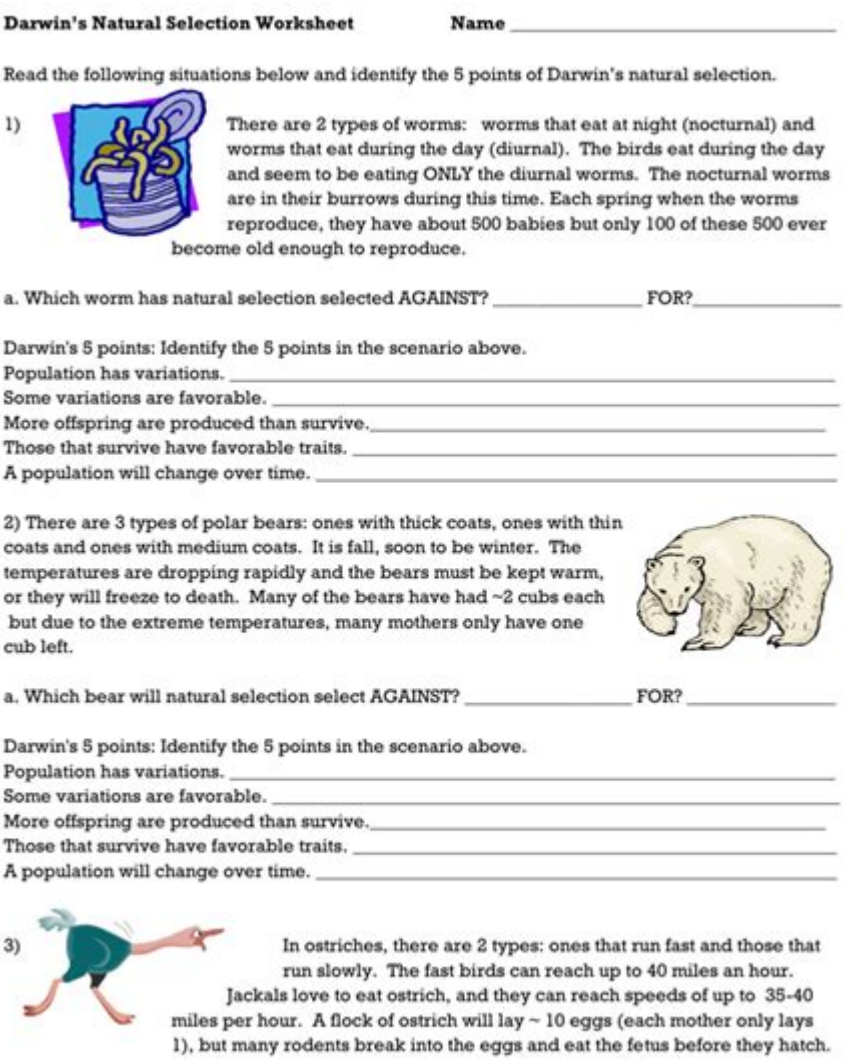
Natural Selection Worksheet



Darwin's Natural Selection Worksheet **Name** _____

Read the following situations below and identify the 5 points of Darwin's natural selection.

1) There are 2 types of worms: worms that eat at night (nocturnal) and worms that eat during the day (diurnal). The birds eat during the day and seem to be eating ONLY the diurnal worms. The nocturnal worms are in their burrows during this time. Each spring when the worms reproduce, they have about 500 babies but only 100 of these 500 ever become old enough to reproduce.

a. Which worm has natural selection selected AGAINST? _____ FOR?_____

Darwin's 5 points: Identify the 5 points in the scenario above.
Population has variations. _____
Some variations are favorable. _____
More offspring are produced than survive._____
Those that survive have favorable traits. _____
A population will change over time. _____

2) There are 3 types of polar bears: ones with thick coats, ones with thin coats and ones with medium coats. It is fall, soon to be winter. The temperatures are dropping rapidly and the bears must be kept warm, or they will freeze to death. Many of the bears have had ~2 cubs each but due to the extreme temperatures, many mothers only have one cub left.

