

TINKERCAD



CONTENT

- ✓ What is 3D Printer?
- ✓ I'm Learning TinkerCad
- ✓ Let's Get to Know TinkerCad Environment
- ✓ My First Design

GAINS

- ✓ Learn what is 3D printing and 3D design.
- ✓ Learn what three-dimensional drawing is and how it has advantages.
- ✓ Students get to know the tinkerCad working environment.
- ✓ Learn the basic shapes of TinkerCad.
- ✓ Learns to select objects in TinkerCad working environment and perform operations on them.
- ✓ Recognizes cutting, copying, coloring and sizing tools in TinkerCad.



What is a 3D Printer?

Three-dimensional printer technology uses many different materials to separate the three-dimensional model into layers and reveals the designed model as a real product. It is possible to print out with 3D computer drawings or 3D printer programs downloaded from the internet. In other words, you can reach any product you have designed or dreamed of in minutes thanks to a 3D printer.



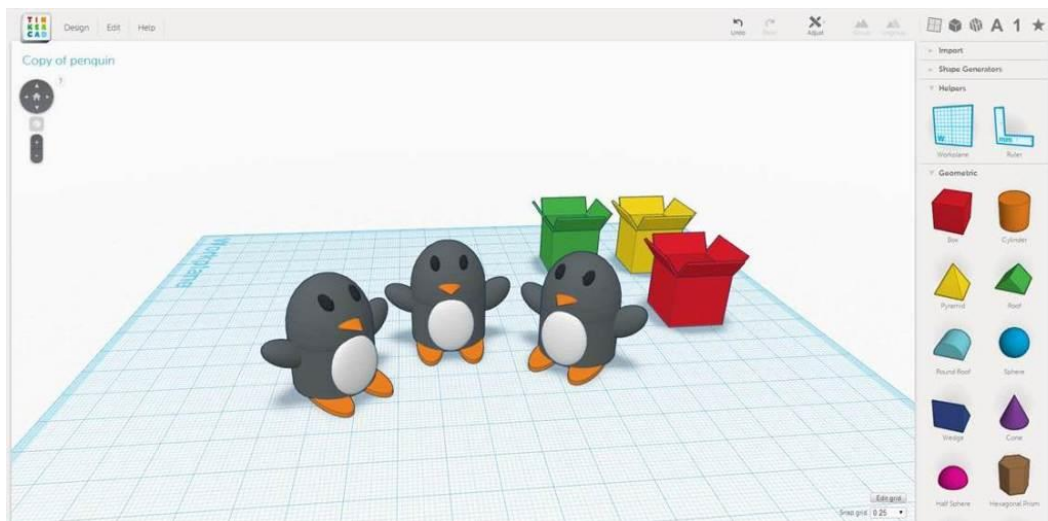
3D printing technology has been widely used in the last 10 years. We will have the opportunity to produce the product we want by keeping the printers used in the industrial sector in our home with the recently developed desktop models. We can draw the product ourselves or download it to the computer. It is also possible to personalize the product by printing and duplicating the desired number of colors in the desired color.





3D Printing process

3D printers using Fused Deposition Modeling (FDM) technology produce using a raw material called filament. The 3D printer, which melts the filament at a certain temperature, stacks it in layers. An average model consists of hundreds of layers. When these layers overlap, an object emerges.



To produce something with 3D printers, you must first have a digital model. You can design this model from design programs (CAD) or you can get it from the internet. There are sites that offer hundreds of thousands of models that you can download directly from the internet. Such a huge 3D model archive has been created as a result of the designers uploading their own designs to the sites and the contributions of people who design them for hobby purposes.

Note: FDM type 3D printers often use thermoplastics, abbreviated as PLA or ABS, to print designs that I have made / found.

Low Prices

3D printing technology provides the opportunity to produce at a lower cost for creative and manufacturing companies. It would be a much better idea to use a 3D printer in order to save costs in the process of transforming the product to be produced from the idea stage to reality.



Learning TinkerCad

In order for 3D printers to work, it is essential to have a software in which we can insert the models we have designed and make the necessary adjustments (color, enlargement,-reduction, rotation, etc.).

