

# Let's take a quick quiz!

Questions taken from SF Chronicle's climate quiz!





# When will the worst effects of climate change be irreversible?

A. 2030

B. 2025

C. 2050

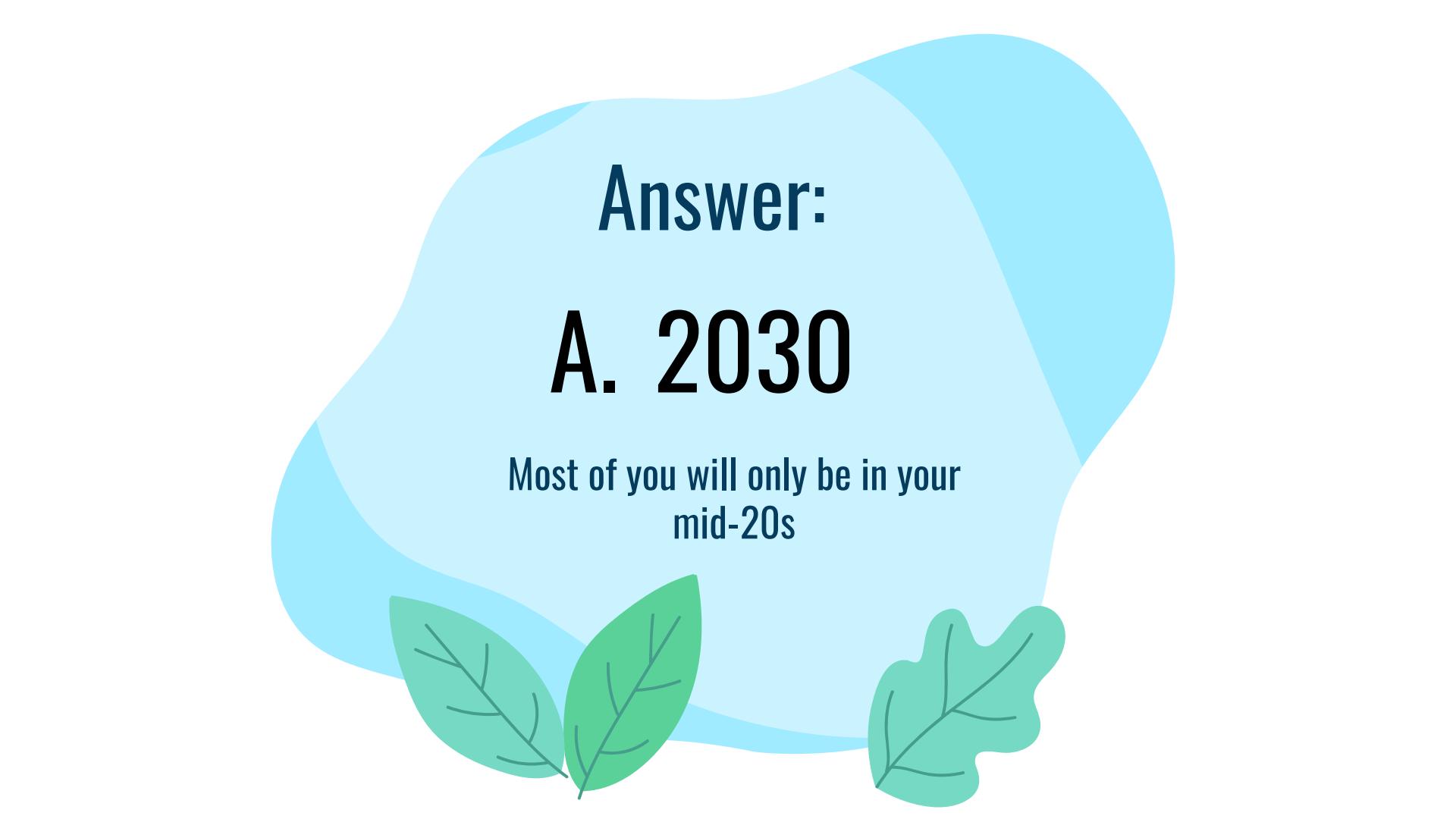
D. 2070



Students, drag the icon!



