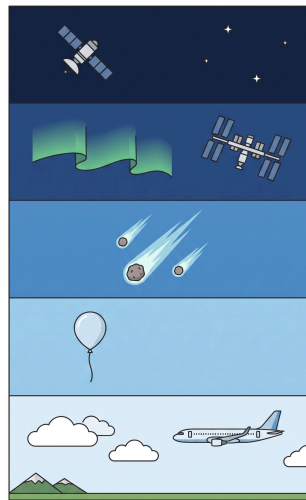


Layers of the Atmosphere

The five layers of air between the ground and space



7

printable sheets

17

pages

All

answer keys included

Layers of the Atmosphere Teaching Pack

The five layers of air between the ground and space

How to use this pack. The sheets are in a suggested teaching order: show the labeled diagram, have students label the blank one, then work through the practice sheets and finish with the quiz. Use them all over a week or pick the ones you need. The answer keys are together at the back.

What is inside

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6. Review

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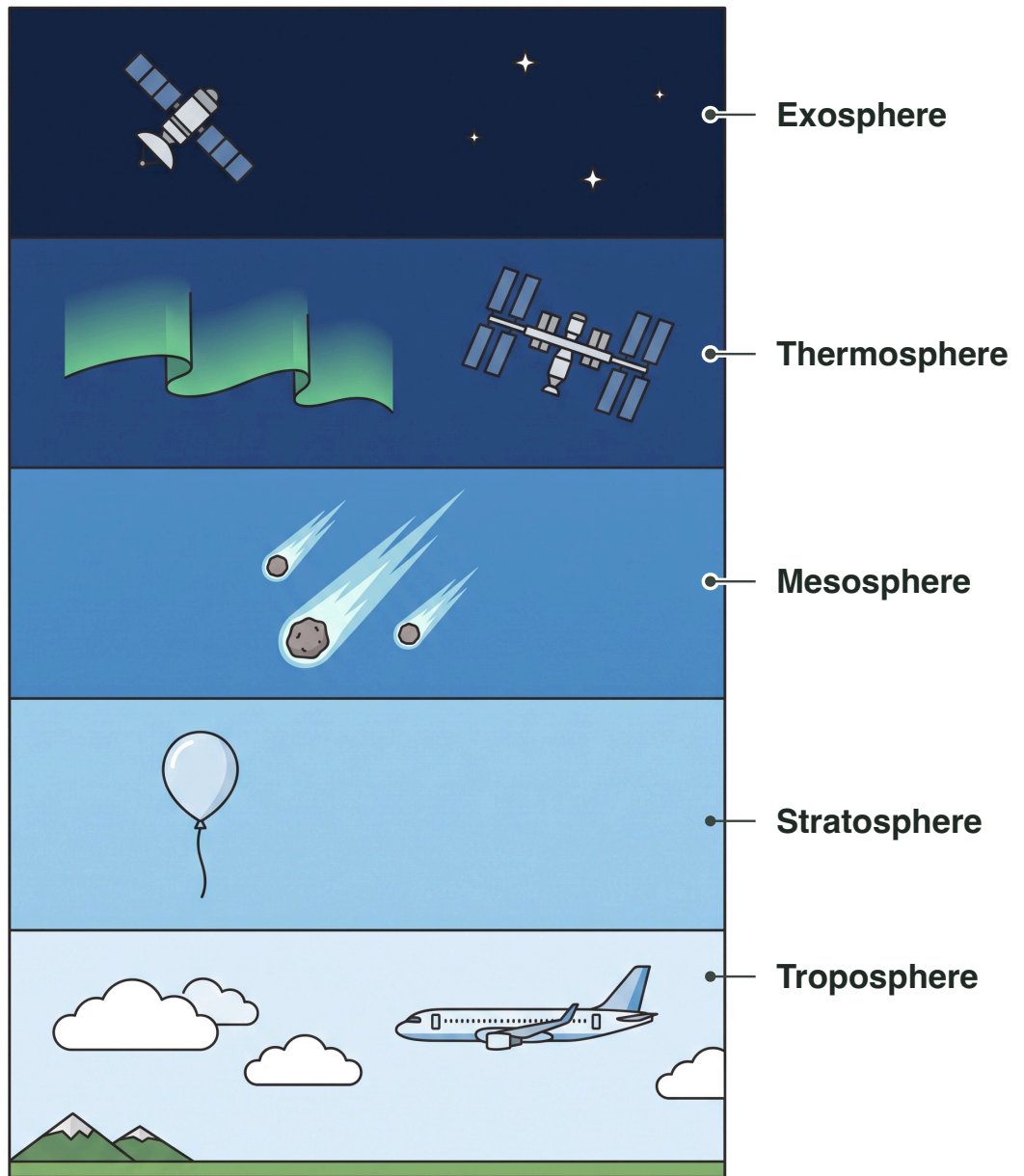
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Answer keys

