Claim Evidence Reasoning NOW Symposium

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Agenda

Overall Driving Question:

How can we support our students in crafting evidence based arguments in science and across the curriculum?

Agenda

- Look at an example of evidence based argumentation
- Use I DO, WE DO, YOU DO scaffolding
- Use CER to justify the correct answer on released OAA questions
- Discuss classroom implementation
- Analyze standards across the curriculum

Agenda

Learning Targets

- Identify claim, evidence, reasoning.
- Use evidence and reasoning to support a claim.
- Plan for classroom implementation
- Analyze standards across the curriculum

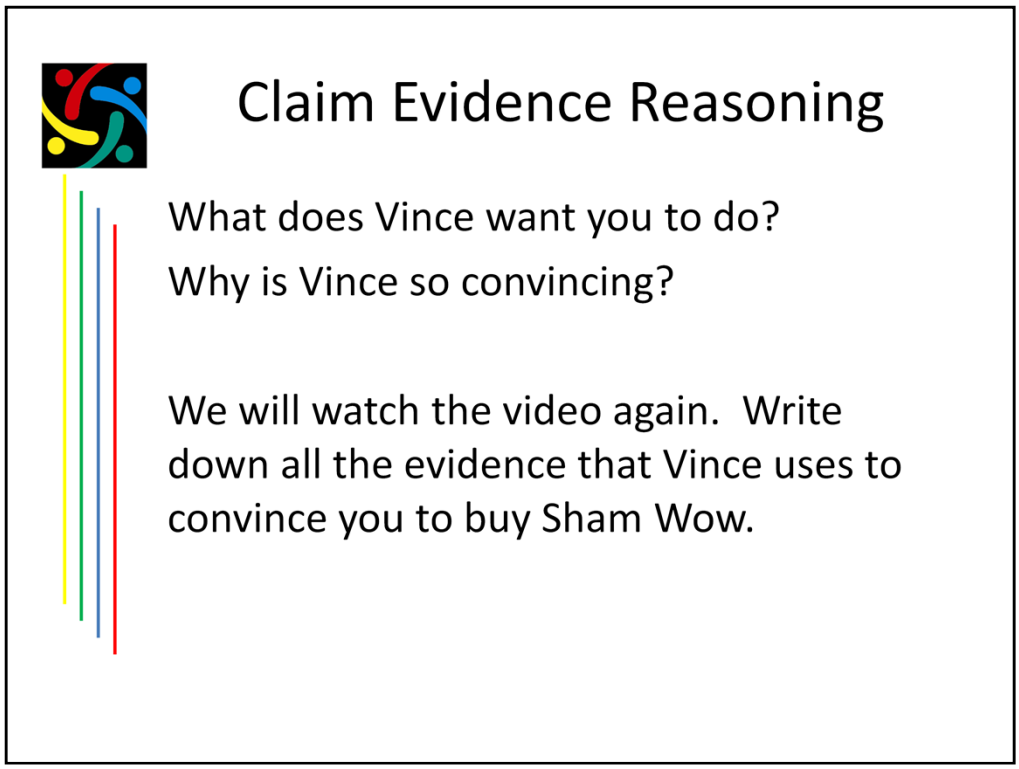
Group Norms

Use technology appropriately and respectfully
Take breaks as needed
Be conscious of “air time”
Keep side bars to a minimum
Comments & questions are welcome
(constructive, on topic)

Claim Evidence Reasoning

http://www.youtube.com/watch?v=Ns4mnmNBk1Y

Click on the live link to play video



What claim is the presenter making? – *that you should buy Sham Wow*

Why is the presenter so convincing?

He shows you multiple examples of how it can be used.

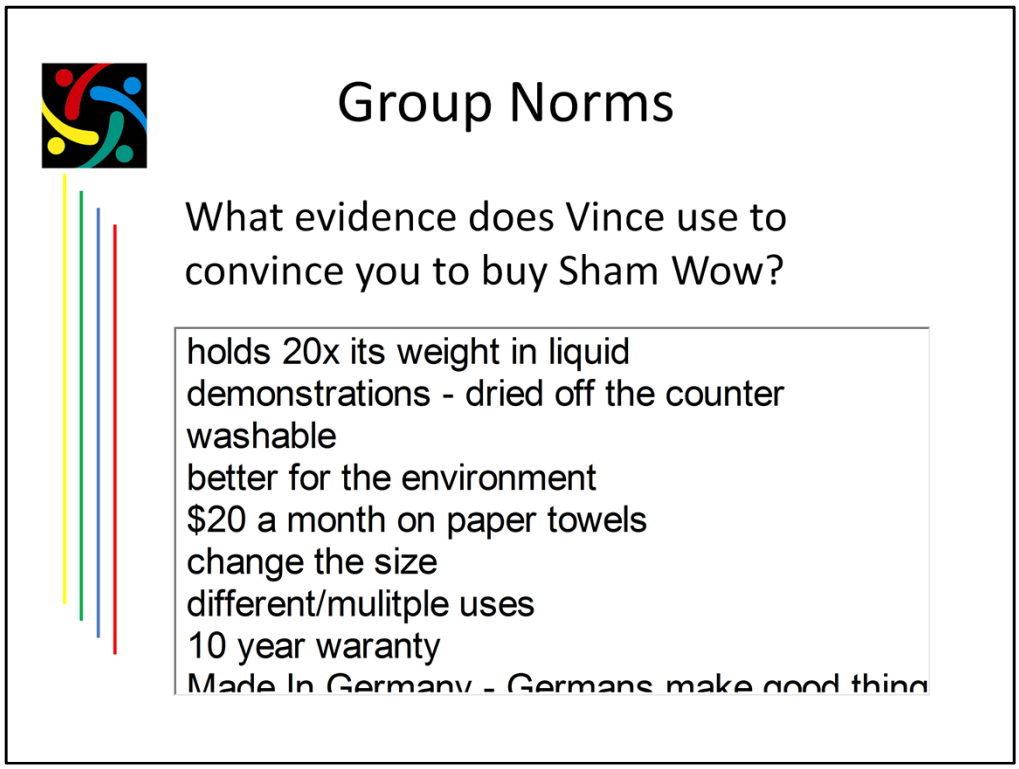
He does on camera experiments

The presenter is giving you evidence to support his claim that you should buy Sham Wow

