

Pedigree Practice Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

Which symbol is typically used to represent a male in a pedigree chart?

Hint: Think about the basic symbols used in pedigree charts.

- A) Circle
- B) Square ✓
- C) Triangle
- D) Diamond

■ The square symbol is used to represent males in pedigree charts.

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Which of the following statements are true about shaded symbols in a pedigree chart? (Select all that apply)

Hint: Think about what shaded symbols represent in terms of traits.

- A) They represent individuals who express the trait. ✓
- B) They indicate carriers of a trait.
- C) They represent unaffected individuals.
- D) They show individuals with unknown genotype.

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Describe the difference between autosomal dominant and autosomal recessive inheritance patterns.

Hint: Consider how traits are passed down through generations.

Autosomal dominant traits require only one copy of the allele to be expressed, while autosomal recessiv traits require two copies.

Describe the difference between autosomal dominant and autosomal recessiv inheritance patterns.

Hint: Consider how traits are passed down through generations.

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Part 2: Comprehension and Application

In a pedigree chart, if a trait is seen in every generation, what is the most likely mode of inheritance?

Hint: Think about how traits are passed down through generations.

- A) Autosomal Recessiv
- B) Autosomal Dominant ✓
- C) X-linked Recessiv
- D) Y-linked

█ The most likely mode of inheritance is autosomal dominant.

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Which of the following are characteristics of a carrier in a recessiv trait pedigree? (Select all that apply)

Hint: Consider the genetic makeup of carriers.

- A) They express the trait.
- B) They have one dominant and one recessiv allele. ✓
- C) They can pass the trait to offspring. ✓
- D) They are always male.

Carriers have one dominant and one recessive allele and can pass the trait to their offspring.

Which of the following are characteristics of a carrier in a recessive trait pedigree? (Select all that apply)

Hint: Consider the genetic makeup of carriers.

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Carriers have one dominant and one recessive allele and can pass the trait to offspring.

Explain what is meant by a heterozygous genotype and provide an example using allele notation.

Hint: Consider the definition of heterozygous.

A heterozygous genotype has two different alleles for a trait, such as Aa.

Explain what is meant by a heterozygous genotype and provide an example using allele notation.

Hint: Consider the definition of alleles and how they combine.

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Explain what is meant by a heterozygous genotype and provide an example using allele notation.

Hint: Consider the definition of heterozygous and how it relates to alleles.

A heterozygous genotype has two different alleles for a trait, such as Aa.

If a father is affected by an X-linked recessive trait, what is the probability that his son will also be affected?

Hint: Consider how X-linked traits are inherited.

- A) 0% ✓
- B) 25%
- C) 50%
- D) 100%

The probability is 0% because sons inherit their X chromosome from their mother.

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■ The probability is 0% because sons inherit the Y chromosome from their father.

In an autosomal dominant pedigree, if one parent is heterozygous for the trait and the other is unaffected, what are the possible genotypes of their children? (Select all that apply)

Hint: Consider the combinations of alleles that can result from this pairing.

- A) Homozygous dominant ✓
- B) Heterozygous ✓
- C) Homozygous recessiv
- D) Carrier

■ The possible genotypes are heterozygous and homozygous dominant.

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Hint: Consider the combinations of alleles from the parents.

- A) Homozygous dominant ✓
- B) Heterozygous ✓
- C) Homozygous recessiv
- D) Carrier

█ Possible genotypes include heterozygous and homozygous dominant.

Part 3: Analysis, Evaluation, and Creation

A pedigree shows a trait that affects only males and is passed from father to son. What is the most likely mode of inheritance?

Hint: Think about how traits are inherited through male lineage.

- A) Autosomal Dominant
- B) Autosomal Recessiv
- C) X-linked Recessiv
- D) Y-linked ✓

█ The most likely mode of inheritance is Y-linked.

A pedigree shows a trait that affects only males and is passed from father to son. What is the most likely mode of inheritance?

Hint: Think about the inheritance patterns that affect males.

- A) Autosomal Dominant
- B) Autosomal Recessiv
- C) X-linked Recessiv
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■ The most likely mode of inheritance is Y-linked.

In a pedigree chart, if a trait skips a generation, which inheritance patterns could it possibly indicate? (Select all that apply)

Hint: Consider how traits can be passed down through carriers.

- A) Autosomal Dominant
- B) Autosomal Recessiv ✓
- C) X-linked Dominant
- D) X-linked Recessiv ✓

■ It could indicate autosomal recessiv or X-linked recessiv inheritance patterns.

In a pedigree chart, if a trait skips a generation, which inheritance patterns could it possibly indicate? (Select all that apply)

Hint: Consider the inheritance patterns that allow for skipped generations.

- A) Autosomal Dominant
- B) Autosomal Recessiv ✓
- C) X-linked Dominant
- D) X-linked Recessiv ✓

■ Skipped generations could indicate autosomal recessiv or X-linked recessiv inheritance.

In a pedigree chart, if a trait skips a generation, which inheritance patterns could it possibly indicate? (Select all that apply)

Hint: Consider the implications of traits skipping generations.

- A) Autosomal Dominant
- B) Autosomal Recessiv ✓
- C) X-linked Dominant
- D) X-linked Recessiv ✓

Traits that skip generations may indicate autosomal recessiv or X-linked recessiv inheritance.

Analyze a given pedigree chart (provide a sample chart) and determine the mode of inheritance. Justify your answer with evidence from the chart.

Hint: Look for patterns in the inheritance of traits.

Analyze the chart for patterns that indicate the mode of inheritance.

Analyze a given pedigree chart (provide a sample chart) and determine the mode of inheritance. Justify your answer with evidence from the chart.

Hint: Consider the relationships and patterns in the chart.

Analyze the chart to identify the mode of inheritance based on the patterns observed.

Analyze a given pedigree chart (provide a sample chart) and determine the mode of inheritance. Justify your answer with evidence from the chart.

Hint: Consider the patterns of inheritance you observe.

Analyze the chart for patterns that indicate the mode of inheritance.

Given a pedigree where a mother is affected by an X-linked dominant trait, what is the probability that her daughter will also be affected?

Hint: Consider how X-linked dominant traits are inherited.

- A) 0%
- B) 25%
- C) 50% ✓
- D) 100%

The probability is 50% because daughters inherit one X chromosome from each parent.

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Design a pedigree chart for a family with a known autosomal recessiv trait. Which of the following must be true? (Select all that apply)

Hint: Consider the implications of autosomal recessiv inheritance.

- A) Both parents must be carriers or affected. ✓
- B) The trait can appear in any gender. ✓
- C) The trait will appear in every generation.
- D) Unaffected parents cannot have affected children.

Both parents must be carriers or affected, and the trait can appear in any gender.

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Reflect on the importance of understanding genetic pedigrees in real-world applications such as genetic counseling and disease prevention. Provide examples to support your reflection.

Hint: Consider how this knowledge can impact individuals and families.

Understanding genetic pedigrees is crucial for identifying risks and making informed decisions about health.

Reflect on the importance of understanding genetic pedigrees in real-world applications such as genetic counseling and disease prevention. Provide examples to support your reflection.

Hint: Consider the implications of genetic knowledge in healthcare.

Understanding genetic pedigrees is crucial for identifying risks and making informed decisions in healthcare.

Reflect on the importance of understanding genetic pedigrees in real-world applications such as genetic counseling and disease prevention. Provide examples to support your reflection.

Hint: Consider the implications of genetic knowledge.

Understanding genetic pedigrees is crucial for identifying risks and making informed decisions.