Every answer key, in the same order 13

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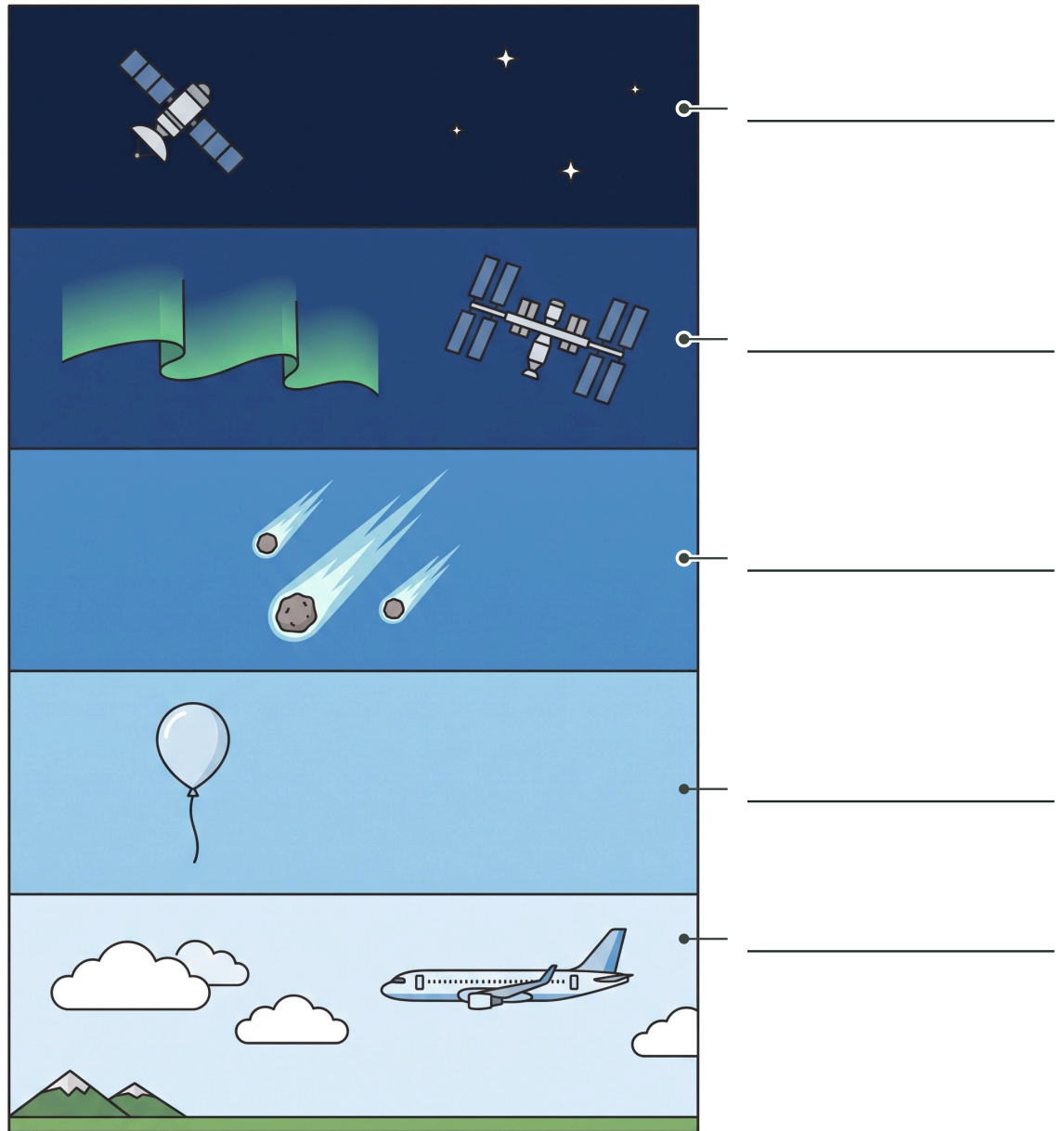
Layers of the Atmosphere



Layers of the Atmosphere

Name: _____

Write the name of each part on its line. Use the word bank.



Word bank

Exosphere

Mesosphere

Stratosphere

Thermosphere

Troposphere

Layers of the Atmosphere and Key Words

Use the labeled layers of the atmosphere diagram to help you.

Part A. Write the word that fits each description.

Word bank

air pressure

altitude

aurora

Exosphere

Mesosphere

meteor

ozone layer

Stratosphere

Thermosphere

Troposphere

The third layer from the ground and the coldest one. Bits of space rock

1. burn up here.

