

Quiz: Gas Mechanics

Instructions: Multiple choice questions — Select the best answer — Answers revealed after each question

Q1. What is the primary purpose of gas in Ethereum?

- A) To make transactions expensive
- B) To prevent spam and compensate validators
- C) To create scarcity
- D) To replace Ether

Quiz (1–5)

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Answer: B – Gas prevents DoS attacks and compensates validators.

Q2. How many Gwei are in 1 Ether?

- A) 10^6
- B) 10^9
- C) 10^{12}
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Answer: B – 1 Gwei = 10^9 Wei, 1 ETH = 10^{18} Wei.

Q3. In the pre-EIP-1559 model, what was the transaction fee formula?

- A) Gas Used + Gas Price
- B) Gas Used \times Gas Price
- C) Gas Limit \times Gas Price
- D) Base Fee + Priority Fee

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Q5. If a block is more than 50% full, how does the base fee change?

- A) Decreases by 12.5%
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- C) Increases by up to 12.5%
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Answer: C – Base fee increases when blocks exceed 50% capacity.

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- A) 10,000 B) 21,000 C) 45,000 D) 100,000

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Answer: C – Priority fee (tip) incentivizes validators to include transaction.

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Answer: B – Target is 15M gas (50% of 30M block limit).

Q11. What is the gas cost for a cold SLOAD (first storage read in a transaction)?

- A) 100 B) 700 C) 2,100 D) 5,000

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Answer: C – Cold SLOAD costs 2,100 gas; warm costs 100 gas (EIP-2929).

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A) 5,000 B) 10,000 C) 15,000 D) 20,000

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Answer: C – Clearing storage (SSTORE to zero) refunds 15,000 gas (after 5,000 cost).

Q13. What is the maximum gas refund cap introduced by EIP-3529?

A) 10% of gas used B) 20% of gas used C) 50% of gas used D) No cap

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Q14. Which transaction type typically uses the most gas?

A) Simple ETH transfer B) ERC-20 transfer C) Uniswap swap D) Contract deployment

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Answer: D – Deploying contracts costs 200k-500k+ gas, far exceeding other operations.

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- A) Events are faster B) Events cost much less gas (375 vs 20,000)
C) Events are on-chain accessible D) No advantage

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A) Events are faster B) Events cost much less gas (375 vs 20,000)

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Answer: B – Events cost 375 gas + 8/byte vs 20,000+ for storage.

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Answer: B – EIP-4844 (Dencun, March 2024) adds blob gas market for L2 data.

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Answer: B – Target is 3 blobs/block (384 KB), max 6 blobs (768 KB).

Q18. What optimization technique reduces gas by packing multiple values in one storage slot?

- A) Memory arrays
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Answer: B – Packing multiple small values into one uint256 slot saves SSTORE costs.

Q19. In a require statement with AND logic, which condition should come first?

- A) Most expensive
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Q20. If base fee is 30 Gwei, priority fee is 2 Gwei, and max fee is 50 Gwei, what is the effective gas price?

- A) 30 Gwei
- B) 32 Gwei
- C) 50 Gwei
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