Lesson Plan: Invertebrates: Animals without Backbones

Grade Level: 4
Subject: Life Science
Duration: 45–60 min
4-LS1-1: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Learning Objectives

By the end of this lesson, students will be able to:

- **Identify** the defining characteristic of invertebrates, which is the absence of a backbone.
- **Classify** animals into major invertebrate groups including arthropods, mollusks, cnidarians, sponges, worms, and echinoderms.

Materials Needed: (all links are included in this PDF)

- Study Guide Science Grade 4 Invertebrates Animals Without Backbones (https://newpathworksheets.com/api/guide/study-guide-science-grade-4-invertebrates-animals-without-backbones.pdf)
- Activity Lesson Science Grade 4 Invertebrates Animals Without Backbones Invertebrates Animals Without Backbones 4 (https://newpathworksheets.com/api/activity-lesson/activity-

lesson-science-grade-4-invertebrates-animals-without-backbones-invertebrates-animals-without-backbones-4.pdf)

- Worksheet Science Grade 4 Invertebrates Animals Without Backbones 0 (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-invertebrates-animals-without-backbones-0.pdf)
- Worksheet Science Grade 4 Invertebrates Animals Without Backbones 1 (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-invertebrates-animals-without-backbones-1.pdf)
- Vocabulary Science Grade 4 Invertebrates Animals Without Backbones 1 (https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-invertebrates-animals-without-backbones-1.pdf)

Lesson Procedure

Step 3: Guided Practice (15 minutes)

- Distribute Vocabulary Set 1. Work as a class to match scientific terms to their correct definitions to reinforce new terminology. (https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-invertebrates-animals-without-backbones-1.pdf)
- Use the Activity Lesson to help students draw and categorize animals into the correct invertebrate group within a marine habitat. (https://newpathworksheets.com/api/activity-

lesson/activity-lesson-science-grade-4-invertebrates-animals-without-backbones-invertebrates-animals-without-backbones-4.pdf)

Step 4: Independent Practice (15 minutes)

- Have students work individually on Worksheet 0 to answer multiple-choice questions assessing their comprehension of invertebrate characteristics. (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-invertebrates-animals-without-backbones-0.pdf)
- Circulate the room to ensure students are correctly differentiating between the phyla and understanding the purpose of structures like exoskeletons.

Step 5: Assessment (10 minutes)

- Review the answers from Worksheet 0 using the teacher's answer key (Worksheet 1) to clear up any misconceptions. (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-invertebrates-animals-without-backbones-1.pdf)
- Have students share one new fact they learned about an invertebrate's external structures

Extension Activities

- Go on an outdoor 'bug hunt' to safely observe local arthropods and annelids in their natural habitats, documenting their external structures.
- Create a diorama or drawn poster showing a coral reef ecosystem and label the various invertebrates (like sponges, cnidarians, and echinoderms) that reside there.

Complete List of Available Resources:

- Invertebrates: Animals without Backbones Topic (https://newpathworksheets.com/science/grade-4/invertebrates-animals-without-backbones)
- Study Guide Science Grade 4 Invertebrates Animals Without Backbones (https://newpathworksheets.com/api/guide/study-guide-science-grade-4-invertebrates-animals-without-backbones.pdf)
- Activity Lesson Science Grade 4 Invertebrates Animals Without Backbones Invertebrates Animals Without Backbones 4 (https://newpathworksheets.com/api/activity-lesson/activity-lesson-science-grade-4-invertebrates-animals-without-backbones-invertebrates-animals-without-backbones-4.pdf)
- Worksheet Science Grade 4 Invertebrates Animals Without Backbones 0 (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-invertebrates-animals-without-backbones-0.pdf)
- Worksheet Science Grade 4 Invertebrates Animals Without Backbones 1 (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-4-invertebrates-

(https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-invertebrates-animals-without-backbones-4.pdf)

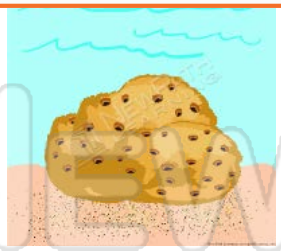
- Vocabulary Science Grade 4 Invertebrates Animals Without Backbones 5 (https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-4-invertebrates-animals-without-backbones-5.pdf)

INVERTEBRATES: ANIMALS WITHOUT BACKBONES

Most Animals are Invertebrates!

Animals are classified into groups so that scientists around the world can study them easier. Scientists **classify** animals into two major groups, **vertebrates and invertebrates**.

Invertebrates are animals that do not have a backbone. Many invertebrates do **not** have hard body parts either, though some do.



