



Financial Literacy with Mr. 401(k)  
Winter Term 2024 - 2025  
January 29, 2025

# Exploring Bitcoin

## **Class 18: Bitcoin 101**

### **– Permissionless and Decentralized Digital Money**

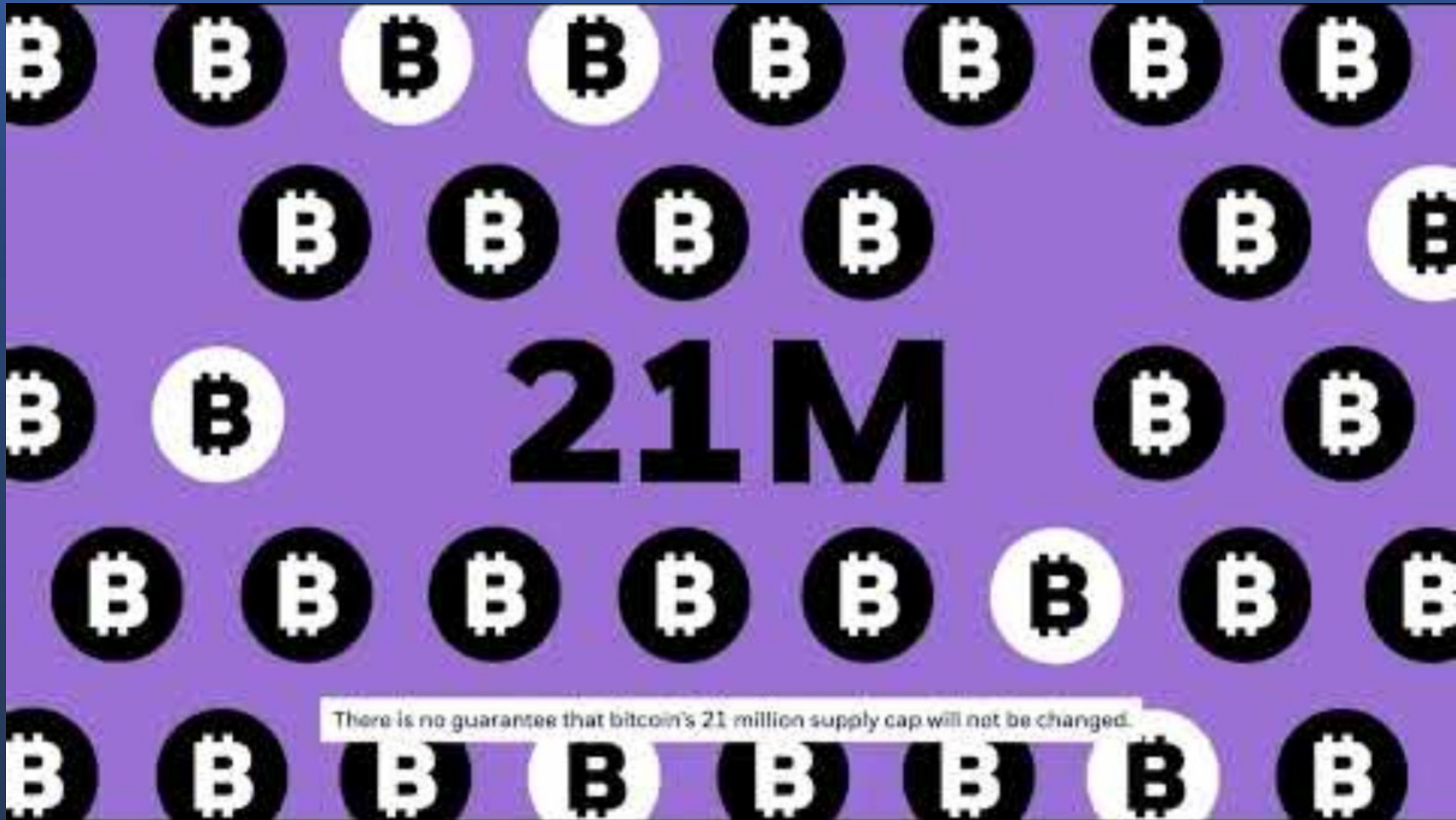






# *Class Discussion*

*What is one U.S.  
Dollar worth?*



[Launch Video](#)

# Introduction to Bitcoin



Bitcoin is digital money. **It has no physical form.** It has no issuer.