a. Which bear will natural selection select AGAINST? _____ FOR? _____

Darwin's 5 points: Identify the 5 points in the scenario above.
Population has variations. _____
Some variations are favorable. _____
More offspring are produced than survive._____
Those that survive have favorable traits. _____
A population will change over time. _____

3) In ostriches, there are 2 types: ones that run fast and those that run slowly. The fast birds can reach up to 40 miles an hour. Jackals love to eat ostrich, and they can reach speeds of up to 35-40 miles per hour. A flock of ostrich will lay ~ 10 eggs (each mother only lays 1), but many rodents break into the eggs and eat the fetus before they hatch.

Natural Selection Worksheet: A Comprehensive Guide for Students and Educators

Understanding natural selection is fundamental to grasping the core principles of evolutionary biology. This comprehensive guide provides everything you need to know about natural selection, alongside readily accessible natural selection worksheets designed to reinforce learning and assess comprehension. Whether you're a student struggling to grasp the concept or an educator searching for engaging teaching materials, this post offers a wealth of resources to solidify your understanding of this crucial biological process.

What is Natural Selection?

Natural selection, the cornerstone of Darwin's theory of evolution, describes the process where organisms better adapted to their environment tend to survive and produce more offspring. This "survival of the fittest" isn't about brute strength, but rather about possessing advantageous traits that increase an organism's chances of reproduction in a specific environment. These traits can be physical, behavioral, or physiological. Let's break down the key components:

Variation: Individuals within a population exhibit variations in their traits. This variation is crucial because it provides the raw material for natural selection to act upon. These variations arise from genetic mutations and sexual reproduction.

Inheritance: These advantageous traits are heritable, meaning they can be passed down from parents to offspring through genes.

Overproduction: Organisms produce more offspring than can possibly survive, leading to competition for limited resources like food, water, and mates.

Differential Survival and Reproduction: Individuals with traits better suited to their environment are more likely to survive and reproduce, passing on those advantageous traits to their offspring. This process gradually leads to changes in the population over time.

Types of Natural Selection

Natural selection isn't a monolithic process; it manifests in different ways depending on the selective pressures acting on a population:

Directional Selection: Favors one extreme phenotype (observable characteristic) over others. For example, if larger individuals are better at obtaining resources, the population will shift towards larger sizes over time.

Stabilizing Selection: Favors the intermediate phenotype, eliminating extreme variations. For example, birth weight in humans; both very low and very high birth weights have lower survival rates.

Disruptive Selection: Favors both extremes of a phenotype, often leading to the divergence of the population into two distinct groups. For example, a bird species with two different beak sizes, one for large seeds and one for small seeds.

Utilizing Natural Selection Worksheets Effectively

Natural selection worksheets serve as invaluable tools for both students and educators. They provide

a hands-on approach to understanding complex concepts, allowing for active learning and reinforcement of key principles. Effective worksheets should:

Include diverse examples: Illustrations from various organisms and ecosystems help students apply the concept across different contexts.

Present a range of difficulty levels: Cater to different learning styles and levels of understanding.

Encourage critical thinking: Prompts should go beyond simple memorization and encourage analysis and problem-solving.

Promote collaboration: Group activities using worksheets foster discussion and shared learning.

Where to Find Natural Selection Worksheets

Numerous resources provide high-quality natural selection worksheets. Online educational platforms, textbook websites, and educational resource stores offer printable and interactive worksheets catering to various age groups and learning styles. Searching for "natural selection worksheet PDF" or "natural selection activities for high school" will yield many relevant results. Remember to assess the quality and accuracy of the content before use.

Creating Your Own Natural Selection Worksheet

Designing your own worksheet can be a rewarding experience, allowing you to tailor the content to specific learning objectives. Consider incorporating:

Case studies: Real-world examples of natural selection in action make the concept more relatable and engaging.

Data analysis: Presenting data sets and asking students to interpret them allows for practice in scientific reasoning.

Diagram interpretation: Including diagrams of evolutionary trees or population graphs enhances understanding of visual representations.