Claim Evidence Reasoning

What evidence does Vince use to convince you to buy Sham Wow?

http://www.youtube.com/watch?v=Ns4mnmNBk1Y



Works wet or dry

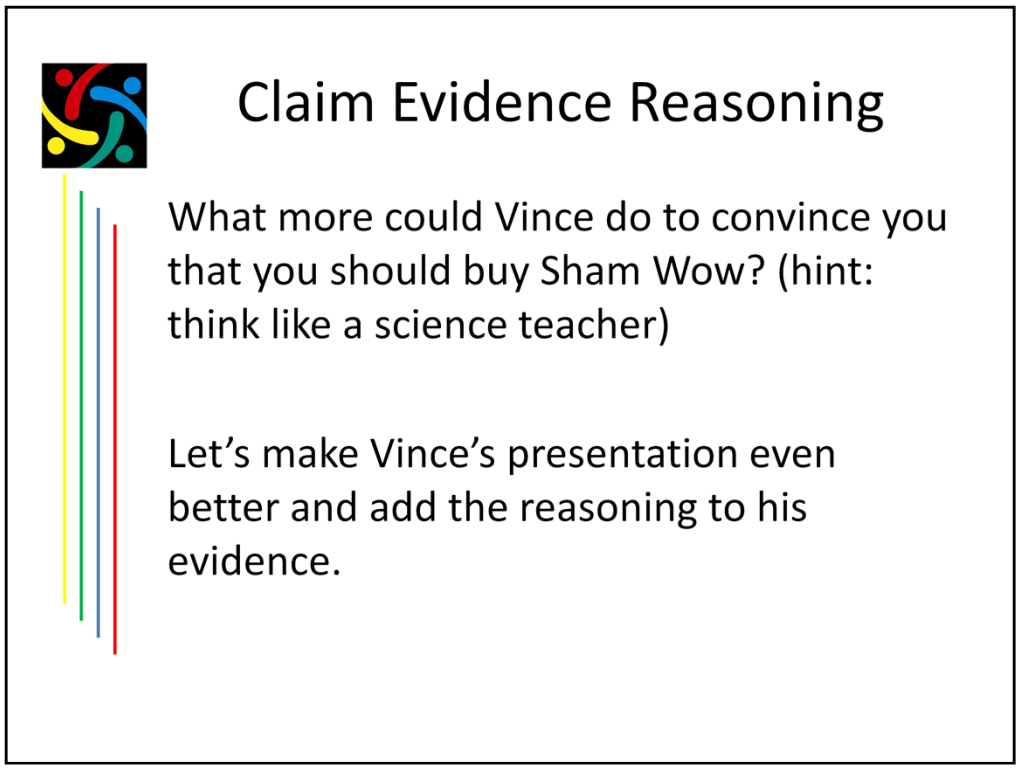
Multiple uses (house, boat, car, RV, bath mat, towel, dry sweaters)

Holds 20x its weight in liquid

Washable

Make in Germany

Carpet experiment



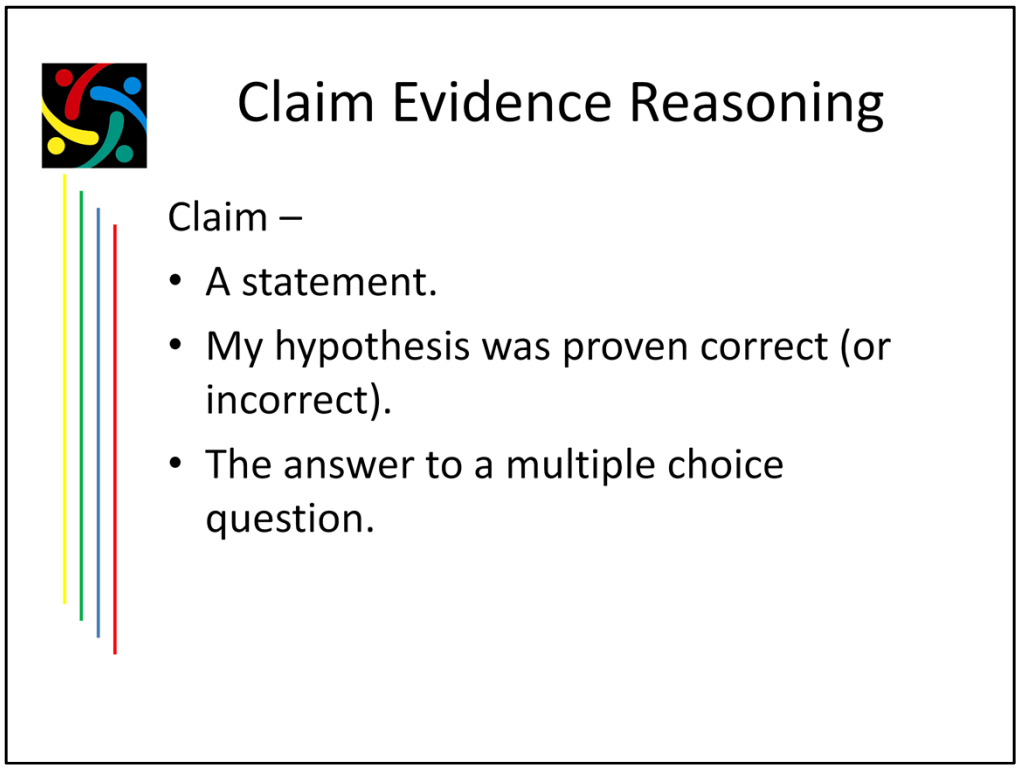
What more could Vince Do:

