LESSON MAKER PRO

Straight-On Sketches

Turn solid structures into scale elevations

HIGH SCHOOL · MM.D3D.A.10.b

MM.D3D.A.10.b "Create an elevation drawing to represent a given solid structure, using technology where appropriate."

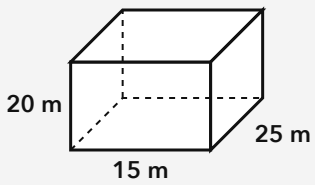
NAME _____ DATE _____

THE BIG IDEA

An elevation shows a solid straight on, with its depth hidden. For a rectangular prism, the front elevation uses l for width and h for height; the right-side elevation uses w for width and h for height. A cylinder has a rectangular elevation and a cone has a triangular one, each 2r wide. Divide real dimensions by the scale's real units per drawn centimeter.

WORKED EXAMPLE

Look at the solid. Sketch its front elevation at a scale of 1 cm for every 5 m. Label the drawn width and height.

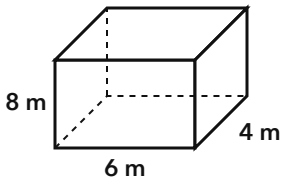


1. The front elevation is a rectangle. Its real width is 15 m, and its real height is 20 m.
2. Drawn width: 15 / 5 = 3 cm.
3. Drawn height: 20 / 5 = 4 cm.

Answer: A rectangle labeled 3 cm wide and 4 cm high.

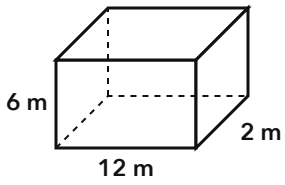
PRACTICE 6 problems

1 Sketch the front elevation of the solid at 1 cm for every 2 m. Label its drawn width and height.



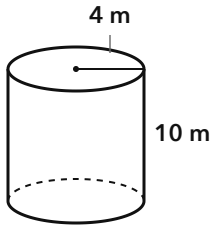
ANSWER _____

2 Sketch the right-side elevation of the solid at 1 cm for every 2 m. Label its drawn width and height.



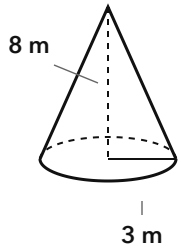
ANSWER _____

3 Sketch the front elevation of the solid at 1 cm for every 2 m. Label its drawn width and height.



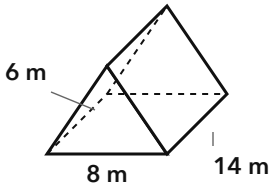
ANSWER _____

4 Sketch the front elevation of the solid at 1 cm for every 2 m. Label its drawn base width and height.



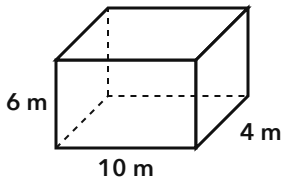
ANSWER _____

5 View the triangular end of the solid straight on. Sketch that elevation at 1 cm for every 2 m. Label its drawn base width and height.



ANSWER _____

6 Sketch both the front and right-side elevations at 1 cm for every 2 m. Label each sketch's drawn width and height.

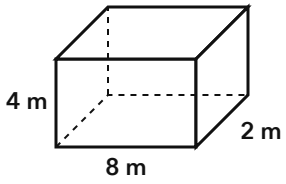


ANSWER _____

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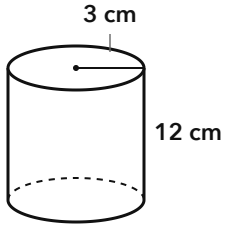
APPLY IT Show your work

1 A student is planning a gaming booth shaped like the solid shown. Sketch its front elevation at 1 cm for every 2 m. Label the drawn width and height.



ANSWER _____

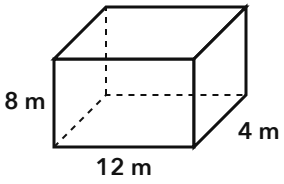
2 A designer is drawing a cylindrical speaker from the front. Sketch the elevation of the solid shown at 1 cm for every 3 cm. Label the drawn width and height.



ANSWER _____

CHALLENGE One step up

An artist's front elevation of this solid is 6 cm wide, and the right-side elevation is 2 cm wide. Sketch both elevations at the artist's scale. Label their heights and explain how you found the shared height.



WORK SPACE AND ANSWER

Straight-On Sketches

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Sketch the front elevation of the solid at 1 cm for every 2 m. Label its drawn width and height.	**A rectangle labeled 3 cm wide and 4 cm high.**
2	Sketch the right-side elevation of the solid at 1 cm for every 2 m. Label its drawn width and height.	**A rectangle labeled 1 cm wide and 3 cm high.**
3	Sketch the front elevation of the solid at 1 cm for every 2 m. Label its drawn width and height.	**A rectangle labeled 4 cm wide and 5 cm high.**
4	Sketch the front elevation of the solid at 1 cm for every 2 m. Label its drawn base width and height.	**A triangle labeled 3 cm across its base and 4 cm high.**
5	View the triangular end of the solid straight on. Sketch that elevation at 1 cm for every 2 m. Label its drawn base width and height.	**A triangle labeled 4 cm across its base and 3 cm high.**
6	Sketch both the front and right-side elevations at 1 cm for every 2 m. Label each sketch's drawn width and height.	**Front: a rectangle 5 cm wide and 3 cm high. Right side: a rectangle 2 cm wide and 3 cm high.**

PART 2 · APPLY IT

1. **A rectangle labeled 4 cm wide and 2 cm high.** Use the front length and height, not the depth. Divide 8 m and 4 m by 2 m per drawn centimeter.
2. **A rectangle labeled 2 cm wide and 4 cm high.** The front width is the diameter, 2 × 3 = 6 cm. At the given scale, the drawn width is 6 / 3 = 2 cm and the drawn height is 12 / 3 = 4 cm.

CHALLENGE

Front: a rectangle 6 cm wide and 4 cm high. Right side: a rectangle 2 cm wide and 4 cm high. Both widths show a scale of 1 cm for every 2 m, so the 8 m height is 4 cm in both elevations.

Accept freehand sketches with the correct outline and labeled drawn dimensions. Exact measured lengths are not required.