

Area & Geometry for Home Renovation

ਘਰ ਦੀ ਮੁਰੰਮਤ, ਟਾਈਲਾਂ (Flooring) ਅਤੇ ਪੇਂਟ (Painting) ਲਈ ਖੇਤਰਫਲ ਅਤੇ ਜਿਓਮੈਟਰੀ

1. Key Concepts: Area & Perimeter (ਖੇਤਰਫਲ ਅਤੇ ਪਰਿਮਾਪ)

When renovating a home, calculating exact surface area prevents waste and saves money on material costs like tiles, paint, and flooring.

FUNDAMENTAL FORMULAS (ਮੁੱਖ ਫਾਰਮੂਲੇ)

Area of Rectangle = Length × Width

Perimeter of Rectangle = 2 × (Length + Width)

Area of 4 Walls = 2 × Height × (Length + Width)

2. Real-Life Renovation Scenarios

Scenario A: Calculating Floor Tiles Required (ਟਾਈਲਾਂ ਦਾ ਹਿਸਾਬ)

Example: You have a room of size **12 ft × 10 ft**. You want to lay square tiles of size **2 ft × 2 ft**. How many tiles do you need?

1. Step 1: Calculate Room Floor Area

Room Area = 12 ft × 10 ft = 120 sq. ft.

2. Step 2: Calculate Area of One Tile

Tile Area = 2 ft × 2 ft = 4 sq. ft.

3. Step 3: Calculate Number of Tiles Needed

Base Tiles = 120 / 4 = 30 tiles



Wastage Rule (10% Extra): Always buy 10% extra tiles for cutting and breakage!

Total Tiles to Buy = 30 + (10% of 30) = 30 + 3 = 33 tiles.

Scenario B: Wall Paint Calculation (ਦੀਵਾਰਾਂ ਦੇ ਪੇਂਟ ਦਾ ਹਿਸਾਬ)

Example: A room is **15 ft long, 10 ft wide, and 10 ft high**. One litre of paint covers **100 sq. ft.** How much paint is needed for 2 coats on the 4 walls?

1. **Step 1: Calculate Total 4 Wall Area**

Wall Area = $2 \times \text{Height} \times (\text{Length} + \text{Width}) = 2 \times 10 \times (15 + 10) = 500 \text{ sq. ft.}$

2. **Step 2: Account for 2 Coats of Paint**

Total Painting Area = $500 \text{ sq. ft.} \times 2 = 1,000 \text{ sq. ft.}$

3. **Step 3: Calculate Paint Volume Required**

Paint Required = $1,000 / 100 = 10 \text{ Litres}$

3. Material Estimation Cheatsheet

Material	Standard Coverage / Calculation	Pro Tip
Floor Tiles	Room Area ÷ Tile Area	Add +10% extra for cutting waste
Wall Paint	~100–120 sq. ft. per Litre (1 Coat)	Subtract door & window areas (~21 sq. ft. per door)
Baseboard / Skirting	Perimeter of room = $2 \times (L + W)$	Subtract door width

4. Practical Practice Exercises (ਅਭਿਆਸ ਲਈ ਪ੍ਰਸ਼ਨ)

Q1 Lawn Turf / Grass: A rectangular garden is 20 ft long and 15 ft wide. What is the total square footage of grass required to cover the lawn?
Answer: Area = $20 \times 15 = 300 \text{ sq. ft.}$

Q2 Curtain Skirting / Border Wire: You want to put decorative LED lights around the ceiling perimeter of a room sized 14 ft × 12 ft. How many feet of LED light strip is needed?
Answer: Perimeter = $2 \times (14 + 12) = 2 \times 26 = 52 \text{ ft.}$

Q3 Bathroom Wall Tiling: A bathroom wall measures 8 ft wide and 8 ft high. It has a door measuring 3 ft × 7 ft. Calculate the net area that needs tiling.
Answer: Gross Area = $8 \times 8 = 64 \text{ sq. ft.}$ Door Area = $3 \times 7 = 21 \text{ sq. ft.}$ Net Area = $64 - 21 = 43 \text{ sq. ft.}$