2. Height above sea level.

3. The bottom layer. We live here, and almost all weather happens here.

4. A band of gas that absorbs most of the Sun's harmful ultraviolet rays.

5. The top layer. It slowly fades into outer space.

6. A streak of light made when a bit of space rock burns up in the air.

7. The second layer from the ground. Weather balloons rise into it.

The push of the air on everything it touches. It gets weaker as you go

8. higher.

9. A very hot layer of very thin air. The space station orbits here.

Glowing curtains of colored light in the sky, seen mostly near Earth's

10. poles.

Part B. Answer the questions.

1. List the five layers in order, starting from the ground.

2. Which layer holds the ozone layer?

3. Why is the ozone layer important for living things?

Layers of the Atmosphere and Key Words: Answer Key

Answers are in green. Written answers will vary; these are examples.

Part A. Write the word that fits each description.

Word bank

air pressure

altitude

aurora

Exosphere

Mesosphere

meteor

ozone layer

Stratosphere

Thermosphere

Troposphere

- | | |
|--|---------------------|
| 1. The third layer from the ground and the coldest one. Bits of space rock burn up here. | Mesosphere |
| 2. Height above sea level. | altitude |
| 3. The bottom layer. We live here, and almost all weather happens here. | Troposphere |
| 4. A band of gas that absorbs most of the Sun's harmful ultraviolet rays. | ozone layer |
| 5. The top layer. It slowly fades into outer space. | Exosphere |
| 6. A streak of light made when a bit of space rock burns up in the air. | meteor |
| 7. The second layer from the ground. Weather balloons rise into it. | Stratosphere |
| 8. The push of the air on everything it touches. It gets weaker as you go higher. | air pressure |
| 9. A very hot layer of very thin air. The space station orbits here. | Thermosphere |
| 10. Glowing curtains of colored light in the sky, seen mostly near Earth's poles. | aurora |

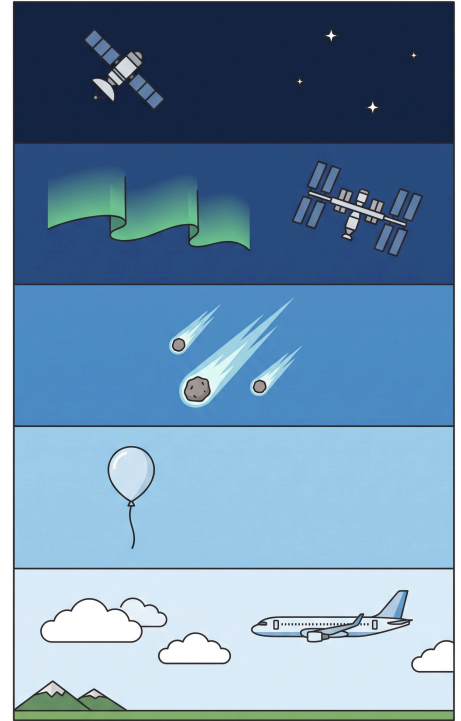
Part B. Answer the questions.

1. List the five layers in order, starting from the ground.
Troposphere, stratosphere, mesosphere, thermosphere, exosphere.
2. Which layer holds the ozone layer?
The stratosphere.
3. Why is the ozone layer important for living things?
It absorbs most of the Sun's harmful ultraviolet rays before they reach the ground.

A Blanket of Air

Read the text. Then answer the questions on the next page.

- 1 Earth is wrapped in a blanket of air called the **atmosphere**. Gravity holds it in place. The air is mostly nitrogen and oxygen. It is thickest near the ground and gets thinner as you go up. Scientists divide the atmosphere into five layers. They are sorted by how the temperature changes with **altitude**, or height.
- 2 The bottom layer is the **troposphere**. We live in it, and it holds most of the air. Almost all weather happens here. The air gets colder as you go up, which is why high mountains have snow on top. Passenger jets fly near the top of this layer.
- 3 The next layer is the **stratosphere**. It holds the **ozone layer**, a band of gas that absorbs most of the Sun's harmful ultraviolet rays. Taking in that energy warms the air. So in the stratosphere the air gets warmer as you go up.
- 4 Above it is the **mesosphere**. Here the air gets colder again with height. It is the coldest layer. Most bits of rock from space burn up here. The streaks of light they make are called **meteors**, or shooting stars. Next comes the **thermosphere**, where the temperature climbs very high. It would not feel hot to you, though. The air is so thin that there is almost nothing to carry the heat to your skin. Glowing lights called **auroras** appear in this layer, and the space station orbits here.
- 5 The top layer is the **exosphere**. Its air is thinner still, and it slowly fades into outer space. Some satellites orbit here. All the air above you has weight, and it presses down. This push is called **air pressure**. It is strongest at sea level and gets weaker as you climb, because less air is above you.



