 + 25 \times 15 - 7$ d $216 - 9 \times 8 - 5$

e $112 + 56 \div 7 + 14$ f $95 + 190 \div 10 + 9$

g $243 + 27 \div 9 - 3$ h $936 - 429 \div 13 - 2$

i $51 \times 9 - 6 + 53$ j $35 \times 6 - 18 + 2$

k $840 \div 5 + 3 \times 25$ l $53 \times 3 + 42 - 98$

m $144 \div 8 \times 4 + 16$

Hint

Remember, brackets can go round more than two numbers and one operation.

2 Write five calculations, each with three operations, where the answer is the same no matter where you put the brackets. Explain why this is.