Tell me why it works. What is the reason that Sham Wow Works! Scientifically Speaking, why is this type of towel better than a paper towel or a terrycloth towel?

Claim Evidence Reasoning

Claim Evidence Reasoning is a framework for constructing scientific explanations.

- Claim – the main idea
- Evidence – the facts that support the claim
- Reasoning – explanation of the logic behind why the facts support the claim



Examples of statements:

I want to vote for candidate A.

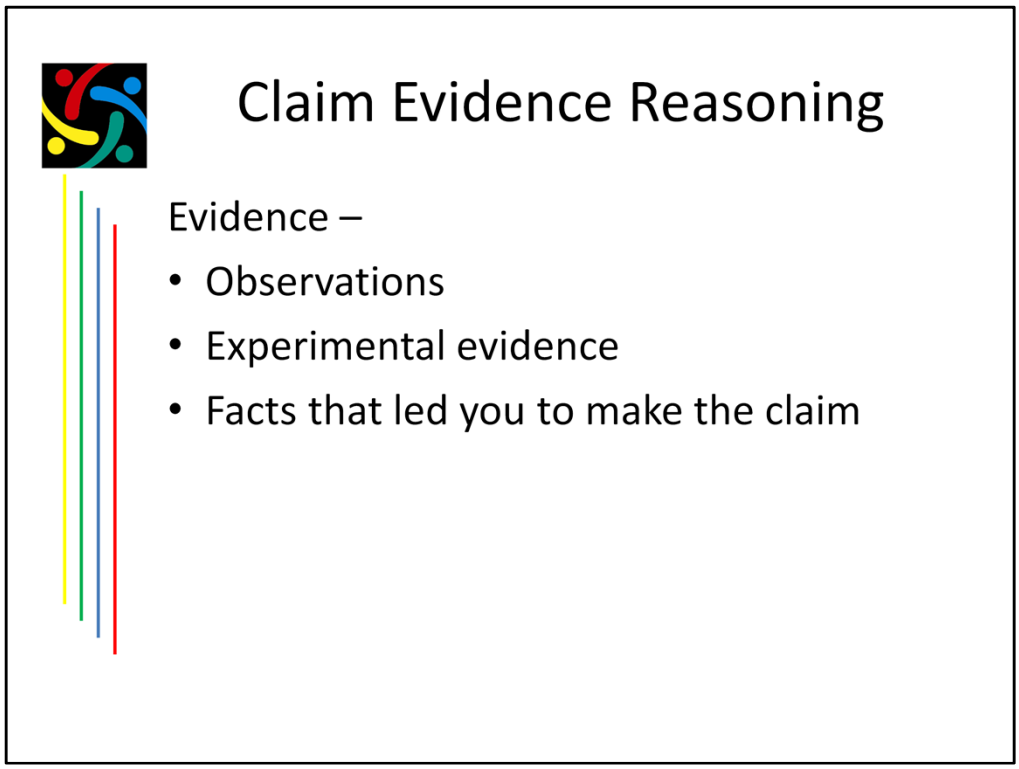
The national park service should commit more time and resources fighting invasive species

The findings from an investigation:

My hypotheses was correct or incorrect.

The answer to a multiple choice question:

