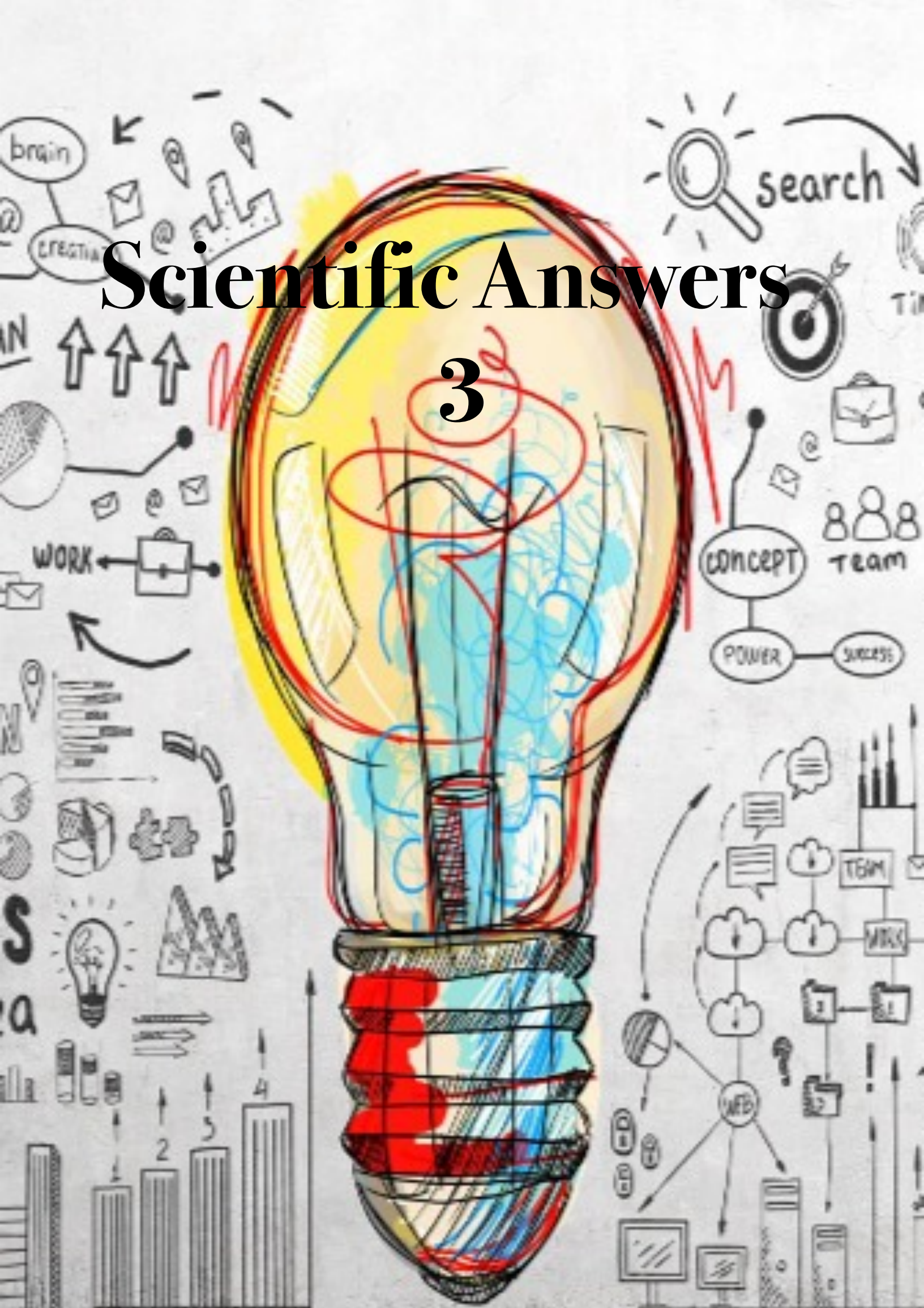
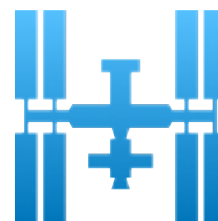


