

Let's Explore Computer Aided Design - Activity Sheet

Activity: Explore elements of Computer Aided Design (CAD)!

What to do: You have to explore and observe the various elements that go into Computer Aided Designing.

At the end of the activity: You will be able to identify the elements that are a part of Computer Aided Design.

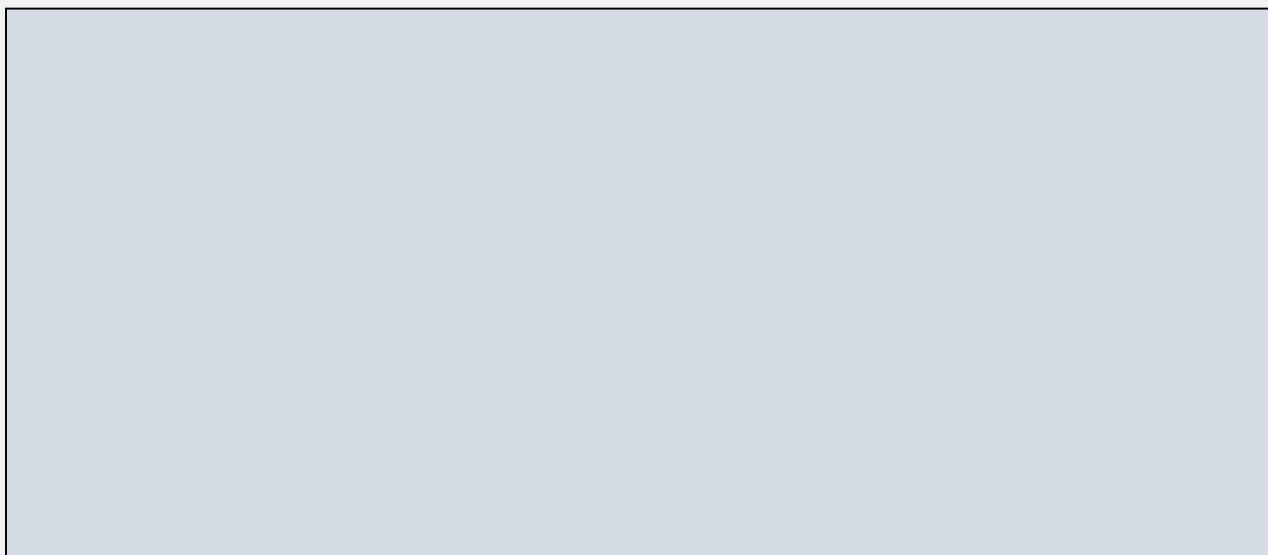
Materials Required:

- Computer/laptop
- Internet Connection
- Paper with a Pen/Pencil
- Worksheet

Let's get started!!

- Look around you and choose a simple object.
- Pay attention to how the object appears from different points of view i.e. side view, top view and front view, specifically which features of the object are visible, and which are hidden in these different views.

Draw the side view, top view and front view of the object (e.g. bottle) on the piece of paper with a pen/pencil. Jot down your observations below as you make the drawing.



Congratulations! The views you have captured i.e. the side view, top view and front views are called 'Orthographic Projections'. Note that these views that you have drawn are two dimensional only.

When a three-dimensional object is shown on a two-dimensional surface, it is called a "Perspective view". A special type of perspective view called "Isometric View" is commonly used in engineering drawings and by computer aided design software.

To design any object, you have to know how it would appear from all these views. As you must have noticed, manual drawing can be pretty time-consuming and limiting when you want to turn all those ideas in your brain into designs. Hence comes Computer Aided Design (CAD) to the rescue!

Explore CAD on the internet and note down what you find.

What is Computer Aided Design (CAD)? Why is CAD software used, what are its applications and its major advantages?

CAD uses concepts of 2D and 3D geometry. Can you list some of them?

