



Visualization Chapter 11

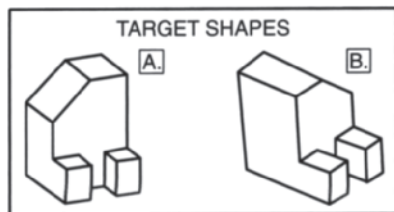
Diagnostic Images

Because of the nature of the human body, engineering design in the medical fields requires visualization of complex shapes in many different orientations. For instance, all human beings share similar physical characteristics. We also have many differences; for instance, we are male or female, tall or short, old or young. Whether it is a surgical device, rehabilitation equipment, or a prosthetic device, not every design concept can be modeled based on primitive shapes or described in the standard three views of multiview drawings. Even 2D and 3D diagnostic images can be taken from multiple directions. Their interpretation requires visualization skills.

It takes well-developed visualization abilities to mentally rotate objects at other angles than 90 degrees. When objects are very similar in shape and size, it can be difficult to visualize slight differences in them after they have been placed in different orientations in space. Another visualization skill that can be of use in medical fields is being able to visualize what an object would look like if cut by a plane at a given angle.

Exercises

Exercise 1 Match the objects shown at different rotations with the target shapes.



1 ☐



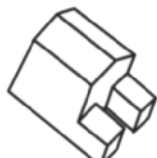
2 ☐



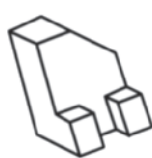
3 ☐



4 ☐



5 ☐



6 ☐



7 ☐



8 ☐



9 ☐



10 ☐



11 ☐



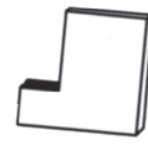
12 ☐



13 ☐



14 ☐



15 ☐



16 ☐



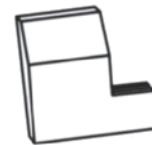
17 ☐



18 ☐



19 ☐



20 ☐

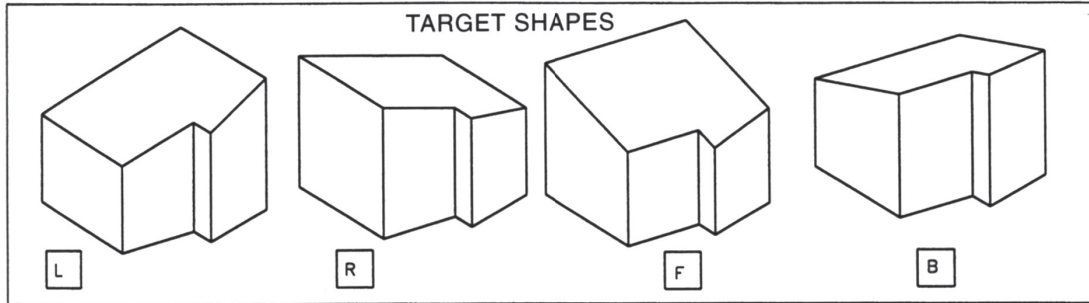
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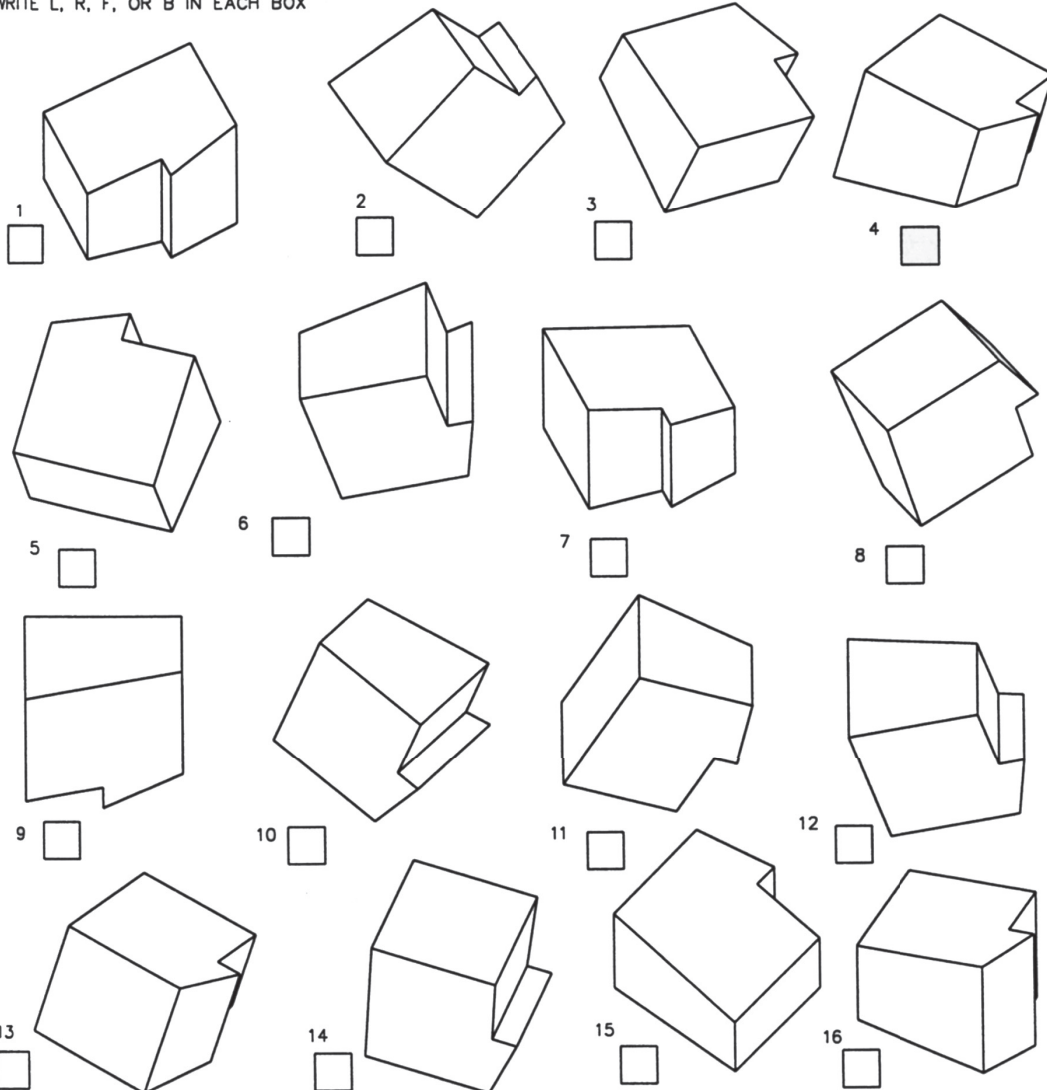
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Diagnostic Images

Exercise 2 Match the objects shown at different rotations with the target shapes.



WRITE L, R, F, OR B IN EACH BOX



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Diagnostic Images

Exercise 3 Visualize the surface that would result from the plane cutting through the 3D object. Select the matching answer from those given.

A

B

C

D

