Congratulations! You passed!

Grade received 100% **To pass** 80% or higher

Go to next item

1. Which aspect of the bitcoin blockchain protocol consumes the most energy? **1 / 1 point**

- ○ Creating the genesis block
- ○ Broadcasting a new transaction to the nodes in the network
- ◉ Solving the proof-of-work problem (SHA-256 hash) required to add a new block to the chain
- ○ Verifying a miner's solution to a proof-of-work problem

Correct
The proof-of-work consensus mechanism enforces the security of the network, making it difficult and costly for malicious miners to attack. However, the secure hash algorithm (SHA-256) used in bitcoin mining consumes more than 4.41 billion kilowatt hours (kW·h) of energy - a Godzilla-sized carbon footprint.

2. What approaches can be used to improve the sustainability of blockchain technologies? Select all that apply. **1 / 1 point**

- ☑ Improving the efficiency of computing hardware and architecture

Correct
Improvements to computing hardware and architecture, combined with new approaches to recycling computer parts, will help make blockchain technologies more sustainable.

- ☐ Building new mining operations in places where fossil fuels are cheapest
- ☑ Implementing alternative consensus mechanisms, such as proof of stake

Correct
Experts have been exploring alternatives to the proof-of-work consensus mechanism, including proof-of-stake and proof-of-disk, which would reduce the amount of energy needed to secure the network while still retaining decentralization.

- ☑ Powering blockchain technologies using renewable energy sources

Correct
Powering blockchain technologies using renewable energy sources, such as wind or solar power, would make them more sustainable.