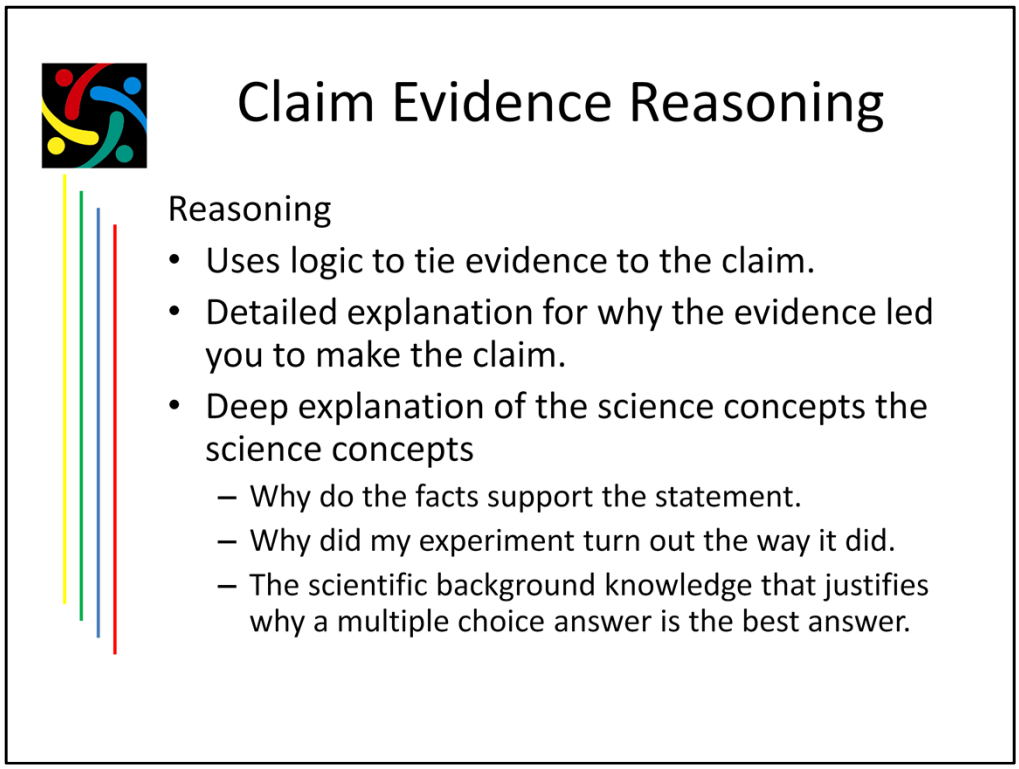
I claim the answer is A



Evidence is the fact(s) that led you to make the claim.

Evidence could include observation; evidence from investigations such as facts from research and data from an experiments.

Essentially evidence is a list of facts that support your claim.



Reasoning is where it all comes together.

Reasoning is where a student proves they understand why the evidence supports the claim OR where a presenter (like our friend Vince) should explain the connection between the evidence and the claim.

In the reasoning section should contain details about the thought process that led you to make the claim as you examined the evidence.

The reasoning is where the student incorporates content knowledge into the explanation.

Breakdown the design of the experiment and analyze the relationship between the variables.

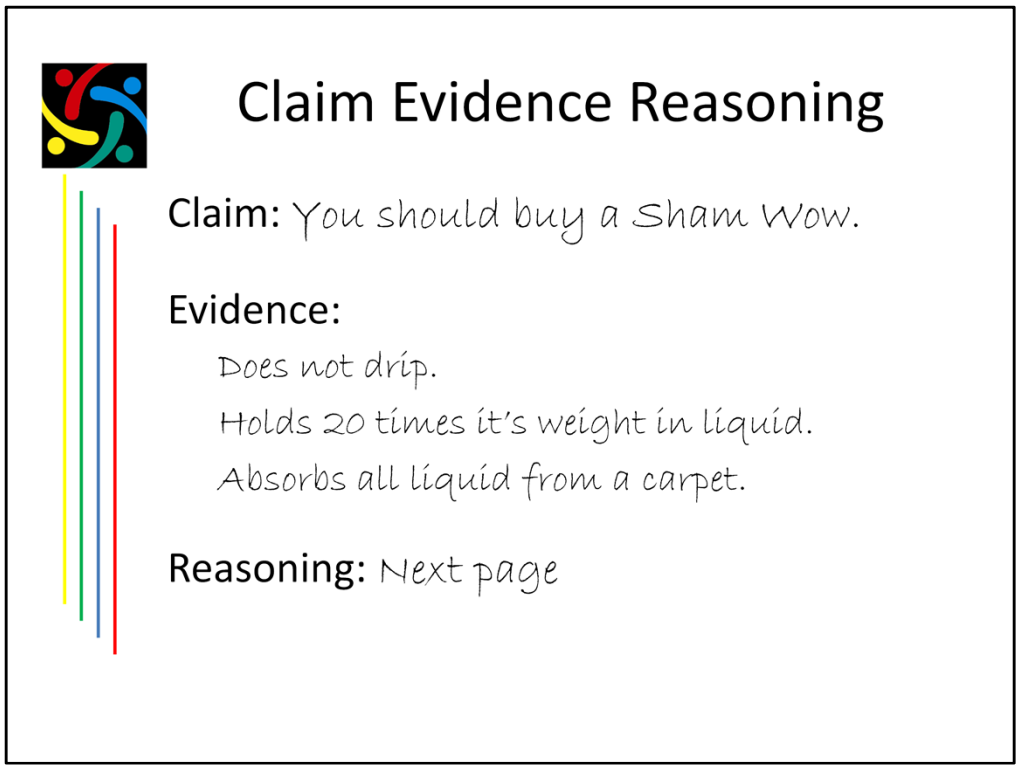
Multiple choice question – explanation of why one answer choice is better than the others, or content knowledge that makes a certain answer the best choice.

Claim, Evidence, Reasoning

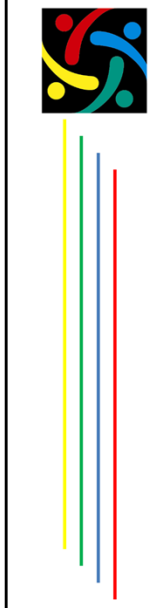
- Use it to discuss claims made in documentaries, videos, commercials.
- Use it after an experiment to explain why a hypothesis was proven correct or not.
- Use it to justify why an OAA question is correct.
- Use it to engage in structured, respectful, argumentation.

Claim Evidence Reasoning

- Does not necessary have to be stated in that order.
- There are multiple correct answers.