The five layers, from the ground at the bottom to the edge of space at the top.

A Blanket of Air: Questions

Go back to the text to find each answer. The paragraphs are numbered to help you.

1. What is this text mostly about?

- ☐ How airplanes fly
- ☐ Why the sky is blue
- ☐ The layers of air around Earth
- ☐ How to predict the weather

2. In which layer does almost all weather happen?

- ☐ The troposphere
- ☐ The stratosphere
- ☐ The mesosphere
- ☐ The exosphere

3. How are the five layers sorted?

4. What does the ozone layer do?

- ☐ It makes the auroras glow.
- ☐ It holds the atmosphere in place.
- ☐ It burns up rocks from space.
- ☐ It absorbs most of the Sun's harmful ultraviolet rays.

5. Number these layers 1, 2 and 3, from the lowest to the highest.

- ☐ Mesosphere
- ☐ Troposphere
- ☐ Stratosphere

6. Which layer is the coldest?

- ☐ The troposphere
- ☐ The stratosphere
- ☐ The mesosphere
- ☐ The thermosphere

7. The thermosphere has a very high temperature. Why would it not feel hot to you?

8. What happens to air pressure as you climb higher? Why?

Which Layer Is It In?

Read what you would find and the clue. Write the layer. You will use every layer, and most of them more than once.

WHAT YOU WOULD FIND	CLUE	LAYER
1. Rain clouds	Almost all of Earth's weather happens in this layer.	_____
2. The ozone layer	This band of gas is in the second layer from the ground.	_____
3. Shooting stars	Most bits of space rock burn up in the third layer from the ground.	_____
4. Auroras	These curtains of colored light glow in a very hot layer of very thin air.	_____
5. A faraway satellite	It orbits in the top layer, where the air fades into outer space.	_____
6. A passenger jet	It cruises near the top of the layer we live in.	_____
7. The space station	It orbits in the same layer where the auroras glow.	_____
8. A weather balloon	It rises above the clouds and out of the bottom layer into the next one.	_____
9. The coldest air	The lowest temperatures in the atmosphere are in this middle layer.	_____
10. Mount Everest	Even the highest mountain on Earth does not reach out of the layer we live in.	_____

