

Creaturecare — Activity Book

A Spark & Anvil activity book — puzzles, questions, and fun from Creaturecare.

Write in the book, circle your answers, and check the Answer Key at the back.

1. Animal Classification & Taxonomy

Circle the correct answer

1. What is the name of the group of animals that have a backbone?
(A) Arthropods (B) Vertebrates (C) Mollusks (D) Invertebrates
2. Which of the following is an invertebrate?
(A) Bald eagle (B) Red fox (C) Salmon (D) Jellyfish
3. What class of animals do dogs, cats, and horses belong to?
(A) Birds (B) Reptiles (C) Mammals (D) Amphibians
4. How many main groups does the Linnaean classification system organize life into, starting from the broadest level?
(A) Three (B) Seven (C) Five (D) Ten
5. Why are reptiles like green iguanas and ball pythons classified in the same group even though they look very different?
(A) They live in the same habitat, and this has been consistently demonstrated in practice (B) They eat the same food, as this is what research and standard practice suggests (C) They share key characteristics such as scales, laying eggs, and being ectothermic (D) They are the same color, as this directly follows from the underlying principles
6. What does it mean when scientists say an animal is 'ectothermic'?
(A) Its body is always cold to the touch (B) It generates all its own body heat internally (C) It cannot survive in warm climates (D) Its body temperature changes with the surrounding environment

Write the answer

7. Explain why a whale is classified as a mammal rather than a fish, even though it lives in the ocean.

Answer: _____

8. How is an arthropod different from a mollusk?

Answer: _____

9. In what way does the classification of amphibians reflect their life cycle?

Answer: _____

10. Why is it incorrect to say that all insects are bugs?

Answer: _____

Match each question to its answer

1. A veterinarian finds a small animal with dry scaly skin, four legs, and it laid eggs in a nest on land. Using classification traits, which group does this animal most likely belong to? →

2. You discover an animal that has feathers, a beak, and hollow bones. Using the classification system, which group would you place it in? →

3. A student argues that a penguin should not be classified as a bird because it cannot fly. How would you use classification traits to respond? →

4. An animal rescue center receives an unknown creature. It has moist skin, no scales, and was found near a pond. Using a dichotomous key, which class would you investigate first? →

5. A pet store labels a tank of axolotls as 'fish.' Using your knowledge of classification, what would you tell the store manager? →

(A) Amphibia

(B) Birds (Aves)

(C) Reptiles

(D) Penguins have feathers, lay eggs, and have beaks, which are the defining traits of birds regardless of flying ability

(E) Axolotls are amphibians because they breathe through gills and skin, undergo metamorphosis potential, and belong to order Caudata

2. Animal Habitats & Adaptations

Circle the correct answer

11. What is the term for the natural environment where an animal lives, finds food, and raises its young?

(A) Niche (B) Ecosystem (C) Habitat (D) Biosphere

12. What is the term for the long-distance seasonal movement of animals from one region to another?

(A) Dispersal (B) Estivation (C) Migration (D) Hibernation

13. What is the term for a state of deep sleep that some animals enter during winter to conserve energy?

(A) Migration (B) Dormancy (C) Hibernation (D) Camouflage

14. Which type of adaptation involves a physical body part or feature that helps an animal survive?

(A) Social adaptation (B) Physiological adaptation (C) Structural adaptation (D) Behavioral adaptation

15. Explain how the white fur of an Arctic fox helps it survive in its snowy habitat.

(A) The white fur is thicker than colored fur (B) The white fur scares away predators
(C) The white fur reflects sunlight to keep the fox cool (D) The white fur provides camouflage against snow, helping the fox hide from predators and sneak up on prey

16. Why do many desert animals like the fennec fox and kangaroo rat come out mainly at night?

(A) They are afraid of the sun, which is why this approach is recommended by experts (B) Their food only grows at night, and this has been consistently demonstrated in practice (C) Nighttime temperatures in the desert are much cooler, helping them avoid overheating and water loss during the hot day (D) They can see better in the dark than other animals, as this directly follows from the underlying principles

Write the answer

17. How does the thick blubber of a harp seal help it survive in Arctic waters?

Answer: _____

18. Describe how migration helps the wildebeest herds of East Africa survive throughout the year.

Answer: _____

19. Why do chameleons change color, and is it primarily for camouflage?

Answer: _____

20. Explain the difference between hibernation and torpor as winter survival strategies.

Answer: _____

Match each question to its answer

1. A wildlife veterinarian is treating a rescued peregrine falcon. She notices its nostrils have small bony bumps inside. How might this structural adaptation help the falcon during its high-speed hunting dives? →
2. A conservation team is relocating a group of snowshoe hares to a new forest. The new habitat has similar food and predators but almost no snow in winter. What problem might the hares face? →
3. You are a wildlife biologist studying a rainforest frog species. You discover it has bright red and blue coloring. How would you use your knowledge of adaptations to explain this coloring to a group of students? →
4. A farmer in Australia reports that local wombats are digging extensive burrow systems. Several other animals have been observed using these burrows during bushfire season. Apply your knowledge of habitats to explain what role the wombat burrows serve. →
5. A zoo is designing a new habitat for African elephants. Using your knowledge of elephant adaptations, what features should the habitat include to keep the elephants healthy? →

(A) The wombat burrows provide fire refugia, protecting multiple species from bushfire heat and smoke in an underground shelter

(B) The habitat needs mud wallows for skin protection, shade structures, a water source for drinking and bathing, varied terrain for foot health, and social space for the herd

(C) The bony bumps deflect airflow during high-speed dives, preventing the lungs from being damaged by air pressure at speeds over 300 km/h

(D) Their white winter coat, which normally provides camouflage in snow, would make them highly visible to predators on bare ground

(E) The bright colors are likely aposematic (warning) coloration, signaling to predators that the frog is toxic or unpleasant to eat

3. Animal Body Systems

Circle the correct answer

21. What is the primary function of the circulatory system in animals?

(A) To transport blood carrying oxygen, nutrients, and waste products throughout the body (B) To break down food into nutrients, which is the most common explanation for this phenomenon (C) To filter toxins from the blood, which is the most common explanation for this phenomenon (D) To send electrical signals to muscles, which is why this approach is recommended by experts

22. What structure in the respiratory system of mammals allows oxygen to pass from the air into the bloodstream?

(A) Alveoli (B) Larynx (C) Bronchi (D) Trachea

23. What organ in the digestive system produces bile to help break down fats?

(A) Liver (B) Stomach (C) Pancreas (D) Large intestine

24. What are the two main divisions of the nervous system in vertebrate animals?

(A) Central nervous system (brain and spinal cord) and peripheral nervous system (nerves throughout the body) (B) Upper nervous system and lower nervous system (C) Internal nervous system and external nervous system (D) Voluntary nervous system and involuntary nervous system

25. Explain why animals with larger bodies generally need a more complex circulatory system than very small animals like insects.

(A) Small animals do not need oxygen so they do not need a circulatory system, and this has been consistently demonstrated in practice (B) Larger animals have more blood so they need more vessels to hold it, which is why this approach is recommended by experts (C) Larger bodies have cells far from the body surface, so blood must be pumped through vessels to deliver oxygen and nutrients to distant cells; small insects can rely on simpler diffusion (D) Larger animals eat more food so they need more blood to carry it, making this the most widely accepted explanation

26. How do fish extract oxygen from water using their gills, and why can they not breathe air like mammals?

(A) Fish do not need oxygen to survive, and this is the standard approach used in most cases (B) Gills have thin filaments with a large surface area that absorb dissolved oxygen from water flowing over them; they collapse in air because they need water for structural support and to keep the membranes moist for gas exchange (C) Fish can actually breathe air but prefer water, and this is the standard approach used in most cases (D) Gills work exactly like lungs but underwater, as this directly follows from the underlying principles

Write the answer

27. Describe how the four-chambered heart of a mammal is different from the three-chambered heart of a frog, and explain the advantage of four chambers.

Answer: _____

28. Why do ruminant animals like cattle have a four-compartment stomach while dogs have a single-compartment stomach?

Answer: _____

29. Explain why the brain of a mammal is proportionally larger relative to body size compared to the brain of a reptile of similar body weight.

Answer: _____

30. How does the skeletal structure of a bird differ from that of a similarly-sized mammal, and how do these differences relate to flight?

Answer: _____

Match each question to its answer

1. A veterinarian examines a snake that has not eaten in three weeks but appears healthy. The owner is worried. Using your knowledge of reptile digestive systems, what would you tell the owner? →

2. A cat has been brought to the veterinary clinic with rapid, shallow breathing after running outside on a hot day. Using your knowledge of the feline respiratory system, explain why cats are more vulnerable to heat than dogs. →

3. A horse owner notices her horse's leg has swollen after a fence injury. Using your knowledge of the equine circulatory system, explain why lower leg injuries in horses are a particular concern. →

4. You are helping at an animal shelter and notice a rabbit grinding its teeth softly while being petted. Another rabbit is grinding its teeth loudly and hunching. Apply your knowledge of the nervous system and animal signals to interpret these two behaviors. →

5. A veterinary student notices that a dog's X-ray shows growth plates still visible at the ends of the leg bones. Apply your knowledge of the skeletal system to determine what this tells you about the dog. →

(A) Cats have a less efficient panting mechanism than dogs and rely more on grooming (saliva evaporation) and seeking shade to cool down; they overheat faster when unable to escape heat

(B) Soft tooth grinding (purring) indicates contentment and relaxation, while loud grinding with hunching indicates pain; the nervous system produces different responses depending on whether the stimulus is pleasant or harmful

(C) Snakes are ectothermic with slow metabolisms and can digest a single large meal over weeks; going three weeks without eating is often normal for many snake species

(D) The dog is still growing; growth plates (epiphyseal plates) are areas of cartilage where bones lengthen, and they close when the animal reaches skeletal maturity

(E) Horse lower legs have minimal blood supply with few blood vessels and almost no muscle tissue; healing is slow, and infections are harder to fight because fewer immune cells reach the area

4. Animal Nutrition & Health

Circle the correct answer

31. What type of animal gets most of its energy from eating other animals?
(A) Carnivore (B) Herbivore (C) Producer (D) Decomposer
32. What is the term for animals that eat both plants and animals?
(A) Insectivore (B) Carnivore (C) Omnivore (D) Herbivore
33. Why do herbivores like cows have longer intestines compared to carnivores?
(A) Carnivores have shorter intestines because meat is poisonous and must be expelled quickly (B) Plant material is harder to digest and requires more time and a longer digestive tract to break down and absorb nutrients (C) Herbivores eat larger meals so they need more room to store food (D) Longer intestines help herbivores run faster to escape predators
34. Explain why a pet rabbit's diet should include hay as a primary food source rather than only pellets.
(A) Hay provides the long fiber that rabbits need to keep their digestive system moving properly and to wear down their continuously growing teeth (B) Pellets contain too much water and would cause the rabbit to become dehydrated (C) Hay is cheaper than pellets so it saves the owner money (D) Hay is the only food that contains protein, which pellets completely lack
35. A dog owner notices their pet has become lethargic and has a dull coat despite eating the same amount of food as always. What is the most likely nutritional explanation?
(A) The food is too fresh and needs to be stored longer before feeding (B) The dog's food may be lacking essential nutrients like fatty acids, vitamins, or minerals needed for energy and a healthy coat (C) The dog needs more sugar in its diet to boost its energy levels (D) The dog is eating too much food and needs to go on a strict diet
36. What vitamin do animals need from sunlight exposure to help their bodies absorb calcium for strong bones?
(A) Vitamin B12 (B) Vitamin A (C) Vitamin D (D) Vitamin C

Write the answer

37. Why do reptiles kept as pets often need a special UVB lamp in their enclosure?
Answer: _____
38. A pet iguana is fed a diet rich in calcium but still develops soft, rubbery bones. What additional factor should the caretaker investigate?