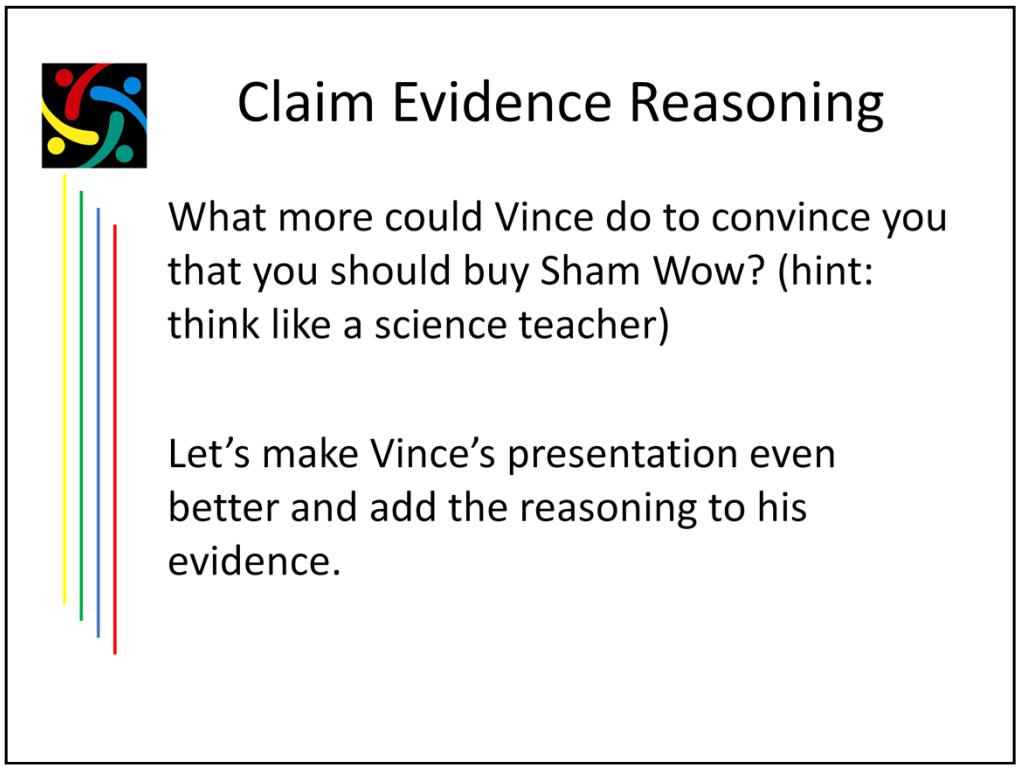


Lets look at some examples:



Claim Evidence Reasoning

I DO



What more could Vince Do:

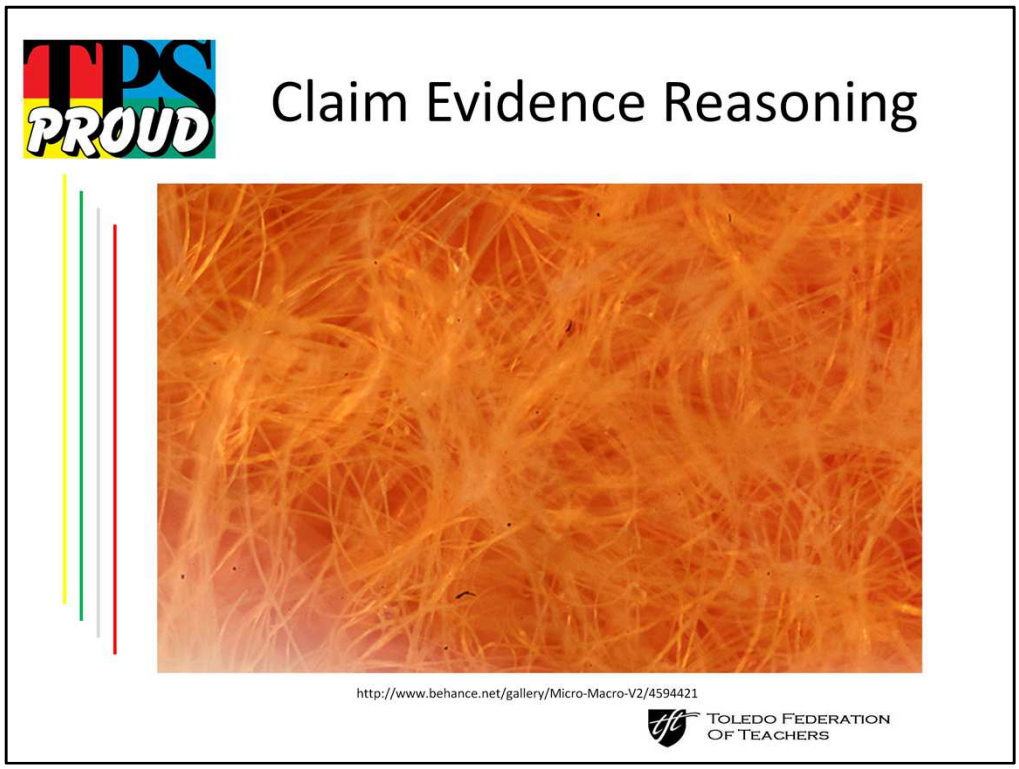
Tell me why it works. What is the reason that Sham Wow Works! Scientifically Speaking, why should I buy a Sham Wow ?

Claim, Evidence, Reasoning

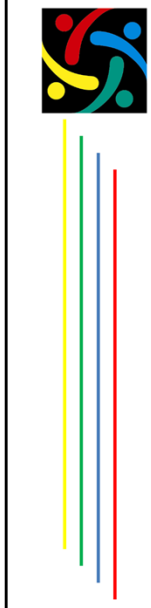
Reasoning:

The Shan Wow towel works so well because it contains micro fibers. Micro fiber towels are made from two synthetic (man made) materials, usually nylon and polyester. The fibers are treated with chemicals and mechanically changed to make them very small, smaller than 1/100th the diameter of a human hair. This gives the towel a lot of surface area to make contact with the spill and absorb the liquid. The tiny fibers get into small places where most towel fibers cannot reach.