Let's explore one such CAD software i.e. CollabCAD. Install CollabCAD and explore all the toolboxes it provides. To install CollabCAD, visit <https://collabcad.gov.in/atInfo.html>

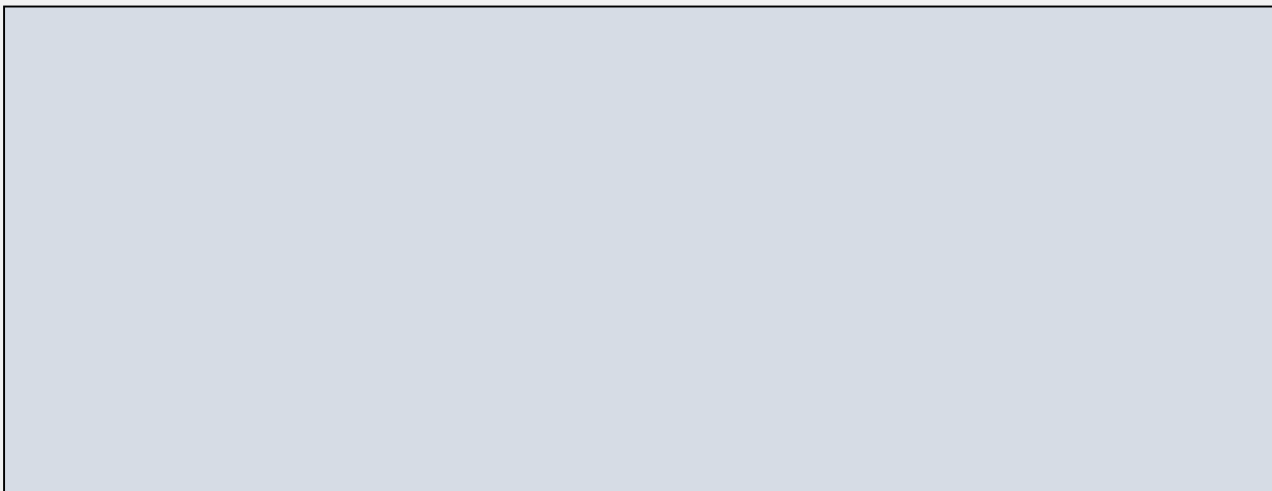
Now, take a minute and think of an object you'd like to design to make your life at home easier. It could be as simple as a mobile phone holder!

Ready? Let's start with the fun part, let's design!

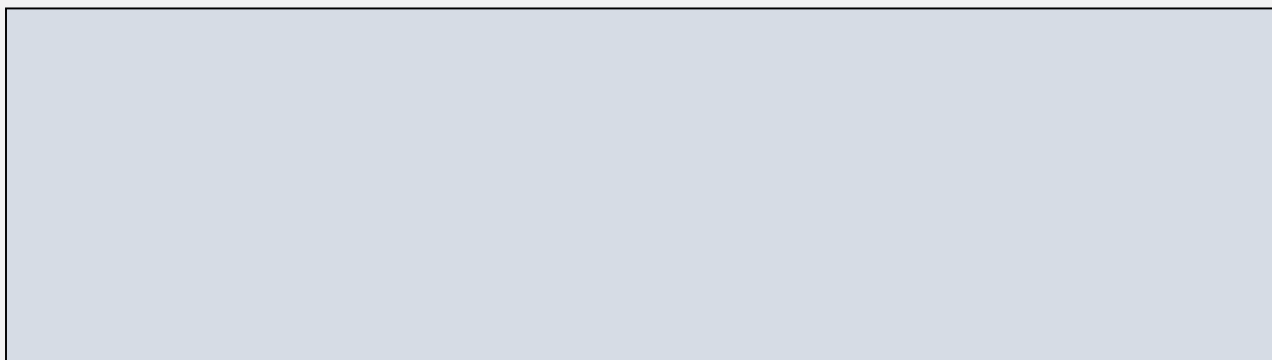
List down the object's functionality highlighting the use of all its parts. (e.g. base to support, a holder to hold a phone etc. for a mobile phone holder)



Choose a part of the object (e.g. the base). Create its 2D view on CollabCAD. After you have successfully created it, write down the steps you followed below.



Let's move to 3D! Create the 3D view of the same part on CollabCAD. After you have successfully created it, write down the down the steps you followed below.



Try changing the plane of view (top, side, front) from 2D to 3D on CollabCAD. Write down the steps you followed below.

You're doing great! We're almost done!

Generate a 3D printable (.stl) file in CollabCAD. Write down the steps you followed below.

You're a designer in making!! Through this activity, you have learnt the basics of 3D Design and CollabCAD.

You can now explore the software even further and create complicated shapes and objects. You can try creating a pen holder, a mobile case for your smartphone, or an earphone cord organizer etc. and generate a ready to print 3D printable (.stl) file.

Happy Designing!