Scientific Answers

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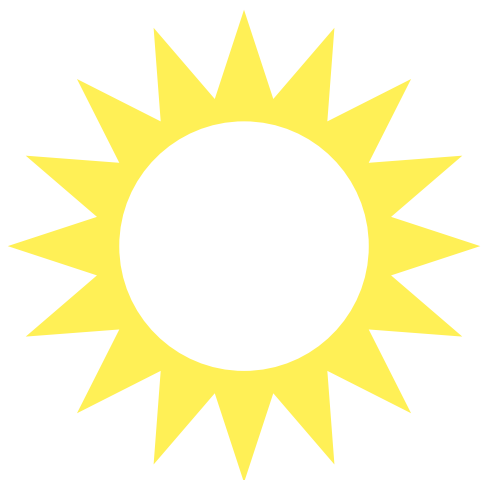


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Wether

The weather is unpredictable. Now, you might logically think that there are meteorologists. However, their forecasts are not always very accurate. For example, they might say on TV that it will rain at 2:00 PM, but instead, it rains at 4:00 PM or not at all. Read on to learn how meteorologists predict the weather and various other related things.





Wether forecast

The weather forecast, or better yet, weather prediction, is an amazing “tool” - service that many of us rely on to determine how the weather will behave in the coming days.

To begin with, let's mention that there are the American model called GFS and the European one named ECMWF.

Both are equally effective.

Moreover, it's not exactly about prediction but rather about forecasting. The difference lies in the fact that they essentially know in advance what will happen and don't just guess.

Now, let's look at how these models make weather predictions.

These models are constantly fed with information about various atmospheric conditions such as atmospheric pressure, temperature, humidity, etc., from meteorological stations set up by meteorological services of each country, both on land and at sea.

They are also supplied with information about points in the atmosphere at specific altitudes, even at higher levels of the atmosphere.

This is done through the process of radiosondes (the well-known meteorological balloons) combined with data collection from various satellites.

“Thus, the model at specific time intervals provides information about the actual conditions (pressure, temperature, humidity, etc.) on the Earth's surface as well as in the atmosphere.

So, there is a three-dimensional grid with points around the Earth that continuously feed the models with information for weather forecasting.”



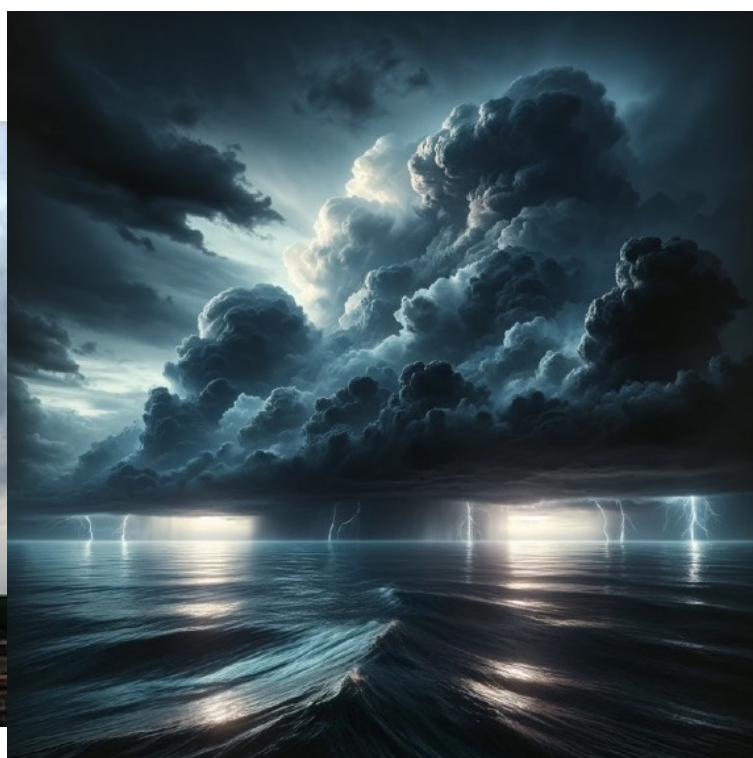
Storm

A storm is essentially a weather phenomenon. Storms are created by a series of meteorological conditions. Initially, moisture in the atmosphere is needed to form clouds. As warm, moist air rises into the atmosphere, it begins to cool, and the water it contains turns into droplets or ice crystals, forming clouds.

The significance of the word comes from the shield of Zeus, which was depicted as an aegis, a cloak made of goat skin, and it was believed that when he shook it vigorously, it caused a storm.

When conditions are ideal, these clouds can become very dense and tall, creating conditions for a storm. Thermal instability, meaning the presence of warm air below and cold air above, helps in this process.