<https://projects.sfchronicle.com/2019/climate-quiz/>

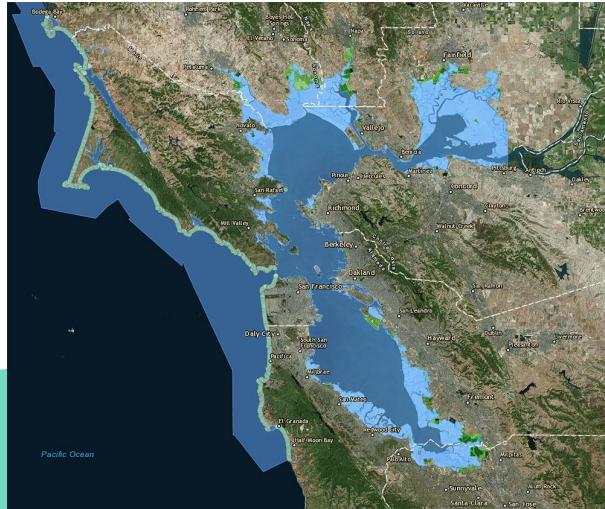


**Answer:**

**A. 2030**

Most of you will only be in your  
mid-20s

# What is the maximum level of possible sea level rise that may occur in California by the next century?



- A) Up to 1 foot
- B) Up to 2 meters
- C) Up to 3 meters
- D) Up to 18 Inches

<https://projects.sfchronicle.com/2019/climate-quiz/>



Students, drag the icon!



AT&T Park by 2100

# Answer:

## C. Up to 3 meters

Along with other coastal states around the nation, California is predicted to see its coastline retreat significantly by 2100, according to a state assessment released in 2018.

# How much financial damage are rising seas expected to cause in California by 2100 if no action is taken?

- A. \$10 billion
- B. \$18 billion
- C. \$32 billion
- D. \$50 billion

<https://projects.sfchronicle.com/2019/climate-quiz/>



Students, drag the icon!





Answer:

B. \$18 Billion

If rising seas flood urban centers, damages could climb to nearly \$18 billion



# What percentage of California's greenhouse gas emissions come from transportation?

- A. 32%
- B. 56%
- C. 28%
- D. 40%



<https://projects.sfchronicle.com/2019/climate-quiz/>

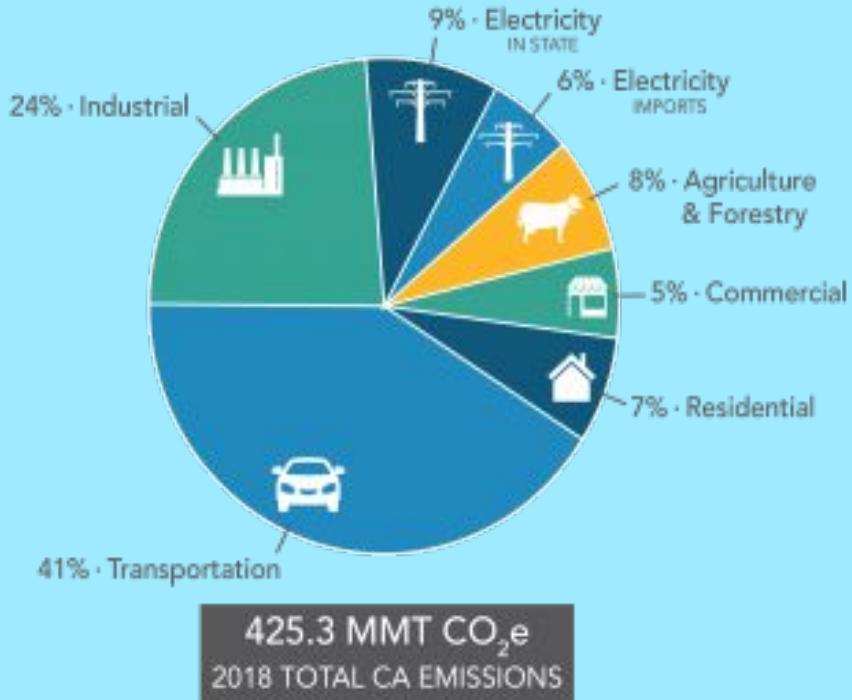


Students choose an option

# Answer:

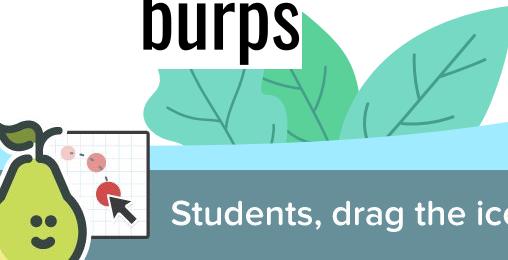
## D. 40%

Transportation accounts for the largest share of California's annual tally of greenhouse gas emissions. These emissions come mostly from passenger vehicles.



# California wants 5 million of what Green Technology to be in place by 2030?

- A. Wind Turbines
- B. Face masks for cows to capture methane from their burps
- C. Emission-Free vehicles
- D. Solar Panels



Students, drag the icon!



<https://projects.sfchronicle.com/2019/climate-quiz/>

Answer:

# C. Emission Free Vehicles

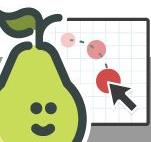
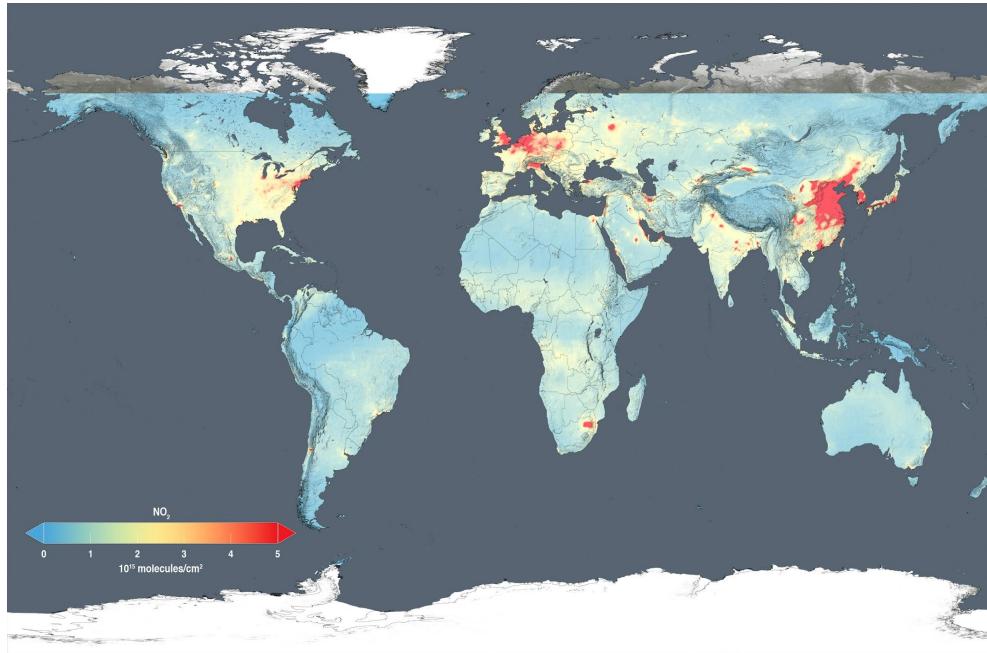


In January 2018, Governor Jerry Brown signed an order establishing the goal of getting 5 million zero-emission Vehicles such as electric cars on California's roads by 2030. In September 2020, Governor Newsom developed on this and mandated that all new vehicle sales must be emission-free by 2035.