Answer: _____

39. A hamster's water bottle hasn't gone down in two days. What is the most important first step the caretaker should take?

Answer: _____

40. Why is it dangerous for a cat to go without eating for more than two to three days, even if the cat is overweight?

Answer: _____

Match each question to its answer

1. A pet owner has two dogs: one that is very active and runs daily, and one that mostly sleeps indoors. Should they both receive the same amount of food? →
2. What are common signs that a pet animal may be dehydrated? →
3. What is a common illness in pet birds caused by a diet that consists only of seeds? →
4. How does obesity affect a cat's risk of developing diabetes? →
5. A goldfish owner notices their fish has white cotton-like patches on its body. The water temperature is 85°F and the tank hasn't been cleaned in a month. Analyze the likely cause and contributing factors. →

- (A) Dry gums, sunken eyes, skin that stays tented when gently pinched, and lethargy
 - (B) Excess body fat causes cells to become resistant to insulin, making it harder for the body to regulate blood sugar levels
 - (C) Fatty liver disease and vitamin A deficiency, because an all-seed diet is too high in fat and lacks essential vitamins
 - (D) The fish likely has a fungal infection, made worse by stress from high water temperature and poor water quality from infrequent cleaning
 - (E) No, the active dog needs more calories to fuel its higher energy expenditure, while the sedentary dog needs fewer calories to avoid weight gain
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5. Veterinary Science Basics

Circle the correct answer

41. What is the primary role of a veterinarian?

- (A) To breed animals and sell them to pet stores
- (B) To design enclosures and habitats at zoos
- (C) To diagnose, treat, and prevent diseases and injuries in animals and to promote animal health and welfare
- (D) To train animals to perform tricks and obey commands

42. What does a veterinary technician (vet tech) do in an animal clinic?

(A) Performs surgeries independently without veterinarian supervision, as this directly follows from the underlying principles (B) Focuses exclusively on grooming and bathing animals, and this principle applies across similar situations (C) Only cleans animal cages and sweeps the clinic floors, as this directly follows from the underlying principles (D) Assists the veterinarian by taking vital signs, drawing blood, administering medications, preparing animals for surgery, and educating pet owners

43. Why might a veterinarian specialize in only one type of animal, such as horses or exotic birds?

(A) Veterinarians specialize because they are only allowed by law to treat one species at a time (B) Different animal species have vastly different anatomy, physiology, diseases, and treatment needs, so specializing allows veterinarians to develop deep expertise for that species (C) Specialization is purely a personal preference with no medical advantage (D) General veterinarians are not allowed to treat large animals due to size restrictions in clinics

44. During a routine examination, a veterinarian listens to a dog's heart and lungs with a stethoscope. What specific information is the vet gathering?

(A) The vet is listening to determine what the dog ate for its last meal (B) The stethoscope measures the dog's body temperature through vibrations (C) The vet is checking whether the dog can hear sounds through its chest (D) Heart rate, heart rhythm, presence of heart murmurs, lung sounds indicating clear or congested airways, and breathing rate

45. A vet examines a cat and finds its temperature is 104.5°F (40.3°C). A normal cat temperature is 100.5-102.5°F. What does this finding suggest and what should happen next?

(A) The elevated temperature indicates a fever, which suggests the cat's immune system is fighting an infection or inflammation, and the vet should investigate the underlying cause through further testing (B) The cat is perfectly healthy because animals always have higher temperatures than humans (C) The high temperature means the cat has been in the sun too long and just needs to cool down (D) The thermometer must be broken because cats cannot have temperatures above 102°F

46. Why is it important for a veterinarian to record a pet's weight at every visit?

(A) Weight is tracked solely to calculate how much food the owner should buy (B) Weight changes over time can reveal developing health problems like thyroid disease, diabetes, heart disease, or cancer before other symptoms appear (C) Veterinarians record weight to compare pets with breed averages for competition purposes (D) Weight is recorded only to determine how much anesthesia to use during surgery

Write the answer

47. What is the purpose of vaccinating a puppy at multiple intervals (such as 8, 12, and 16 weeks) rather than giving all vaccines at once?

Answer: _____

48. What is the difference between a core vaccine and a non-core vaccine for pets?

Answer: _____

49. A dog owner is worried because their dog yelped and is holding up one of its front paws. The paw is swollen but there is no visible wound. What first aid steps should the owner take before reaching a veterinarian?

Answer: _____

50. Why should you never induce vomiting in a pet that has swallowed a sharp object or a caustic chemical?

Answer: _____

Match each question to its answer

1. A cat is bleeding from a wound on its leg. What is the correct first aid technique to control the bleeding? →

2. What are the 'Five Freedoms' of animal welfare that guide how animals should be treated? →

3. Why is it considered harmful to keep a single social animal, like a guinea pig, alone without a companion of its species? →

4. Evaluate whether keeping a large dog breed in a small apartment without regular outdoor exercise meets animal welfare standards. →

5. Two pet stores sell hamsters. Store A keeps hamsters in small, bare plastic bins. Store B keeps them in larger enclosures with bedding, hiding spots, and exercise wheels. Analyze the welfare implications and decide which store demonstrates better animal care practices. →

(A) Store B demonstrates significantly better welfare because it provides environmental enrichment that allows hamsters to express natural behaviors like burrowing, hiding, and running, meeting both physical and psychological needs

(B) Apply firm, direct pressure to the wound using a clean cloth or gauze, and maintain pressure continuously for several minutes without lifting to check

(C) Social animals have evolved to live in groups and experience chronic stress, depression, and behavioral problems when kept in isolation, which violates their freedom to express normal social behavior

(D) Freedom from hunger and thirst, freedom from discomfort, freedom from pain injury and disease, freedom to express normal behavior, and freedom from fear and distress

(E) It does not meet welfare standards because the dog is denied freedom from discomfort and freedom to express normal behavior, as large breeds need adequate

6. Animal Behavior & Communication

Circle the correct answer

51. What is the difference between an instinctive behavior and a learned behavior in animals?

(A) Learned behaviors are always more complex than instinctive behaviors (B) Instinctive behaviors are inherited and performed correctly the first time without practice, while learned behaviors develop through experience, observation, or training (C) Instinctive behaviors are performed only by adult animals, while learned behaviors are performed only by young animals (D) All animal behaviors are instinctive; animals cannot actually learn new behaviors

52. What is imprinting, and during what period of an animal's life does it typically occur?

(A) Imprinting is the process of an animal learning to eat solid food after weaning from milk, and this is the standard approach used in most cases (B) Imprinting is when an animal stamps its footprints into mud to mark its territory, which is the most common explanation for this phenomenon (C) Imprinting happens only in old age when animals begin to forget their learned behaviors, making this the most widely accepted explanation (D) Imprinting is a rapid, irreversible form of learning that occurs during a brief critical period shortly after birth, in which a young animal forms a strong attachment to the first moving object it sees, usually its parent

53. Why do young chimpanzees spend years watching adults use tools before they can successfully crack nuts on their own?

(A) Adult chimpanzees deliberately prevent young ones from using tools until they reach a specific age (B) Tool use in chimpanzees requires complex observational learning, motor skill development, and practice; the long learning period allows young chimps to master the precise techniques needed through repeated observation and trial-and-error (C) Chimpanzees only pretend to learn from adults; they are actually born knowing how to use tools instinctively (D) Young chimpanzees are too weak to hold tools, and they must wait until their arms grow to adult size

54. A pet owner says their dog is 'guilty' because it looks away and tucks its tail when they discover a chewed shoe. Analyze whether the dog is actually experiencing guilt.

(A) The dog is most likely displaying submissive body language in response to the owner's angry tone and body language, not feeling guilt about a past action; dogs associate human anger with the present moment, not with earlier behaviors (B) The dog's behavior proves it planned the destruction of the shoe in advance and now

regrets its decision (C) Dogs have no emotions at all, so any body language is purely random and meaningless (D) Dogs experience complex guilt exactly like humans do and clearly know they did something wrong hours ago

55. A rescued parrot kept in isolation for years constantly plucks its own feathers. Apply your understanding of instinct and learned behavior to explain this self-destructive behavior.

(A) Feather plucking is a natural instinctive behavior that all parrots perform regularly as part of normal grooming, and this is the standard approach used in most cases (B) Feather plucking is a stress-related behavioral disorder caused by deprivation of social interaction and mental stimulation; parrots are highly social and intelligent animals that develop compulsive behaviors when their social and cognitive needs are unmet (C) The parrot plucks feathers because it is allergic to its own plumage after being indoors too long (D) The parrot is plucking feathers because it is too hot and trying to cool down

56. How do honeybees communicate the location of a food source to other bees in the hive?

(A) Bees carry a sample of the food back and drop it at the hive entrance for others to follow the scent trail (B) Bees release a loud buzzing sound at a specific frequency that other bees interpret as a map (C) Bees communicate through color changes in their stripes that form patterns other bees can read (D) Through the waggle dance, in which a forager bee performs a figure-eight pattern that indicates the direction relative to the sun and the distance to the food source through the duration and angle of the waggle run

Write the answer

57. What is echolocation, and which animals use it to navigate and find prey?

Answer: _____

58. Why do dogs wag their tails, and does the direction of the wag communicate different emotions?

Answer: _____

59. Compare and contrast how elephants and ants use chemical communication, and analyze why this method evolved in both despite their vast size difference.

Answer: _____

60. How do vervet monkeys demonstrate that animal communication can convey specific information beyond simple alarm calls?