Source:
http://www.cleanlink.com/cp/article/Microfiber-101-The-Science-of-Tiny-Threads--3488



Microfiber towel under magnification.



Claim Evidence Reasoning

WE DO

Claim Evidence Reasoning

•Smile Video – ABC news report about research into smiling.

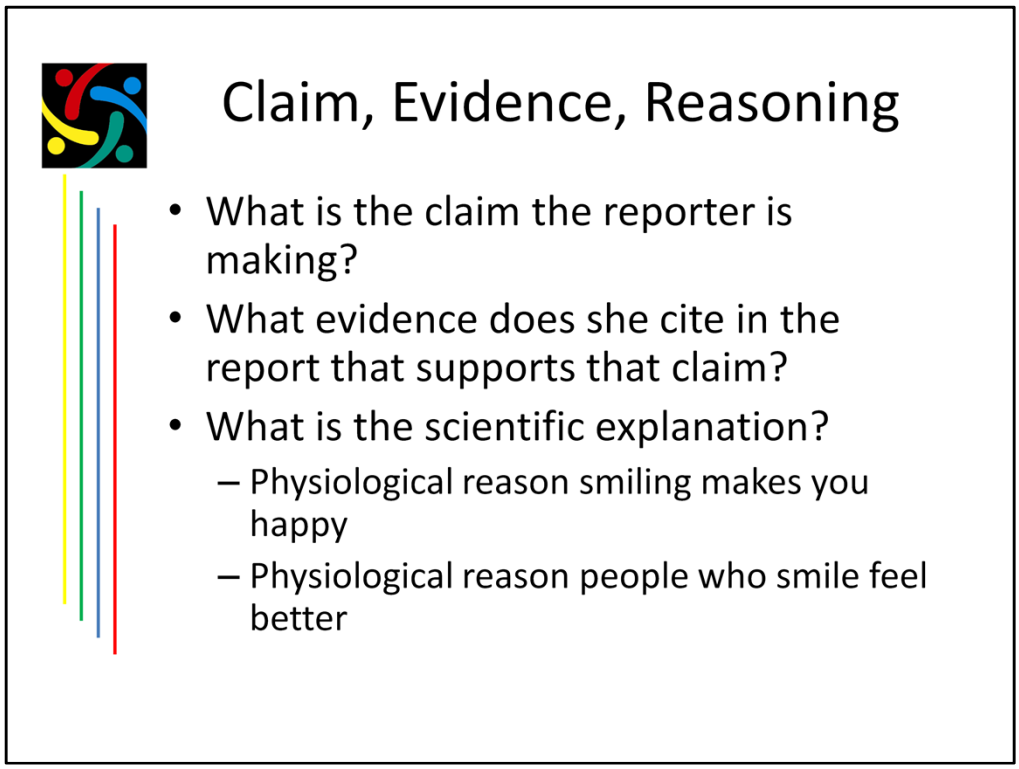
Look for the claim, the evidence, the reasoning

(Hint – ideas will not be presented in that order.)

Claim Evidence Reasoning

http://abcnews.go.com/WNT/video/smiling-proven-make-us-happier-14822785

Click on link to go to online video.



Claim – you should smile it make you feel happy

Evidence –Facebook study

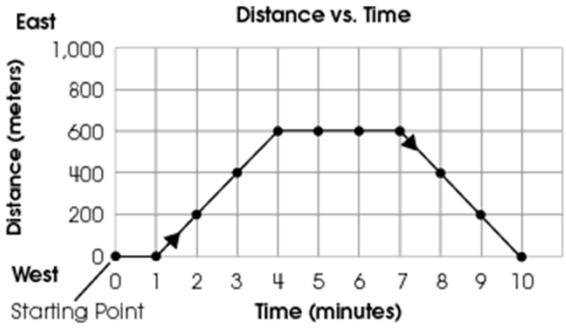
Reasoning – muscles send a signal to the brain that controls emotion making you feel better

Claim Evidence Reasoning

WE DO

Released OAA

What is the car's motion relative to the starting point at time = 8 minutes?



A. at rest at the starting point
B. in motion at the starting point
C. moving toward the starting point
D. moving away from the starting point

Question 33 2009/2010

Claim

C is the correct answer.

Evidence

Line is going down – on a motion time graph a line going down means the moving object is moving toward the reference point.

Reasoning

B and D are inconsistent with the graph

A and C are consistent with the graph, but only C correctly states what is happening at the 8 min. mark.

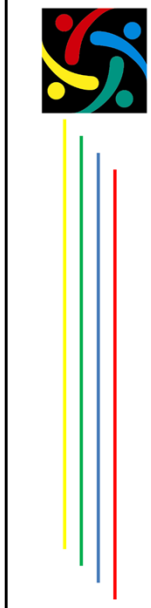
Evidence - downward slope of a line on a distance time graph means an object is moving toward the reference point.

Reasoning – Car is 600 meters from the reference point at 7 min, 400m from the reference point at 8min, 200m from the reference point at 9 min.

