

# Lesson 1: What is 3D Printing?

3D Printing Center - Village School

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v1

2025

# Welcome to 3D Printing!

**Establish Class Expectations**

**What are our 3D Printing M&Ms?**

# Welcome to 3D Printing!

## Establish Class Expectations

- Model Respect
  - respect centermates' work
  - respect the printers
    - don't get hurt by them
    - don't hurt them
  - respect the mere 45 minutes per center lesson
- Make Good Choices
- Solve Problems
  - If you know how, help your peers

# Welcome to 3D Printing!

**Today's Big Question**

**What is 3D printing and how does it work?**

# Amazing 3D Printed Objects

## Look at These!

- Toys and games
- Tools and gadgets
- Decorations
- Food (yes, food!)

*Pass around demonstration objects*

# How Does 3D Printing Work?

## Think of Building with Pancakes!

- 3D printing builds objects **layer by layer**
- Like stacking pancakes on top of each other
- Each layer sticks to the one below it

# From Computer to Object

## The 3 Steps

1. **Design** - We create on computers
2. **Slice** - Computer breaks design into layers
3. **Print** - Machine builds layer by layer

## How does 3D printing work?

PV Print Lab  
#PVPrintLab  
Placerville EDC Library

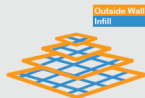
1

You start with a 3D model, like this pyramid:



2

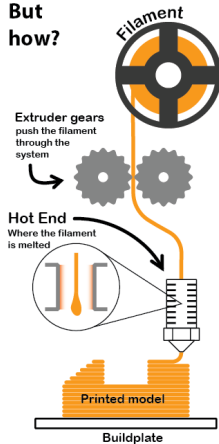
Then, a program called a  **slicer**  cuts it into layers



3

Finally, the 3D printer melts plastic  **filament**  and carefully lays down material for each layer

But how?



# The Magic Material

## How Plastic Becomes Objects

- Plastic filament gets **heated up**
- Squeezed out like **frosting from a tube**
- **Cools down** and hardens
- Layers **stick together** as they cool

## How does 3D printing work?

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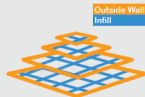
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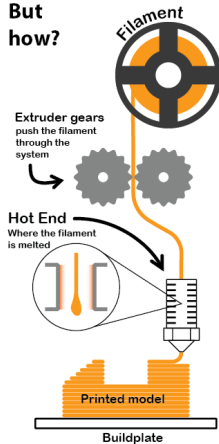
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## 3D Printing Helps People

- **Custom phone cases** and game pieces
- **Replacement parts** for broken toys
- **Art projects** and sculptures
- **Helpful tools**
- **Medical devices** like prosthetics
- **Aerospace** and car parts

## Object Detective

*Examine the printed objects on your table*

- What do you think each object is used for?
- Can you see the layers?
- Which one is your favorite? Why?

## 3D Printer Safety Rules

- **Never touch** the hot parts
- **Don't reach** into the printer while it's working
- **Tell a teacher** if something looks wrong
- The printer gets **very hot** - like an oven!

## Watch the Printer Work!

*Show the actual 3D printer in action*

- **Hot end** - where plastic comes out
- **Build plate** - where object grows
- **Filament** - the plastic “thread”

## 3D Printing is Amazing!

- Builds objects **layer by layer**
- Starts with **computer designs**
- Uses **heated plastic**
- Helps people in **many ways**
- Is used in **many industries**

## Lesson 2 Preview

**“Now that we know what 3D printing is, we’ll learn to design our own objects!”**

- Learn to use Tinkercad
- Design your first keychain
- See your ideas come to life!

**What surprised you most about 3D printing?**

*Quick sharing - one word or phrase*

# Cleanup Time!

## 5 Minutes to Pack Up

- Help organize demonstration materials
- Put objects back carefully
- Clean up your workspace
- Get ready for next class

**Great job learning about 3D printing today!**