Lesson Checkpoint:
Where do most sponges live?

Cnidarians

Cnidarians include hydra, jelly fish, and sea anemones. Cnidarians have several things they have in common with each other. One characteristic they have in common is that they all have stinging cells. Cnidarians include **hydra,** which are organisms that live in freshwater. **Cnidarians** also include jellyfish. **Jellyfish** have soft bodies and long stinging tentacles that are poisonous.

living thing. **Leeches** are also classified as invertebrates and have segmented bodies.

Lesson Checkpoint:
How does a tapeworm live?

Mollusks

Snail and clams are types of mollusks. **Mollusks** have soft bodies and most mollusks have shells.

Mollusks, like a snail, move by using a structure called a **foot**. This foot produces **slime** that helps the snail move easier along the ground.

Lesson Checkpoint:
What is an example of a mollusk?

PREVIEW

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Arthropods

Arthropods are the largest animal phylum. Two characteristics of arthropods are that they have segmented bodies and jointed legs.

Spiders

Spiders are NOT **insects**. Spiders only have two main body parts and eight legs. Insects have THREE main body parts and SIX legs. **Arachnids** are

Lesson Checkpoint:
Are spiders insects? Why or why not?

Coral Reefs

Coral reefs are a mass or ridge of living coral that need sunshine and warm waters to survive. Coral reefs live in warm, shallow sea waters. Coral reefs provide a **protective place to live** for a large variety of marine life.

Lesson Checkpoint:
What do coral reefs provide?

PREVIEW

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Invertebrates - Animals without Backbones

Sci D

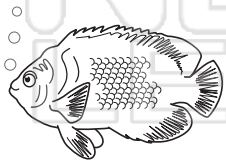
Name _____ Class _____ Date _____

Animals can be **classified**, or grouped together, by the things they have in common, like by how they act, where they live, or how they look. Scientists separate animals into **two main groups** called **vertebrates** and **invertebrates.**

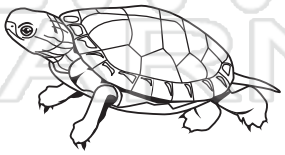
Vertebrates are animals that have a **backbone**. There are 5 major groups:

birds

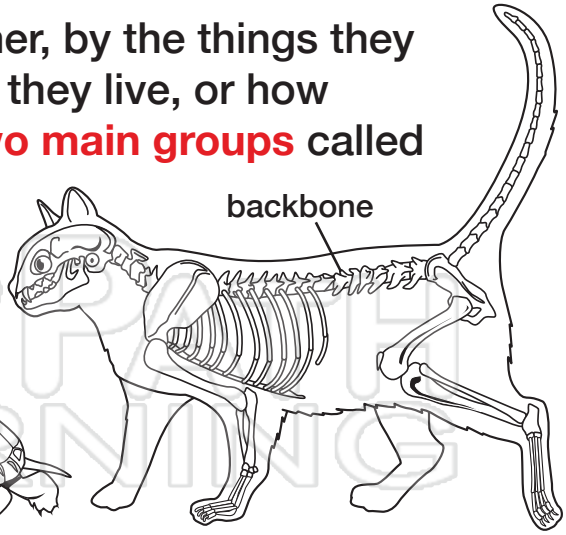
amphibians



fish



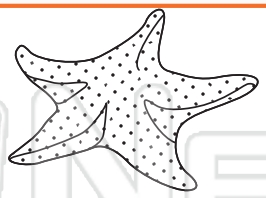
reptiles



mammals

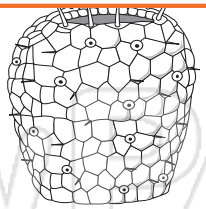
arthropods

Include insects, crabs, centipedes, millipedes & spiders. Arthropods have skeletons on the outside of their bodies. They have **segmented bodies** & jointed legs.



echinoderms

Include starfish, sea urchins & sand dollars. Echinoderms live in the ocean and show **radial symmetry.**



sponges

Sponges remain in one place for most of their life cycle, attached to rocks underwater.

cnidarians

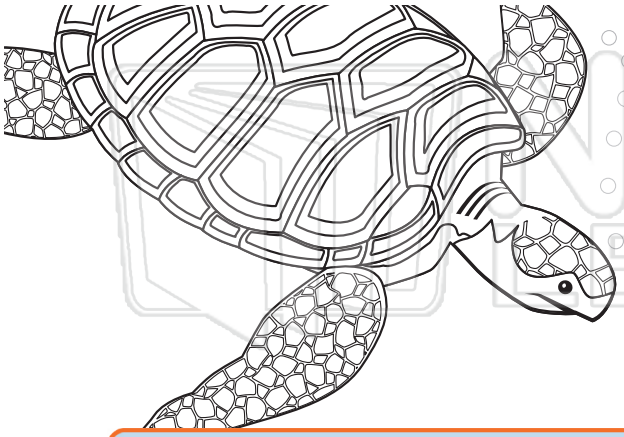
Include hydra, sea anemones & jellyfish. All cnidarians have **stinging cells** which they use to catch food.

