Grade 6 Math, Explained

Unit 10 · Perimeter, Area and Volume

HARDER PRACTICE QUESTIONS

Full marks 30

Write your answers on separate paper. Show your working, with the unit of every answer. The sizes and prices on this sheet are made up.

1 Same fence, different gardens [4]

Aayusha has 24 m of fence for a rectangular vegetable bed. Its sides must be whole meters.

i. Copy and complete the table for every bed she could make.

Length (m)	**11**	**10**	**……**	**……**	**……**	**……**
Breadth (m)	1	……	……	……	……	……
Area (m^2)	11	……	……	……	……	……

ii. Which bed gives her the most space to grow vegetables?

iii. Do beds with the same perimeter always have the same area?

2 Spot the error [3]

Ankit says: "If I make the side of a square twice as long, its area becomes twice as big too."

i. Test his rule with a square of side 3 cm.

ii. What really happens to the area?

iii. What happens to the volume of a cube when its edge is made twice as long?

3 A leaf on squared paper [3]

Pragya draws round a leaf on paper of 1 cm squares. The leaf covers 18 whole squares, 10 squares more than half, and 7 squares less than half.

i. Estimate the area of the leaf.

ii. Her friend counts every square the leaf touches and gets 35 cm^2. Is that a better estimate? Why?

iii. How could Pragya get a closer estimate?

4 Tiling a floor [3]

A room's floor is 4 m long and 3 m broad. It is to be covered with square tiles 25 cm on each side, which cost Rs 85 each.

i. How many tiles fit along the length, and how many along the breadth?

ii. How many tiles are needed?

iii. What do the tiles cost?

5 A fence with a gate [4]

A rectangular garden has an area of 135 m^2 and a length of 15 m. It is fenced with 3 rounds of wire, but a gap 2 m wide is left for the gate.

i. Find the garden's breadth.

ii. Find its perimeter.

iii. How much wire is needed?

iv. Wire costs Rs 45 a meter. What does the wire cost?

6 A path round a lawn [3]

A lawn is 10 m long and 6 m broad. A path 1 m wide runs all round it, outside the lawn. Find the area of the path.

7 The water tank [3]

A water tank shaped like a cuboid is 2 m long, 1.5 m broad and 1 m high. One cubic meter holds 1000 liters.

i. Find its volume.
ii. How many liters does it hold when full?
iii. A family uses 250 liters of water a day. For how many days does a full tank last?

8 Make your own [3]

Describe a box shaped like a cuboid whose volume is 360 cm^3, with its length, breadth and height three different whole numbers of centimeters. Then find the area of its base.

9 Think: how many boxes fit? [4]

A carton is 60 cm long, 40 cm broad and 30 cm high.

i. Find its volume.
ii. How many cube-shaped boxes with edges of 10 cm fit in it?
iii. Sushant divides the carton's volume by the volume of a 20 cm cube, and says 9 such cubes fit. How many really fit, and why is his answer wrong?