Therefore, in this course, we will learn to use the TinkerCad application, where we can change the existing designs and design anything we imagine.

What is TinkerCad?

TinkerCad is one of the most fun design programs to use. With its colorful interface, you can do even serious tasks with pleasure. If you want to start making your own designs, you can open a free account, create your profile, save the models you have made and play on them later. In addition, after you open your profile, you can share the models you made and use other shared models. Thus, you actually have a lot of models that you can play with.



You can download and print the models you create for 3D printers. Thus, using this simple program and 3D printers, you can quickly turn your ideas into reality.



What Will We Learn?

- ✓ Drawing environment
- ✓ Draw simple objects
- ✓ Adding Objects Together
- ✓ Creating holes in objects
- ✓ Working of a basic 3D printer
- ✓ Send our object to the printer and start printing

Let's Get to Know the TinkerCad Working Environment

First of all, enter Tinkercad.com from your browser. The screen that will appear as a result of the address we entered will be as in the figure.

The image is a screenshot of the Tinkercad website homepage. At the top right, there is a navigation menu with links for 'Gallery', 'Blog', 'Learn', 'Teach', 'Q', 'Sign in', and a 'JOIN NOW' button. The main content area features the Tinkercad logo on the left, which includes the text 'TINKERCAD' in a grid of colored squares and 'AUTODESK TINKERCAD' to its right. Below the logo, the text reads 'From mind to design in minutes' followed by a short description: 'Tinkercad is a free, easy-to-use web app that equips the next generation of designers and engineers with the foundational skills for innovation: 3D design, electronics, and coding!'. There are two buttons: 'Start Tinkering' (blue) and 'Join your class' (green). On the right side, there is a 3D model of a gear mechanism on a blue grid labeled 'Workplane'. Below the model, the text says 'Design a Gear in 3D. Try it!' with navigation arrows.

If you have not registered to the site before, click the Join Now button in the upper right menu. From the tab that opens, the trainers start here option is selected.



Start Tinkering

How will you use Tinkercad?

In school?

[Educators start here](#)

[Students, join a Class](#)

On your own

[Create a personal account](#)

Already have an account?
[Sign In](#)

Mark the agreement on the screen that opens and click the I Accept button. Then choose the recording format that is suitable for you from the tab that opens.

Student safety and moderation

Welcome teachers!

Once you create an educator account and set up your classroom, students that join will be in Safe Mode.

With Safe Mode enabled, students will not be able to share projects publicly, post comments, upload images, collaborate with other Tinkercad users, or contact customer service.

You will be a moderator of your student accounts. That means you will be able to see their designs and other activities and make their content public.

[Continue to start making my educator account](#)

Not a teacher?
[Go back](#)

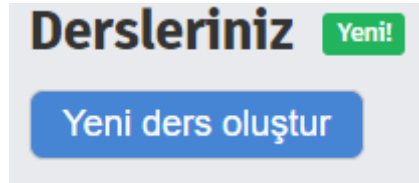
After creating the account, we will see a page like the following. The next page will be our main work page and all the designs we will make will be saved on this page.

The screenshot shows the Tinkercad user interface. At the top left is the Tinkercad logo and the text 'AUTODESK TINKERCAD'. On the right side of the top bar are links for 'Sınıflar', 'Galeri', 'Blog', 'Öğren', 'Öğret', a search icon, and a user profile icon. The main content area features a user profile for 'Bahar Kayar' with a search bar for 'Tasarım ara...'. Below the search bar are tabs for '3D Tasarımlar', 'Circuits', 'Kod Blokları' (with a 'YENİ' button), and 'Dersler'. There is also a 'Dersleriniz' section and a 'Projeler' section with a '+ Proje oluştur' button. A notification box titled 'Tinkercad Lesson Plans' is visible, containing text about lesson plans and a 'Learn more' link. Below the notification is a section titled 'Geçmiş tasarımlarım' with a 'Yeni tasarım oluştur' button and a 'Select' checkbox.