Bitcoin functions like other forms of money: Medium of Exchange; Store of Value; and Unit of Account



Bitcoin can be used to buy goods, services, and information.



Bitcoin is not issued by any government, nor is it backed by any government.





[Launch Video](#)



# Practical Application

Who do you think is **the issuer** of the following:

**1) The U.S. Dollar**





# Practical Application

Who do you think is **the issuer** of the following:

- 1) The U.S. Dollar
- 2) **Microsoft Company Stock**



# Practical Application

Who do you think is **the issuer** of the following:

- 1) The U.S. Dollar
- 2) Microsoft Company Stock
- 3) **Japan 10-Year Government Bond**



# Practical Application

Who do you think is **the issuer** of the following:

- 1) The U.S. Dollar
- 2) Microsoft Company Stock
- 3) Japan 10-Year Government Bond
- 4) **City of Seattle Municipal Bond**





## *Class Discussion*

*So, what does it  
mean to say that  
Bitcoin has no  
issuer?*





# *Class Discussion*

*Who is the issuer  
for gold, lumber,  
oil, or wheat?*



# Practical Application

What is the producer likely to do in the following situations:

- 1) A gold miner when the price of gold rises rapidly



# Practical Application

What is the producer likely to do in the following situations:

- 1) A gold miner when the price of gold rises rapidly
- 2) **A timber company when lumber prices increase**



# Practical Application

What is the producer likely to do in the following situations:

- 1) A gold miner when the price of gold rises rapidly
- 2) A timber company when lumber prices increase
- 3) **An oil exploration company if oil prices fall below the cost of production**