Finally, storms are often accompanied by heavy rain, hail, and sometimes even tornadoes, depending on the strength and conditions of the storm.



Thunders and lightning

During a storm, thunder and lightning can be observed. Lightning is caused by the rapid discharge of electrical energy between positively and negatively charged areas within the cloud or between the cloud and the ground. Thunder is caused by the rapid expansion and contraction of air that is suddenly heated by the lightning.

Question: Sometimes lightning appears first and then thunder is heard. Why does this happen?

Answer: This happens because the speed of light is greater than that of sound, so lightning is seen first and then thunder is heard.

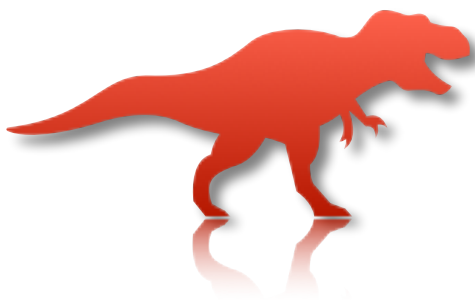


Dinosaurs

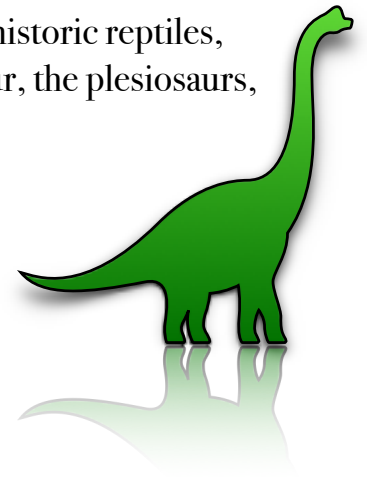
Dinosaurs were vertebrate animals that dominated the Earth's ecosystem for about 165 million years. They first appeared 230 million years ago. At the end of the Cretaceous period, 65 million years ago, the dinosaurs went extinct, marking the end of their dominance on the planet. Today's birds are direct descendants of theropod dinosaurs, and as such, they are considered the only group of dinosaurs that survived.

Since the first dinosaur was discovered in the 19th century, fossilized dinosaur skeletons have become a major feature in museums around the world. In total, paleontologists have discovered more than 500 different genera of dinosaurs. Dinosaurs have become a part of global culture and remain consistently popular, especially with children. They have appeared in novels, in movies like Jurassic Park, and in comics, while new discoveries about dinosaurs are regularly covered by the media.

The term "dinosaur" is sometimes informally used to describe other prehistoric reptiles, such as the pelicosaur Dimetrodon, the pterosaur, the marine ichthyosaur, the plesiosaurs, and the mosasaurs. However, practically none of these were dinosaurs.