We can create classes on this platform, which we created as instructors, and include students in classes. For this, first of all, the Classes button in the upper right corner is clicked.

Click on the Create new course option from the page that opens.



When you click the create new course button, a window like the image will appear.

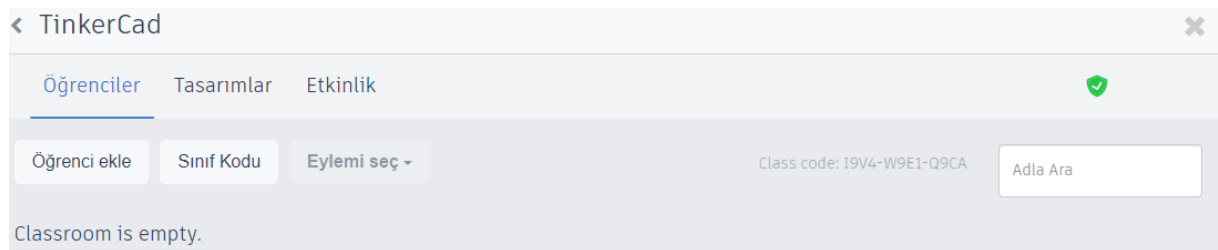
Yeni ders ×

Sınıf adı ✓

Notlar

Konu

From the opened tab, the relevant options are filled and the Create class button is clicked and the class creation process is performed. Clicking on the name of the class we created will enter the class.



After logging into the classroom, a screen like the one above will appear.

From here, click the "Add student" button to add students to the class.



Öğrenci ekle

Class: TinkerCad

Tinkercad hesabı olan öğrenciler

Oturum açmak için e-posta, Google veya diğer sağlayıcıları kullanan öğrenciler, paylaştığımız Sınıf Bağlantısı yoluyla katılmalıdır. Söz konusu öğrenciler otomatik olarak sınıfınıza eklenir ve bu öğrenciler için aşağıda gösterilen şekilde bir Koltuğa ihtiyaç yoktur.

Öğrenci Koltuğu ekleme [koltuk nedir?](#)

Ad Takma ad

Takma ad 3 veya daha fazla karakter, rakam veya harften oluşmalıdır.

In the tab that opens, the student name and nickname are entered. The point to be considered here is to enter the Nickname part appropriately. The student will log into the class with this nickname. After entering the necessary information, click the "Save Changes" button. Adding students successfully

Note: "Paste student list" option is available when enrolling multiple students.

TinkerCad

Öğrenciler Tasarımlar Etkinlik

Öğrenci ekle Sınıf Kodu Eylemi seç

Class code: I9V4-W9E1-Q9CA Adla Ara

Öğrenciler	Oturum açma bilgileri	Tür	Etkinlik	Güvenli	Menü
<input type="radio"/>	Ahmet	ahmet	Seat	<input type="checkbox"/>	...

After the student is added to the class, the teacher can enter the student designs by clicking on the student, and can also make edits on the designs.

The teacher clicks the Class Code button for the student to join the class. The window opens as shown in the figure.



I9V4 W9E1 Q9CA

Kodu kopyala

Bağlantıyı kopyala

Öğrenci yönergeleri

Sınıf bağlantınız mı var?

1. <https://www.tinkercad.com/joinclass/I9V4W9E1Q9CA> adresinden sınıfınıza gidin.
2. Öğretmeninizin size atadığı **Takma Adı** girin.

Sınıf kodunuz mu var?

1. <https://www.tinkercad.com/joinclass> adresine gidin
2. Sınıf kodunuzu girin: **I9V4W9E1Q9CA**
3. Öğretmeninizin size atadığı **Takma Adı** girin.

From this tab, the necessary link is shared with the student and the student is allowed to attend the class.

After the student logs in, a workspace of his own is created. The student can make various designs from this area. And the teacher can reach these designs and make arrangements as well as make comments. Other students in the class can go to each other's pages and like and comment on the design with the like button.

After creating a class and adding students successfully, the teacher can return to their worksheet. From here, click the create new design button.