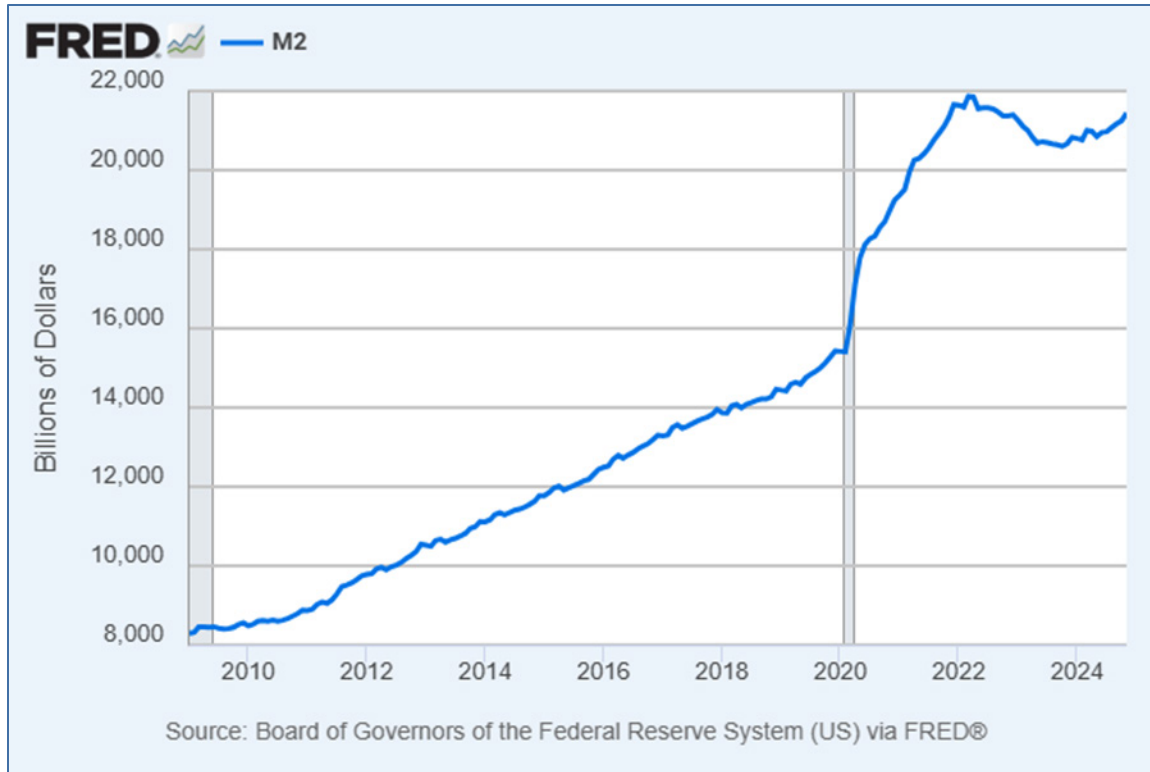


# Practical Application

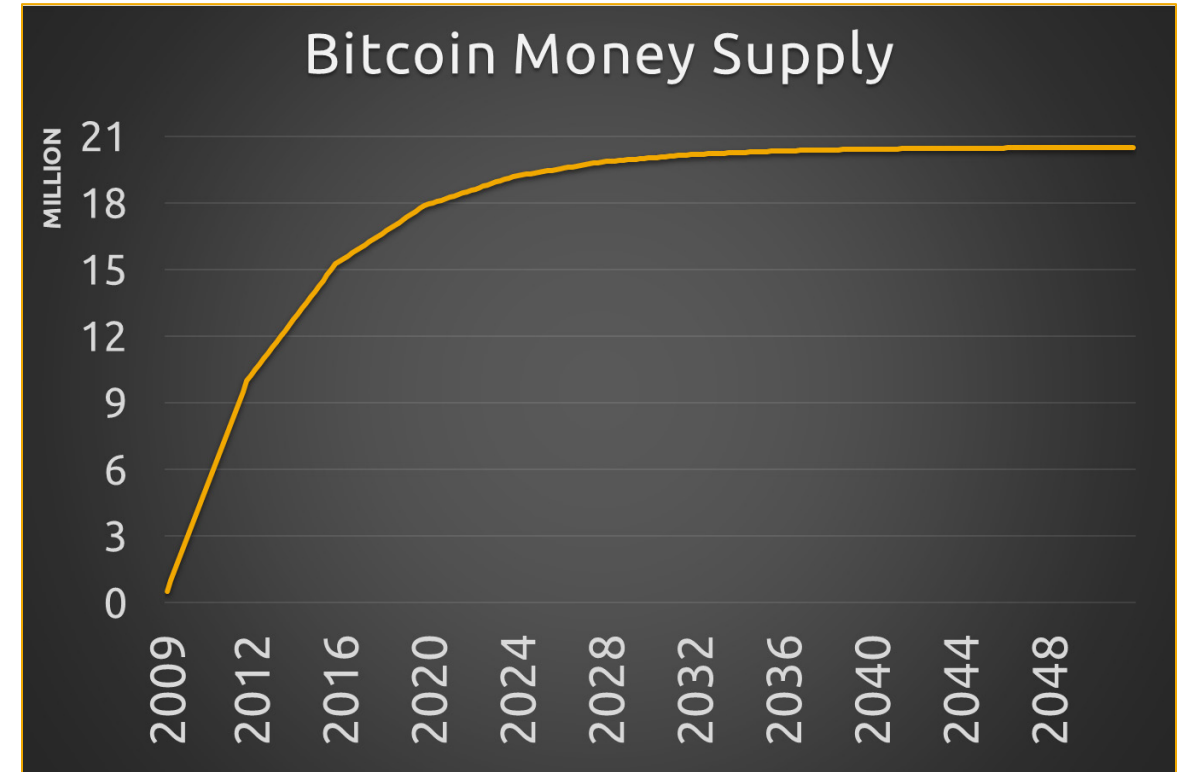
What is the producer likely to do in the following situations:

- 1) A gold miner when the price of gold rises rapidly
- 2) A timber company when lumber prices increase
- 3) An oil exploration company if oil prices fall below the cost of production
- 4) **A wheat farmer in North Dakota when major tornados destroy 50% of wheat crops in Kansas**

# Money Supply: U.S. Dollars vs. Bitcoin



The supply of U.S. Dollars is **elastic**.  
New U.S. Dollars are 'created' through  
fractional reserve bank lending.