<https://projects.sfchronicle.com/2019/climate-quiz/>  
<https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-drastically-reduce-demand-for-fossil-fuel-in-californias-fight-against-climate-change/>

What's the one country that emits more carbon dioxide than the U.S.?

- A. China
- B. Russia
- C. Saudi Arabia
- D. India



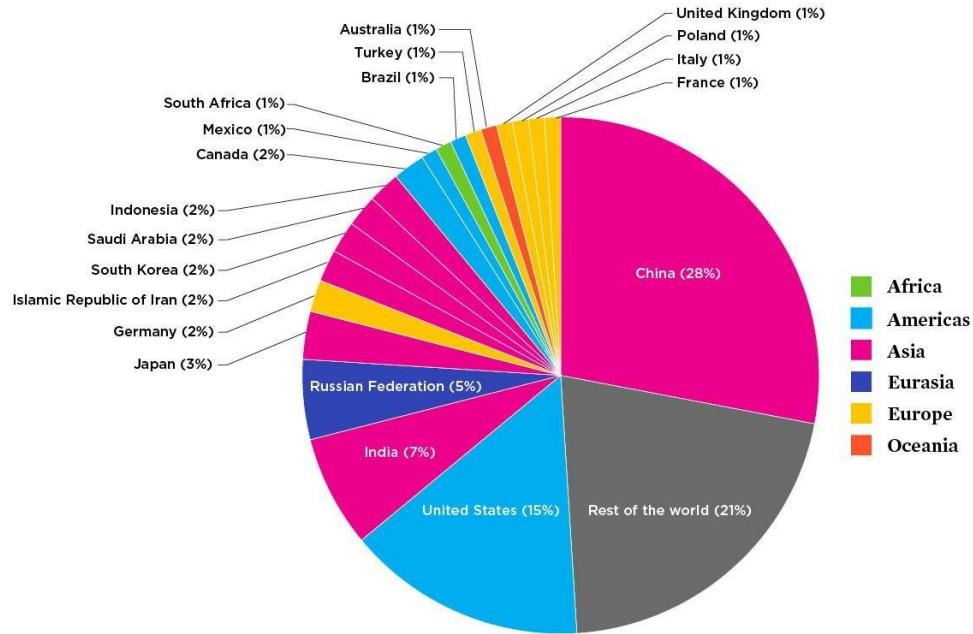
Students, drag the icon!



# Answer:

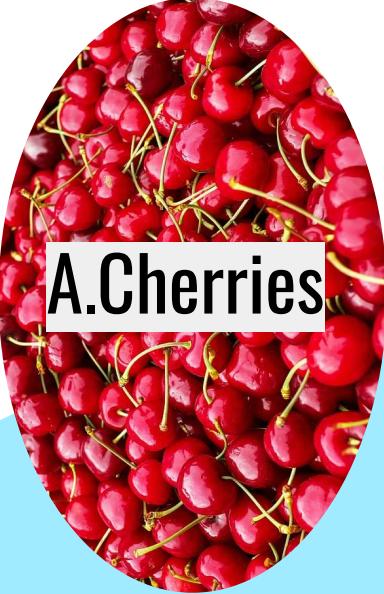
# A. China

The United States used to produce more climate-warming gases than any other country, but China took that mantle in 2006. As of August 2020, China produces 10.07 Gigatons of CO<sub>2</sub> to USA's 5.41 Gigatons.

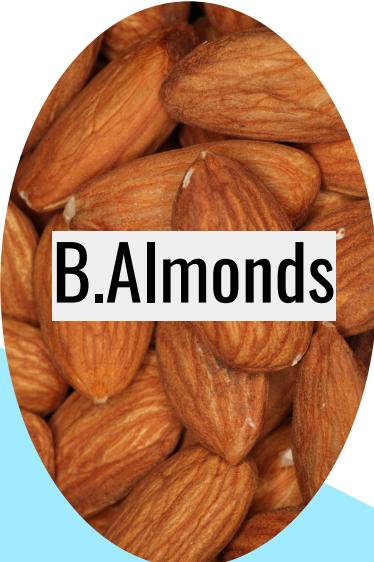


© 2020 Union of Concerned Scientists  
Data: Earth Systems Science Data 11, 1783–1838, 2019