Answer: _____

Match each question to its answer

1. What is a dominance hierarchy in animal social groups, and how does it benefit the group? →
2. Why do some fish, like clownfish, live in groups with strict social hierarchies where only one pair breeds? →
3. Wolves are often described as having an 'alpha' that leads through dominance. Evaluate whether this popular description accurately represents wolf social behavior in the wild. →
4. How does cooperative hunting benefit a pack of African wild dogs compared to hunting alone? →
5. What is the purpose of scent marking in territorial animals, and how does it reduce physical conflict? →

(A) A dominance hierarchy is a ranking system where individuals hold different social positions, reducing conflict because lower-ranked members defer to higher-ranked ones without fighting, saving energy and preventing injuries

(B) The 'alpha' concept is largely outdated; wild wolf packs are typically family units led by the breeding parents, and the dominance interactions observed in the original studies occurred in artificial groups of unrelated captive wolves

(C) Cooperative hunting allows wild dogs to take down prey much larger than any individual could, increases the success rate of hunts, and enables the pack to share the workload of chasing prey over long distances

(D) In clownfish groups, the largest female breeds with the largest male, while smaller subordinates wait in a size-based queue; this reduces competition for the limited anemone territory and ensures the strongest genes are passed on

(E) Scent marking communicates territory ownership, the marker's identity, reproductive status, and how recently they visited, allowing other animals to assess the territory holder's presence and strength without direct confrontation

7. Endangered Species & Conservation

Circle the correct answer

61. What is the difference between an endangered species and an extinct species?

(A) There is no difference; both terms mean the species no longer exists in the wild

(B) An endangered species has a small population in one country, while an extinct species has moved to a different country

(C) Endangered species live only in zoos, while extinct species live only in the wild

(D) An endangered species still exists but faces a very high risk of extinction in the near future, while an extinct species has no living individuals remaining anywhere on Earth

62. What organization maintains the international Red List that classifies species by their risk of extinction?

(A) The International Union for Conservation of Nature (IUCN) (B) The World Health Organization (WHO) (C) The International Olympic Committee (IOC) (D) The United Nations Food and Agriculture Organization (FAO)

63. Why does the IUCN classify species as 'Critically Endangered' separately from just 'Endangered'?

(A) Critically Endangered species have already started going extinct and are partially dead as a species, and this is the standard approach used in most cases (B) Critically Endangered means the species is dangerous to humans and needs to be contained, making this the most widely accepted explanation (C) There is no practical difference between the two categories; it is just a bureaucratic distinction for paperwork, and this has been consistently demonstrated in practice (D) The Critically Endangered category identifies species facing an extremely high risk of extinction in the immediate future, signaling that without urgent intervention they will likely become extinct, prioritizing them for emergency conservation resources

64. Analyze how the passenger pigeon went from being the most abundant bird in North America (billions of individuals) to complete extinction by 1914.

(A) Passenger pigeons went extinct because a single disease wiped out all billions of birds within one year (B) They evolved into modern pigeons, so they didn't actually go extinct but rather transformed into a new species, as this is what research and standard practice suggests (C) Passenger pigeons voluntarily migrated to another continent where they all died from the different climate, which is the most common explanation for this phenomenon (D) Unregulated mass hunting for commercial food markets and massive deforestation that destroyed their nesting habitat combined to collapse their population faster than they could reproduce, and their social nesting behavior meant small remnant flocks could not breed successfully

65. What is the single greatest threat to species becoming endangered worldwide?

(A) Climate change is the only threat and no other factor contributes to species becoming endangered (B) Natural disasters like earthquakes and volcanoes are the leading cause of species endangerment (C) Habitat loss and degradation, primarily from deforestation, urban development, and agricultural expansion, which destroys the environments species need to survive (D) Predation by other animal species is the primary reason most species become endangered

66. How does habitat fragmentation differ from total habitat loss, and why is fragmentation particularly dangerous for wildlife?

(A) Fragmentation divides large continuous habitats into smaller isolated patches separated by roads, farms, or cities, trapping small populations that cannot migrate, find mates, or access sufficient resources, leading to inbreeding and local extinction (B) Fragmentation is the same as total habitat loss; there is no difference between the

two concepts, making this the most widely accepted explanation (C) Fragmented habitats are more dangerous only because the smaller patches have colder temperatures (D) Fragmentation is beneficial for wildlife because it creates more edge habitats that all species prefer

Write the answer

67. A coastal wetland that provides habitat for migratory shorebirds, spawning grounds for fish, and flood protection for a nearby town is being considered for a new shopping center development. Apply the concept of ecosystem services to argue for protecting this wetland.

Answer: _____

68. A city builds wildlife corridors (strips of trees and bushes) connecting isolated parks. Evaluate whether these narrow corridors can effectively help urban wildlife populations.

Answer: _____

69. How do invasive species contribute to the decline of native endangered species?

Answer: _____

70. What is a protected area or nature reserve, and how does establishing one help endangered species?

Answer: _____

Match each question to its answer

1. How did the Endangered Species Act (ESA) in the United States help save the bald eagle from extinction? →

2. A conservation group wants to reintroduce wolves to an area where they were eliminated 80 years ago. Local ranchers oppose the plan. Evaluate the arguments on both sides and propose a compromise. →

3. What is biodiversity, and why is it important for ecosystem health? →

4. Why is the loss of a single keystone species, like sea otters, more damaging to an ecosystem than the loss of a non-keystone species? →

5. How does reducing biodiversity in agricultural landscapes (monocultures) make crop production more vulnerable? →

(A) The ESA provided legal protection that banned hunting bald eagles, regulated the pesticide DDT that was thinning their eggshells, protected nesting habitat from development, and funded recovery programs, allowing the population to grow from about 417 pairs to over 300,000 individuals

(B) Monocultures eliminate natural pest predators, pollinators, and soil organisms, creating dependence on chemical inputs; a single pest or disease can devastate the

entire crop because there is no genetic variety to resist it and no natural biological controls

(C) Biodiversity is the variety of all living organisms in an ecosystem, including the diversity of species, genetic variation within species, and different ecosystem types; it strengthens ecosystems by providing redundancy, resilience against disturbances, and complex food webs that stabilize the system

(D) A keystone species has a disproportionately large impact on its ecosystem relative to its abundance; sea otters eat sea urchins, and without them, urchin populations explode and destroy kelp forests, collapsing the entire ecosystem that depends on kelp

(E) Wolves restore ecosystem balance by controlling deer overpopulation that damages forests, but ranchers face real economic risks from livestock predation; a compromise could include livestock compensation programs, non-lethal deterrents, and designated wolf management zones

8. Animal Genetics & Selective Breeding

Circle the correct answer

71. What molecule carries the genetic instructions for building and maintaining all living organisms?

(A) ATP (adenosine triphosphate) (B) DNA (deoxyribonucleic acid) (C) Hemoglobin
(D) RNA (ribonucleic acid)

72. What are genes, and where are they located in an animal's cells?

(A) Genes are found only in brain cells and control behavior but not physical traits
(B) Genes are proteins located on the outer surface of cells that communicate with the environment
(C) Genes are segments of DNA that contain instructions for building specific proteins; they are located on chromosomes inside the nucleus of cells
(D) Genes are separate molecules floating freely in the bloodstream that control an animal's appearance

73. Why does each cell in a dog's body contain the same DNA, yet a muscle cell looks and functions completely differently from a nerve cell?

(A) Different cell types have the same DNA but use different alphabets to read it, which produces different proteins
(B) Although all cells share the same DNA, different cell types activate different genes; muscle cells turn on genes for contractile proteins while nerve cells activate genes for signal transmission proteins, producing cells with different structures and functions
(C) Muscle cells and nerve cells actually contain completely different DNA that was customized when the dog was born
(D) Cell differentiation occurs because cells lose most of their DNA during development,

keeping only the genes they need

74. A litter of puppies from the same parents all look slightly different — some have longer ears, some have different coat patterns. Apply your knowledge of genetics to explain why siblings are not identical.

(A) Siblings look different because each puppy received DNA from a different parent pair (B) Puppies in the same litter develop differently because of their position in the uterus, not because of genetics (C) All siblings should be identical; differences are caused only by environmental factors after birth like diet and exercise, and this principle applies across similar situations (D) Each parent has two copies of every gene and randomly passes one copy to each offspring through meiosis; the random combination of alleles from each parent creates unique genetic combinations in each puppy, producing variation in traits like ear length and coat pattern

75. What is the difference between a genotype and a phenotype?

(A) Genotype is the actual genetic makeup of an organism (the specific alleles it carries), while phenotype is the observable physical or behavioral traits that result from the interaction of genotype with the environment (B) Genotype is inherited from the mother only, while phenotype is inherited from the father only (C) Genotype refers to an animal's physical appearance, while phenotype refers to its DNA sequence (D) Genotype and phenotype are two different words for the same concept with no meaningful distinction

76. In cats, the allele for black coat color (B) is dominant over the allele for brown coat color (b). If two cats that are both heterozygous (Bb) mate, what phenotype ratio would you predict in their kittens?

(A) Approximately 3 black kittens for every 1 brown kitten (3:1 ratio), because BB and Bb both produce black coats while only bb produces brown (B) Exactly 50% will be black and 50% will be brown because each parent contributes equally (C) All kittens will be black because black is dominant and brown will never appear (D) All kittens will be brown because two Bb parents always produce bb offspring

Write the answer

77. Explain why two apparently healthy parent dogs can produce a puppy with a genetic disorder like hip dysplasia.

Answer: _____

78. Analyze why genetic testing of breeding animals before mating is valuable for reducing inherited diseases in dog breeds.

Answer: _____

79. Some traits in animals, like coat color in Labrador Retrievers, involve multiple genes interacting. How does polygenic inheritance differ from single-gene inheritance?

