

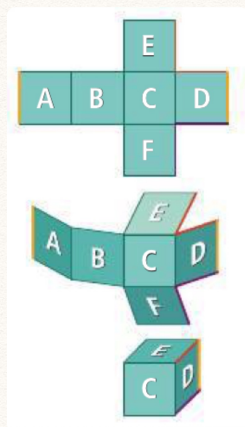
Nets and Drawings for Visualizing Geometry:

Goal: Learn how to represent a three-dimensional object with a two-dimensional figure using special drawing techniques.

1. Nets
2. Isometric Drawings
3. Orthographic Drawings

Nets

Def: A net is a two-dimensional diagram that you can fold to form a three dimensional figure. It shows all surfaces of a figure in one view.



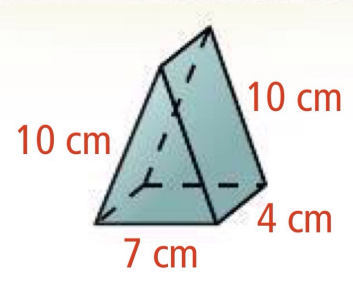
← This is a net of a cube



Ex 1) Draw a net of the following rectangular prism and label all dimensions:



Ex 2) Draw a net of the following triangular prism and label all dimensions:



Isometric Drawings

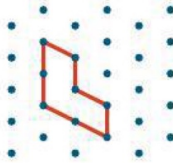
Def: An isometric drawing is a two-dimensional drawing that shows a corner view of a three-dimensional figure. It shows the top, front, and side of the figure.

Isometric dot paper is helpful, but not necessary, to make isometric drawings.

What is an isometric drawing of the cube structure at the right?

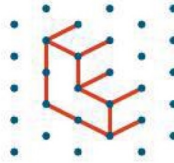
Step 1

Draw the front edges.



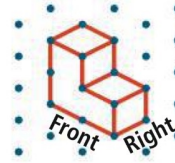
Step 2

Draw the right edges.



Step 3

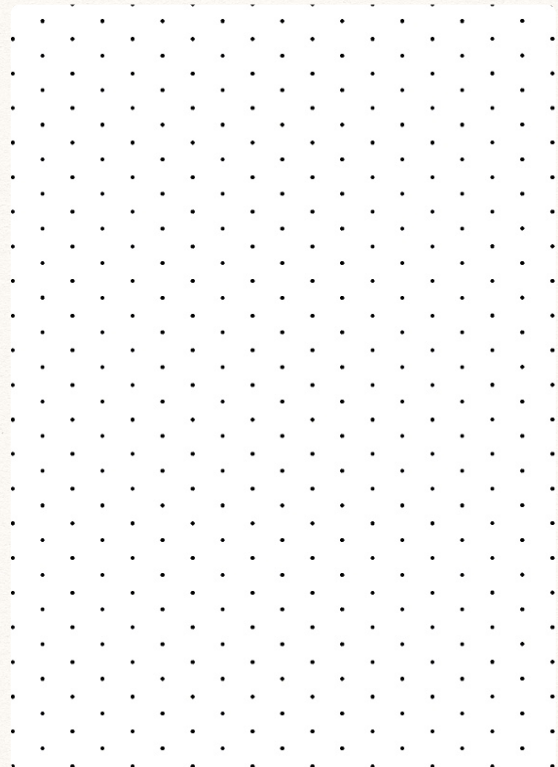
Draw the back edges.



Ex 3) Let's draw
an isometric
drawing of a
rectangular
prism

Ex 4)

What is an isometric drawing of this cube structure?



Orthographic Drawings

Def: An orthographic drawing is a two dimensional drawing that shows **THREE SEPARATE VIEWS** of a three-dimensional figure:

- ▶ top view
- ▶ front view
- ▶ right-side view

Problem 4 Orthographic Drawing

What is the orthographic drawing for the isometric drawing at the right?

Solid lines show visible edges.

Dashed lines show hidden edges.

Top

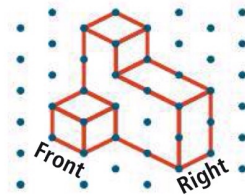
Front

Right

An isometric drawing shows the same three views.

Ex 5)

What is the orthographic drawing for this isometric drawing?



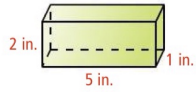
LESSON CHECK:



Lesson Check

Do you know HOW?

1. What is a net for the figure below? Label the net with its dimensions.



2. What is an isometric drawing of the cube structure?

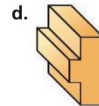
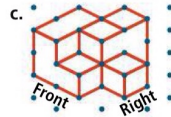
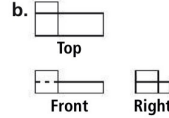


3. What is the orthographic drawing of the isometric drawing at the right? Assume there are no hidden cubes.

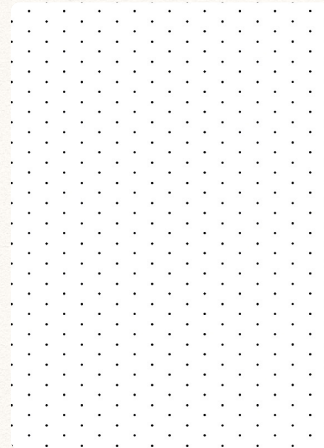


Do you UNDERSTAND? MATHEMATICAL PRACTICES

4. **Vocabulary** Tell whether each drawing is *isometric*, *orthographic*, a *net*, or *none*.



5. **Compare and Contrast** What are the differences and similarities between an isometric drawing and an orthographic drawing? Explain.



HOMEWORK:

**P. 7-10 #6-11, 12-13, 16-17, 22, 24-28,
32, 35, 40**

(19 PROBLEMS)