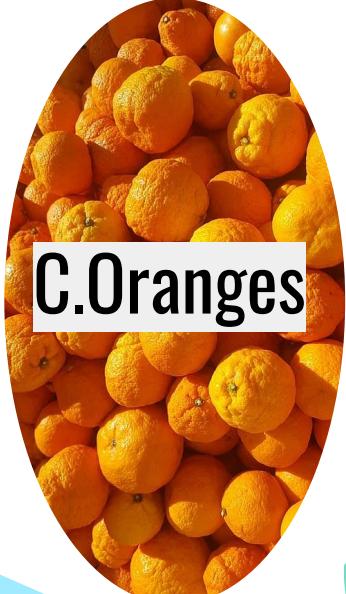
If we keep global temperature increases to under 3.6 degrees Fahrenheit,  
which of the following California crops will still fare the worst?



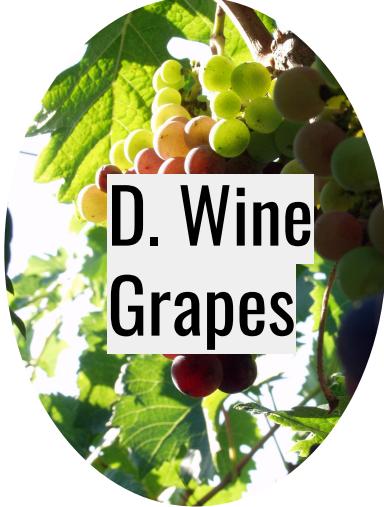
A. Cherries



B. Almonds



C. Oranges



D. Wine  
Grapes



Students, drag the icon!



# Answer:

# A. Cherries



Crop yields will be hurt virtually everywhere in California even if we hit the internationally accepted target of 3.6 degrees Fahrenheit of warming. Cherry trees produce the best crop after a “cooling session” during the winter, which allows the trees to rest and prepare for blooming in the spring.

# Citations

Cassidy, Megan, and Kate Galbraith. “Quiz: How Much Do You Know about Climate Change in California?” *The San Francisco Chronicle*, San Francisco Chronicle, 15 Sept. 2019, [projects.sfchronicle.com/2019/climate-quiz/](http://projects.sfchronicle.com/2019/climate-quiz/).



# Problems



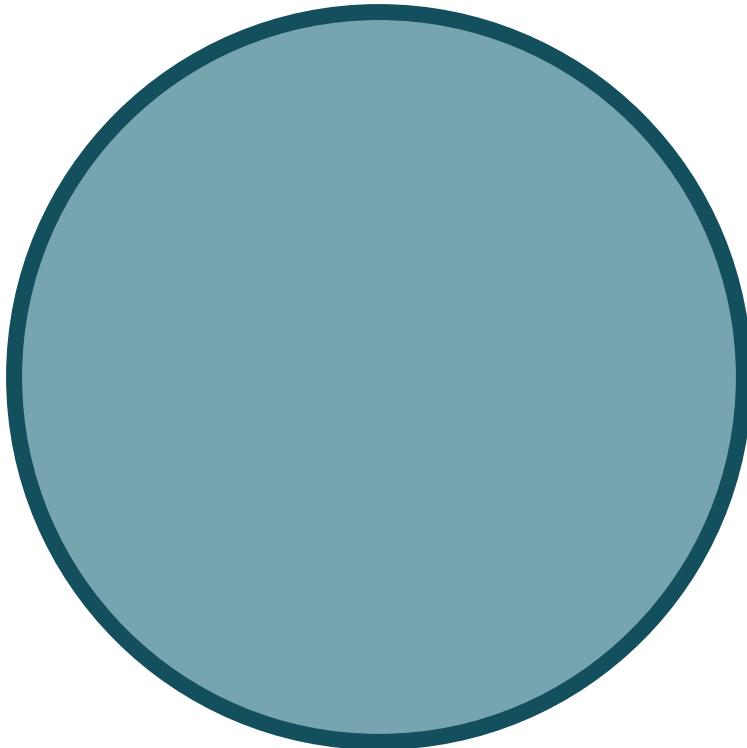


# Why Climate Change Happens



# 01

In 2051, 30 years from now, how old would you be? Draw an image of what you think Earth will look like in 2051.



