

# A few words regarding copyright...

## Hi there!

We're glad you're using this resource. Continue to check our website ([realsciencechallenge.com](https://realsciencechallenge.com)) to find more resources. And, sign up for our newsletter to receive updates on materials that will be available soon.

We spend countless hours writing, researching, editing and generating graphics/charts for each question. We want to continue creating useful content for you to use - however, we also want to ensure we are being fairly compensated for it.

Therefore, below are the terms and conditions for use of our materials.

## What is allowed:

- photocopying our content for your students to use.
- posting a copy of our content (ie. questions, rubrics) on a password protected site for your students to access and/or complete.
- copying our questions into your tests or assignments. Please give credit in this case.

## What is not allowed:

- Selling our content.
- Repackaging our content in your own materials and then selling it. NOTE: giving credit to us still does not make this okay.
- Distributing and/or posting our content online (for example, on social media or a blog).

Thank you for supporting us. And, we look forward to helping you with your teaching practice. Please feel free to reach out to us if you have any questions or suggestions.

Sincerely,

REAL Science Challenge

## Intro to Engaging in Argument Using Evidence



Our science curriculum requires students to engage in argument from evidence. Consider this: when it comes to evidence, not all individuals may look at and interpret it the same way. For example, although there is overwhelming evidence that climate change due to human activity exists, not everyone interprets the evidence the same way. Some interpret the evidence one way and draw one conclusion; others interpret the same evidence another way and draw a different one.

*When we draw a conclusion from evidence, we are writing and engaging in an argument. It is necessary for students to practice writing arguments effectively.*

### The CER Framework

A strong argument can be written using the CER framework. This framework outlines the 3 parts that make up a strong argument:

1. **Claim** - the conclusion or answer to a research question.
2. **Evidence** - the data and observations that support the claim, and
3. **Reasoning** - the scientific ideas that explain the evidence in relation to the claim.

### Bee Stings & the CER Framework

For example, one researcher once set out to answer the question, “*where is the most painful area to get stung by a bee?*” This researcher designed an experiment, recorded observations, and finally, came up with the following argument:



Claim	Two of the most painful sting locations were the nostril and the upper lip.
Evidence	According to the results from the pain scale used by the researcher, the average pain score at these locations were 9 and 8.7, respectively. For the
Reasoning	most painful locations, sting depth may be important, because the face has some of the thinnest skin on the human body. Furthermore, the nose and lips are openings to our bodies - so they may also have lower pain thresholds for protection.



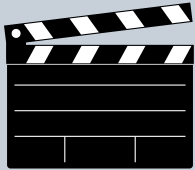
## Practice: Identifying CER Statements

For each of the following arguments below, circle the claim, underline the evidence, and draw a bracket around the reasoning.

**Claim** → *The conclusion or answer to a research question*

**Evidence** { *The data and observations that support the claim*

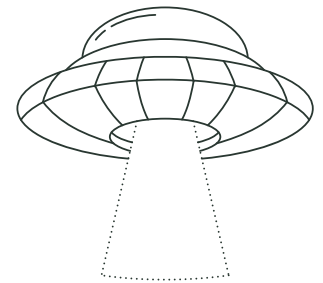
**Reasoning** [ *The scientific ideas that explain the evidence in relation to the claim.*



### What's your take?

Who is the most successful director in the modern age of movie making?

Steven Spielberg is the most successful movie director in the modern age. Spielberg has directed 37 films which have garnered 32 Oscar wins and grossed a total of \$10.6 billion in box office sales. Spielberg is successful because he continually uses the latest techniques and technologies to ensure his movies are always of the moment and he is able to constantly create original and fresh movies that speak to viewers of all ages and demographics.



James Cameron is the most successful movie director in the modern age. Cameron directed both Avatar - which is the highest grossing film of all time - and Titanic, which was the 1st movie to gross \$1B and the only movie to spend 15 consecutive weeks at No 1. Cameron is able to create stories and worlds that connect to deeper human themes and, therefore, audiences continue to watch those movies over and over.

The Russo brothers are the most successful movie directors in the modern age. Although they have only made 7 films, their films make an average of \$980M - the highest average amongst any director. The success of Russo brothers is largely due to their work in creating the Marvel Cinematic Universe, where they were able to stitch together multiple characters and storylines to keep its fans constantly engaged.

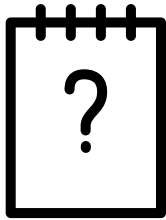


# The Big Why

We want students to be *CHALLENGED* in science.

We want students to think *BIG*.

We want student to become great science thinkers and doers by connecting science to *REAL LIFE*.



However, how do we get students to practice science skills like "**engaging in argument from evidence**" in everyday life? We use the CER (Claim, Evidence, Reasoning) framework. But, how can our students practice it?

This is why we came up with our **CER Starter Kit**.

## ***CER Starter Kit - MS Edition***

We searched the internet for some interesting facts and data that connect with curricular content. Then, we generated our own fun graphs and came up with templates that help students practice writing strong scientific arguments.

Our worksheets help students...

1. identify the difference between a claim, evidence, and reasoning,
2. get started with the CER framework through prompts and fill-in-the-blanks, and
3. get more practice using CER by providing fun graphs from a variety of content areas.

We've produced 7 sets of worksheets complete with engaging graphs, prompts, fill-in-the-blanks, and sample responses to help your students get practice "engaging in argument from evidence" by writing CER statements..

Best of all, most of our worksheets (6 out of 7) are **connected to middle school curricular content**. Unfortunately, our worksheet that helps introduce writing CER statements uses Box Office Sales data, which we were unable to find a curricular content connection to ;)

Visit our website **realsciencechallenge.com** to get a full copy of *CER Starter Kit - MS Edition* today.