Comparing linear growth/cost models

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. A class has a 20-dollar booking fee plus 8 dollars per student. Write a rule for n students. [2 marks]

The fixed part is 20 and n students contribute $8n$.

Answer: $C = 20 + 8n$ dollars

2. Use $C = 20 + 8n$ to find the cost for 7 students. [2 marks]

$20 + 8(7) = 76$.

Answer: AUD 76.00

3. A costs $15 + 5n$ dollars and B costs $30 + 2n$ dollars. Find the equal-cost count. [3 marks]

$15 + 5n = 30 + 2n$ gives $3n = 15$.

At $n = 5$, both give 40.

Answer: $n = 5$, cost AUD 40.00

4. For A: $15 + 5n$ and B: $30 + 2n$, which is cheaper for 3 items? [2 marks]

A costs 30 and B costs 36.

Answer: A, by AUD 6.00

5. A costs $15 + 5n$ dollars and B costs $30 + 2n$ dollars. Which is cheaper for 10 items, and by how much? [2 marks]

A costs 65 and B costs 50.

Answer: B, by AUD 15.00

6. A model gives $C = 25 + 4h$ dollars for $0 \le h \le 8$ hours. Explain why using it at h=20 needs care. [3 marks]

The pricing rule is only supplied for up to 8 hours.

It may change beyond that interval, so the formula alone does not justify a 20-hour quote.

Answer: 20 hours is outside the stated domain.