Word bank

Exosphere

Mesosphere

Stratosphere

Thermosphere

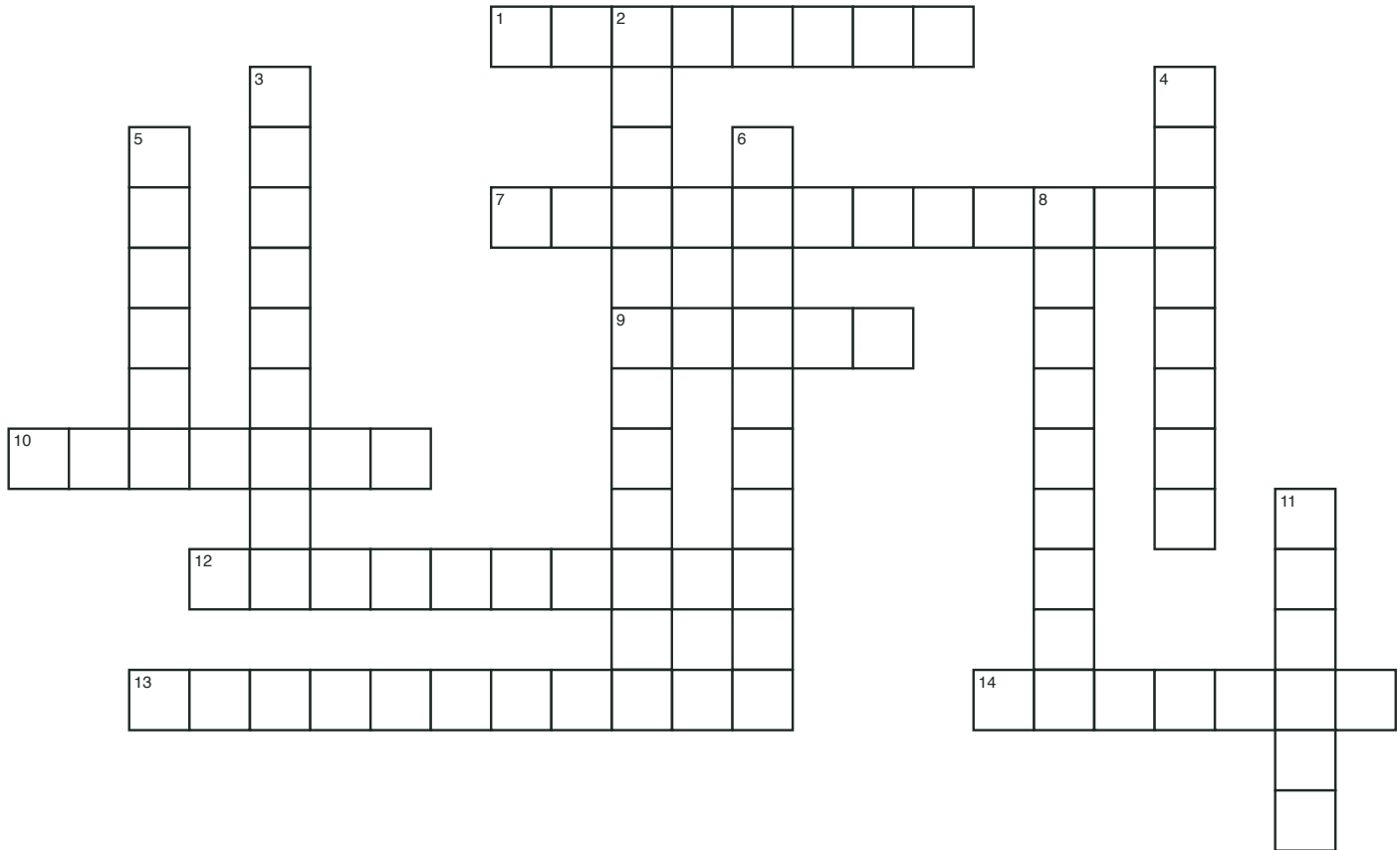
Troposphere

Think about it

Climbers near the top of Mount Everest often breathe extra oxygen from tanks. Use what you know about air and altitude to explain why.

Layers of the Atmosphere Crossword

Read each clue. Write the answer in the puzzle, one letter in each box. Use the word bank if you get stuck.



ACROSS

1. Height above sea level.
7. The second layer from the ground.
9. The ____ layer absorbs most of the Sun's harmful ultraviolet rays.
10. The pull that holds the air around Earth.
12. The coldest layer.
13. The bottom layer, where we live.
14. Rain, wind, snow and storms.

DOWN

2. A very hot layer where the space station orbits.
3. A machine that orbits Earth.
4. Air ____ is the push of the air on everything it touches.
5. Glowing curtains of colored light in the sky near the poles.
6. The blanket of air around Earth.
8. The top layer. It fades into outer space.
11. A streak of light made when a bit of space rock burns up. A shooting star.

Word bank

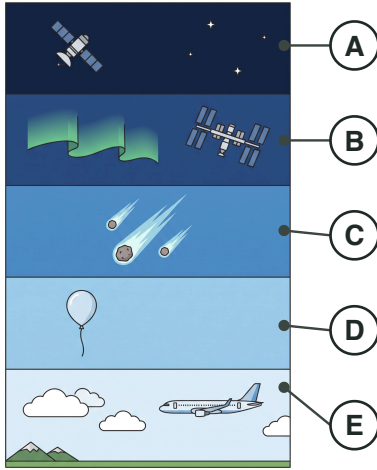
altitude atmosphere aurora exosphere gravity mesosphere meteor ozone
pressure satellite stratosphere thermosphere troposphere weather

Layers of the Atmosphere Quiz

Score _____ / 13

Show what you know about the layers of the atmosphere. The ground is at the bottom of the picture.

Part A. These are the layers of the atmosphere. Write the name of each layer.



A _____
B _____
C _____
D _____
E _____

Exosphere · Mesosphere · Stratosphere · Thermosphere · Troposphere

Part B. Choose the best answer.

1. In which layer do we live?

- ☐ Stratosphere
- ☐ Troposphere
- ☐ Mesosphere
- ☐ Exosphere

2. Which layer holds the ozone layer?

- ☐ Troposphere
- ☐ Thermosphere
- ☐ Stratosphere
- ☐ Mesosphere

3. In which layer do most bits of space rock burn up?

- ☐ Mesosphere
- ☐ Troposphere
- ☐ Exosphere
- ☐ Stratosphere

4. In which layer do auroras glow?

- ☐ Troposphere
- ☐ Stratosphere
- ☐ Mesosphere
- ☐ Thermosphere

5. What happens to the air as you go higher in the atmosphere?

- ☐ It gets thicker.
- ☐ It gets thinner.
- ☐ It turns into ozone.
- ☐ It stays the same.