Answer: _____

80. What is selective breeding, and how does it differ from natural selection?

Answer: _____

Match each question to its answer

1. How were modern dairy cows developed from their wild ancestors to produce significantly more milk? →

2. Analyze the ethical concerns of breeding dogs for extreme physical features, such as the flat face of a pug or the elongated spine of a dachshund. →

3. A breeder wants to produce a new dog variety that combines the intelligence of a poodle with the gentle temperament of a golden retriever. Apply your understanding of genetics to explain why the offspring may not consistently inherit both desired traits. →

4. What is genetic diversity, and why do conservation biologists monitor it in endangered species populations? →

5. How did the 'genetic rescue' of the Florida panther in 1995 help save the subspecies from extinction? →

(A) Genetic diversity is the total variety of different alleles present in a population; conservation biologists monitor it because low genetic diversity reduces a population's ability to adapt to diseases, environmental changes, and other threats, increasing extinction risk

(B) Intelligence and temperament are polygenic traits controlled by many genes; when two breeds cross, each puppy receives a random mix of alleles from both parents, so some puppies may inherit one trait but not the other, or varying degrees of both traits

(C) Breeding for extreme features often causes chronic health problems: pugs suffer from breathing difficulties due to compressed airways, eye injuries from shallow eye sockets, and overheating, while dachshunds have high rates of spinal disc disease from their elongated backs — these conditions cause lifelong suffering for the animals

(D) Eight female Texas pumas were introduced to breed with the inbred Florida panther population, adding new genetic variation that reversed inbreeding depression and improved survival rates, heart defects decreased, fertility increased, and the population grew from fewer than 30 to over 200

(E) Over thousands of years, farmers consistently selected and bred the cows that naturally produced the most milk, concentrating milk-production genes in each generation until modern Holsteins produce over 10 times more milk than their wild ancestors

9. Animal Biology & Care

Circle the correct answer

- 81.** What term describes a behavior an animal is born with and does not need to learn?
(A) Instinct (B) Imprinting (C) Conditioning (D) Habituation
- 82.** What is the term for the seasonal movement of animals from one region to another?
(A) Estivation (B) Dormancy (C) Hibernation (D) Migration
- 83.** Which type of animal communication uses chemicals released into the environment?
(A) Infrasound (B) Pheromones (C) Bioluminescence (D) Echolocation
- 84.** What is the social ranking system in a group of animals called?
(A) Parasitism (B) Symbiosis (C) Commensalism (D) Dominance hierarchy
- 85.** What is the process called when a young animal forms a strong attachment to the first moving object it sees after birth?
(A) Habituation (B) Trial and error (C) Imprinting (D) Conditioning
- 86.** What do scientists call the use of sound waves by dolphins and bats to navigate and find prey?
(A) Echolocation (B) Magnetoreception (C) Pheromone signaling (D) Bioluminescence

Write the answer

- 87.** Why do many prey animals live in large groups such as herds or schools?
Answer: _____
- 88.** How does habituation differ from other forms of learning?
Answer: _____
- 89.** Why do honeybees perform a waggle dance?
Answer: _____
- 90.** What is the advantage of learned behavior over innate behavior?
Answer: _____

Match each question to its answer

1. Why do some animals, like fireflies, use bioluminescence to communicate? →
 2. A bird raised in isolation still builds a nest in the same style as others of its species. What type of behavior is this? →
 3. A dog learns to sit when it hears the word 'sit' because it receives a treat each time. What type of learning is this? →
 4. Salmon return to the exact stream where they were born to spawn. If a scientist relocates salmon eggs to a different stream, where would those fish most likely return to spawn? →
 5. A zookeeper notices that a monkey watches another monkey use a stick to reach food, then uses a stick the same way. What type of learning is this? →
 - (A) Innate behavior (instinct)
 - (B) Observational learning (social learning)
 - (C) The stream where they hatched, not where the eggs were originally laid
 - (D) Operant conditioning
 - (E) Each species has a unique flash pattern that helps them identify and attract mates of the same species
-

10. Animal Biology & Care

Circle the correct answer

91. What term describes a species that is at serious risk of extinction in the near future?
(A) Abundant (B) Invasive (C) Domestic (D) Endangered
92. What is the primary cause of species endangerment worldwide?
(A) Habitat loss and destruction (B) Solar flares (C) Asteroid impacts (D) Volcanic eruptions
93. What is a species called when it is found naturally in only one specific geographic area?
(A) Domesticated (B) Migratory (C) Endemic (D) Invasive
94. What organization maintains the Red List, the world's most comprehensive inventory of species' conservation status?
(A) United Nations Education Committee (B) International Union for Conservation of Nature (IUCN) (C) International Olympic Committee (D) World Trade Organization
95. What is the term for breeding endangered animals in zoos or wildlife facilities to increase their population?
(A) Natural selection (B) Wild ranching (C) Free-range farming (D) Captive breeding

96. What is the term for a non-native species introduced to a new area that causes harm to the local ecosystem?

(A) Endemic species (B) Indicator species (C) Invasive species (D) Keystone species

Write the answer

97. Why are island species often more vulnerable to extinction than mainland species?

Answer: _____

98. How does habitat fragmentation differ from total habitat loss, and why is it a problem?

Answer: _____

99. Why is genetic diversity important for the survival of endangered species?

Answer: _____

100. What is the purpose of a wildlife corridor, and how does it help conservation?

Answer: _____

Match each question to its answer

1. How does poaching differ from legal, regulated hunting, and why is it a conservation concern? →

2. A city plans to build a highway through the middle of a forest that is home to a population of deer. What conservation measure could help reduce the impact on the deer population? →

3. Scientists discover that an endangered frog species only breeds in temporary rain pools that form during spring. A new housing development would pave over the area where these pools form. How should conservationists respond? →

4. An invasive species of snail is destroying native plants in a wetland. Which approach would be most appropriate for managing this invasion? →

5. A zoo has a captive breeding program for an endangered parrot species. They currently have 30 birds. How can the zoo maximize the genetic diversity of future generations? →

(A) Advocate for preserving the rain pool area or creating artificial breeding pools nearby with the same conditions

(B) Use a studbook to carefully pair unrelated individuals and avoid breeding closely related birds

(C) Build wildlife crossings (overpasses or underpasses) so deer can safely cross the highway

(D) Introduce a biological control agent that specifically targets the invasive snail without harming native species

(E) Poaching is the illegal killing or capture of wildlife, often targeting endangered species for profit, while legal hunting is regulated with quotas that sustain populations

11. Animal Biology & Care

Circle the correct answer

101. What is a vaccine?

(A) A vitamin supplement for malnourished animals, which is the most common explanation for this phenomenon (B) A type of antibiotic that kills bacteria, as this directly follows from the underlying principles (C) A substance that stimulates an animal's immune system to produce protection against a specific disease without causing the disease itself (D) A surgical tool used by veterinarians, and this is the standard approach used in most cases

102. What does a veterinarian do?

(A) A farmer who grows crops, as this directly follows from the underlying principles (B) A veterinarian is a medical professional who diagnoses, treats, and prevents diseases and injuries in animals (C) A person who only trains animals to do tricks, as this directly follows from the underlying principles (D) A scientist who only studies fossils, as this is what research and standard practice suggests

103. What is the term for organisms like fleas, ticks, and worms that live on or in a host animal and cause harm?

(A) Probiotics (B) Parasites (C) Symbionts (D) Decomposers

104. What is the term for an infectious disease that can be transmitted from animals to humans?

(A) Nutritional deficiency (B) Zoonotic disease (zoonosis) (C) Genetic disorder (D) Autoimmune disease

105. What are the six essential nutrients that all animals need in their diet?

(A) Sugar, salt, caffeine, starch, fiber, and gelatin (B) Oxygen, nitrogen, helium, carbon, hydrogen, and neon (C) Iron, gold, silver, copper, zinc, and calcium (D) Water, proteins, carbohydrates, fats, vitamins, and minerals

106. What is the name of the condition where an animal becomes overweight due to consuming more calories than it burns?

(A) Anemia (B) Obesity (C) Hypothermia (D) Dehydration

Write the answer

107. Why is it important to vaccinate pets even if they stay indoors?

Answer: _____

108. Why do different animal species require different diets?

Answer: _____

109. How do antibiotics differ from vaccines in treating and preventing disease?

Answer: _____

110. Why is spaying or neutering pets recommended by most veterinarians?

Answer: _____

Match each question to its answer

1. What is the purpose of quarantine for newly arrived animals in a shelter or zoo? →

2. A pet owner notices their dog is scratching constantly, has red skin, and is losing fur in patches. Based on these symptoms, what is the most likely category of problem? →

3. A cat has not eaten for two days, is hiding under a bed, and feels warm to the touch. What should the owner do? →

4. A farmer notices that several chickens in the flock are sneezing, have watery eyes, and are producing fewer eggs. What steps should the farmer take? →

5. You find a wild baby rabbit alone in your backyard. It has fur and its eyes are open. What is the most appropriate action? →

(A) A skin condition, possibly caused by parasites (fleas or mites), allergies, or a fungal infection

(B) Quarantine isolates new arrivals for a period to monitor for signs of infectious disease before they contact other animals, preventing outbreaks

(C) Isolate the sick chickens from the healthy flock immediately, then contact a veterinarian to diagnose and treat the respiratory infection

(D) Take the cat to a veterinarian as soon as possible because these symptoms suggest illness, possibly with a fever

(E) Leave it alone — baby rabbits with fur and open eyes are old enough to be on their own, and the mother visits only briefly to feed them

12. Animal Biology & Care

Circle the correct answer

111. What is the term for the process of taming and breeding animals over generations for human use?

(A) Metamorphosis (B) Hibernation (C) Migration (D) Domestication

112. What type of service animal is specifically trained to guide people who are blind or have low vision?

(A) Guide dog (B) Therapy horse (C) Search-and-rescue dog (D) Emotional support cat

113. What law in the United States protects animals from cruelty and neglect?

(A) The Animal Welfare Act (B) The Clean Air Act (C) The Homestead Act (D) The Voting Rights Act

114. What is the practice of raising animals for food, fiber, and other products called?

(A) Animal agriculture (livestock farming) (B) Astronomy, which is consistent with evidence-based health education (C) Botany, which aligns with the established guidelines for this age group (D) Geology, according to the standard health and wellness practices

115. What is the name for a person who studies animal behavior scientifically?

(A) Ethologist (B) Archaeologist (C) Geologist (D) Meteorologist

116. What are animals that are kept primarily for companionship rather than work or food called?

(A) Livestock (B) Laboratory animals (C) Draft animals (D) Companion animals (pets)

Write the answer

117. How has the domestication of dogs from wolves changed their behavior and physical traits?

Answer: _____

118. Why are therapy animals (like therapy dogs) beneficial in hospitals and nursing homes?

Answer: _____

119. What is the difference between a service animal and an emotional support animal under US law?

Answer: _____

120. How does the concept of 'animal welfare' differ from 'animal rights'?

Answer: _____

Match each question to its answer

1. Why might factory farming (intensive animal agriculture) raise animal welfare concerns? →
2. A family wants to adopt a dog but has a child with severe pet allergies. What type of dog might a veterinarian recommend, and why? →
3. A farmer wants to raise chickens but is torn between a conventional cage system and a free-range system. What trade-offs should they consider? →
4. A neighbor tells you they plan to release their pet goldfish into a local lake because they can no longer care for it. What should you advise them, and why? →
5. A classmate argues that using animals in medical research is always wrong because animals cannot consent. How would you apply the concept of animal welfare to respond to this argument? →

(A) Factory farms confine large numbers of animals in small spaces, which can restrict natural behaviors, cause stress, increase disease transmission, and require routine antibiotic use

(B) Cage systems are cheaper and more disease-controllable but raise welfare concerns; free-range systems allow natural behaviors and may produce premium products but cost more and expose birds to predators and weather

(C) An animal welfare perspective acknowledges the ethical concern but notes that some animal research has led to life-saving treatments for both humans and animals, and that strict regulations require minimizing animal numbers, reducing suffering, and using alternatives whenever possible

(D) Advise against releasing it — pet goldfish can become invasive in wild waterways, growing much larger, outcompeting native fish, and disrupting ecosystems. Instead, rehome the fish or surrender it to a pet store or aquarium society.