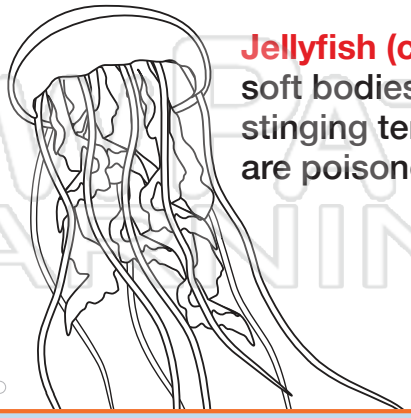
Invertebrates - Animals without Backbones

Sci D

Name _____ Class _____ Date _____

Many invertebrates live in water. **Coral reefs** live in warm, shallow sea waters. Coral reefs provide a protective living environment for a large variety of vertebrate and **invertebrate marine life**.





Jellyfish (cnidarian) have soft bodies and long stinging tentacles that are poisonous.

sea sponge

Sea anemones live attached to objects on the ocean floor.

shrimp (crustacean)

Invertebrates - Animals without Backbones

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Name _____ Class _____ Date _____

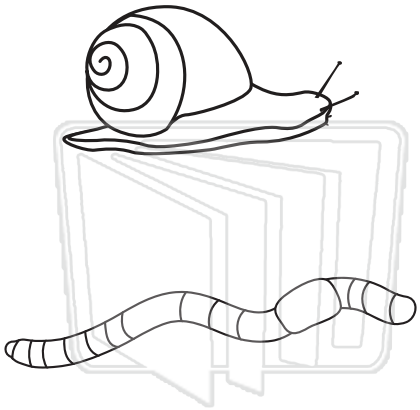
Draw animals in this ocean habitat.
Label them with the group of **invertebrates** they belong to.

Invertebrates - Animals without Backbones

Sci D

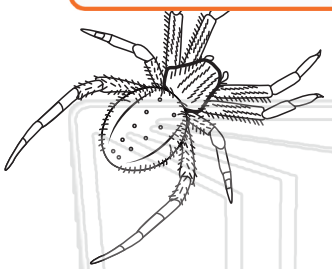
Name _____ Class _____ Date _____

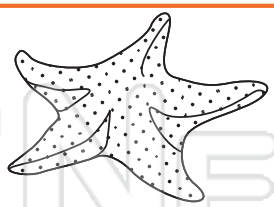
Draw a line to match each animal with the correct group.



worms

sponges





arthropods

These animals are all _____ because they do not have _____.

Invertebrates - Animals without Backbones

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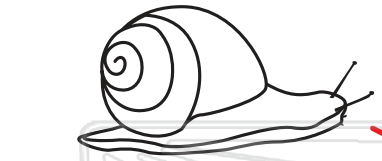
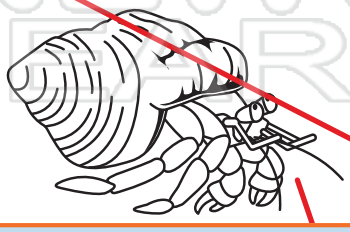
Answer Key

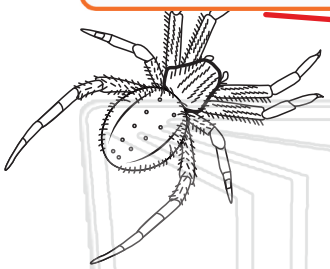
Draw a line to match each animal with the correct group.

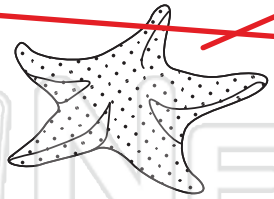


worms



sponges





arthropods

These animals are all _____invertebrates_____ because they do not have _____backbones_____.

Invertebrates - Animals without Backbones

Sci D

Name_____ Class_____ Date_____

1 What are the two major groups of **animal classification**?

A vertebrates and mammals
B vertebrates and invertebrates
C invertebrates and insects
D insects and animals

2 **Invertebrates** are animals that do not have _____.