The supply of Bitcoin is fixed or **inelastic**. By design, there can never be  
more than 21 million Bitcoin.





# *Class Discussion*

*What do you think  
might happen when  
more and more people  
want something, but  
the amount available  
can never increase --  
you can never produce  
more of it?*



# Technology Behind Bitcoin



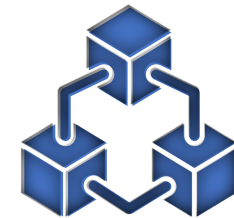
## Peer-to-Peer Network

Users broadcast Bitcoin spending transactions to a network of computers



## Confirming Transactions

Specialized computers confirm a block of transactions by solving cryptographic puzzles

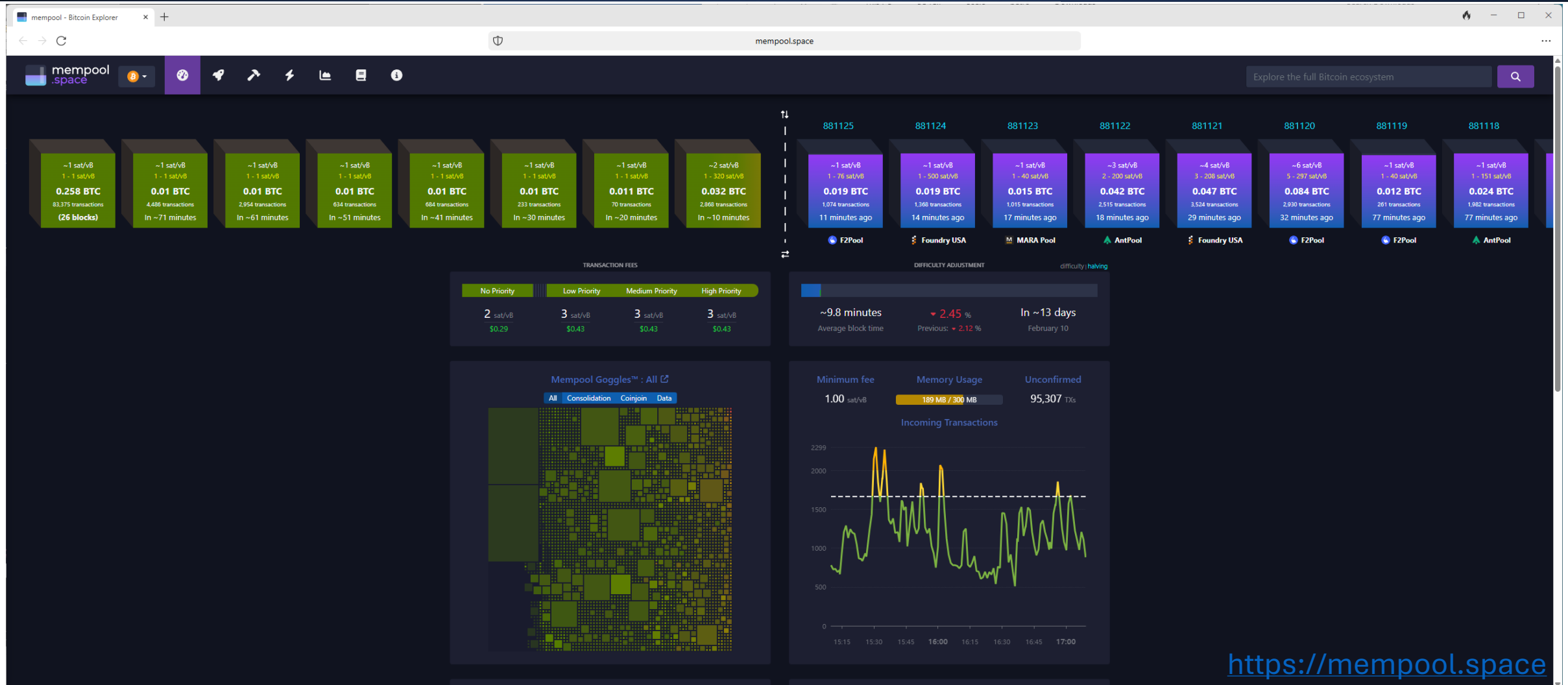


## The Bitcoin Blockchain

Blocks of transactions are recorded and linked together on a permanent public ledger, creating a metaphorical chain of blocks – a Blockchain



