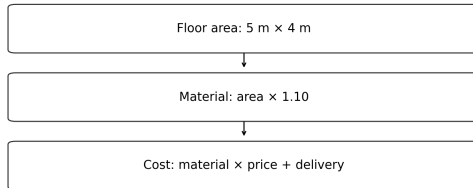


Essential skills in a multi-step practical model

Original skill preparation; versioned source scope

Method and conditions



- A rate compares quantities with their units.
- Fractions; unit conversion; percentage base.

Worked method 1

Read and reason

A rate compares quantities with their units.

$v = d/t = (90 \text{ km})/(1.5 \text{ h}) = 60 \text{ km/h}$. Convert using cancelling units:

$v = (60 \text{ km/h})(1000 \text{ m/km})/(3600 \text{ s/h}) = 50/3 \text{ m/s}$. Do not convert only the numerator of a compound rate.

Original context 1

Read and reason

Task context

Read and reason

Each task below states its own complete data. Values may differ from the worked example.

Attempt 1.1

Read and reason

A room is 5 m by 4 m. Allow extra flooring equal to 10% of the room area for wastage, costs 35 yuan per square metre, and delivery adds 60 yuan. Build a cost model and find the total. A 1:50 plan shows the room; give its dimensions in centimetres.

Reasoning 1.1

Read and reason

Area $A = LW = (5\text{ m})(4\text{ m}) = 20\text{ m}^2$. Required material $Q = 1.10A = 22\text{ m}^2$. Cost $C = pQ + d = (35\text{ yuan/m}^2)(22\text{ m}^2) + 60\text{ yuan} = 830\text{ yuan}$. Plan dimensions are $500/50 = 10\text{ cm}$ and $400/50 = 8\text{ cm}$. Wastage is on area, not on both side lengths.

Attempt 2.1

Read and reason

A delivery model $C = 6 + 4d$ yuan is consistently 5 yuan below observed bills at distances 2,4,6 km. Propose a first revision. Explain what pattern instead would suggest a slope error.

Reasoning 2.1

Read and reason

A constant residual suggests raising the intercept by 5 to $C = 11 + 4d$. A residual systematically growing with distance would suggest checking the per-kilometre rate. Neither pattern alone proves the reason; check fee definitions and other conditions.

Transfer and limits

Read and reason

Fractions; unit conversion; percentage base.

Check yourself

Read and reason

Close the worked reasoning. Explain why the method fits the final transfer task, reconstruct its conclusion, and state a condition that would change your answer. Then check the full reasoning in the reference.