6. What holds the atmosphere around Earth?

- ☐ The ozone layer
- ☐ The wind
- ☐ Gravity
- ☐ Air pressure

Part C. Write your answer.

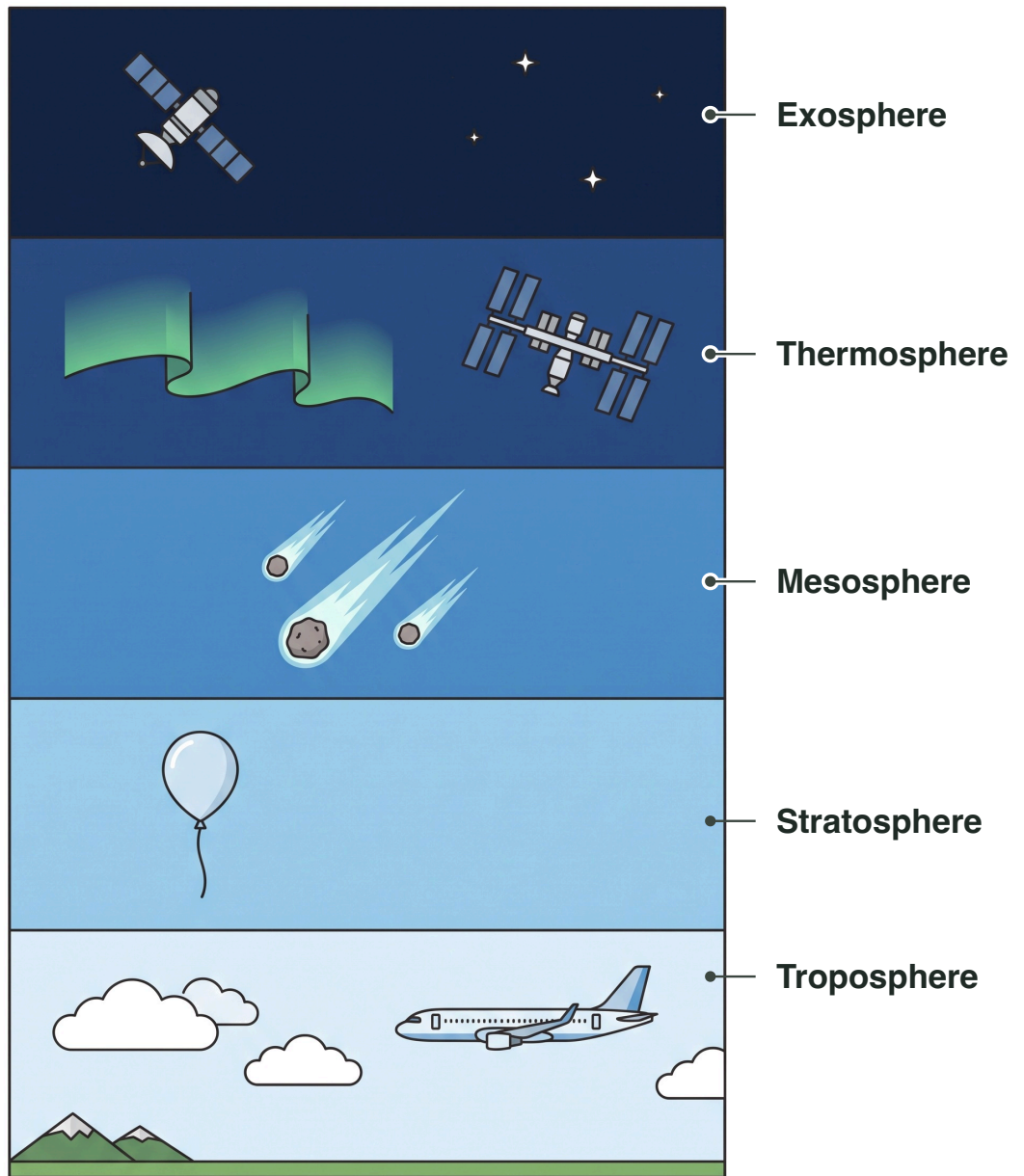
7. The thermosphere has a very high temperature. Why would it not feel hot to you?

8. Where is air pressure stronger, at sea level or on a high mountain? Why?

Answer Keys

In the same order as the sheets.

Layers of the Atmosphere: Answer Key



A Blanket of Air: Answer Key

Answers are in green. Written answers will vary; these are examples.

1. What is this text mostly about?

- ☐ How airplanes fly
- ☐ Why the sky is blue
- ☒ **The layers of air around Earth**
- ☐ How to predict the weather

2. In which layer does almost all weather happen?

- ☒ **The troposphere**
- ☐ The stratosphere
- ☐ The mesosphere
- ☐ The exosphere

3. How are the five layers sorted?

By how the temperature changes with altitude (height).

