

ADP, ATP, & Cellular Respiration
PowerPoint Question Guide

1. _____ is the energy used by all cells.
2. ATP stands for _____.
3. ATP is an _____ molecule containing high-energy _____ bonds.
4. The sugar in ATP is _____, while the nitrogen base is _____.
5. How many phosphate groups does ATP contain?
6. How do we get energy from ATP?

7. Make a simple sketch of ATP and show the high-energy bond that is broken.

8. To break the last phosphate bond in ATP, _____ must be added.
9. The process is called _____.
10. What enzyme is used to help weaken & break the last phosphate bond in ATP?
11. Can ATP be remade?
12. When the last phosphate bond of ATP is broken, _____ and a free _____ form.
13. What enzyme can be used to rejoin ADP and a free phosphate to make more ATP?
14. Using ATP's energy and then remaking it is called the _____ cycle.
15. In the body, ATP is made during the process of _____
_____.
16. Cellular respiration takes place in both _____ and _____.

17. Cellular respiration requires the gas _____.
18. In cellular respiration, _____ is oxidized (loses electrons) and _____ is reduced (gains electrons).
19. The breakdown of one glucose molecule results in _____ to _____ ATP molecules of energy.
20. Write the overall equation for cellular respiration.
21. Cellular respiration is an example of a _____ reaction.
22. REDOX stands for _____ - _____ reactions.
23. What are the products of cellular respiration?
24. What carries the energized electrons from glucose in cellular respiration?
25. NAD^+ is a _____ that forms _____ when it is reduced (picks up electrons).
26. What does NAD^+ stand for?
27. Name a second coenzyme that acts as an energy carrier in cellular respiration.
28. What does FAD^+ stand for?
29. FAD^+ becomes _____ whenever it is reduced.
30. Cellular respiration like photosynthesis is a _____ because it involves many reactions to make or break down carbohydrates.
31. Cellular respiration is an _____ reaction because it releases energy from glucose.
32. Glucose is broken down into _____ and _____.
33. Is cellular respiration catabolic or anabolic? Explain why.

34. Name the 3 stages of cellular respiration.

35. _____ takes place in the cytoplasm of cells. while the _____ cycle and ETC take place in the _____.

36. Sketch and label the parts of a mitochondrion.

37. Describe the outer surface of the mitochondria.

38. The inner membrane of the mitochondria is _____.

39. The folds of the inner mitochondrial membrane are called _____.

40. The innermost space of the mitochondria is known as the _____.

41. Using the PowerPoint diagram, answer the following:

a. Glycolysis occurs where?

b. Glycolysis produces what energy molecule?

c. The products of glycolysis enter what other part of a cell?

d. What organic compound enters the Krebs cycle?

e. Electron carriers (NADH & FADH) carry electrons to what?

f. The ETC occurs across what?

g. What is the product at the end of the ETC?

h. What gas is added at the end of the ETC?

i. The Krebs cycle occurs where?

j. What gas is a product of the Krebs cycle?

k. Is ATP made in the Krebs cycle?

l. Is ATP in the ETC?

42. Is glycolysis aerobic or anaerobic? Explain why.

43. Glycolysis requires how much ATP to get started?

44. In glycolysis, glucose is split into two molecules of _____ or pyruvic _____.

45. Is any CO_2 produced during glycolysis?

46. Glycolysis uses 2 ATP and produces _____ ATP.

47. How much NADH (energy carrier) is made during glycolysis?

48. Glycolysis does _____ require oxygen but may occur if _____ is present.

49. If oxygen is NOT present, the products of glycolysis enter a process called _____.

50. Fermentation is an _____ process because no _____ is needed.

51. Name the 2 types of fermentation.

52. Which fermentation occurs in tired muscle cells?

53. _____ acid builds up and makes muscles feel tired.

54. _____ fermentation in yeasts produces an alcohol called _____.

55. Fermentation only nets _____ molecules of ATP.

56. Why did Hans Krebs receive the Nobel Prize in medicine in 1953?

57. Why did he have to leave Germany before WWII?

58. Does the Krebs cycle need oxygen?

59. Processes needing oxygen are said to be _____.

60. How many turns of the Krebs cycle are needed to burn one molecule of glucose?

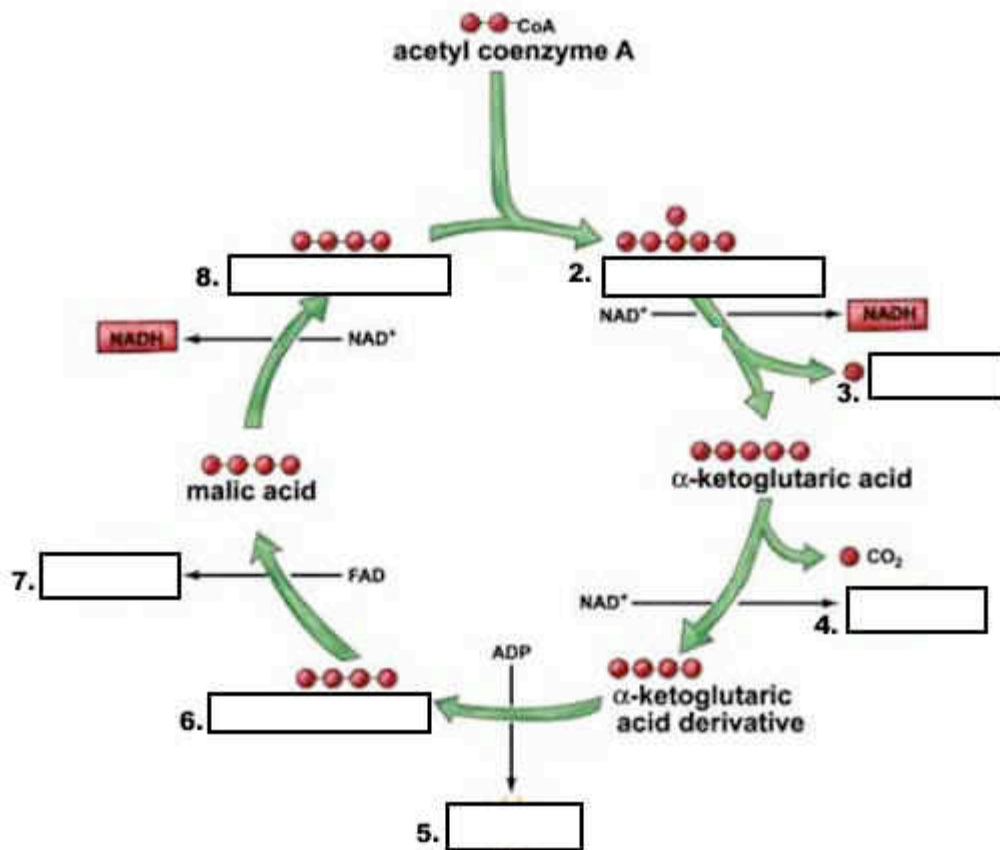
61. What gas is made during the Krebs Cycle?

62. Where does the Krebs cycle take place?

63. TWO TURNS of the Krebs cycle produces _____ CO₂ molecules, _____ NADH, _____ FADH, and _____ ATP molecules.

64. Label the parts of the Krebs Cycle.

SUMMARY OF THE CYCLE



65. The ETC occurs across the inner membrane of the _____ and produces _____ as an end product.

66. The ETC uses the energized electrons carried by the coenzymes _____ and _____ to make 34 ATP's of energy.

67. Each NADH makes _____ ATP's, while each FADH makes only _____ ATP's.