Claim Evidence Reasoning

Multiple Choice Question

- Claim – What is the correct answer
- Evidence –
  - data from the graph
  - facts from background information
  - reasons for excluding other answer choices.
- Reasoning –
  - Scientific background knowledge
  - Deep explains about why the answer is correct beyond what is given in the graph, table or background information.



Claim Evidence Reasoning

YOU DO

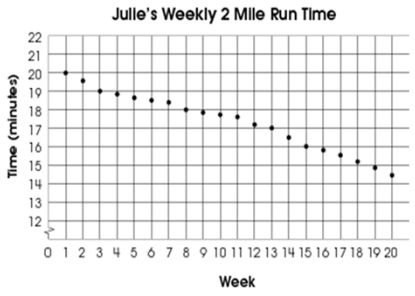
Released OAA

2010-2011: Grade 8: Math: Data Analysis and Probability: Question 2

Each Friday, Julie's track club runs two miles. The graph shows the amount of time that it takes Julie to run the 2 miles each week over a period of 20 weeks.

Which describes the relationship between the number of weeks Julie practices and her running time?

A. Julie is running at a slower rate each week.
B. Julie decreases her time by about 20 seconds each week.
C. Julie decreases her time by about one minute each week.
D. Julie is likely to run the 2 miles in 12 minutes during the 21st week.



Claim B

Evidence 20min – 14.5 min = 5.5 min. 5.5 min x 60 seconds/min = 330sec. 330 sec / 19 weeks = 17.37 seconds/week

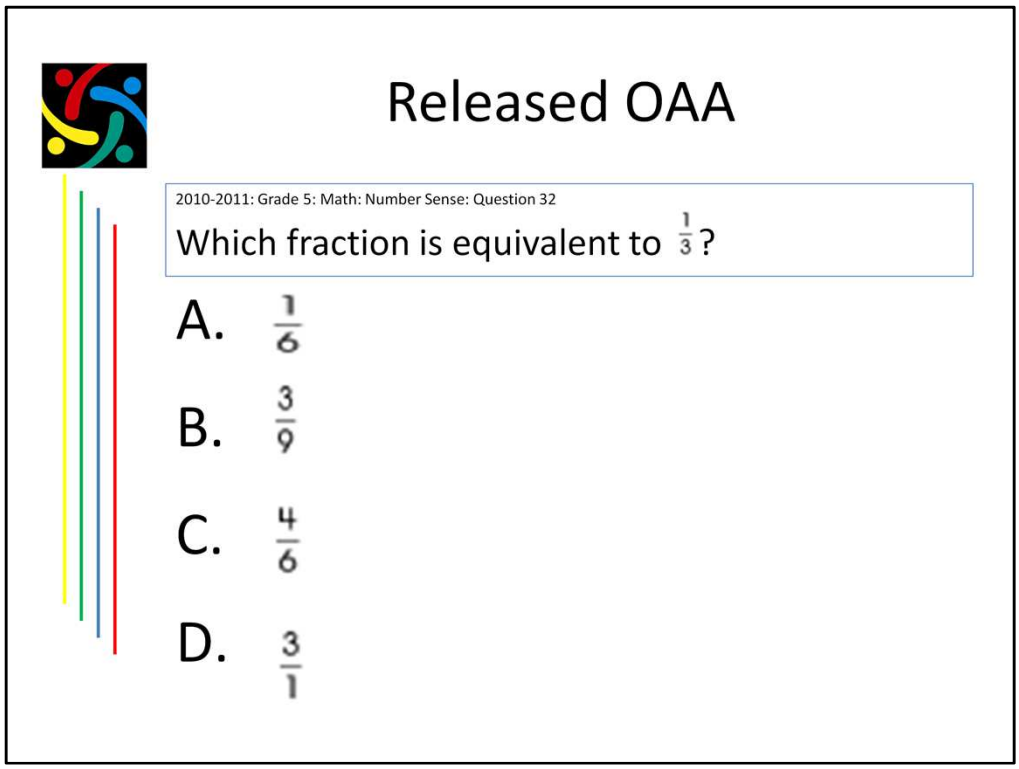
Reasoning (why you performed the steps you did)

The first week she was able to run the 2 mi in 20 min. The 20th week she could run the distance in 14.5 seconds. I subtracted 20 min form 14.5 min to find how much her run time decreased. 5.5min

I multiplied 5.5 min by 60 seconds to find how many seconds she decreased her run time decreased by 330 sec.

I divided the number of seconds she decreased her time by the number weeks she was running (19 weeks) to estimate the amount of time she improved per week 17.4 seconds.