Students, draw anywhere on this slide!

# 01 Reflection

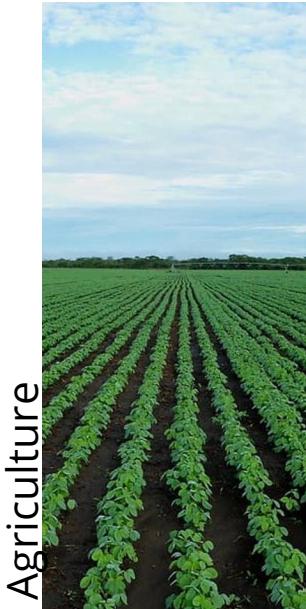
Think, is your view positive or negative? Do you imagine a planet devastated by a warming climate or do you see a bright future where climate change has been slowed? How do you fit into this future? If your drawing is positive: how did we stop climate change, and if it is negative: what can we do to prevent it?

# 02

Order the US greenhouse gas emitters (shown below) from most to least emissions produced.



Industry



Agriculture



Transportation



Electricity



Commercial

Students, drag the icons!

1 2 3 4 5

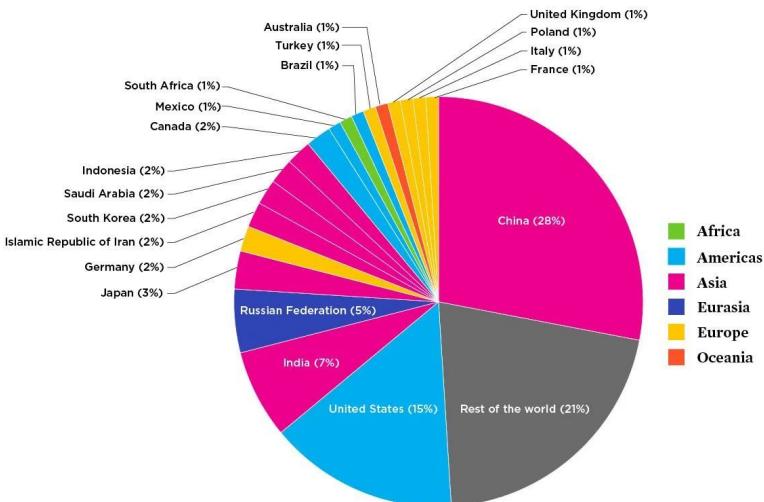
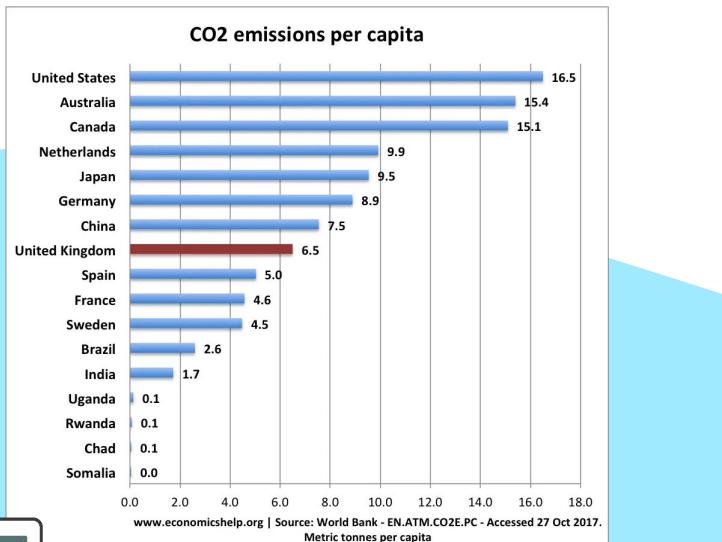
# 02 Answer

