Interpreting intersections and break-even points

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

1. Find equal cost for $A = 40 + 2n$ and $B = 16 + 5n$. [2 marks]

$40 + 2n = 16 + 5n$ gives $n = 8$.

Answer: 8 uses, AUD 56.

2. For the same plans, which is cheaper at 12 uses? [2 marks]

$A = 64$ and $B = 76$.

Answer: A, by AUD 12.

3. A product sells for AUD 28 and costs AUD 210 fixed plus AUD 13 per unit. Find break-even. [2 marks]

$28n = 210 + 13n$ gives $15n = 210$.

Answer: 14 products.

4. Find profit on 20 products in Question 3. [2 marks]

$P = 15n - 210$; at 20 this is $300 - 210 = 90$.

Answer: AUD 90.

5. Profit is $P = 12n - 95$. Find the smallest profitable whole-number attendance. [2 marks]

$n > 95/12$, about 7.92; the first permitted integer is 8.

Answer: 8 people.

6. Why do $A = 30 + 4n$ and $B = 80 + 4n$ never have equal cost? [2 marks]

The gradients match and $B - A = 50$ for all n.

Answer: B always costs AUD 50 more.