TINKERCAD AUTODESK TINKERCAD

Sınıflar Galerî Blog Öğren Öğret Q

Bahar Kayar

Tasarım ara...

3D Tasarımlar

Circuits

Kod Bloklar **YENİ**

Dersler

Dersleriniz

Projeler

Proje oluştur

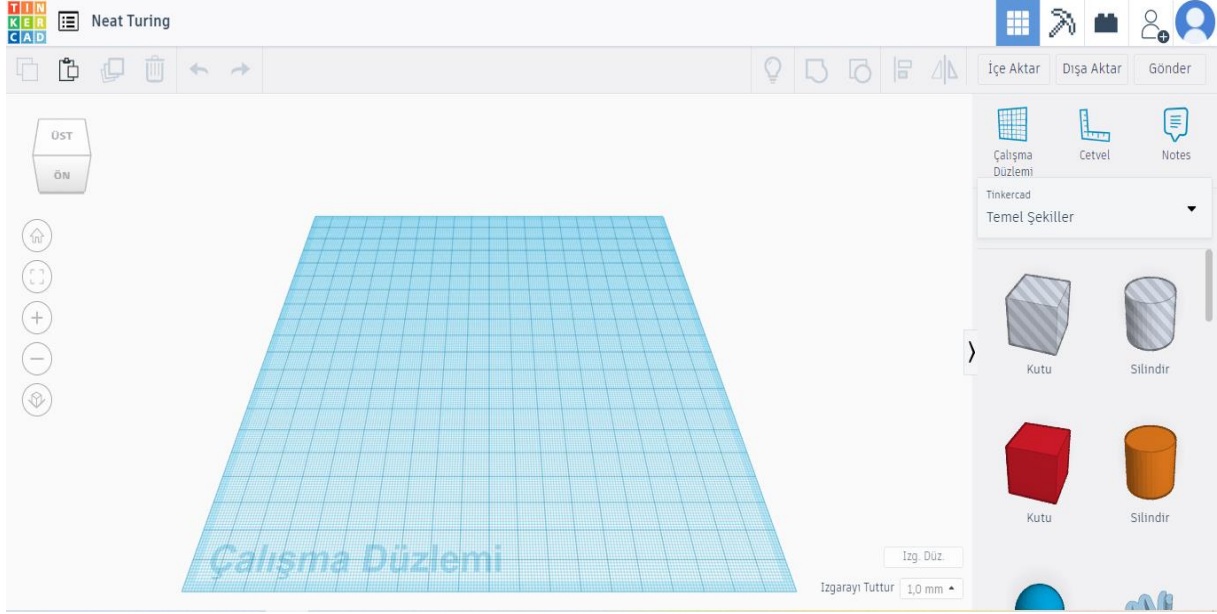
Geçmiş tasarımlarım

Yeni tasarım oluştur

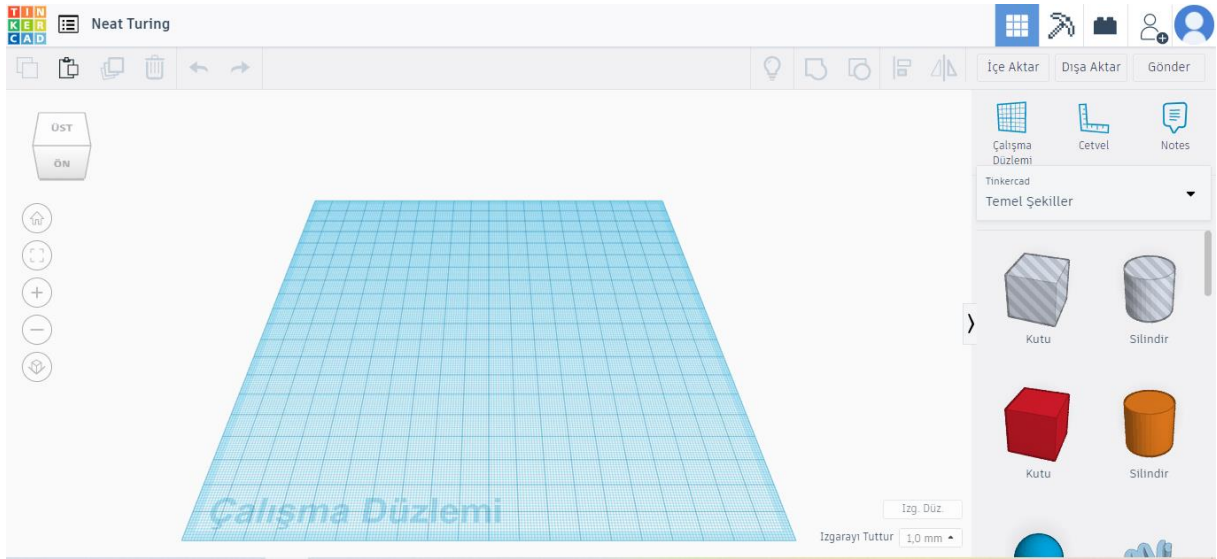


In this area, the teacher can also see the designs he has made before and can make rearrangements.

After saying create a new design, the workspace opens as in the figure below.



Tinkercad Workspace Menus





Copy



Paste



Copy and Repeat



Delete



Next Back



Show all



Group



Ungroup



Align



Mirror

İçe Aktar

Dışa Aktar

Gönder

Upload file

Download and 3D print

Share with Others and Apps



Neat Turing

Change File Name

Izg. Düz.

Izgarayı Tuttur

1,0 mm ▲

Workspace dimensions and In-Scene Ease



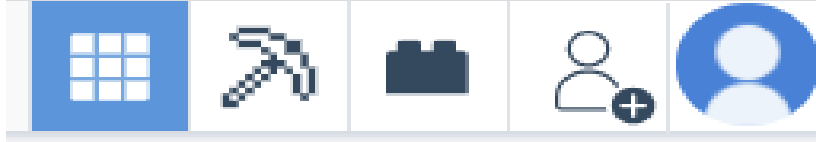
Plane View Menu

