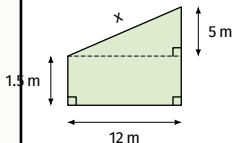


Supplier Decision



Use the shared diagram throughout. Show each measurement, apply the stated rates, and give a traceable final decision.

The profile is 12 m wide, with a 1.5 m platform, 5 m rise and 4 m depth.



(a) Find its cross-sectional area, slope length and volume.

Solution: $A = 18 + 30 = 48 \text{ m}^2$; slope = 13 m; $V = 48(4) = 192 \text{ m}^3$.

(b) Finish costs are \$120/m² on the rectangle plus \$650, and \$66/m² on the triangle. Lights cover base plus slope at \$75/m.

Solution: $2160 + 650 = \$2810$; art = \$1980; lights = $25(75) = \$1875$.

(c) Supplier A charges \$218/m³. Supplier B charges \$205/m³ plus \$3100 delivery. Which gives the lower total project cost?

Solution: A concrete = \$41 856, total = \$48 521. B concrete = \$42 460, total = \$49 125. Choose A, cheaper by \$604.

(d) State two assumptions that could materially affect the quote.

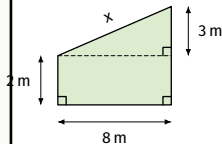
Solution: Examples: constant 4 m depth; the diagram is to scale only through its labels; only one side is decorated; no concrete wastage; tax/labour included exactly as stated.

Budget Risk



Use the shared diagram throughout. Show each measurement, apply the stated rates, and give a traceable final decision.

The profile is 8 m wide with a 2 m platform, 3 m rise and 6 m depth. The project budget is \$45 000.



(a) Find area, slope, and volume.

Solution: $A = 16 + 12 = 28 \text{ m}^2$; slope $= \sqrt{73} = 8.544 \dots \text{ m}$; $V = 168 \text{ m}^3$.

(b) Finish the visible side: rectangle $\$135/\text{m}^2$ plus $\$500$; triangle $\$72/\text{m}^2$; lights along base and slope $\$82/\text{m}$.

Solution: $2660 + 864 + \$1356.63 = \4880.63 .

(c) Concrete is quoted at $\$232/\text{m}^3$ with a 5% wastage allowance. Is the project within budget?

Solution: Order volume $= 168(1.05) = 176.4 \text{ m}^3$; concrete $= \$40\,924.80$; total $= \$45\,805.43$, so it is $\$805.43$ over budget.

(d) Explain why using rounded intermediate values could change a borderline decision.

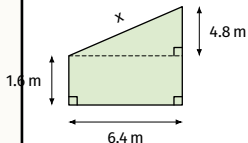
Solution: Rounding the slope, volume, or percentage too early accumulates error; carry full precision and round only the final money amount.

Camera-Side Limitation



Use the shared diagram throughout. Show each measurement, apply the stated rates, and give a traceable final decision.

The course has a 6.4 m base, 1.6 m platform, 4.8 m rise and 5 m depth. The quoted art and logos cover only the camera-facing side.



(a) Calculate the visible areas, slope and concrete volume.

Solution: Rectangle = 10.24 m^2 ; triangle = 15.36 m^2 ; total 25.6 m^2 ; slope = 8 m; volume = 128 m^3 .

(b) Logos cost $\$128/\text{m}^2$ plus $\$625$; art $\$69/\text{m}^2$; lighting along base and slope $\$76/\text{m}$; concrete $\$224/\text{m}^3$. Find the quote.

Solution: Logos = $\$1935.72$; art = $\$1059.84$; lights = $\$1094.40$; concrete = $\$28\,672$; total = $\$32\,761.96$.

(c) The client later asks for both sides to receive logos and art, but lighting remains on one side. Find the revised total.

Solution: Add one more logo-area charge without a second setup fee, $10.24(128) = \$1310.72$, and one more art charge, $\$1059.84$. Revised total = $\$35\,132.52$.

(d) Identify the original model limitation revealed by this change.

Solution: The quote depended on the visibility assumption; it did not represent the cost of finishing the complete three-dimensional course.