From most to least: Transportation, Electricity, Industry, Commercial, Agricultural

Transportation is the largest greenhouse gas emitter in the US, making up 28% of all the greenhouse gasses released. Carbon emissions from electricity are declining though solar and wind powered generators, while transportation emissions rise because more people are driving. Advancement in electric cars, the use of lower-carbon fuels, and public transportation will hopefully decrease carbon emissions in the future.

# 03

An average person in the United States creates 16.5 metric tons of CO<sub>2</sub> while a person in China creates 7.5 metric tons. Meanwhile, the US, as a whole, contributes 15% of the world's greenhouse gas emissions while China, as a whole, contributes 28% of the world's GHG emissions. What does this tell you about the United States and China's contribution to GHG emissions?



© 2020 Union of Concerned Scientists  
Data: Earth Systems Science Data 11, 1763-1838, 2019

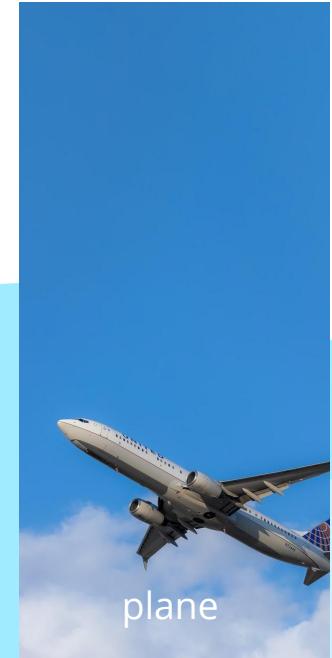
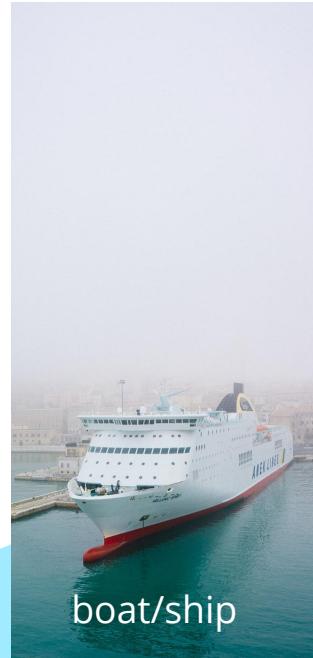
Students, write your response!

# 03 Answer

Even though China, having the highest population in the world at 1.4 billion people, produces more GHG emissions than the United States, which has a population of about 330 million a person in the United States will produce more GHG on average than a person in China. What does this mean for us and

# 04

Drag your dot to the mode of transportation that you think creates the most greenhouse gasses.



Students, drag the icon!



# 04 Answer

Cars contributes the most to GHG emissions!

From most to least: cars, trucks, airplanes, trains, boats

Cars individually don't emit as much GHG as a truck or airplane. However, generally, cars contribute the most because of the sheer amount being used on a daily basis. For example, you wouldn't take an airplane to go to school, would you?

# 05

True or False: Do light bulbs generate CO<sub>2</sub>?

- 1) True
- 2) False



Students choose an option

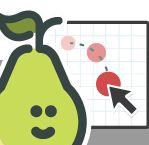
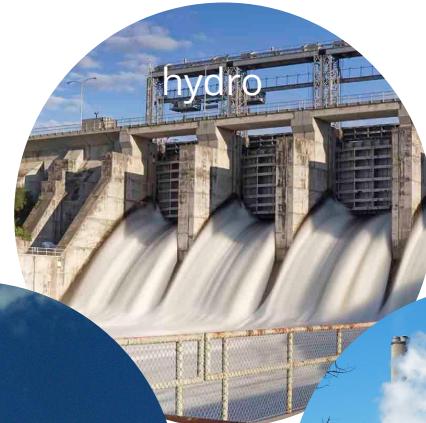
# 05 Answer

True!