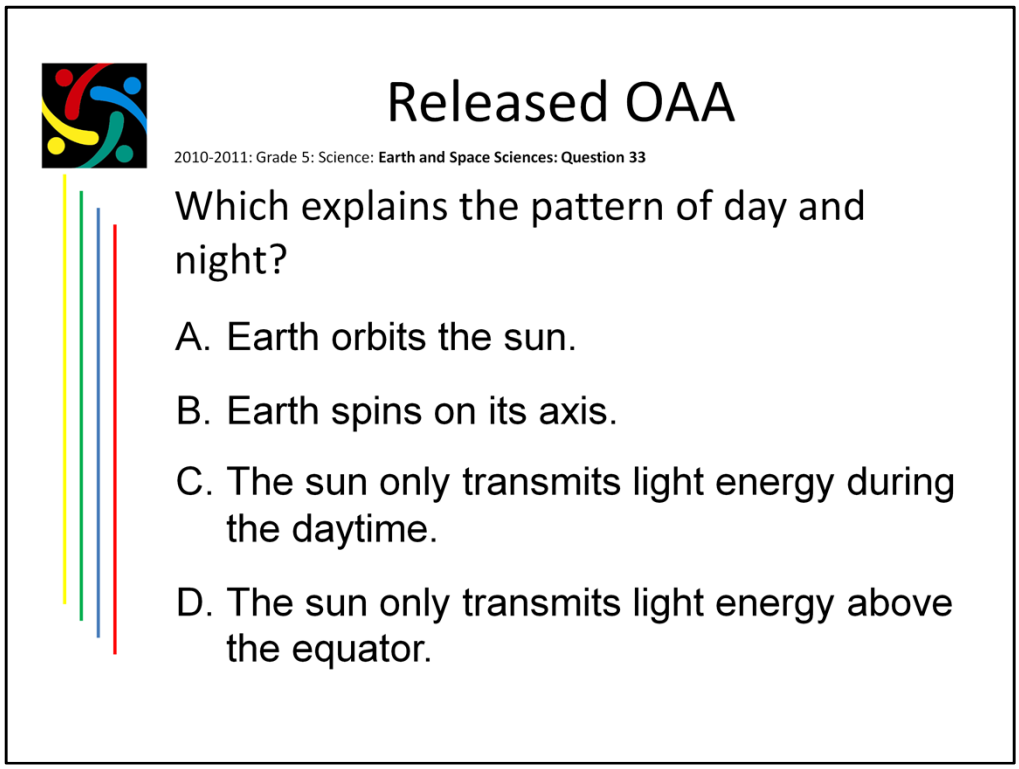
This rounds up to 20 seconds.



Claim B

Evidence 1x3 = 9 3x3 = 9

Reasoning – equivalent fractions have the same value. 1 part of a group broken into 3 = parts is 1/3, If that same group were broken into 9 parts, 3 of those 9 parts would be the same 1/3 of the groups.



Claim – B is the correct answer

Evidence – Choices C & D contain inaccurate information about the sun and the earth. Choice A is an accurate statement, however this is not the reason there is a pattern of day and night. (Reason why other answer choices are wrong.)

Reasoning – The Earth makes a complete rotation every 24 hours. At any given time, half of the Earth is facing the Sun and will be shined upon while the other half will have no light. Since the Earth rotates (spins on its axis), any given location will face the sun and experience day and face away from the sun, experiencing night during each 24 hour period.

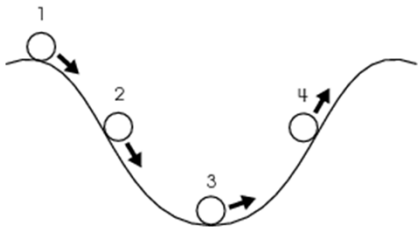
Read more: http://www.universetoday.com/59707/what-causes-day-and-night/#ixzz2jfdZYmUn

Released OAA

A ball is released from rest at position 1. The diagram shows the ball in four positions as it rolls along a track from left to right.

In which position does the ball have its minimum gravitational potential energy and maximum kinetic energy?

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



Question 19 2007/2008

Claim : The correct answer is C.

Evidence: At position 3 the ball is at the lowest position.

Reasoning: As an object accelerates downward, its gravitational potential energy is transformed into kinetic energy. At position 1 the ball has gravitational potential energy (GPE). At position 2 the GPE is being transformed to Kinetic Energy (KE) and at this position the ball has both GPE and KE, about half and half of each because the ball is halfway down the first hill of the track. At position 3 the ball is at the lowest position on the track, therefore the GPE the ball had at position 1 has been transformed into KE. At position 4 the ball is traveling up the next incline due to the KE it possessed at position 3. As the ball rolls up the incline the KE is being transformed back into GPE.

Claim Evidence Reasoning

- It can be done.
- It will take time.
- Give yourself time to get used to this framework!
- Practice makes perfect.
- Start dropping the works “claim, evidence, reasoning” informally.

Claim Evidence Reasoning

- Use scenarios that are real to students
  - Who is the best vocal artist?
  - What time should you get up on the weekend?
  - What is a reasonable allowance for a junior high student?
  - Mysteries “Who done it?”

Claim Evidence Reasoning

- Scaffolding
- Look at examples as a class.
- I do, we do, you do
- Peer review
- Feedback
- For reasoning – let students paraphrase information from the text or internet research.

Claim Evidence Reasoning

- 4th & 5th grade – claim & evidence only
- 6th grade and above – start to uses explanation
- Mid to late high school – counter claims & arguments

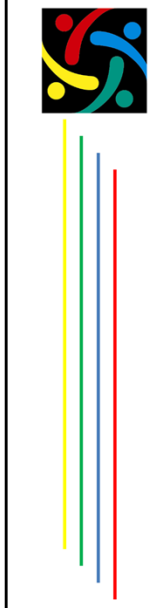
Claim Evidence Reasoning

- What cross curricular connections can be made with this strategy?
- Give an example of how this writing strategy can be used in math? social studies?
- Why do students struggle writing in depth explanation?
- How does this strategy help our students develop critical thinking skills?
- How could this writing strategy serve as a formative assessment tool?
- How could the claim, evidence, reasoning strategy help students when they disagree?

Closure

- Roll the dice
- Dice number corresponds to a set of standards
- Use the highlighter to highlight standards that could be supported by CER
- Report out, how many standards & what standards

1. ELA – Science & Technical
2. ELA – Social Studies
3. ELA- Writing
4. Science Inquiry & Application
5. Mathematical Practices
6. Choice!



Claim Evidence Reasoning

Thank You