Practice Questions for Mitosis and Meiosis

The following are practice questions on the topic of Mitosis and Meiosis. There is also another document with more questions and also links to a practice *kahoot*.

Mitosis:

Which process results in the production of two identical daughter cells?

A) Meiosis

B) Mitosis

C) Fertilization

D) Replication

Meiosis:

What is the primary purpose of meiosis?

A) Growth and tissue repair

B) Production of gametes (sex cells)

C) Asexual reproduction

D) Cell metabolism

Mitosis Stages:

During which stage of mitosis do chromosomes line up along the center of the cell?

A) Prophase

B) Metaphase

C) Anaphase

D) Telophase

Chromosome Number:

How many chromosomes are present in a human somatic cell?

A) 23

B) 46

C) 92

D) 69

Crossing Over:

Which process occurs during prophase I of meiosis but not in mitosis?

A) Chromosome alignment

B) DNA replication

C) Crossing over

D) Nuclear envelope breakdown

Genetic Diversity:

Why is crossing over during meiosis important?

A) It prevents chromosome loss

B) It increases the number of chromosomes

C) It increases genetic variation

D) It repairs damaged DNA

Gametes:

How many chromatids are in a human gamete (sperm or egg)?

A) 23

B) 46

C) 92

D) 69

Cell Cycle:

What is the correct sequence of phases in the cell cycle?

A) G1, S, G2, M

B) G2, S, G1, M

C) M, G1, S, G2

D) S, G1, G2, M

Chromosome Structure:

What holds the sister chromatids together in the chromosome?

A) Centromere

B) Spindle fibers

C) Nucleolus

D) Centrosome

Mitosis Function:

What is the primary function of mitosis in multicellular organisms?

A) Sexual reproduction

B) Growth, repair and development

C) Formation of gametes

D) DNA replication

Meiosis II:

What is the result of meiosis II?

A) Two diploid cells

B) Four haploid cells

C) One diploid cell

D) Four diploid cells

Homologous Chromosomes:

During which phase of meiosis do homologous chromosomes come together and pair up forming a tetrad?

A) Prophase I

B) Metaphase II

C) Anaphase I

D) Telophase II

Chromosome Segregation:

In which phase of mitosis do sister chromatids separate and move towards opposite poles?

A) Prophase

B) Metaphase

C) Anaphase

D) Telophase

Genetic Variation:

Which process leads to genetic variation among offspring?

A) Mitosis

B) Cytokinesis

C) Meiosis

D) Interphase

Sexual Reproduction:

Why is meiosis essential for sexual reproduction?

A) It produces identical offspring

B) It creates haploid cells needed for fertilization

C) It increases genetic diversity

D) It speeds up cell division

Cell Growth:

In which phase of the cell cycle does a cell grow and carry out normal functions?

A) Prophase

B) Interphase

C) Metaphase

D) Anaphase

DNA Replication:

During which phase of the cell cycle does DNA replication occur?

A) G1

B) S phase

C) G2

D) M phase

Daughter Cells in Mitosis:

How do the daughter cells produced in **mitosis** compare to the parent cell?

A) They have half the chromosomes

B) They are genetically identical

C) They have twice as many chromosomes

D) They are genetically different

Meiosis vs. Mitosis:

What is a key difference between mitosis and meiosis?

A) Mitosis produces four cells, meiosis produces two

B) Mitosis creates gametes, meiosis creates body cells

C) Mitosis maintains chromosome number, meiosis halves it

D) Meiosis produces identical cells, mitosis does not

Genetic Variation:

Which process in meiosis contributes most to genetic variation?

A) DNA replication

B) Cytokinesis

C) Crossing over

D) Spindle formation

Diploid vs. Haploid:

What is the diploid number for human cells?

A) 12

B) 23

C) 46

D) 92

Spindle Fibers:

What is the role of spindle fibers in mitosis?

A) Replicate DNA

B) Move chromosomes

C) Protect the nucleus

D) Break down the cell membrane

Cytokinesis in Animal Cells:

How do animal cells complete cytokinesis?

A) They form a cell plate

B) They create a cleavage furrow

C) They duplicate DNA

D) They undergo binary fission

Cytokinesis in Plant Cells:

What structure forms during cytokinesis in plant cells?

A) Cleavage furrow

B) Cell plate

C) Centromere

D) Spindle fiber

Mitosis Location:

Where does mitosis occur in the human body?

A) Only in reproductive organs

B) Only in muscle cells

C) In all body cells except gametes

D) Only in damaged cells

Meiosis Location:

Where does meiosis occur in the human body?

A) In all body cells

B) In gamete-producing organs

C) In the skin

D) In red blood cells

Anaphase I of Meiosis:

What happens during anaphase I of meiosis?

A) Sister chromatids separate

B) Homologous chromosomes separate

C) DNA replication occurs

D) The nuclear membrane reforms

Anaphase II of Meiosis:

What happens during anaphase II of meiosis?

A) Sister chromatids separate

B) Homologous chromosomes separate

C) DNA replication occurs

D) The nuclear membrane reforms

Result of Mitosis:

What is the final result of mitosis?

A) Four haploid cells

B) Two identical diploid cells

C) Two haploid cells

D) Four identical diploid cells

Result of Meiosis:

What is the final result of meiosis?

A) Two diploid cells

B) Two haploid cells

C) Four haploid cells

D) Four diploid cells

Function of Mitosis:

Which of the following is **NOT** a function of mitosis?

A) Growth

B) Repair

C) Reproduction in single-celled organisms

D) Production of sperm and eggs

Meiosis and Fertilization:

What happens when a sperm cell and an egg cell combine?

A) The chromosome number is doubled

B) The chromosome number is restored to diploid

C) The chromosome number is halved

D) A clone is produced

Somatic Cells:

What are somatic cells?

A) Cells involved in reproduction

B) All body cells except gametes

C) Only nerve cells

D) Only muscle cells

Gametes:

What type of cells are sperm and egg cells?

A) Diploid

B) Haploid

C) Somatic

D) Mitochondrial

Cell Cycle Phase Duration:

Which phase of the cell cycle typically lasts the longest?

A) Mitosis

B) Cytokinesis

C) Interphase

D) Anaphase

Chromosome Number in Offspring:

If a dog's sperm cell has 39 chromosomes, how many chromosomes does a zygote have?

A) 39

B) 78

C) 156

D) 46

Why Cells Divide:

Why do cells divide instead of growing larger?

A) To replace old or damaged cells

B) To prevent DNA overload

C) To allow efficient nutrient exchange

D) All of the above

Why Mitosis Matters:

Why is mitosis important for an organism?

A) It helps organisms grow and heal

B) It makes sex cells

C) It reduces the chromosome number

D) It creates genetic variation