Yes, light bulbs do contribute to carbon emissions through the electricity they consume. LED light bulbs are more energy efficient than incandescent lights, consuming up to 75% less energy.

# 06

With a star, choose all the options that can act as renewable sources of energy.



Students, drag the icons!



# 06 Answer

Geothermal heat, solar, wind

Hydro is not considered a renewable energy because it comes with its own environmental cost. Dams can drastically alter a natural habitat surrounding the river and negatively affect the migration and reproduction pattern of local wildlife.

Geothermal energy comes from the Earth's core and the heat that is produced. Although it's considered renewable, it is difficult to find a source that produces enough heat to generate energy nor is it as plentiful as solar and wind energy.

# 07

How many liters of water is needed to produce the cotton needed to make a single cotton shirt?



Students, enter a number!

# 07 Answer

2,700 Liters! This is enough water for a single person to drink in 900 days or about 250 times as big as a basketball.

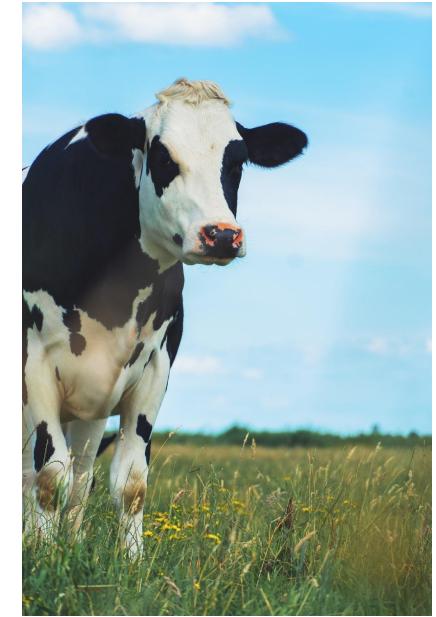


The textile industry uses millions of gallons of water everyday, containing substances such as formaldehyde, chlorine and heavy metals that contribute to aquatic life toxicity.

# 08

How much methane does a cow produce a day?

- a) ~1000 liters
- b) ~50 liters
- c) ~500 liters
- d) None, how does a cow make methane??



Students choose an option

# 08 Answer

500 Liters!

A single cow can produce 250 to 500 liters of methane a day from burping and farting. Other livestock, like sheep, also release methane into our atmosphere. Livestock are responsible for creating ~14 percent of all human related greenhouse gasses (this includes the fertilizer and the land use).

# Citations

E. (2017, July 10). Home Heating & Energy Blog. Retrieved January 23, 2021, from  
<https://evergreenhomeheatingandenergy.com/blog/146142>

G. (2020). Impact of the Textile Industry on the Environment. Retrieved January 23, 2021, from  
<https://www.greenofchange.com/textile-pollution>

Pettinger, T. (2019, October 25). Top CO2 polluters and highest per capita. Retrieved January 23, 2021, from  
<https://www.economicshelp.org/blog/10296/economics/top-co2-polluters-highest-per-capita/>

U. (2008, July 16). Each Country's Share of CO2 Emissions. Retrieved January 23, 2021, from  
<https://www.ucsusa.org/resources/each-countrys-share-co2-emissions>

U. (2020, September 23). Transportation is now the largest source of greenhouse gas emissions. Retrieved January 23, 2021, from  
<https://usafacts.org/articles/transportation-now-largest-source-greenhouse-gas-emissions/>

W. (2013, January 16). The Impact of a Cotton T-Shirt. Retrieved January 23, 2021, from  
<https://www.worldwildlife.org/stories/the-impact-of-a-cotton-t-shirt>

Watts, G. (2019, August 6). The cows that could help fight climate change. Retrieved January 23, 2021, from  
<https://www.bbc.com/future/article/20190806-how-vaccines-could-fix-our-problem-with-cow-emissions>

# Consequences



# Conclusion

