LESSON MAKER PRO

Choose the View

Match a flat drawing to the dimensions it needs to show.

HIGH SCHOOL · MM.D3D.A.10.d

MM.D3D.A.10.d "Determine an appropriate means to visually represent an object or structure, such as drawings on paper or graphics on computer screens."

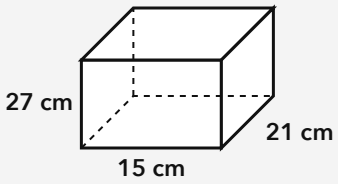
NAME _____ DATE _____

VIEWS AND SCALE

A top view of a rectangular prism shows length and width, a front view shows length and height, and a side view shows width and height. Choose the view that shows the measurements your audience needs. For a 1:n scale drawing, divide each real length by n, then multiply the drawn lengths to find the drawing's area.

WORKED EXAMPLE

You need a 1:3 scale drawing that shows the prism's width and height. Which view should you use, and what is its drawn area?

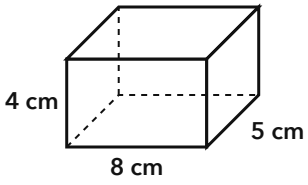


1. Choose the side view because it shows width and height.
2. Divide by 3: drawn width = 7 cm and drawn height = 9 cm.
3. Multiply: 7 × 9 = 63 cm^2.

Answer: Side view, 63 cm^2.

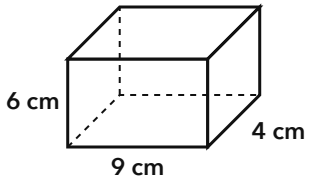
PRACTICE 6 problems

1 For a 1:2 scale drawing, which view shows the prism's length and width? What is the drawn area?



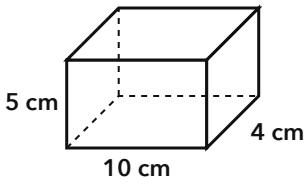
ANSWER _____

2 What is the area of the prism's front view at full size?



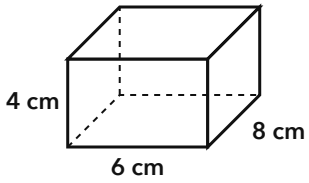
ANSWER _____

3 What is the area of the prism's side view at full size?



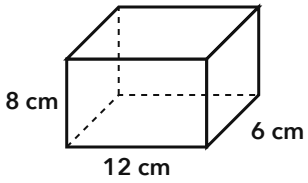
ANSWER _____

4 Which full-size view has the largest rectangular area? Name the view and give its area.



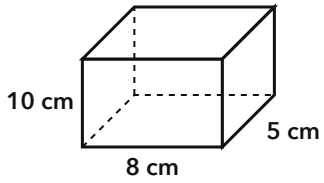
ANSWER _____

5 A drawing must show the prism's width and height at full size. Which view should you choose, and what is its area?



ANSWER _____

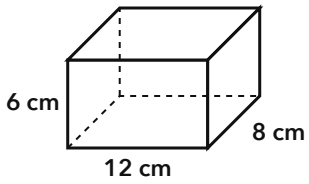
6 At a scale of 1:2, which view has a drawn area of 20 cm^2?



ANSWER _____

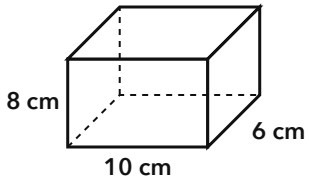
APPLY IT Show your work

1 You are making a top-down image of this sneaker storage box for a resale listing. At 1:4 scale, which view should you draw, and what will its area be on paper?



ANSWER _____

2 A printer enclosure has a removable panel covering its width and height. Which full-size view should a repair guide use to show that panel, and what is its area?



ANSWER _____

CHALLENGE One step up

A shop's front-view drawings of Boxes A and B look identical. Check the full-size front-view area of each box. Then choose the view that shows length and width, find its area for each box at 1:2 scale, and explain why that view distinguishes the boxes.

BOX DIMENSIONS

Box	Length (cm)	Width (cm)	Height (cm)
A	8	4	5
B	8	9	5

WORK SPACE AND ANSWER

ANSWER KEY

Choose the View

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For a 1:2 scale drawing, which view shows the prism's length and width? What is the drawn area?	**Top view, 10 cm^2.**
2	What is the area of the prism's front view at full size?	**54 cm^2**
3	What is the area of the prism's side view at full size?	**20 cm^2**
4	Which full-size view has the largest rectangular area? Name the view and give its area.	**Top view, 48 cm^2.**
5	A drawing must show the prism's width and height at full size. Which view should you choose, and what is its area?	**Side view, 48 cm^2.**
6	At a scale of 1:2, which view has a drawn area of 20 cm^2?	**Front view**

PART 2 · APPLY IT

1. **Top view, 6 cm^2.** The top view shows length and width. At 1:4 scale, its drawn dimensions are 12/4 = 3 cm and 8/4 = 2 cm, so its area is 6 cm^2.
2. **Side view, 48 cm^2.** The side view shows width and height. Its area at full size is 6 × 8 = 48 cm^2.

CHALLENGE

Both front views have an area of 40 cm^2. The top view shows length and width. At 1:2 scale, Box A's top view has an area of 8 cm^2, and Box B's has an area of 18 cm^2. The top views differ because the boxes have different widths.

Accept dimensions multiplied in either order. For scaled views, areas must be calculated from the scaled lengths, not divided by the scale factor only once.