

27. Area and Perimeter

- 1 The area of any shape ≥ 0
- 2 Two shapes that completely overlap have **equal area**
- 3 Shapes placed together without overlapping: **total area = sum of parts**
- 4 A square with side length **1** has area **1**

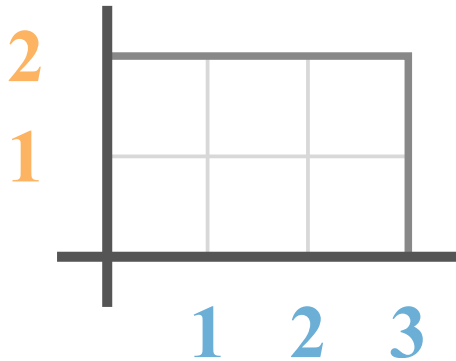
These four are the foundation — all area formulas derive from them



Unit square — area reference

27. Area Formula Derivation

Rectangle with length 3 and width 2



Divided into $3 \times 2 = 6$ unit squares

Each unit square has area = 1

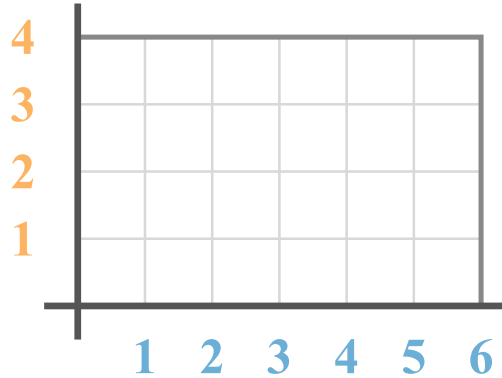
$$\text{Area} = 3 \times 2 = 6$$

Rectangle Area = length $\times$ width $\leftarrow$ derived theorem

27. Area and Perimeter

a)

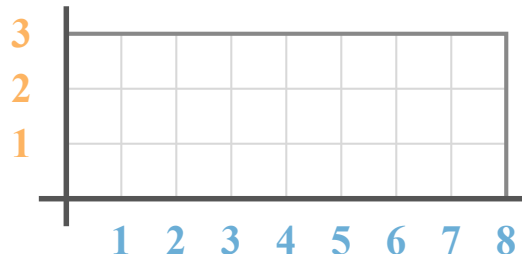
$$\text{Perimeter} = 2 \times (\text{length} + \text{width}) \quad | \quad \text{Area} = \text{length} \times \text{width}$$



$$\text{Perimeter} = 2 \times (6 + 4) = 2 \times 10 = 20 \text{ cm}$$

$$\text{Area} = 6 \times 4 = 24 \text{ cm}^2$$

b)

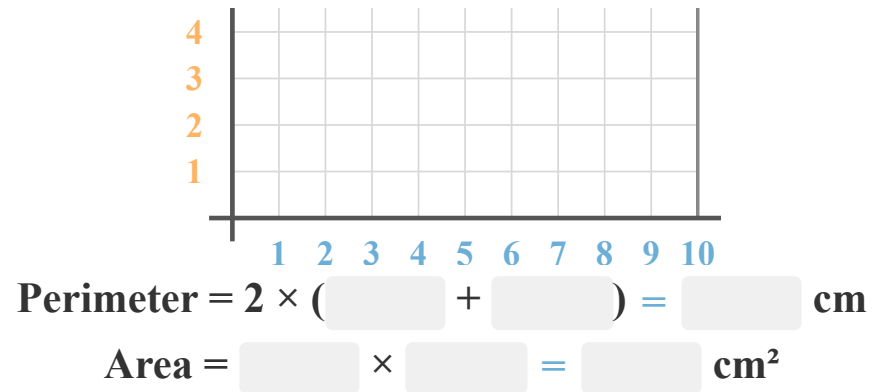


$$\text{Perimeter} = 2 \times (\text{ } + \text{ }) = \text{ } \text{ cm}$$

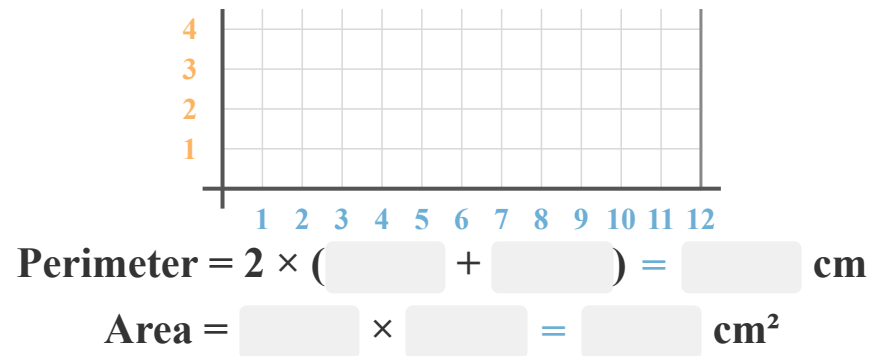
$$\text{Area} = \text{ } \times \text{ } = \text{ } \text{ cm}^2$$

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c)

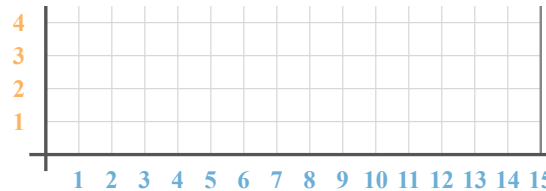


d)



27. Area and Perimeter

e)



$$\text{Perimeter} = 2 \times (\text{ } + \text{ }) = \text{ } \text{ cm}$$

$$\text{Area} = \text{ } \times \text{ } = \text{ } \text{ cm}^2$$

f)

A rectangular garden is 9 m long and 6 m wide.
How much fencing is needed? What is the area?

$$\text{Perimeter} = 2 \times (\text{ } + \text{ }) = \text{ } \text{ m}$$

$$\text{Area} = \text{ } \times \text{ } = \text{ } \text{ m}^2$$