

# What is the Krebs Cycle?

## Worksheet

The Krebs cycle oxidizes acetyl-CoA in the mitochondrial matrix, producing 3 NADH, 1 FADH<sub>2</sub>, 1 ATP (GTP), and 2 CO<sub>2</sub> per turn - and it turns twice for every glucose molecule.



## Questions

1. Where does the Krebs cycle take place?

- A) Cytoplasm
- B) Mitochondrial matrix
- C) Inner mitochondrial membrane
- D) Nucleus

2. How many NADH are produced per turn of the Krebs cycle?

- A) 1
- B) 2
- C) 3
- D) 4

3. How many times does the Krebs cycle turn for one glucose molecule?

- A) 1
- B) 2
- C) 3
- D) 4

4. What molecule enters the Krebs cycle to start it?

- A) Glucose
- B) Pyruvate
- C) Acetyl-CoA
- D) Oxygen

5. One acetyl-CoA molecule enters the Krebs cycle for one turn. How many NADH, FADH<sub>2</sub>, and ATP are produced?

6. One glucose molecule yields 2 acetyl-CoA, so the Krebs cycle turns twice. Total NADH produced?

7. If a cell has 4 acetyl-CoA molecules available, how many total ATP (GTP) come directly from the Krebs cycle?

8. Define: Where does the Krebs cycle occur?

9. Define: What enters the Krebs cycle?

10. Define: How many NADH per turn of the Krebs cycle?

## Answer Key

1. B) Mitochondrial matrix - The Krebs cycle occurs in the mitochondrial matrix.
2. C) 3 - Each turn produces 3 NADH molecules.
3. B) 2 - One glucose gives 2 acetyl-CoA, so the cycle turns twice.
4. C) Acetyl-CoA - Acetyl-CoA combines with oxaloacetate to begin the cycle.
5. Each turn produces 3 NADH Each turn produces 1 FADH<sub>2</sub> Each turn produces 1 ATP (GTP) directly
6. NADH per turn = 3 Turns per glucose = 2 Total NADH = 2 3 = 6 NADH
7. ATP per turn = 1 Turns = 4 (one per acetyl-CoA) Total ATP = 4 1 = 4 ATP
8. In the mitochondrial matrix.
9. Acetyl-CoA, derived from pyruvate after glycolysis.
10. 3 NADH per turn.

### **Bounlu**

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