

Answer Key — Order of Operations — With Brackets

Year 4 Mathematics · Number and algebra · WA4MNAOO1

Section A — Fluency (16 marks, 1 mark each)

1. 18
2. 18
3. 16
4. 3
5. 20
6. 25
7. 5
8. 15
9. 18
10. 14
11. 24
12. 24
13. 5
14. 32
15. 4
16. 24

Section B — Core (21 marks)

1. $(4 + 3) \times 2 = 7 \times 2 = 14$ chocolates. [3 marks]
2. (a) $(40 + 8) \div 4$. (b) \$12. [2 marks part (a), 2 marks part (b)]
3. $(6 - 2) \times 5 = 4 \times 5 = 20$ seedlings. [3 marks]
4. (a) $60 \div (3 + 2)$. (b) 12 sandwiches. [2 marks part (a), 2 marks part (b)]
5. $3 \times (8 - 3) = 3 \times 5 = 15$ boxes. [3 marks]
6. (a) $(90 + 30) \div (2 + 1)$. (b) \$40. [2 marks part (a), 2 marks part (b)]

Section C — Reasoning (9 marks) — sample responses, award marks for valid reasoning

1. Brackets show which part of the expression must be worked out first, overriding the usual order; in $(6+3) \times 2$, the $6+3$ is calculated first ($=9$) before multiplying by 2, giving 18. [2 marks]
2. The student multiplied the number inside the brackets by 3 before completing the subtraction in the brackets; the brackets must be calculated completely first: $10-4=6$, then $6 \times 3=18$. [2 marks]
3. $2 \times (5 + 3)$ calculates the brackets first ($5+3=8$), then multiplies: $2 \times 8=16$. $2 \times 5 + 3$ multiplies first ($2 \times 5=10$), then adds: $10+3=13$. The brackets change which operation happens first and give a different answer. [2 marks]
4. Brackets can be used with any combination of operations to show what must be calculated first; for example, $(2 + 3) \times 4$ uses addition and multiplication, and the brackets still change the answer from $2+3 \times 4=14$ to $(2+3) \times 4=20$. [3 marks]

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Section D — Challenge (7 marks)

1. $(2 + 3) \times 4 = 20$. [2 marks]
2. $2 \times (3 + 4) = 14$. [2 marks]
3. Any valid set, e.g. $a=2, b=2, c=6$ $((2+2) \times 6 = 24)$, or $a=4, b=2, c=4$ $((4+2) \times 4 = 24)$. [3 marks]