Tinkercad

Temel Şekiller ▼



Drawing Shapes Menu

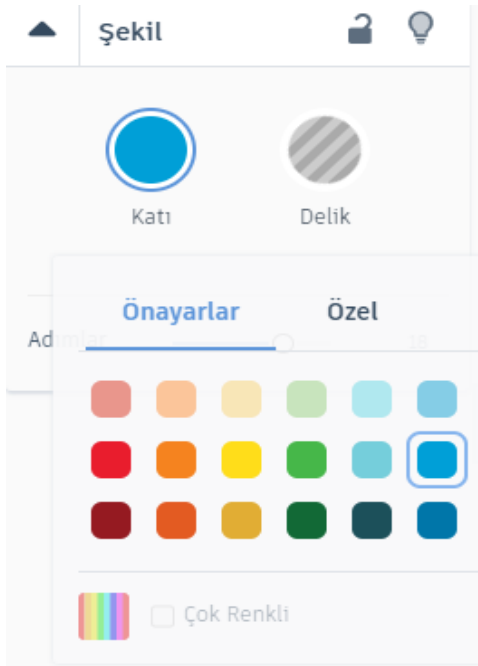


3D Design

Blocks

Bricks

Working with Others



Change Object Color or Select Object as Hole



TinkerCad Keyboard Shortcuts

MOVING OBJECT(S)

(Using keyboard)

Move along X/Y axis	← / ↑ / ↓ / →
Move along Z axis	Ctrl + ↓ / ↑
×10 Nudge along X/Y axis	Shift + ← / ↑ / ↓ / →
×10 Nudge along Z axis	Ctrl + Shift + ↓ / ↑

KEYBOARD + MOUSE SHORTCUTS

(Press and hold the keys, then click and drag the mouse)

Duplicate dragged object(s)	Alt + Drag left mouse button
Select multiple object(s)	Shift + Left mouse button
45° rotation	Shift (Hold while rotating)
Scale in one direction	Alt + Hold side handle
Scale in two directions	Alt + Hold corner handle
Uniform scale	Shift + Hold corner handle
Uniform scale in all directions	Alt + Shift + Corner handle
Uniform scale in all directions	Alt + Shift + Top handle

