

What Is Mining?

Grades 9–12 · 1:44 video · Economics Standard 4 · thesteadyblock.com/episodes/what-is-mining/

Students learn how bitcoin mining works as a guessing lottery: the winner adds the next page and earns new bitcoin, the network adjusts the difficulty to keep the pace, and the work protects the record at a real energy cost.

1 Before watching

If there's no boss, how could a group of strangers fairly decide who gets to write the next page of a shared notebook?

2 Watch the episode

1:44, at thesteadyblock.com/episodes/what-is-mining/ or on YouTube (@TheSteadyBlock).

3 Discuss

1. Why does the episode compare mining to a lottery rather than to solving a hard math problem?
2. What happens to the difficulty when more miners join, and why does the network keep new pages coming about every 10 minutes?
3. Bitcoin mining uses about half a percent of the world's electricity. Critics call it waste; supporters say it's the price of a record no one controls. What would you need to know to decide whether that energy use is worth it?

Key terms

Miner	A computer, and the person or company running it, competing to add the next page by guessing.
Target	The number a winning code must fall below; the lower the target, the harder it is to win.
Difficulty adjustment	The reset about every two weeks (2,016 blocks) that keeps new pages coming about every 10 minutes.
Block reward	The new bitcoin, plus fees, paid to the miner who adds a page.

4 Exit quiz: answer key

1. **C Making guess after guess until one code lands below a target**
Mining is repeated guessing: each guess turns the page into a code, and only a code below the target wins.
2. **A Newly created bitcoin plus the fees in that page**
The prize is 3.125 new bitcoin (since the April 2024 halving) plus the fees in the page.
3. **D The target drops, so winning gets harder**
About every 2 weeks (2,016 blocks), the network resets the target to keep the pace near 10 minutes.
4. **B To rewrite one, you'd have to win all the later lotteries again, faster than everyone else combined**
Changing an old page means redoing the guessing for it and every page after it, faster than the rest of the network combined.
5. **A About half a percent**
About 138 TWh a year, roughly half a percent of the world's electricity (Cambridge Centre for Alternative Finance, April 2025); estimates vary.

National standard

MAIN STANDARD · ECONOMICS STANDARD 4

People usually respond predictably to positive and negative incentives.

Also: Economics Standard 4, grade 8, benchmark 2, Economics Standard 4, grade 12, benchmark 1. From the Voluntary National Content Standards in Economics (Council for Economic Education, 2nd edition, 2010).

The student quiz handout, numbers, sources and further reading are on the full teacher page: thesteadyblock.com/teachers/what-is-mining/. Free to use in class. Educational content only, not financial or investment advice.