Grade 5 Math, Explained

Unit 12 · Perimeter, Area and Volume

HARDER PRACTICE QUESTIONS

Full marks 34

Write your answers on separate paper. Show your working, and write the unit with every answer: cm or m for a length, sq. cm or sq. m for an area, cubic cm or cubic m for a volume. Use squared paper where it helps.

1 Work backwards [3]

A rectangular room has an area of 72 sq. m. It is 12 m long.

i. How broad is it? (12 times which number makes 72?)
ii. What is its perimeter?

2 Four times round [3]

A farmer uses 160 m of barbed wire to go **4 times** round a square vegetable garden.

i. What is the perimeter of the garden?
ii. How long is each side?
iii. What is the area of the garden?

3 Think: cut off a corner [4]

On squared paper, draw a rectangle 6 squares long and 4 squares broad. Then cut a square 2 squares by 2 squares off one corner, so the shape looks like the letter L. Each square is 1 cm long.

i. What was the area of the rectangle, and what is the area of the L?
ii. Find the perimeter of the L by walking round its edge.
iii. Pratik says: “Cutting off a corner makes the perimeter smaller too.” Is he right? Explain.

4 A carpet and a border [4]

A hall is 6 m long and 5 m broad. (The prices are made up for the problem.)

i. A carpet covers the whole floor. It costs Rs. 400 for each sq. m. What does the carpet cost?
ii. A wooden strip goes round the bottom of the walls, except across the door, which is 1 m wide. How long is the strip?

5 Spot the error [3]

Sujana found that a square with sides of 4 cm has a perimeter of 16 and an area of 16. She wrote: “So for this square, the perimeter and the area are the same thing.”
What is wrong with what she wrote? Explain with the units.

6 Packing soap [3]

Bars of soap are 5 cm long, 4 cm broad and 2 cm high. A carton is 20 cm long, 12 cm broad and 10 cm high. The bars are packed lying the same way as the carton, with no gaps.

i. How many bars fit along the length, the breadth and the height?
ii. How many bars fit in the carton?
iii. Check your answer with the volumes of the carton and of one bar.

7 A fish tank [4]

A fish tank is 50 cm long, 30 cm broad and 40 cm high inside. 1,000 cubic cm of water is 1 liter.

i. What is the volume of the tank?
ii. How many liters does it hold when full?
iii. Water is poured in until it is 30 cm deep. How many liters is that?

8 A bigger cube [3]

Mijash builds a cube from 64 small cubes, each 1 cm long.

i. How long is each edge of his cube? Explain how you know.

ii. He wants to make the next bigger cube, with edges 1 cm longer. How many more small cubes does he need?

9 Is it possible? [4]

The sides are whole numbers of cm. Give a reason, or an example, for each.

i. A rectangle with an area of 12 sq. cm and a perimeter of 14 cm.

ii. A square with a perimeter of 20 cm and an area of 20 sq. cm.

iii. A cuboid 2 cm high with a volume of 24 cubic cm.

iv. A cube with a volume of 10 cubic cm.

10 Make your own [3]

Draw every rectangle with whole-number sides that has an area of 24 sq. cm. (A 4 by 6 and a 6 by 4 rectangle count as one.)

i. Find the perimeter of each.

ii. Which has the smallest perimeter? What do you notice about its shape?