

Answer Key — Perimeter of Composite Shapes

Year 4 Mathematics · Measurement and geometry · WA4MMGME1

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

1. 36m
2. 38m
3. 30m
4. 50m
5. 64m
6. 40m
7. 44m
8. 48m
9. 24m
10. 50m
11. 48m
12. 72m
13. 40m
14. 58m
15. 36m
16. 60m

Section B — Core (21 marks)

1. $P = 2 \times (40 + 25) = 2 \times 65 = 130\text{m}$ (the notch size is not needed). [2 marks working, 1 mark correct answer]
2. $P = 2 \times (8 + 6) = 28\text{m}$; cost = $28 \times \$12 = \$336$. [2 marks perimeter, 2 marks cost]
3. $P = 2 \times (14 + 9) = 2 \times 23 = 46\text{m}$ of fencing. [2 marks working, 1 mark correct answer]
4. $P = 2 \times (60 + 40) = 200\text{m}$; 3 laps = $200 \times 3 = 600\text{m}$. [2 marks perimeter, 2 marks total distance]
5. $P = 2 \times (7 + 5) = 24\text{m}$; cost = $24 \times \$9 = \$216$. [2 marks perimeter, 1 mark cost]
6. $P = 2 \times (11 + 8) = 38\text{m}$. The two outer sides shortened by the notch are replaced by two new inner sides of the same total length, so the perimeter doesn't change. [2 marks perimeter, 2 marks explanation]

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

1. The two outer sides that are shortened by the notch are exactly replaced by two new inner sides whose combined length equals the amount removed, so the total perimeter stays the same. [2 marks]
2. Removing a corner notch takes away area, but the missing outer-edge length is replaced by an equal length of new inner edge, so the perimeter is unaffected even though material (area) was removed. [2 marks]
3. Add the length and width of the bounding (original) rectangle, then double that total — the notch size is not needed for a single corner notch. [2 marks]
4. No, this is not correct. Since a corner notch doesn't change the perimeter, both gardens have exactly the same perimeter, $2 \times (12 + 8) = 40\text{m}$, regardless of how big the notch is. [3 marks]

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Section D — Challenge (7 marks)

1. $P = 2(L + W) = 50$, so $L + W = 25$; width = $25 - 18 = 7\text{m}$. [2 marks]
2. Any single corner notch leaves the perimeter unchanged (the removed outer length is replaced by equal new inner length), so both L-shapes have the same perimeter as the original rectangle: $2 \times (16 + 10) = 52\text{m}$. [2 marks]
3. Each corner notch individually leaves the perimeter unchanged, by the same reasoning, so cutting two separate corner notches still leaves the perimeter equal to the original rectangle's: $2 \times (20 + 15) = 70\text{m}$. [2 marks for extending the principle, 1 mark correct value]