NOTES FOR TEACHERS

Following One Transaction

Students follow one bitcoin payment from “pending” to final: computers check it, it waits in a waiting room called the mempool, the fee helps set its place in line, a miner writes it onto a page, and every page added on top is another confirmation that makes it harder to undo.

Grades 9–12 **1:45 video** **Spending 8-4c** **Free to use, no sign-up**

STEP 1

Before watching

> When a card payment or an app transfer says “pending,” where do you think the money is right then, and what has to happen before the payment is final?

STEP 2

Watch the episode

Bitcoin Basics, 1:45: thesteadyblock.com/episodes/following-one-transaction/ (also on YouTube, @TheSteadyBlock)

STEP 3

Discussion questions

1. Before a payment can enter the waiting room, computers check two things: that it is signed, and that its coins are still unspent. What could go wrong if either check were skipped?
2. Why might a store or an exchange wait for three to six confirmations instead of accepting a payment the moment it is sent? What are they protecting themselves from, and what does the wait cost the person paying?
3. Supporters say a payment that grows harder to undo with every page, with no bank in the middle, is a strength; critics say waits that can run to an hour, and fees that rise when the network is busy, make bitcoin a poor fit for everyday purchases. For which kinds of payments would each side’s point matter most? Give an example of each.

STEP 4

Exit quiz

1. What is the mempool?

A. A bank that holds bitcoin for you
B. A secret password that unlocks a wallet
C. A waiting room where checked payments wait to be written onto a page
D. The first page of the blockchain

2. Before a payment enters the waiting room, computers across the network check two things. Which two?

A. That it is signed, and that its coins haven't already been spent
B. That the sender has a bank account and a photo ID
C. That the payment is small and the receiver is online
D. That the receiver has agreed to the payment

3. When the network is busy, which payments do miners usually pick first?

A. The oldest ones in the waiting room
B. The smallest payments
C. Payments from the biggest wallets
D. The ones that pay the most for their space

4. What is a confirmation?

A. A receipt signed by the person you paid
B. The page that holds your payment joining the chain, and each new page stacked on top of it
C. The fee your payment pays
D. A message from the app saying the payment was sent

5. Why do many services wait for 3 to 6 confirmations?

A. Because a new page always takes exactly 10 minutes, so six pages is exactly an hour
B. Because the law requires exactly six
C. Because now and then two miners win at nearly the same moment and one page is dropped, sending its payments back to the waiting room
D. Because each confirmation earns the service a bigger fee

Key terms

Pending	Sent and checked, but not yet written onto a page of the record.
Mempool	The waiting room where checked payments sit until a miner writes them onto a page; each computer on the network keeps its own.
Transaction fee	What a payment offers miners for its space on a page; when the network is busy, a bigger fee usually means a shorter wait.
Confirmation	The page that holds a payment, and each page added on top of it; more confirmations make a payment harder to undo.

National standard

MAIN STANDARD · SPENDING 8-4C

Summarize the advantages, disadvantages, risks, and protections of various payment methods.

Part of standard Spending 8-4: “Consumers weigh the costs and benefits of different payment methods to determine the best option for purchasing goods and services.”

SPENDING 8-4B

Explain how various payment methods are used to purchase goods and services.

SAVING 12-3B

Compare and contrast the features of mobile payment accounts, cryptocurrency accounts, and checking/savings accounts.

Bitcoin is one more way to pay. The episode shows its cost (the fee), a disadvantage (the wait, which varies), a risk (a payment can briefly drop back to the waiting room) and a protection (each confirmation makes it harder to undo): the four things Spending 8-4c asks students to summarize. Pair it with a card or app payment, which also shows “pending.”

From the National Standards for Personal Financial Education (Council for Economic Education and Jump$tart Coalition, 2021), Spending grade 8, p. 17; Saving grade 12, p. 23.

Numbers in this episode

As of October 2026

- 72,582: Unconfirmed payments waiting in the mempool on October 12, 2026 (mempool.space). The count rises and falls through the day; that day the fee to make the next page was low, about 1 satoshi per virtual byte.
- ~10 min: The average gap between pages (the network’s 600-second target). Gaps are random: for a 10-minute average, about 1 in 10 is under a minute and about 1 in 400 is over an hour.
- 3 to 6: Confirmations services commonly wait for: Kraken credits bitcoin deposits after 3 (about 45 minutes); the Bitcoin Core wallet recommends 6 (about an hour on average).

- 2 pages: Two pages can briefly compete when miners win at nearly the same moment; the chain keeps one. A rarer two-page swap happened on March 23, 2026, at block 941,880.
- 2 weeks: By default, a Bitcoin Core node drops a payment that has waited 336 hours without confirming (its mempool holds up to 300 MB).

Where each number comes from is listed on the episode page.

Further reading

For students or teachers who want to go deeper.

FOR STUDENTS **Payments Education: How Your Money Gets From One Place to Another** (https://www.richmondfed.org/payments_services/overview/payments_101)

Federal Reserve Bank of Richmond

A free 30-minute interactive module on how payment systems work, from early money to today's cards and apps; useful for comparing bitcoin with the payments students already use.

FOR TEACHERS **Lesson 4.3: Payment Methods (Keys to Financial Success)** (https://www.federalreserveeducation.org/resources/lessons/lesson--keys-4-3-payment-methods.pdf)

Federal Reserve Education

A ready lesson in which students weigh the trade-offs of ten payment methods; add bitcoin as an eleventh and compare its fee and wait. Answer keys need a free FederalReserveEducation.org account.

FOR TEACHERS **Bitcoin: A Peer-to-Peer Electronic Cash System** (https://nakamotoinstitute.org/library/bitcoin/)

Satoshi Nakamoto (2008), Satoshi Nakamoto Institute copy

Section 5 describes payments being broadcast and gathered into blocks; section 11 shows why an attacker's chance falls with every block added, the reason services wait for confirmations.

FOR TEACHERS **mempool.space** (https://mempool.space/)

The Mempool Open Source Project

A free, open-source block explorer. In class, look at how many payments are waiting and the current fee levels, then watch a new page arrive and clear part of the waiting room.

Links checked October 2026.

Free to use in class. Educational content only, not financial or investment advice. Episode narration uses a synthetic voice. Answer keys and teacher sheets: email hello@thesteadyblock.com.