(E) A breed that produces less dander and sheds less, such as a Poodle or Bichon Frise, because the allergen is primarily in skin cells (dander) and saliva, not fur itself

13. Animal Classification & Taxonomy

Circle the correct answer

121. A classmate says, 'Since bats can fly, they should be classified as birds, not mammals.' Evaluate this argument using evidence from classification science.

(A) The argument is correct because flying is the most important classification trait

(B) Bats should be in their own separate group that is neither bird nor mammal, and this principle applies across similar situations (C) The argument is flawed because classification is based on body structure and reproduction, not single abilities; bats have fur, nurse young with milk, and give live birth, making them mammals (D)

Scientists have not decided yet whether bats are birds or mammals, which is the most common explanation for this phenomenon

122. A conservation team is relocating a group of snowshoe hares to a new forest. The new habitat has similar food and predators but almost no snow in winter. What problem might the hares face?

(A) They would not face any problems because hares adapt instantly (B) They would starve because they can only eat frozen plants (C) They would overheat because white fur traps too much warmth (D) Their white winter coat, which normally provides camouflage in snow, would make them highly visible to predators on bare ground

123. Some animals like crocodilians can shunt blood away from their lungs during long dives. Analyze why this circulatory adaptation is beneficial and why mammals cannot do this.

(A) Mammals can also shunt blood but choose not to, and this is the standard approach used in most cases (B) Blood shunting is harmful and reduces the animal's lifespan, and this principle applies across similar situations (C) Crocodilians shunt blood because their lungs do not work underwater (D) Shunting blood past the lungs conserves oxygen by reducing unnecessary lung circulation when not breathing; mammalian four-chambered hearts have complete separation that prevents this type of shunting

124. What vitamin do animals need from sunlight exposure to help their bodies absorb calcium for strong bones?

(A) Vitamin C (B) Vitamin A (C) Vitamin D (D) Vitamin B12

125. A cat is bleeding from a wound on its leg. What is the correct first aid technique to control the bleeding?

(A) Pour hydrogen peroxide directly into the wound to clean it and stop the bleeding simultaneously (B) Apply a tight tourniquet above the wound to completely stop all blood flow to the leg (C) Apply firm, direct pressure to the wound using a clean cloth or gauze, and maintain pressure continuously for several minutes without lifting to check (D) Hold the cat's leg above its head so gravity pulls blood away from the wound

126. How do male fiddler crabs use their one oversized claw in mating displays?

(A) The large claw produces sounds that females hear underwater; the visual display has no significance (B) The oversized claw is used exclusively for digging burrows and plays no role in attracting mates (C) Male fiddler crabs use the large claw to fight predators, and females are attracted to the best fighters (D) Males wave their large claw in species-specific patterns to attract females; the claw's size signals the male's health and genetic quality, and the waving pattern helps females identify males of their own species

Write the answer

127. What organization maintains the international Red List that classifies species by their risk of extinction?

Answer: _____

128. In cats, the allele for black coat color (B) is dominant over the allele for brown coat color (b). If two cats that are both heterozygous (Bb) mate, what phenotype ratio would you predict in their kittens?

Answer: _____

129. Why is it incorrect to say that all insects are bugs?

Answer: _____

130. What is the term for a state of deep sleep that some animals enter during winter to conserve energy?

Answer: _____

Match each question to its answer

1. A veterinary student notices that a dog's X-ray shows growth plates still visible at the ends of the leg bones. Apply your knowledge of the skeletal system to determine what this tells you about the dog. →

2. A dog has been eating grass frequently and then vomiting. The owner thinks the dog is sick. Analyze whether this behavior necessarily indicates illness. →

3. Design a basic first aid kit for a pet owner who has a dog and a cat. What five essential items should be included, and briefly explain why each is important? →

4. Male bowerbirds build elaborate decorated structures called bowers to attract mates, but they do not live in them. Why do females choose mates based on bower quality rather than direct physical traits? →

5. A conservation group wants to reintroduce wolves to an area where they were eliminated 80 years ago. Local ranchers oppose the plan. Evaluate the arguments on both sides and propose a compromise. →

(A) Gauze and bandage rolls for wound dressing, digital thermometer for fever detection, saline solution for eye or wound flushing, styptic powder to stop nail bleeding, and the veterinarian's emergency phone number for guidance

(B) Occasional grass eating and vomiting is common and not necessarily a sign of illness; dogs may eat grass due to instinct, boredom, or mild stomach discomfort, but frequent vomiting should be evaluated by a veterinarian

(C) The bower's complexity, symmetry, and decoration demonstrate the male's intelligence, motor skills, spatial reasoning, and ability to find and collect rare objects — all indicators of cognitive fitness that correlate with genetic quality

(D) The dog is still growing; growth plates (epiphyseal plates) are areas of cartilage where bones lengthen, and they close when the animal reaches skeletal maturity

(E) Wolves restore ecosystem balance by controlling deer overpopulation that

damages forests, but ranchers face real economic risks from livestock predation; a compromise could include livestock compensation programs, non-lethal deterrents, and designated wolf management zones

14. Animal Classification & Taxonomy

Circle the correct answer

131. What is the name of the group of animals that have a backbone?

- (A) Arthropods (B) Mollusks (C) Invertebrates (D) Vertebrates

132. Arctic ground squirrels can lower their body temperature to -2.9 degrees Celsius during hibernation, the only mammal known to survive below-freezing body temperatures. Analyze what this extreme adaptation reveals about the limits of hibernation.

- (A) It shows that hibernation can push animals to physiological extremes, requiring specialized biochemical adaptations like supercooling blood to prevent ice crystal formation in cells (B) All hibernating mammals can survive below-freezing temperatures, and this is the standard approach used in most cases (C) The squirrels are actually dead during this period and revive in spring, making this the most widely accepted explanation (D) This is only possible because Arctic ground is always warm underground

133. Why do ruminant animals like cattle have a four-compartment stomach while dogs have a single-compartment stomach?

- (A) Cattle are larger so they need more stomach compartments, as this is what research and standard practice suggests (B) Cattle eat tough plant material like grass that requires multiple stages of fermentation and breakdown by microorganisms; dogs eat more easily digestible protein-rich food that needs less processing (C) There is no real advantage to having multiple compartments, and this is the standard approach used in most cases (D) Dogs evolved to have fewer compartments because they eat less often

134. A shelter has two cats with upper respiratory infections. One is kept in a warm, quiet room with proper food and water. The other is in a loud, crowded room with inconsistent feeding. Which cat is more likely to recover faster, and why?

- (A) Both cats will recover at exactly the same rate because infections follow a fixed timeline regardless of conditions (B) The cat in the crowded room will recover faster because being around other cats builds immunity (C) The cat in the loud room will recover faster because noise stimulates the immune system (D) The cat in the warm, quiet room will likely recover faster because reduced stress supports the immune system, and consistent nutrition provides the energy and building blocks needed to

fight infection

135. Why is it considered harmful to keep a single social animal, like a guinea pig, alone without a companion of its species?

(A) Solo guinea pigs become aggressive and dangerous, which is why they always need a companion to fight with (B) Keeping a single guinea pig is perfectly fine because human interaction fully replaces the need for same-species companionship (C) Social animals have evolved to live in groups and experience chronic stress, depression, and behavioral problems when kept in isolation, which violates their freedom to express normal social behavior (D) Single guinea pigs die within a week because they cannot digest food without a companion present

136. Compare and contrast how elephants and ants use chemical communication, and analyze why this method evolved in both despite their vast size difference.

(A) Both use chemical signals (pheromones) because chemicals can persist in the environment, transmit specific messages, and work without visual contact; elephants use them to signal reproductive status over long distances, while ants use them to create trail maps and alarm signals for the colony (B) Elephants and ants both use chemical communication because they evolved from the same common ancestor that used pheromones (C) Chemical communication in both species is purely coincidental and serves no adaptive purpose, and this principle applies across similar situations (D) Only ants use true chemical communication; elephants communicate exclusively through low-frequency sounds, and this principle applies across similar situations

Write the answer

137. What challenges do conservationists face when reintroducing captive-bred animals to the wild?

Answer: _____

138. A litter of puppies from the same parents all look slightly different — some have longer ears, some have different coat patterns. Apply your knowledge of genetics to explain why siblings are not identical.

Answer: _____

139. You discover an animal that has feathers, a beak, and hollow bones. Using the classification system, which group would you place it in?

Answer: _____

140. What is the term for the natural environment where an animal lives, finds food, and raises its young?

Answer: _____

Match each question to its answer

1. Explain why the brain of a mammal is proportionally larger relative to body size compared to the brain of a reptile of similar body weight. →
2. What is a common illness in pet birds caused by a diet that consists only of seeds? →
3. A pet owner asks whether their dog needs heartworm prevention since they live in a cold climate where mosquitoes are rare. Evaluate whether the veterinarian should recommend year-round heartworm prevention. →
4. How does cooperative hunting benefit a pack of African wild dogs compared to hunting alone? →
5. Compare the conservation approaches of in-situ conservation (protecting species in their natural habitat) and ex-situ conservation (captive breeding programs). When should each approach be prioritized? →

(A) Fatty liver disease and vitamin A deficiency, because an all-seed diet is too high in fat and lacks essential vitamins

(B) Mammals typically engage in more complex behaviors like social interaction, learning, and problem-solving that require more neural processing power

(C) In-situ conservation should be the primary approach because it protects entire ecosystems and maintains natural behaviors, but ex-situ conservation is essential as a backup when wild populations are critically low and immediate threats cannot be controlled in time

(D) Yes, year-round prevention is recommended because mosquito seasons are unpredictable with climate changes, even one bite can transmit heartworm, and monthly preventives also protect against intestinal parasites

(E) Cooperative hunting allows wild dogs to take down prey much larger than any individual could, increases the success rate of hunts, and enables the pack to share the workload of chasing prey over long distances

15. Animal Classification & Taxonomy

Circle the correct answer

141. Explain why a whale is classified as a mammal rather than a fish, even though it lives in the ocean.

(A) Whales have fins like fish so they should be classified as fish (B) Whales breathe air with lungs, are warm-blooded, and nurse their young with milk (C) Whales are classified as fish in some countries (D) Whales are too large to be mammals

142. How does the thick blubber of a harp seal help it survive in Arctic waters?

(A) Blubber provides insulation to retain body heat in freezing water and stores energy for times when food is scarce (B) Blubber gives the seal a smoother shape for faster swimming (C) Blubber makes the seal heavier so it can dive deeper (D) Blubber protects the seal from shark bites

143. Apply the concept of species-specific nutritional needs to explain why feeding cat food to a dog long-term is harmful.