VIEWING DESIGNS

(With the help of a mouse or a mouse pad)

Orbit the view	Right mouse button
Orbit the view	Ctrl + Left mouse button
Pan the view	Shift + Right mouse button
Pan the view	Ctrl + Shift + left button
Zoom the view in or out	Mouse scroll wheel
Zoom-in	+
Zoom-out	-
Fit selected object(s) into view	F

OBJECT SETTINGS

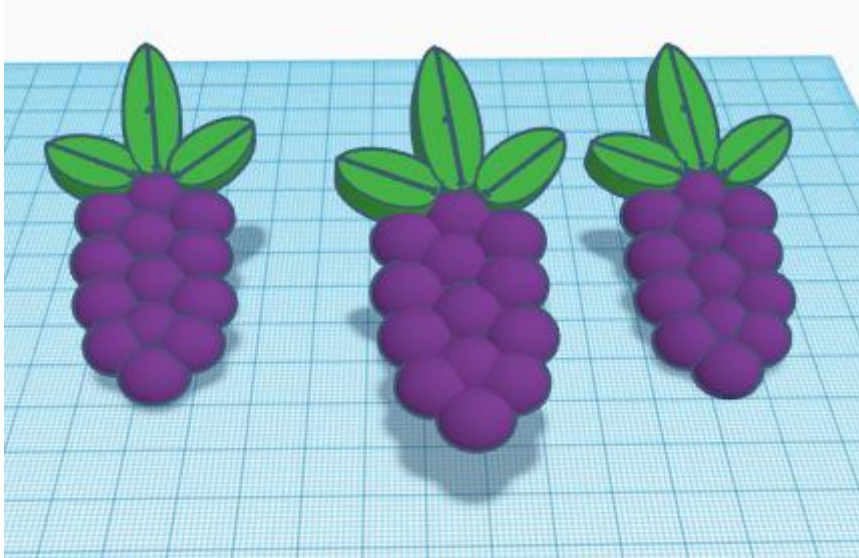
Transparency toggle	T
Turn object(s) into Holes	H
Turn object(s) into Solids	S
Lock or Unlock object(s)	Ctrl + L
Hide object(s)	Ctrl + H
Show all hidden object(s)	Ctrl + Shift + H

TOOLS AND COMMANDS

Copy object(s)	Ctrl + C
Paste object(s)	Ctrl + V
Duplicate object(s) in place.	Ctrl + D
Delete object(s)	Del
Undo action(s)	Ctrl + Z
Redo action(s)	Ctrl + Y
Redo action(s)	Ctrl + Shift + Z
Group object(s)	Ctrl + G
Un-group object(s)	Ctrl + Shift + G
Align object(s)	L
Flip/Mirror objects(s)	M
Select all object(s)	Ctrl + A
Place a Ruler	R (Shift toggle midpoint/center)
Place a Workplane	W (press Shift to flip direction)
Drop object(s) to workplane	D



My First Design (Grape Bunch)



Design steps

- ✓ To make grapes, choose a hemisphere object under the basic shapes tab. Drag and drop onto the workplane.
- ✓ When you click on the object on the plane with the mouse, its dimensions are adjusted from the corners that will appear.
- ✓ (W:11, h:10, d:5)
- ✓ To change the color of the object, click on the object and select the appropriate color from the color palette that opens on the right.
- ✓ By applying the object duplication process, more than one is obtained.
- ✓ All of the grapes are selected and combined.
- ✓ For the leaves of the grape, a half cylinder is selected from the basic shapes section.
- ✓ The dimensions of the half-cylinder are adjusted.
- ✓ Copying is applied to the half cylinder, and rotation is applied to the lower and upper parts.
- ✓ The two objects obtained for the leaf are selected and grouping is applied to the object.
- ✓ 3 copies of the obtained leaf are copied. It is placed in the appropriate parts on the cluster.
- ✓ Grouping process is applied by selecting the whole design.