4. What does the ozone layer do?

- ☐ It makes the auroras glow.
- ☐ It holds the atmosphere in place.
- ☐ It burns up rocks from space.
- ☒ **It absorbs most of the Sun's harmful ultraviolet rays.**

5. Number these layers 1, 2 and 3, from the lowest to the highest.

- 3** Mesosphere
- 1** Troposphere
- 2** Stratosphere

6. Which layer is the coldest?

- ☐ The troposphere
- ☐ The stratosphere
- ☒ **The mesosphere**
- ☐ The thermosphere

7. The thermosphere has a very high temperature. Why would it not feel hot to you?

The air is so thin that there is almost nothing to carry the heat to your skin.

8. What happens to air pressure as you climb higher? Why?

It gets weaker, because less air is above you.

Which Layer Is It In?: Answer Key

Answers are in green. The last answer will vary; one example is given.

WHAT YOU WOULD FIND	CLUE	LAYER
1. Rain clouds	Almost all of Earth's weather happens in this layer.	Troposphere
2. The ozone layer	This band of gas is in the second layer from the ground.	Stratosphere
3. Shooting stars	Most bits of space rock burn up in the third layer from the ground.	Mesosphere
4. Auroras	These curtains of colored light glow in a very hot layer of very thin air.	Thermosphere
5. A faraway satellite	It orbits in the top layer, where the air fades into outer space.	Exosphere
6. A passenger jet	It cruises near the top of the layer we live in.	Troposphere
7. The space station	It orbits in the same layer where the auroras glow.	Thermosphere
8. A weather balloon	It rises above the clouds and out of the bottom layer into the next one.	Stratosphere
9. The coldest air	The lowest temperatures in the atmosphere are in this middle layer.	Mesosphere
10. Mount Everest	Even the highest mountain on Earth does not reach out of the layer we live in.	Troposphere
Word bank	Exosphere Mesosphere Stratosphere Thermosphere Troposphere	