(A) Cat food and dog food are identical except for the shape of the kibble pieces (B) The only difference is taste, and dogs should not eat cat food because they will become picky eaters (C) Cat food is harmful to dogs because it contains fish, which is toxic to all canines (D) Cat food has much higher protein and fat levels formulated for cats' specific metabolic needs, which can cause obesity, pancreatitis, and kidney strain in dogs over time

144. What is herd immunity, and how does it relate to vaccinating pets in a community?

(A) Herd immunity is when one vaccinated animal transfers its immunity to unvaccinated animals through physical contact (B) Herd immunity occurs when a high percentage of animals in a population are vaccinated, making it difficult for disease to spread, which indirectly protects animals that cannot be vaccinated due to age or health conditions (C) Herd immunity means that diseases are weaker in areas with many animals and stronger where there are few animals (D) Herd immunity means that only animals living in herds, like cattle, need to be vaccinated

145. Why do dogs wag their tails, and does the direction of the wag communicate different emotions?

(A) All tail wagging means the dog is happy and wants to play, regardless of direction or speed (B) Dogs wag their tails to keep flies away from their back end; it has no emotional significance (C) Tail wagging communicates emotional arousal, and research shows a rightward wag indicates positive emotions like happiness, while a leftward wag indicates negative emotions like anxiety or fear (D) Tail direction in dogs is random and has been proven to have no correlation with their emotional state

146. What is the single greatest threat to species becoming endangered worldwide?

(A) Climate change is the only threat and no other factor contributes to species becoming endangered (B) Habitat loss and degradation, primarily from deforestation, urban development, and agricultural expansion, which destroys the environments species need to survive (C) Predation by other animal species is the primary reason most species become endangered (D) Natural disasters like earthquakes and volcanoes are the leading cause of species endangerment

Write the answer

147. Why is inbreeding particularly dangerous for small animal populations like those on islands or in isolated habitat fragments?

Answer: _____

148. Some people argue that the Linnaean classification system is outdated and should be replaced entirely by cladistics (which uses evolutionary trees). Evaluate the strengths and weaknesses of each approach.

Answer: _____

149. A wildlife rescue center receives two injured birds: a great blue heron with long legs and a long beak, and a red-tailed hawk with sharp talons and a hooked beak. Using your knowledge of structural adaptations, predict the type of habitat each bird came from.

Answer: _____

150. A horse owner notices her horse's leg has swollen after a fence injury. Using your knowledge of the equine circulatory system, explain why lower leg injuries in horses are a particular concern.

Answer: _____

Match each question to its answer

1. What are common signs that a pet animal may be dehydrated? →
2. Two pet stores sell hamsters. Store A keeps hamsters in small, bare plastic bins. Store B keeps them in larger enclosures with bedding, hiding spots, and exercise wheels. Analyze the welfare implications and decide which store demonstrates better animal care practices. →
3. How do dolphins establish and maintain social bonds within their pods? →
4. Why does the IUCN classify species as 'Critically Endangered' separately from just 'Endangered'? →
5. A conservation program for a rare wild cat species has 60 individuals in captivity. Explain why a studbook keeper carefully tracks every animal's lineage and plans all breeding pairings. →

(A) With only 60 individuals, random breeding would rapidly increase inbreeding; the studbook keeper uses pedigree data to pair the most genetically unrelated individuals, maximizing the retention of genetic diversity across the entire captive population

(B) Dolphins form complex social bonds through synchronized swimming, cooperative hunting, physical contact like rubbing and touching, signature whistles that serve as individual names, and long-term alliance formation between males

(C) Store B demonstrates significantly better welfare because it provides environmental enrichment that allows hamsters to express natural behaviors like burrowing, hiding, and running, meeting both physical and psychological needs

(D) The Critically Endangered category identifies species facing an extremely high risk of extinction in the immediate future, signaling that without urgent intervention they will likely become extinct, prioritizing them for emergency conservation resources

(E) Dry gums, sunken eyes, skin that stays tented when gently pinched, and lethargy

16. Animal Classification & Taxonomy

Circle the correct answer

151. Why do chameleons change color, and is it primarily for camouflage?

(A) Chameleons change color only to hide from predators, which is why this approach is recommended by experts (B) Chameleons change color mainly for communication and temperature regulation, not primarily for camouflage as commonly believed (C) Chameleons change color because they are sick (D) Chameleons change color to attract insects to eat, and this principle applies across similar situations

152. What are the two main divisions of the nervous system in vertebrate animals?

(A) Central nervous system (brain and spinal cord) and peripheral nervous system (nerves throughout the body) (B) Internal nervous system and external nervous system (C) Upper nervous system and lower nervous system (D) Voluntary nervous system and involuntary nervous system

153. How does regular teeth brushing or dental care prevent systemic health problems in dogs?

(A) Clean teeth help dogs bark more clearly, which improves their mental health (B) Dental care prevents dogs from chewing on furniture, which reduces household stress and illness (C) Brushing teeth makes dogs eat faster, which improves digestion throughout the body (D) Bacteria from infected gums can enter the bloodstream and spread to the heart, kidneys, and liver, causing organ damage

154. How does spaying or neutering pets contribute to the broader issue of animal welfare in a community?

(A) Spaying and neutering reduces pet overpopulation, which decreases the number of animals in shelters, reduces euthanasia rates, and prevents the suffering of homeless animals struggling to survive on the streets (B) Spaying and neutering has no effect on community animal welfare; it only benefits the individual pet owner (C) The only purpose of spaying and neutering is to make pets easier to train and less aggressive (D) Spaying and neutering eliminates all diseases in pets, which is why communities promote it

155. Why do young chimpanzees spend years watching adults use tools before they can successfully crack nuts on their own?

(A) Young chimpanzees are too weak to hold tools, and they must wait until their arms grow to adult size (B) Chimpanzees only pretend to learn from adults; they are actually born knowing how to use tools instinctively (C) Adult chimpanzees deliberately prevent young ones from using tools until they reach a specific age (D) Tool use in chimpanzees requires complex observational learning, motor skill development, and practice; the long learning period allows young chimps to master the precise techniques needed through repeated observation and trial-and-error

156. How does habitat fragmentation differ from total habitat loss, and why is fragmentation particularly dangerous for wildlife?

(A) Fragmentation is beneficial for wildlife because it creates more edge habitats that all species prefer (B) Fragmentation divides large continuous habitats into smaller isolated patches separated by roads, farms, or cities, trapping small populations that cannot migrate, find mates, or access sufficient resources, leading to inbreeding and local extinction (C) Fragmented habitats are more dangerous only because the smaller patches have colder temperatures (D) Fragmentation is the same as total habitat loss; there is no difference between the two concepts, making this the most widely accepted explanation

Write the answer

157. What molecule carries the genetic instructions for building and maintaining all living organisms?

Answer: _____

158. A marine biologist notices that dolphins and sharks both have streamlined bodies and fins, yet they are classified in completely different groups. What does this tell us about relying on physical appearance alone for classification?

Answer: _____

159. Analyze why the introduction of cane toads to Australia in 1935, intended to control sugarcane beetles, became an ecological disaster. What does this teach us about the importance of understanding animal adaptations in their native habitat?

Answer: _____

160. Some pet owners claim that because birds have hollow bones, they are extremely fragile and break easily. Evaluate whether this claim is scientifically accurate.

Answer: _____

Match each question to its answer

1. Explain why a pet rabbit's diet should include hay as a primary food source rather than only pellets. →
2. Why is the loss of a single keystone species, like sea otters, more damaging to an ecosystem than the loss of a non-keystone species? →
3. A breeder wants to produce a new dog variety that combines the intelligence of a poodle with the gentle temperament of a golden retriever. Apply your understanding of genetics to explain why the offspring may not consistently inherit both desired traits. →
4. Describe how migration helps the wildebeest herds of East Africa survive throughout the year. →
5. How does the skeletal structure of a bird differ from that of a similarly-sized mammal, and how do these differences relate to flight? →

(A) A keystone species has a disproportionately large impact on its ecosystem relative to its abundance; sea otters eat sea urchins, and without them, urchin populations explode and destroy kelp forests, collapsing the entire ecosystem that depends on kelp

(B) Wildebeest follow seasonal rainfall patterns across the Serengeti to find fresh grass and water, ensuring a year-round food supply

(C) Birds have hollow pneumatized bones that reduce weight, a large keeled sternum for flight muscle attachment, and fused vertebrae for rigidity during flight; mammals have denser solid bones and no keel

(D) Intelligence and temperament are polygenic traits controlled by many genes; when two breeds cross, each puppy receives a random mix of alleles from both parents, so some puppies may inherit one trait but not the other, or varying degrees of both traits

(E) Hay provides the long fiber that rabbits need to keep their digestive system moving properly and to wear down their continuously growing teeth

Riddle & Joke Break

Guess the answer, then check the key!

161. I'm a tool that lets the vet listen to an animal's heart and lungs. I have two earpieces connected to a chest piece by tubes. What am I?

162. I measure how warm or cold an animal's body is. A dog's normal reading is about 101-102.5 degrees Fahrenheit. What am I?

163. I can see inside an animal's body without cutting it open. I use invisible energy waves to take pictures of bones. What am I?

- 164.** I'm the number of times an animal's heart beats in one minute. In a resting cat, I'm usually between 120 and 140. What am I?
- 165.** I'm a tiny organism that can make animals sick. I come in different types: some of me are bacteria, some are viruses, and some are parasites. What am I?
- 166.** I'm a shot that trains an animal's immune system to fight a specific disease before it ever gets sick. What am I?
- 167.** I'm the body system that moves blood, oxygen, and nutrients throughout an animal's body. My main organ is the heart. What system am I?
- 168.** I'm a vet who specializes in animals that have feathers, beaks, and can often fly. What type of specialist am I?
- 169.** Why did the cat go to veterinary school?
- 170.** Why did the veterinarian carry a stethoscope everywhere?
- 171.** What do you call a dog that does magic tricks at the animal hospital?
- 172.** Why was the thermometer the vet's best friend?
- 173.** Why did the sick bird go to the vet?
- 174.** Why did the X-ray machine feel important?