A wings
B legs
C a backbone
D antennae

3 Many invertebrates do **not** have _____ body parts.

A small
B soft
C any
D hard

4 Scientists classify **invertebrates** into broad groups called _____ such as cnidarians, echinoderms, mollusks, and arthropods.

A species
B kingdoms

PREVIEW

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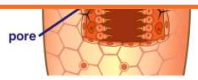
D a jellyfish



9 **Cnidarians** include hydra, jellyfish, and sea anemones. Cnidarians have several things in common with each other. What is one characteristic they have in common?

A They live on dry land.
B They have several eyes.
C They have stinging cells.
D They eat fish.

10 **Hydra**, a cnidarian, is an organism that lives in _____.

A trees
B mountains
C saltwater
D freshwater

Invertebrates - Animals without Backbones

Sci D

Name_____ Class_____ Date_____

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A vertebrates and mammals
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D insects and animals

B

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A species
B kingdoms

D

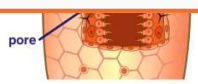
5

D

7

C

D a jellyfish



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A trees
B mountains
C saltwater
D freshwater

D

Invertebrates - Animals without Backbones

Sci D

Name_____ Class_____ Date_____

1 **Jellyfish** are a type of **cnidarian**. They have soft bodies and _____ that are poisonous.

A four eyes
B long, stinging tentacles
C two legs
D sharp claws

2 **Sea anemones** look like flowers in the sea and live _____.

A attached to objects in the sea
B by swimming in the ocean
C on the surface of the ocean
D separated from everything in the ocean

3 Worms have **segmented** bodies. What does **segmented** mean?

A one whole piece
B divided into sections
C attached
D not separated

4 One type of **flatworm** is called a **tapeworm**. A tapeworm is a type of worm that lives off _____.

A freshwater
B saltwater
C another living thing

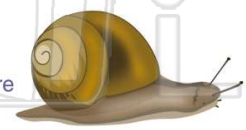
5

7

D invertebrates

D legs

9 **Mollusks** move by using a structure called a **foot**, which produces **slime**. What is one benefit of this **slime** the snail produces?



A scares off prey
B lowers snail's body temperature
C provides snail with food
D helps the snail move more easily

10 **Echinoderms** are invertebrates that show radial symmetry. Sea urchins and _____ are types of echinoderms.

A starfish
B fish
C turtles
D whales

Invertebrates - Animals without Backbones

Sci D

Name_____ Class_____ Date_____

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B

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A freshwater
B saltwater
C another living thing

C

5

C

PREVIEW

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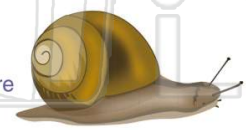
7

D invertebrates

A

D legs

9 **Mollusks** move by using a structure called a **foot**, which produces **slime**. What is one benefit of this **slime** the snail produces?



A scares off prey
B lowers snail's body temperature
C provides snail with food
D helps the snail move more easily

D

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B fish
C turtles
D whales

A

Invertebrates - Animals without Backbones

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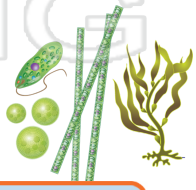
Name_____ Class_____ Date_____

Match each of the following terms to its definition:

Archaebacteria	Algae	Angiosperm	Arthropods
Autotroph	Arachnid	Aerate	Animal

1. - to expose to oxygen

2. - a large and diverse group of simple, plant-like protists ranging from unicellular to multicellular organisms; plant-like protists that contain chloroplasts and are autotrophic



3. aroun

4. organi

5. segme

6. classif

nucleus, some make their own food and some need to obtain food from other sources; often found in harsh environments

7. - organisms that have segmented bodies and jointed legs

8. - a living organism, such as algae, that is capable of producing its own food; also called a producer

Invertebrates - Animals without Backbones

Sci D

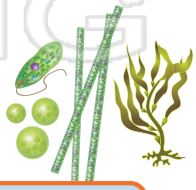
Name_____ Class_____ Date_____

Match each of the following terms to its definition:

Archaebacteria	Algae	Angiosperm	Arthropods
Autotroph	Arachnid	Aerate	Animal

1. aerate - to expose to oxygen

2. algae - a large and diverse group of simple, plant-like protists ranging from unicellular to multicellular organisms; plant-like protists that contain chloroplasts and are autotrophic



3. ang
seeds

4. ani
capabi

5. ara
body,

6. arc
classif
nucleus, some make their own food and some need to obtain food from other sources; often found in harsh environments

7. arthropods - organisms that have segmented bodies and jointed legs

8. autotroph - a living organism, such as algae, that is capable of producing its own food; also called a producer

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