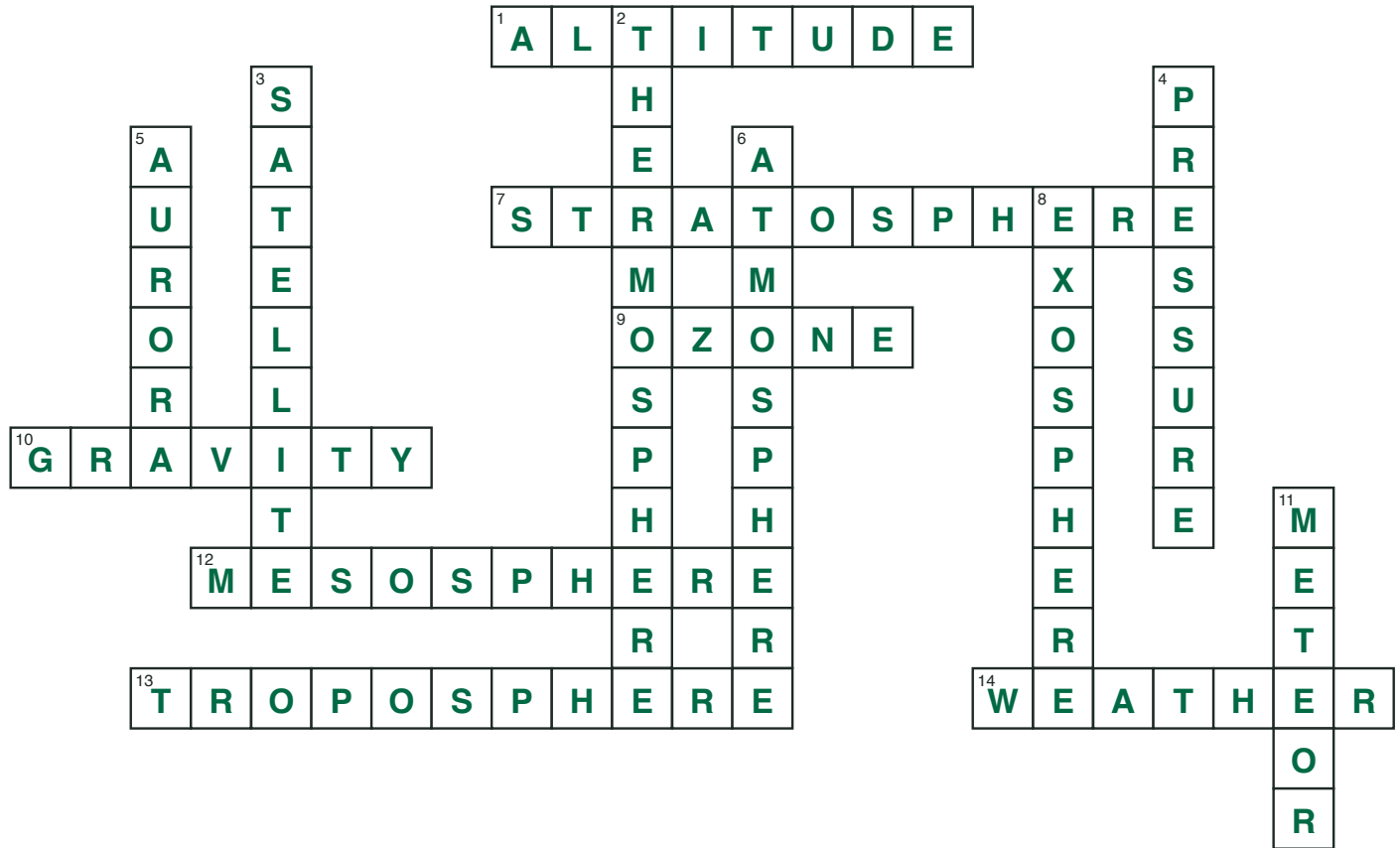
Think about it

Climbers near the top of Mount Everest often breathe extra oxygen from tanks. Use what you know about air and altitude to explain why.

The air gets thinner as you go up. Near the top of the mountain there is much less air, so each breath holds less oxygen.

Layers of the Atmosphere Crossword: Answer Key

Answers are in green.



ACROSS

1. Height above sea level.
7. The second layer from the ground.
9. The ____ layer absorbs most of the Sun's harmful ultraviolet rays.
10. The pull that holds the air around Earth.
12. The coldest layer.
13. The bottom layer, where we live.
14. Rain, wind, snow and storms.

DOWN

2. A very hot layer where the space station orbits.
3. A machine that orbits Earth.
4. Air ____ is the push of the air on everything it touches.
5. Glowing curtains of colored light in the sky near the poles.
6. The blanket of air around Earth.
8. The top layer. It fades into outer space.
11. A streak of light made when a bit of space rock burns up. A shooting star.

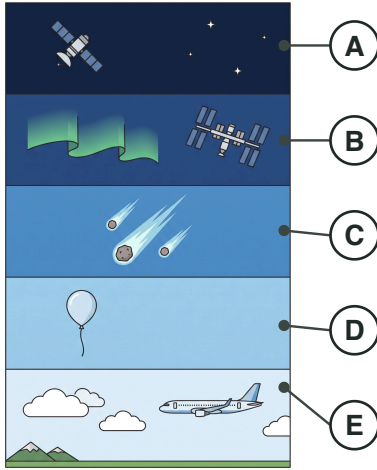
Word bank

altitude atmosphere aurora exosphere gravity mesosphere meteor ozone
pressure satellite stratosphere thermosphere troposphere weather

Layers of the Atmosphere Quiz: Answer Key

Answers are in green. Written answers will vary; these are examples.

Part A. These are the layers of the atmosphere. Write the name of each layer.



A **Exosphere**

B **Thermosphere**

C **Mesosphere**

D **Stratosphere**

E **Troposphere**

Exosphere · Mesosphere · Stratosphere · Thermosphere · Troposphere

Part B. Choose the best answer.

1. In which layer do we live?

- ☐ Stratosphere
- ☒ **Troposphere**
- ☐ Mesosphere
- ☐ Exosphere

2. Which layer holds the ozone layer?

- ☐ Troposphere
- ☐ Thermosphere
- ☒ **Stratosphere**
- ☐ Mesosphere

3. In which layer do most bits of space rock burn up?

- ☒ **Mesosphere**
- ☐ Troposphere
- ☐ Exosphere
- ☐ Stratosphere

4. In which layer do auroras glow?

- ☐ Troposphere
- ☐ Stratosphere
- ☐ Mesosphere
- ☒ **Thermosphere**

5. What happens to the air as you go higher in the atmosphere?

- ☐ It gets thicker.
- ☒ **It gets thinner.**
- ☐ It turns into ozone.
- ☐ It stays the same.

6. What holds the atmosphere around Earth?

- ☐ The ozone layer
- ☐ The wind
- ☒ **Gravity**
- ☐ Air pressure

Part C. Write your answer.

7. The thermosphere has a very high temperature. Why would it not feel hot to you?

The air is so thin that there is almost nothing to carry the heat to your skin.

8. Where is air pressure stronger, at sea level or on a high mountain? Why?

At sea level, because more air is above you pressing down.