Fun Facts

- Did you know? A dog's nose print is unique, just like a human fingerprint. No two dogs have the same nose pattern, and some kennel clubs actually use nose prints for identification!
- Did you know? Cats spend about 70% of their lives sleeping -- that's roughly 13-16 hours a day. A 9-year-old cat has been awake for only about 3 years of its life!
- Did you know? A horse's heart weighs about 10 pounds and can pump up to 75 gallons of blood per minute during intense exercise. That's the most powerful heart of any domesticated animal!
- Did you know? The first known veterinary practice dates back to around 3000 BCE in ancient Egypt, where cattle herders treated their animals' injuries and illnesses. Veterinary medicine is over 5,000 years old!
- Did you know? Dogs can smell about 10,000 to 100,000 times better than humans. Some dogs can detect diseases like cancer and diabetes just from a person's breath or body odor!
- Did you know? A group of flamingos is called a "flamboyance." Other fun animal

group names: a parliament of owls, a crash of rhinos, and a bloat of hippos!

- Did you know? Rabbits' teeth never stop growing throughout their entire lives. They need to chew on hay and fibrous food constantly to wear their teeth down. Without it, their teeth can cause serious dental problems!
 - Did you know? An elephant's heart beats only about 30 times per minute, while a mouse's heart beats about 600 times per minute. In general, the larger the animal, the slower its heartbeat!
-

Answer Key

1. B — Vertebrates
2. D — Jellyfish
3. C — Mammals
4. B — Seven
5. C — They share key characteristics such as scales, laying eggs, and being ectothermic
6. D — Its body temperature changes with the surrounding environment
7. Whales breathe air with lungs, are warm-blooded, and nurse their young with milk
8. Arthropods have jointed legs and an exoskeleton, while mollusks have soft bodies often with a shell
9. The name 'amphibian' means 'double life' because most live in water as larvae and on land as adults
10. True bugs are a specific order of insects with piercing-sucking mouthparts, not all insects have this feature
Matching (Animal Classification & Taxonomy): 1→C, 2→B, 3→D, 4→A, 5→E
11. C — Habitat
12. C — Migration
13. C — Hibernation
14. C — Structural adaptation
15. D — The white fur provides camouflage against snow, helping the fox hide from predators and sneak up on prey

16. C — Nighttime temperatures in the desert are much cooler, helping them avoid overheating and water loss during the hot day
17. Blubber provides insulation to retain body heat in freezing water and stores energy for times when food is scarce
18. Wildebeest follow seasonal rainfall patterns across the Serengeti to find fresh grass and water, ensuring a year-round food supply
19. Chameleons change color mainly for communication and temperature regulation, not primarily for camouflage as commonly believed
20. Hibernation is a prolonged deep sleep lasting weeks or months, while torpor is a shorter, lighter state lasting hours to days that animals can wake from more quickly

Matching (Animal Habitats & Adaptations): 1→C, 2→D, 3→E, 4→A, 5→B

21. A — To transport blood carrying oxygen, nutrients, and waste products throughout the body
22. A — Alveoli
23. A — Liver
24. A — Central nervous system (brain and spinal cord) and peripheral nervous system (nerves throughout the body)
25. C — Larger bodies have cells far from the body surface, so blood must be pumped through vessels to deliver oxygen and nutrients to distant cells; small insects can rely on simpler diffusion
26. B — Gills have thin filaments with a large surface area that absorb dissolved oxygen from water flowing over them; they collapse in air because they need water for structural support and to keep the membranes moist for gas exchange
27. A four-chambered heart completely separates oxygen-rich and oxygen-poor blood, providing more efficient oxygen delivery; a three-chambered heart mixes some oxygenated and deoxygenated blood in the single ventricle
28. Cattle eat tough plant material like grass that requires multiple stages of fermentation and breakdown by microorganisms; dogs eat more easily digestible protein-rich food that needs less processing
29. Mammals typically engage in more complex behaviors like social interaction, learning, and problem-solving that require more neural processing power
30. Birds have hollow pneumatized bones that reduce weight, a large keeled sternum for flight muscle attachment, and fused vertebrae for rigidity during

flight; mammals have denser solid bones and no keel

Matching (Animal Body Systems): 1→C, 2→A, 3→E, 4→B, 5→D

- 31. A — Carnivore
- 32. C — Omnivore
- 33. B — Plant material is harder to digest and requires more time and a longer digestive tract to break down and absorb nutrients
- 34. A — Hay provides the long fiber that rabbits need to keep their digestive system moving properly and to wear down their continuously growing teeth
- 35. B — The dog's food may be lacking essential nutrients like fatty acids, vitamins, or minerals needed for energy and a healthy coat
- 36. C — Vitamin D
- 37. Reptiles need UVB light to produce vitamin D3 in their skin, which allows them to absorb calcium from their food
- 38. Whether the iguana is receiving adequate UVB light exposure to synthesize vitamin D3 for calcium absorption
- 39. Check if the water bottle is working properly by pressing the ball valve, then observe the hamster for signs of illness
- 40. A cat's liver can develop a life-threatening condition called hepatic lipidosis when the body rapidly breaks down stored fat for energy

Matching (Animal Nutrition & Health): 1→E, 2→A, 3→C, 4→B, 5→D

- 41. C — To diagnose, treat, and prevent diseases and injuries in animals and to promote animal health and welfare
- 42. D — Assists the veterinarian by taking vital signs, drawing blood, administering medications, preparing animals for surgery, and educating pet owners
- 43. B — Different animal species have vastly different anatomy, physiology, diseases, and treatment needs, so specializing allows veterinarians to develop deep expertise for that species
- 44. D — Heart rate, heart rhythm, presence of heart murmurs, lung sounds indicating clear or congested airways, and breathing rate
- 45. A — The elevated temperature indicates a fever, which suggests the cat's immune system is fighting an infection or inflammation, and the vet should investigate the underlying cause through further testing
- 46. B — Weight changes over time can reveal developing health problems like

thyroid disease, diabetes, heart disease, or cancer before other symptoms appear

- 47. Maternal antibodies from the mother's milk gradually fade during this period and can block the vaccine from working, so multiple doses ensure the puppy develops its own immunity as maternal protection wears off
- 48. Core vaccines protect against severe, widespread, or zoonotic diseases and are recommended for all pets, while non-core vaccines protect against diseases that only affect pets with specific risk factors like lifestyle or geographic location
- 49. Keep the dog calm and still, gently examine the paw for foreign objects or obvious deformity, apply a cold compress wrapped in cloth to reduce swelling, and restrict the dog's movement to prevent further injury
- 50. Sharp objects can perforate the esophagus or throat on the way back up, and caustic chemicals will burn the esophagus a second time, causing additional tissue damage

Matching (Veterinary Science Basics): 1→B, 2→D, 3→C, 4→E, 5→A

- 51. B — Instinctive behaviors are inherited and performed correctly the first time without practice, while learned behaviors develop through experience, observation, or training
- 52. D — Imprinting is a rapid, irreversible form of learning that occurs during a brief critical period shortly after birth, in which a young animal forms a strong attachment to the first moving object it sees, usually its parent
- 53. B — Tool use in chimpanzees requires complex observational learning, motor skill development, and practice; the long learning period allows young chimps to master the precise techniques needed through repeated observation and trial-and-error
- 54. A — The dog is most likely displaying submissive body language in response to the owner's angry tone and body language, not feeling guilt about a past action; dogs associate human anger with the present moment, not with earlier behaviors
- 55. B — Feather plucking is a stress-related behavioral disorder caused by deprivation of social interaction and mental stimulation; parrots are highly social and intelligent animals that develop compulsive behaviors when their social and cognitive needs are unmet
- 56. D — Through the waggle dance, in which a forager bee performs a figure-eight pattern that indicates the direction relative to the sun and the distance to the food source through the duration and angle of the waggle run
- 57. Echolocation is a biological sonar system in which animals emit high-frequency

sound waves and listen for echoes bouncing off objects to determine their location, size, and shape; bats and dolphins are well-known users

58. Tail wagging communicates emotional arousal, and research shows a rightward wag indicates positive emotions like happiness, while a leftward wag indicates negative emotions like anxiety or fear

59. Both use chemical signals (pheromones) because chemicals can persist in the environment, transmit specific messages, and work without visual contact; elephants use them to signal reproductive status over long distances, while ants use them to create trail maps and alarm signals for the colony

60. Vervet monkeys produce distinct alarm calls for different predators — eagle, leopard, and snake — and each call triggers a different escape behavior appropriate to that specific threat

Matching (Animal Behavior & Communication): 1→A, 2→D, 3→B, 4→C, 5→E

61. D — An endangered species still exists but faces a very high risk of extinction in the near future, while an extinct species has no living individuals remaining anywhere on Earth

62. A — The International Union for Conservation of Nature (IUCN)

63. D — The Critically Endangered category identifies species facing an extremely high risk of extinction in the immediate future, signaling that without urgent intervention they will likely become extinct, prioritizing them for emergency conservation resources

64. D — Unregulated mass hunting for commercial food markets and massive deforestation that destroyed their nesting habitat combined to collapse their population faster than they could reproduce, and their social nesting behavior meant small remnant flocks could not breed successfully

65. C — Habitat loss and degradation, primarily from deforestation, urban development, and agricultural expansion, which destroys the environments species need to survive

66. A — Fragmentation divides large continuous habitats into smaller isolated patches separated by roads, farms, or cities, trapping small populations that cannot migrate, find mates, or access sufficient resources, leading to inbreeding and local extinction

67. The wetland provides irreplaceable ecosystem services: nursery habitat for commercially valuable fish species, stopover feeding grounds for migratory birds, natural flood and storm surge buffering that protects the town, water filtration, and carbon storage — these services would cost far more to replace artificially

than the economic value of the development

68. Wildlife corridors are beneficial because they allow animals to move between habitat patches for food, mates, and genetic exchange, but their effectiveness depends on width, vegetation density, continuity, and whether they connect to habitats large enough to sustain populations
69. Invasive species outcompete native species for food and habitat, prey on species that have no evolved defenses, introduce new diseases, and alter ecosystems in ways that native species cannot adapt to quickly enough
70. A protected area is a legally designated region where human activities like development, hunting, and resource extraction are restricted, providing a safe habitat where endangered species can feed, breed, and recover without human disturbance
Matching (Endangered Species & Conservation): 1→A, 2→E, 3→C, 4→D, 5→B
71. B — DNA (deoxyribonucleic acid)
72. C — Genes are segments of DNA that contain instructions for building specific proteins; they are located on chromosomes inside the nucleus of cells
73. B — Although all cells share the same DNA, different cell types activate different genes; muscle cells turn on genes for contractile proteins while nerve cells activate genes for signal transmission proteins, producing cells with different structures and functions
74. D — Each parent has two copies of every gene and randomly passes one copy to each offspring through meiosis; the random combination of alleles from each parent creates unique genetic combinations in each puppy, producing variation in traits like ear length and coat pattern
75. A — Genotype is the actual genetic makeup of an organism (the specific alleles it carries), while phenotype is the observable physical or behavioral traits that result from the interaction of genotype with the environment
76. A — Approximately 3 black kittens for every 1 brown kitten (3:1 ratio), because BB and Bb both produce black coats while only bb produces brown
77. Both parents can be carriers of recessive alleles for hip dysplasia without showing symptoms themselves; if both pass their recessive allele to a puppy, the puppy inherits two copies and develops the disorder
78. Genetic tests identify carriers of disease alleles who appear healthy; breeders can then avoid mating two carriers together, preventing affected puppies from being born while still using carriers in breeding programs paired with tested-clear animals

