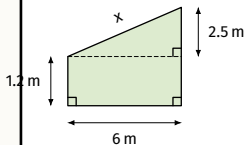


Skate Course Quote



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

The diagram is one visible side of a course, extruded to a constant depth of 5 m. The rectangle carries sponsorship; the triangle carries street art. Lights follow the 6 m ground run and the sloping edge.



(a) Find the rectangular and triangular areas, then the total cross-sectional area.

Solution: Rectangle = $6(1.2) = 7.2 \text{ m}^2$; triangle = $\frac{1}{2}(6)(2.5) = 7.5 \text{ m}^2$; total = 14.7 m^2 .

(b) Sponsorship costs $\$125/\text{m}^2$ plus $\$650$ installation. Find its cost.

Solution: $7.2(125) + 650 = \$1550.00$.

(c) Street art costs $\$62.50/\text{m}^2$. Find its cost.

Solution: $7.5(62.50) = \$468.75$.

(d) The sloping edge is 6.5 m. Lights cost $\$77.50/\text{m}$. Find the lighting cost.

Solution: Length = $6 + 6.5 = 12.5 \text{ m}$; cost = $12.5(77.50) = \$968.75$.

(e) Concrete costs $\$220/\text{m}^3$. Find the volume, concrete cost, and total project cost.

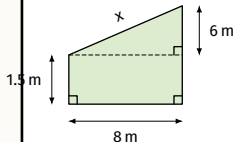
Solution: $V = 14.7(5) = 73.5 \text{ m}^3$; concrete = $73.5(220) = \$16170$; total = $\$19157.50$.

Training Ramp Upgrade



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

One visible side has an 8 m base, a 1.5 m rectangular platform and a 6 m rise. The course depth is 4 m.



(a) Find the two component areas and total cross-sectional area.

Solution: $12 + 24 = 36 \text{ m}^2$.

(b) Branding covers the rectangle at $\$110/\text{m}^2$ plus $\$500$ setup; artwork covers the triangle at $\$70/\text{m}^2$.

Solution: Branding = $12(110) + 500 = \$1820$; artwork = $24(70) = \$1680$.

(c) The sloping edge is 10 m. Lights follow it and the base at $\$65/\text{m}$.

Solution: $(10 + 8)(65) = \$1170$.

(d) Concrete costs $\$205/\text{m}^3$. Find its volume and cost.

Solution: $V = 36(4) = 144 \text{ m}^3$; cost = $144(205) = \$29\,520$.

(e) Find the complete project cost.

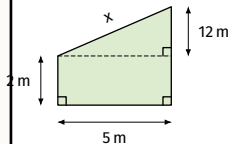
Solution: $1820 + 1680 + 1170 + 29\,520 = \$34\,190$.

Competition Launch Ramp



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

The profile has a 5 m base, 2 m platform height and 12 m rise. It is extruded 3.5 m.



(a) Find the cross-sectional area.

Solution: $5(2) + \frac{1}{2}(5)(12) = 10 + 30 = 40 \text{ m}^2$.

(b) Logos cost $\$140/\text{m}^2$ on the rectangle plus $\$600$ setup; art costs $\$55/\text{m}^2$ on the triangle.

Solution: Logos = $10(140) + 600 = \$2000$; art = $30(55) = \$1650$.

(c) Use Pythagoras to find the slope, then price lights along the slope and base at $\$80/\text{m}$.

Solution: Slope = $\sqrt{5^2 + 12^2} = 13 \text{ m}$; lights = $(13 + 5)(80) = \$1440$.

(d) Concrete is $\$230/\text{m}^3$. Find the volume and cost.

Solution: $V = 40(3.5) = 140 \text{ m}^3$; cost = $140(230) = \$32\,200$.

(e) Find the total.

Solution: $2000 + 1650 + 1440 + 32\,200 = \$37\,290$.