Problem-solving scenarios: Presenting hypothetical scenarios allows students to apply their understanding to new situations.

Conclusion

Natural selection is a fundamental principle in biology. Utilizing natural selection worksheets provides a practical and effective way to reinforce understanding and assess learning. By utilizing diverse examples, incorporating various question types, and encouraging critical thinking, these worksheets can transform the learning experience, making a complex topic engaging and accessible. Remember to utilize reputable sources for your worksheets and tailor them to the specific learning objectives and needs of your students.

FAQs

1. What is the difference between natural selection and evolution? Natural selection is a mechanism of evolution. Evolution is the overall change in the heritable characteristics of a population over time, while natural selection is one of the processes that drives this change.

2. Can natural selection create new traits? Natural selection doesn't create new traits; it acts on existing variations within a population. New traits arise through mutations and other genetic processes. Natural selection then favors the traits that increase an organism's fitness in its environment.

3. Is natural selection always beneficial for a species? Not necessarily. While it often leads to adaptations that improve survival and reproduction, it can also result in traits that are beneficial in one environment but detrimental in another.

4. How long does natural selection take? The timescale for natural selection varies greatly, depending on factors such as generation time, the strength of selection pressure, and the amount of genetic variation within a population. It can occur over relatively short periods or extend across millions of years.

5. Are humans still subject to natural selection? Yes, although the impact of modern medicine and technology has reduced the intensity of selection pressures in many human populations, natural selection still plays a role in shaping human traits and genetic diversity.

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natural selection worksheet: On the Law Which Has Regulated the Introduction of New Species Alfred Russel Wallace, 2016-05-25 This early work by Alfred Russel Wallace was originally published in 1855 and we are now republishing it with a brand new introductory biography. 'On the Law Which Has Regulated the Introduction of New Species' is an article that details Wallace's ideas on the natural arrangement of species and their successive creation. Alfred Russel Wallace was born on 8th January 1823 in the village of Llanbadoc, in Monmouthshire, Wales. Wallace was inspired by the travelling naturalists of the day and decided to begin his exploration career collecting specimens in the Amazon rainforest. He explored the Rio Negra for four years, making notes on the peoples and languages he encountered as well as the geography, flora, and fauna. While travelling, Wallace refined his thoughts about evolution and in 1858 he outlined his theory of natural selection in an article he sent to Charles Darwin. Wallace made a huge contribution to the natural sciences and he will continue to be remembered as one of the key figures in the development of evolutionary theory.

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Mutation is a phenomenon that draws attention from many different disciplines. Thus, the extensive reviews of the literature will be valuable both to established researchers and to those just beginning to study this field. Through up-to-date reviews, the authors provide an insightful overview of each topic and then share their newest ideas and explore controversial aspects of mutation and the evolutionary process. From topics like gonadal mosaicism and mutation clusters to adaptive mutagenesis, mutation in cell organelles, and the level and distribution of DNA molecular changes, the foundation is set for continuing the debate about the role of mutation, fitness, and adaptability. It is a debate that will have profound consequences for our understanding of evolution.

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relation to current work in biology and other disciplines.

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The result is a compelling and important book about how evolution matters to humans today. The contributors include Francisco J. Ayala, Dieter Ebert, Elizabeth Hannon, Richard E. Lenski, Tim Lewens, Jonathan B. Losos, Jacob A. Moorad, Mark Pagel, Robert T. Pennock, Daniel E. L. Promislow, Robert C. Richardson, Alan R. Templeton, and Carl Zimmer.--

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among the most informed and engaging accounts ever written on the evolution of a group of organisms in nature.—Dolph Schluter, author of The Ecology of Adaptive Radiation

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committee, and feature presentations by leading scientists in the field and discussions with a hundred or more researchers with an interest in the topic. Colloquia presentations are recorded and posted on the National Academy of Sciences Sackler colloquia website and published on CD-ROM. These Colloquia are made possible by a generous gift from Mrs. Jill Sackler, in memory of her husband, Arthur M. Sackler.

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