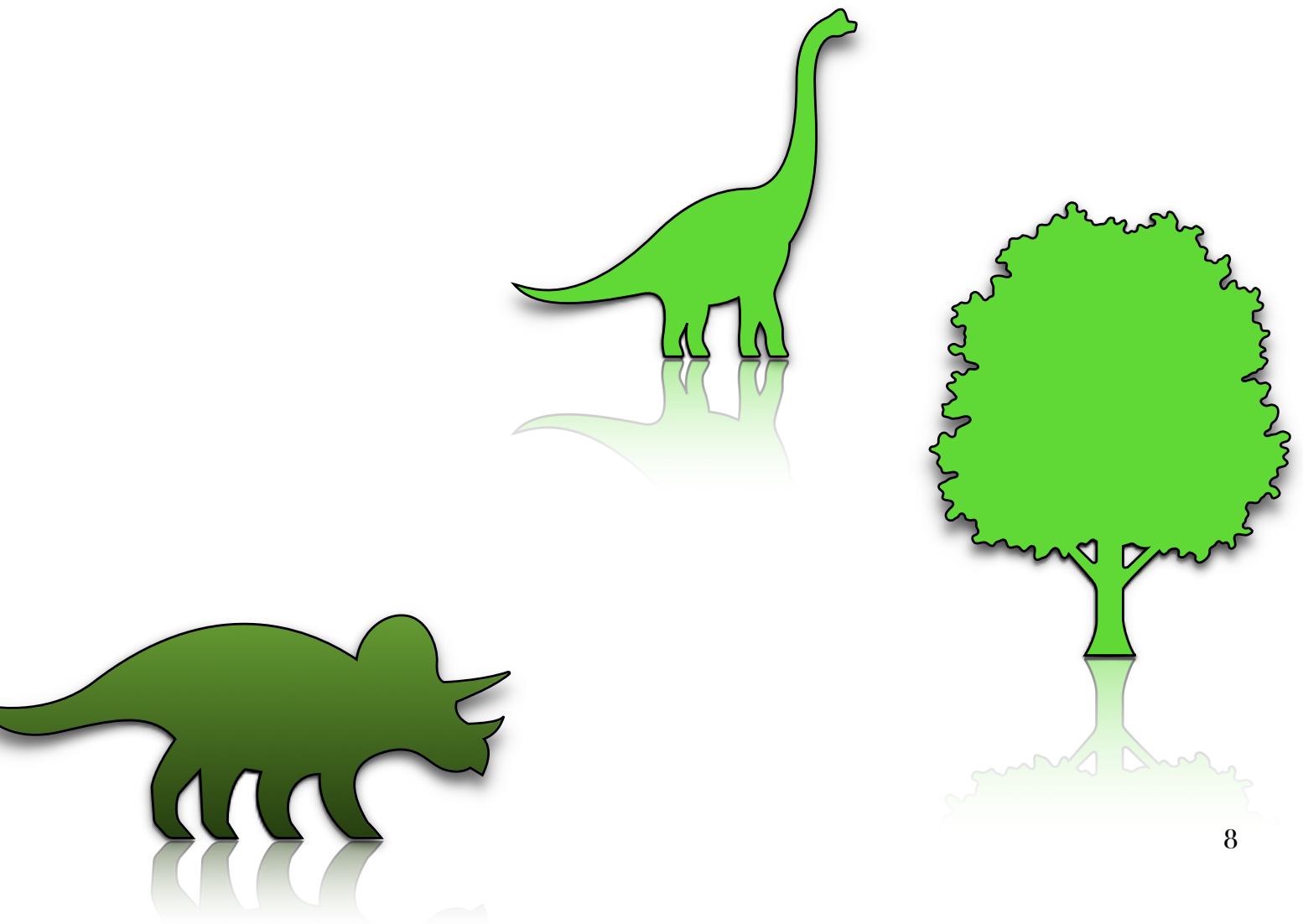


Πηγή: Wikipedia



Why don't dinosaurs exist today?

The prevailing theory for the extinction of the dinosaurs is the impact of a massive asteroid or comet on Earth about 66 million years ago, at the end of the Cretaceous period. This event, known as the Cretaceous-Tertiary (K-T) extinction, caused enormous changes in Earth's environment, such as massive wildfires, tsunamis, and a "nuclear winter" (a long-term dark and cold period due to the accumulation of dust and gases in the atmosphere). These changes severely affected photosynthesis and led to a mass extinction of many species, including the dinosaurs.



Craft

Materials:

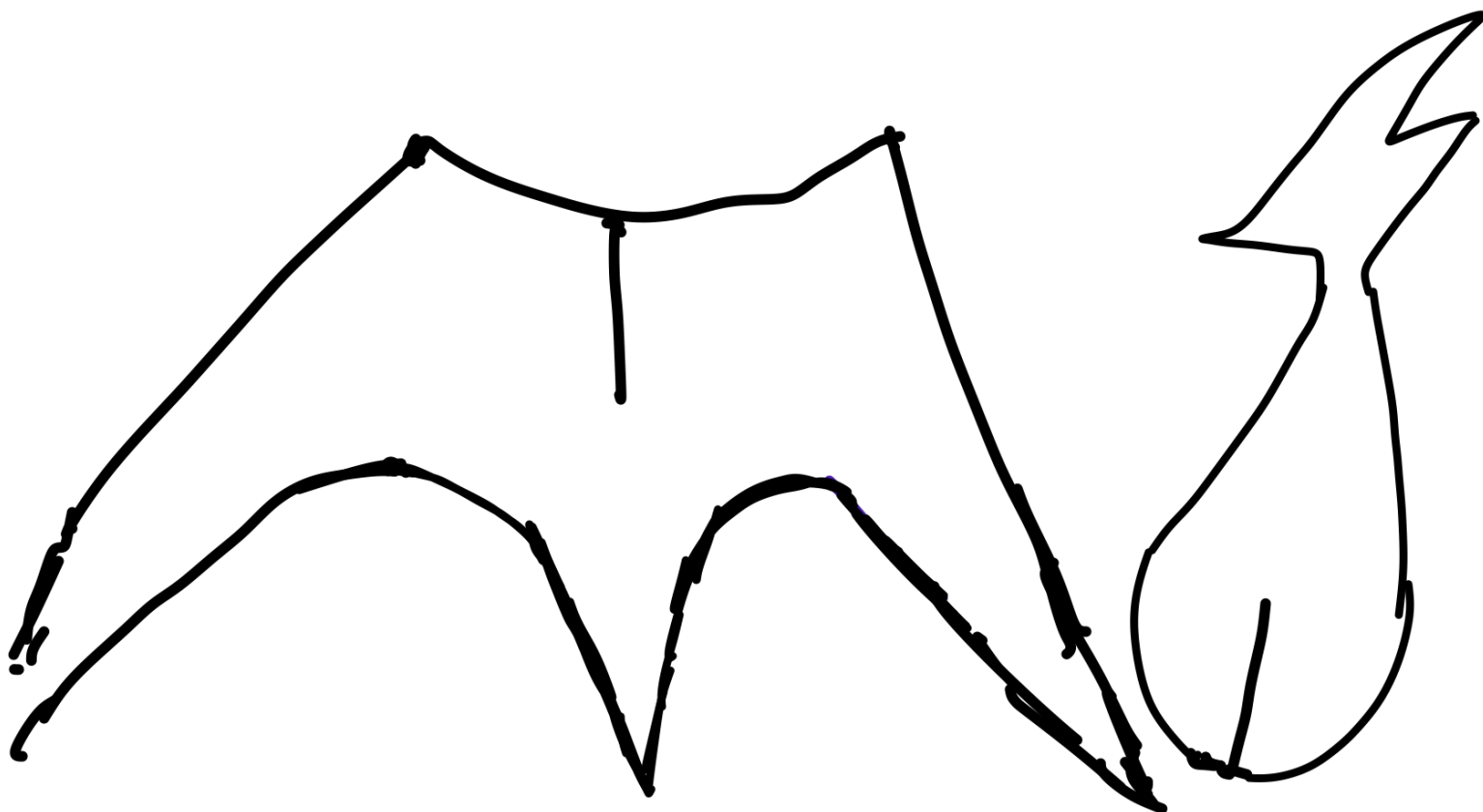
- Markers/colored pencils
- Scissors
- 1 fine black marker



Instructions:

(Use the designs from this page)

1. Cut out the wings and body of the pterodactyl.
2. Color the wings and body with colors of your choice.
3. Attach the wings to the body.
4. Use the black marker to draw the dinosaur's eyes.



Cars

Cars are motorized vehicles primarily designed for transporting people. They have become a vital part of modern life, used for personal transportation, commuting, and recreation. Here's a general overview:

Main Parts of a Car

1. **Engine:** The heart of the car, it powers the vehicle.
 - **Types:** Internal combustion engine (gasoline/diesel), electric motors, or hybrid systems.
2. **Chassis:** The structural framework supporting the car's body and components.
3. **Transmission:** Transfers power from the engine to the wheels, enabling motion.
 - **Types:** Manual, automatic, or CVT (Continuously Variable Transmission).
4. **Wheels & Tires:** Enable movement and maintain grip on various surfaces.
5. **Body:** Protects passengers and gives the car its shape.

Types of Cars

1. **Sedans:** Traditional cars with a separate trunk.
2. **SUVs (Sport Utility Vehicles):** Larger vehicles suitable for families and off-road driving.
3. **Hatchbacks:** Smaller cars with a rear door that opens upwards.
4. **Electric Cars:** Powered entirely by batteries, producing no emissions (e.g., Tesla).
5. **Hybrids:** Use a combination of an electric motor and a combustion engine.

Fuel Types

1. **Gasoline:** Most common, provides good performance.
2. **Diesel:** Better for heavy vehicles, offering more torque.
3. **Electric:** Environmentally friendly but requires charging infrastructure.
4. **Hydrogen Fuel Cells:** Emerging technology with zero emissions.

Interesting Facts About Cars

- The first car was created by Karl Benz in 1885 (the Benz Patent-Motorwagen).
 - Cars have evolved with features like airbags, GPS, and autonomous driving.
 - The fastest car in the world as of now is the Bugatti Chiron Super Sport 300+, with a top speed of over 300 mph.

Importance of Cars

- Provide personal mobility and freedom.
- Essential for commerce and transportation of goods.
- Contribute to urbanization and economic growth.



