

The Math

To make sure you are using your space efficiently, City Council wants a report on how much of the 50m x 100m area will actually be covered by obstacle course. You will need to calculate the area of each of your obstacles and the path connecting them. The goal is to have at least 50% of your available space covered by obstacle course and other required structures.

Calculate each obstacle's area on the given pages. Then find the total area in the table below.

Element	Area (square meters)
Obstacle 1	116 m ²
Obstacle 2	40 m ²
Obstacle 3	60 m ²
Obstacle 4	112 m ²
Obstacle 5	288 m ²
Obstacle 6	128 m ²
Obstacle 7	120 m ²
Obstacle 8	78 m ²
Path	532 m ²
Bathrooms	128 m ²
Spectator Stands	192 m ²
First Aid Station	200 m ²
Warm-Up Area	512 m ²
Total	2506 m ²

You were given a total of 5000 m² to plan. What percent of this area is in use by your course? 50.1%

Write a paragraph summary of what you learned during this project:

Obstacle 5: Swimming Pool

Description	Sketch (label with dimensions)	Area Calculation
Contestants have to swim from one end to the other.		Rectangle: $A = bh$ $A = 24 \cdot 12 = \boxed{288 \text{ m}^2}$

Obstacle 6: Rope Swing

Description	Sketch (label with dimensions)	Area Calculation
Contestants stand on a platform and hold onto a rope, then swing onto one of four small platforms across a gap.		Triangle: $A = \frac{1}{2}bh$ $A = \frac{1}{2} \cdot 16 \cdot 16 = \boxed{128 \text{ m}^2}$

Obstacle 7: Monkey Bars

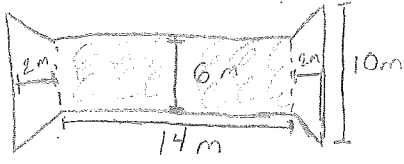
Description	Sketch (label with dimensions)	Area Calculation
Contestants hang from a horizontal bar and move to another bar, until they make it across.		Trapezoids: $A = \frac{1}{2}(b_1 + b_2)h$ $A = \frac{1}{2}(6 + 14) \cdot 6 = 60 \text{ m}^2$ <hr/> Total: $60 \cdot 2 = \boxed{120 \text{ m}^2}$

Obstacle 8: Tunnel Crawl

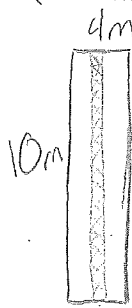
Description	Sketch (label with dimensions)	Area Calculation
Contestants must squeeze through a narrow plastic tube.		Rectangle: $A = bh$ $A = 4 \cdot 16 = 64 \text{ m}^2$ Trapezoid: $A = \frac{1}{2}(b_1 + b_2)h$ $A = \frac{1}{2}(4 + 8)2 = 12 \text{ m}^2$ <hr/> Total: $64 + 12 = \boxed{76 \text{ m}^2}$

Area Calculations Page

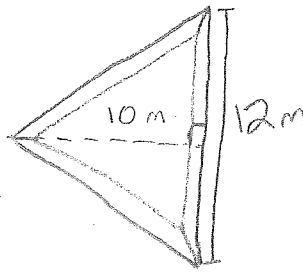
Obstacle 1: Barbed Wire Crawl

Description	Sketch (label with dimensions)	Area Calculation
Contestants will crawl on their stomachs under barbed wire strung a foot off the ground.		<p>Rectangle: $A = b \cdot h = 6 \cdot 14$ $A = 84 \text{ m}^2$</p> <p>Trapezoids: $A = \frac{1}{2}(b_1 + b_2)h$ $A = \frac{1}{2}(6 + 10) \cdot 2 = 16 \text{ m}^2$</p> <p>Total: $84 + 16 + 16 = 116 \text{ m}^2$</p>

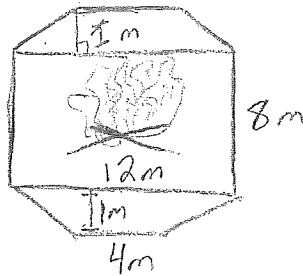
Obstacle 2: Net Climb

Description	Sketch (label with dimensions)	Area Calculation
A large net is hung vertically. Contestants must climb up to the top and down the other side.		<p>Rectangle: $A = b \cdot h$ $A = 10 \cdot 4 = 40 \text{ m}^2$</p>

Obstacle 3: Balance Beams

Description	Sketch (label with dimensions)	Area Calculation
Three balance beams of different heights are set in a triangle. The contestants must travel around all three and end up back where they started.		<p>Triangle: $A = \frac{1}{2}bh$ $A = \frac{1}{2} \cdot 12 \cdot 10 = 60 \text{ m}^2$</p>

Obstacle 4: Fire Jump

Description	Sketch (label with dimensions)	Area Calculation
Jump over fire!		<p>Rectangle: $A = bh$ $A = 12 \cdot 8 = 96 \text{ m}^2$</p> <p>Trapezoids: $A = \frac{1}{2}(b_1 + b_2)h$ $A = \frac{1}{2}(12 + 4)1 = 8 \text{ m}^2$</p> <p>Total: $96 + 8 + 8 = 112 \text{ m}^2$</p>