# Visualizing the Bitcoin Blockchain

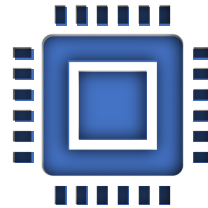


# Understanding Bitcoin Mining



## What Is It?

Mining is the computational work to confirm transactions and add blocks of transactions to the Bitcoin Blockchain.



## What are Miners?

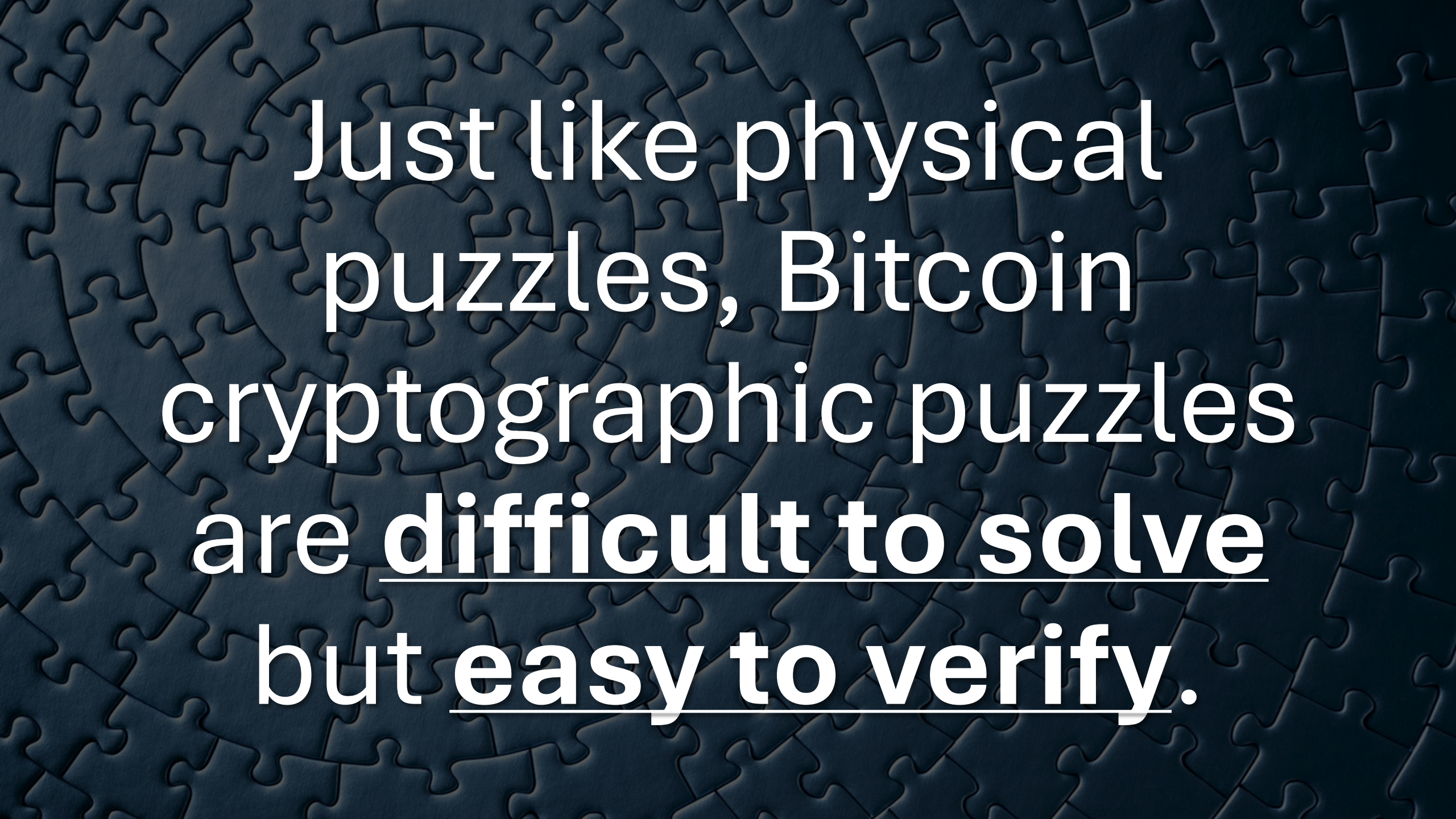
Miners are powerful specialized computers designed to solve computationally intensive Bitcoin cryptographic puzzles.