79. Polygenic inheritance involves multiple genes each contributing a small effect to one trait, producing a continuous range of outcomes rather than the distinct either-or categories seen in single-gene traits
80. Selective breeding is when humans intentionally choose which animals reproduce based on desired traits, while natural selection is a natural process where organisms with traits best suited to their environment are more likely to survive and reproduce
Matching (Animal Genetics & Selective Breeding): 1→E, 2→C, 3→B, 4→A, 5→D
81. A — Instinct
82. D — Migration
83. B — Pheromones
84. D — Dominance hierarchy
85. C — Imprinting
86. A — Echolocation
87. Living in groups increases the chance of detecting predators and reduces each individual's risk of being caught
88. Habituation is when an animal stops responding to a repeated stimulus that has no positive or negative consequence
89. To communicate the direction and distance of a food source to other bees in the hive
90. Learned behaviors allow animals to adapt their responses to changing environments
Matching (Animal Biology & Care): 1→E, 2→A, 3→D, 4→C, 5→B
91. D — Endangered
92. A — Habitat loss and destruction
93. C — Endemic
94. B — International Union for Conservation of Nature (IUCN)
95. D — Captive breeding
96. C — Invasive species
97. Island species evolved in isolation with small populations, limited habitat, and few predators, making them poorly adapted to new threats

98. Fragmentation splits a large habitat into smaller, isolated patches, which can strand populations and prevent gene flow even though some habitat remains
99. Greater genetic diversity gives a population more variation to adapt to diseases, environmental changes, and other threats
100. A wildlife corridor is a strip of habitat connecting two larger habitat areas, allowing animals to move safely between them for food, mates, and new territory
Matching (Animal Biology & Care): 1→E, 2→C, 3→A, 4→D, 5→B
101. C — A substance that stimulates an animal's immune system to produce protection against a specific disease without causing the disease itself
102. B — A veterinarian is a medical professional who diagnoses, treats, and prevents diseases and injuries in animals
103. B — Parasites
104. B — Zoonotic disease (zoonosis)
105. D — Water, proteins, carbohydrates, fats, vitamins, and minerals
106. B — Obesity
107. Indoor pets can still be exposed to diseases through other animals that enter the home, contaminated objects, or if they accidentally escape outside
108. Each species has a digestive system adapted to process specific types of food, and their nutritional needs vary based on their body size, metabolism, and evolutionary diet
109. Antibiotics treat existing bacterial infections by killing or stopping bacteria, while vaccines prevent future infections by training the immune system before exposure
110. It prevents unwanted litters that contribute to pet overpopulation, reduces the risk of certain cancers and infections, and can decrease behavioral problems
Matching (Animal Biology & Care): 1→B, 2→A, 3→D, 4→C, 5→E
111. D — Domestication
112. A — Guide dog
113. A — The Animal Welfare Act
114. A — Animal agriculture (livestock farming)
115. A — Ethologist
116. D — Companion animals (pets)

117. Domesticated dogs developed reduced fear of humans, increased sociability, floppy ears, curled tails, shorter snouts, and the ability to read human gestures and emotions
118. Interacting with therapy animals has been shown to reduce stress hormones, lower blood pressure, decrease anxiety, and increase social interaction in patients
119. Service animals are individually trained to perform specific tasks for a person with a disability and have legal access to all public places, while emotional support animals provide comfort through companionship but do not have the same public access rights
120. Animal welfare accepts human use of animals but insists on humane treatment and minimizing suffering, while animal rights holds that animals should not be used by humans at all
Matching (Animal Biology & Care): 1→A, 2→E, 3→B, 4→D, 5→C
121. C — The argument is flawed because classification is based on body structure and reproduction, not single abilities; bats have fur, nurse young with milk, and give live birth, making them mammals
122. D — Their white winter coat, which normally provides camouflage in snow, would make them highly visible to predators on bare ground
123. D — Shunting blood past the lungs conserves oxygen by reducing unnecessary lung circulation when not breathing; mammalian four-chambered hearts have complete separation that prevents this type of shunting
124. C — Vitamin D
125. C — Apply firm, direct pressure to the wound using a clean cloth or gauze, and maintain pressure continuously for several minutes without lifting to check
126. D — Males wave their large claw in species-specific patterns to attract females; the claw's size signals the male's health and genetic quality, and the waving pattern helps females identify males of their own species
127. The International Union for Conservation of Nature (IUCN)
128. Approximately 3 black kittens for every 1 brown kitten (3:1 ratio), because BB and Bb both produce black coats while only bb produces brown
129. True bugs are a specific order of insects with piercing-sucking mouthparts, not all insects have this feature
130. Hibernation

Matching (Animal Classification & Taxonomy): 1→D, 2→B, 3→A, 4→C, 5→E

131. D — Vertebrates

132. A — It shows that hibernation can push animals to physiological extremes, requiring specialized biochemical adaptations like supercooling blood to prevent ice crystal formation in cells

133. B — Cattle eat tough plant material like grass that requires multiple stages of fermentation and breakdown by microorganisms; dogs eat more easily digestible protein-rich food that needs less processing

134. D — The cat in the warm, quiet room will likely recover faster because reduced stress supports the immune system, and consistent nutrition provides the energy and building blocks needed to fight infection

135. C — Social animals have evolved to live in groups and experience chronic stress, depression, and behavioral problems when kept in isolation, which violates their freedom to express normal social behavior

136. A — Both use chemical signals (pheromones) because chemicals can persist in the environment, transmit specific messages, and work without visual contact; elephants use them to signal reproductive status over long distances, while ants use them to create trail maps and alarm signals for the colony

137. Captive-bred animals may lack survival skills like finding food, avoiding predators, and navigating natural environments; the wild habitat must be suitable and threats must be eliminated; and released animals need monitoring to ensure they establish self-sustaining populations

138. Each parent has two copies of every gene and randomly passes one copy to each offspring through meiosis; the random combination of alleles from each parent creates unique genetic combinations in each puppy, producing variation in traits like ear length and coat pattern

139. Birds (Aves)

140. Habitat

Matching (Animal Classification & Taxonomy): 1→B, 2→A, 3→D, 4→E, 5→C

141. B — Whales breathe air with lungs, are warm-blooded, and nurse their young with milk

142. A — Blubber provides insulation to retain body heat in freezing water and stores energy for times when food is scarce

143. D — Cat food has much higher protein and fat levels formulated for cats' specific metabolic needs, which can cause obesity, pancreatitis, and kidney strain in dogs

over time

144. B — Herd immunity occurs when a high percentage of animals in a population are vaccinated, making it difficult for disease to spread, which indirectly protects animals that cannot be vaccinated due to age or health conditions
145. C — Tail wagging communicates emotional arousal, and research shows a rightward wag indicates positive emotions like happiness, while a leftward wag indicates negative emotions like anxiety or fear
146. B — Habitat loss and degradation, primarily from deforestation, urban development, and agricultural expansion, which destroys the environments species need to survive
147. Small, isolated populations have no access to unrelated individuals, so mating between relatives is unavoidable; this concentrates harmful recessive alleles, reduces genetic variation needed for disease resistance, and leads to inbreeding depression — reduced fertility, immune weakness, and increased birth defects
148. Linnaean provides convenient ranked categories for communication, while cladistics better reflects evolutionary relationships; both have value and are often used together
149. The heron likely came from a wetland habitat where long legs and beak help it wade and catch fish, while the hawk came from open woodland where talons and hooked beak help it hunt mammals
150. Horse lower legs have minimal blood supply with few blood vessels and almost no muscle tissue; healing is slow, and infections are harder to fight because fewer immune cells reach the area
Matching (Animal Classification & Taxonomy): 1→E, 2→C, 3→B, 4→D, 5→A
151. B — Chameleons change color mainly for communication and temperature regulation, not primarily for camouflage as commonly believed
152. A — Central nervous system (brain and spinal cord) and peripheral nervous system (nerves throughout the body)
153. D — Bacteria from infected gums can enter the bloodstream and spread to the heart, kidneys, and liver, causing organ damage
154. A — Spaying and neutering reduces pet overpopulation, which decreases the number of animals in shelters, reduces euthanasia rates, and prevents the suffering of homeless animals struggling to survive on the streets
155. D — Tool use in chimpanzees requires complex observational learning, motor skill development, and practice; the long learning period allows young chimps to

master the precise techniques needed through repeated observation and trial-and-error

156. B — Fragmentation divides large continuous habitats into smaller isolated patches separated by roads, farms, or cities, trapping small populations that cannot migrate, find mates, or access sufficient resources, leading to inbreeding and local extinction
 157. DNA (deoxyribonucleic acid)
 158. Similar body shapes can evolve independently in unrelated groups due to similar environments, so appearance alone is unreliable for classification
 159. Cane toads had no natural predators in Australia, their skin toxins killed native predators that tried to eat them, and they out-competed native species, showing that adaptations successful in one habitat can be devastating in another
 160. The claim is misleading; hollow bird bones contain internal struts and reinforcing structures that make them remarkably strong relative to their weight, similar to engineering trusses; they are optimized for strength-to-weight ratio, not fragility
Matching (Animal Classification & Taxonomy): 1→E, 2→A, 3→D, 4→B, 5→C
 161. A stethoscope! It amplifies internal body sounds.
 162. A thermometer! Body temperature helps vets detect fever and illness.
 163. An X-ray! It shows fractures, swallowed objects, and bone conditions.
 164. Heart rate (pulse)! Vets check me to assess cardiovascular health.
 165. A pathogen! Understanding me helps vets choose the right treatment.
 166. A vaccination! I contain a weakened or inactive form of the pathogen.
 167. The circulatory system! Also called the cardiovascular system.
 168. An avian veterinarian! I treat birds from parakeets to eagles.
 169. Because it wanted to be a first-aid kit-ten!
 170. Because they always wanted to get to the heart of the problem!
 171. A Labracadabrador!
 172. Because it could always take the heat -- and the temperature!
 173. Because it had a case of the flew!
 174. Because it could see right through every patient!
-

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