Electric Cars

An electric car (EV) is a car that uses electrical energy stored in rechargeable battery packs (commonly known as batteries). Electric cars use electric motors instead of internal combustion engines (ICE)

One of the most well-known companies that make electric cars that can even drive themselves is Tesla.

Tesla cars have the capability of autonomous driving through the Autopilot system and the more advanced Full Self-Driving (FSD) version. Autopilot allows for automatic lane keeping, cruise control, and other assistive functions. The Full Self-Driving option offers more advanced capabilities, such as automatic lane changes, autonomous parking, and summoning the car. However, despite its name, FSD technology does not allow for fully autonomous driving without driver supervision. Drivers must always remain attentive and be ready to take control of the vehicle. The autonomous driving capability of Tesla through the Autopilot and Full Self-Driving (FSD) systems is available in many countries, but the extent and functionality of the technology may vary due to local laws and regulations. In the United States, autonomous driving features are more advanced and widely available. In other countries, such as many parts of Europe, China, and Canada, Autopilot and FSD are also available but with some restrictions due to local regulations. It is important to note that governments and regulatory authorities continue to review and adjust regulations for autonomous vehicles, and thus the availability, and functions of Autopilot and FSD may change over time.

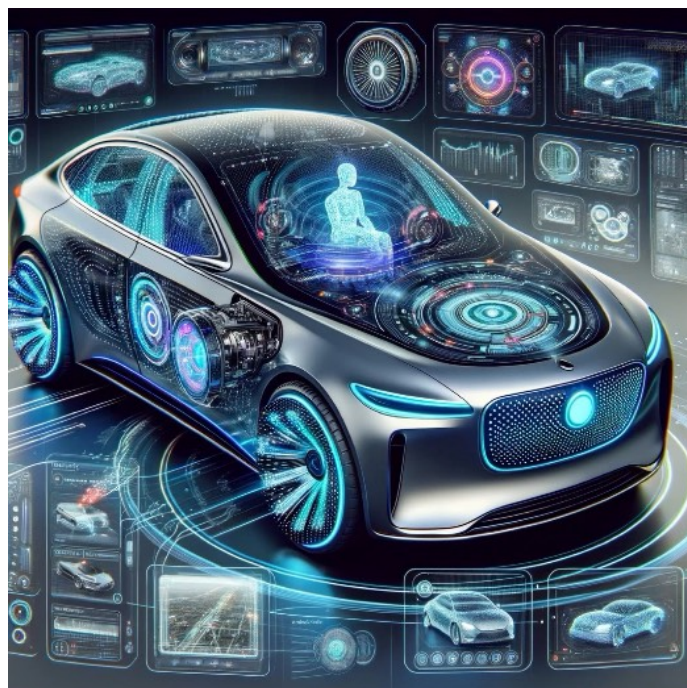


On the other hand, cars that use both (electric motors and internal combustion engines) are called hybrid cars and are usually not considered pure electric vehicles. Battery-powered cars that can be charged and used without internal combustion engines constitute a type of battery electric vehicles (purely electric), and they do not consume fuel.



Cars in the future

In the future, it is predicted that there will be cars like those in the following photos. In the first image, we see a car with three seats in the front that drives itself. However, for safety, there is a steering wheel. Can you imagine what the other car does? Of course, these are not real photos published by scientists, but maybe someday in the distant future, something similar will be invented. Who knows?



Quiz!

What do you remember and have learned from the previous pages of the magazine?

1. Is the wether unpredictable?

A. Sometimes

B. Yes

C. No

2. How many years did the dinosaurs exist?

A. 165 million years.

B. 230 million years.

C. 100 million years.

3. Can a simple electric car drive by itself?

A. Yes.

B. Yes, but only in a few countries.

C. No.

4. What causes thunder?

A. From the rapid expansion and contraction of the air.

B. From the lightning strike.

C. From the large clouds.

Answers:

1. = B
2. = A
3. = C
4. = A

Sneak Peak!

Scientific Answers 4

Issue: November 2024

In the next issue of our magazine, you will learn various things about caves, robots, and another topic...



Scientific Answers

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In our magazine, you will find useful information about the weather, dinosaurs, and cars. You will also discover other things you didn't even know existed! Additionally, in each issue of the magazine from now on, we will write a few words about the next issue on the penultimate page. Keep the answers in mind, because there's a quiz too!