## Why Mine?

The first miner to solve the cryptographic puzzle and confirm a block of transactions is rewarded with the Bitcoin block subsidy and fees.

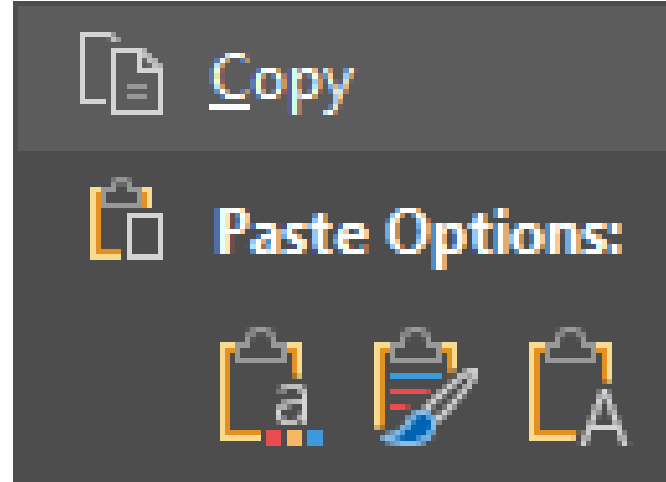




Just like physical  
puzzles, Bitcoin  
cryptographic puzzles  
are difficult to solve  
but easy to verify.



# Blockchain Security and Fraud Prevention



**Imagine if you could copy and paste digital money, just like you can copy and paste a digital photo or a text message.** The digital money would quickly become worthless because everyone could make unlimited copies of it! In traditional finance, people trust banks to keep records, so money cannot be copy/pasted -- the same money cannot be "double spent." Without banks, you need to ensure a person cannot copy/paste or "double spend" the same digital money. Bitcoin cryptographic puzzles make it virtually impossible to change a block of transactions after it is confirmed. The miners are like security guards who ensure the rules are being followed.





# *Class Discussion*

*What do you think  
about using a  
decentralized network  
and computer code to  
manage electronic  
payments instead of  
trusting governments or  
banks? Would you use  
Bitcoin?*

# Bitcoin vs. U.S. Dollar Divisibility



One **Bitcoin** is divisible to **8** decimal points.

1 Bitcoin (₿) = 100,000,000 Satoshis (₿)

1 Satoshi (₿) = 0.00000001 Bitcoin (₿)

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One **U.S. Dollar** is divisible to **2** decimal points.

1 U.S. Dollar (\$) = 100 U.S. Cents (¢)

1 U.S. Cent (¢) = 0.01 U.S. Dollar (\$)



# How to Get Bitcoin or Satoshis



## **Buy**

Bitcoin from a broker, cryptocurrency exchange, payment service, or person



## **Mine**

Bitcoin using specialized computers



## **Receive Gifts**

of Bitcoin or Satoshis from family or friends



## **Trade**

goods, services, or information and ask to be paid in Bitcoin

# Exchange Rate of Bitcoin to U.S. Dollars

Reference Date/Time: January 28, 2025, 3:30 PM U.S. Pacific Time

1.00000000 Bitcoin (₿)	=	100,000,000 Satoshis (₿)	=	\$100,867.80
0.10000000 Bitcoin (₿)	=	10,000,000 Satoshis (₿)	=	\$10,086.78
0.01000000 Bitcoin (₿)	=	1,000,000 Satoshis (₿)	=	\$1,008.68
0.00100000 Bitcoin (₿)	=	100,000 Satoshis (₿)	=	\$100.87
0.00010000 Bitcoin (₿)	=	10,000 Satoshis (₿)	=	\$10.09
0.00001000 Bitcoin (₿)	=	1,000 Satoshis (₿)	=	\$1.01
0.00000100 Bitcoin (₿)	=	100 Satoshis (₿)	=	10¢
0.00000010 Bitcoin (₿)	=	10 Satoshis (₿)	=	1¢
0.00000001 Bitcoin (₿)	=	1 Satoshis (₿)	=	0.10¢



# Median New American Home Price in Bitcoin

Source: <http://www.pricedinbitcoin21.com>



01/2015 = ₿930

01/2016 = ₿664

01/2017 = ₿315

01/2018 = ₿25

01/2019 = ₿80

01/2020 = ₿46

01/2021 = ₿13

01/2022 = ₿9

01/2023 = ₿19

01/2024 = ₿10

01/2025 = ₿4

# Story Time: The \$1 Billion Pizzas

Source: The Bitcoin Historian [@pete\\_rizzo](#)




 **bitcoin history**

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**The Bitcoin Historian**   
[@pete\\_rizzo](#) · [Follow](#)



In 2008, Satoshi Nakamoto started a monetary revolution with [#Bitcoin](#).

But by May 22, 2010, hardly anyone was using it.

The Amazing Story of the pizza purchase that changed history, and the man who spent \$2.8 billion to transform money forever 🔥 [Show more](#)



4:36 AM · May 22, 2024

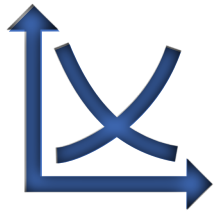


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# Bitcoin Market Value



## Supply/Demand

Determined by the supply of Bitcoin and demand for Bitcoin relative to other assets in the markets.



## Volatile

Bitcoin is a new asset class and is highly volatile – price swings can be large and occur rapidly.



## Purposes

People today may hodl Bitcoin for investment and/or may use it for purchases.

# Bitcoin's Potential



## AI Bots

AI will need a form of money to transact with other AI bots in the future. Bitcoin may be well suited for this application.



## Digital Gold

With a fixed supply, Bitcoin may be well suited to store value digitally and mitigate fiat monetary inflation.



## Payments

Bitcoin may become a mainstream payment method in the future. Merchant adoption is growing.



## Settlements

Bitcoin may replace the U.S. Dollar as a neutral settlement currency to facilitate global trade.



# Bitcoin Features and Warnings

- **Censorship Resistant:** No one can prevent you from spending Bitcoin.
- **Decentralized:** No individual entity controls Bitcoin.
- **Fixed Supply:** It is difficult to debase Bitcoin like fiat currencies.
- **Network Effect:** Adoption has grown faster than other cryptocurrencies.
- **Permissionless:** Anyone can use Bitcoin – you do not need permission.
- **Cryptocurrency Scams:** There are many scammers in cryptocurrency.
- **No Support Lines:** Bitcoin is not a company. There is no support hotline. Users need to find their own solutions.
- **Taxation:** No one can legally avoid taxes – it is important to be mindful of tax laws when using Bitcoin.
- **Transaction Irreversibility:** Bitcoin transactions cannot be reversed – there are no refunds.



# *Class Discussion*

*Bitcoin doesn't  
require anyone's  
permission to use it.  
Why do you think  
that could be  
important for people  
in different parts of  
the world?*





# Three Key Takeaways

1. Bitcoin is digital money with a limited supply of 21 million, and it can be sent anywhere in the world.
2. Miners keep Bitcoin secure by solving complex puzzles that prevent fraud.
3. Bitcoin's value can rise or fall sharply and rapidly based on supply and demand.



# Where to Learn More

- [Bitcoin Education](#) by Petros Koumantaros
- [Bitcoin Money: A Tale of Bitville](#)  
[Discovering Good Money](#) by Michael Caras (Author), Marina Yakubivska (Illustrator)
- [The Bullish Case for Bitcoin](#) by Vijay Boyapati