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Word Generation - Unit 1.06

Focus Words

rely | react | alternative | justify | proportion

Weekly Passage

Animals are used in research by scientists seeking cures for disease. They are also used by pharmaceutical and cosmetic companies to test drugs, makeup, lotions, soaps, and shampoos. Why do we rely on animals to test our products for safety? Because animals share many genes and organs with humans, scientists say that using them advances knowledge and protects humans from potentially harmful effects of new products.

If animal testing is designed to protect humans, then why do so many people react negatively to it? Today, more and more people will not buy products tested on animals because they consider animal testing cruel and unnecessary. Companies that use alternative methods of testing products are advertising to people who don't mind buying shampoo or laundry detergent that is a bit more expensive in order to avoid products tested on animals.

Medical researchers say that only a small proportion of animals are used in painful or dangerous tests. Animal rights defenders say even one is too many.

Is it okay to test drugs or makeup on animals? Do humans have more rights than animals? Is animal testing justified because it helps humans?

TEACHER

Reading Comprehension/Discussion Questions:

- ▶ Who relies on animal testing, and for what purposes?
- ▶ How do scientists justify using animals to test products for humans?
- ▶ Why do some people react negatively to the practice of animal testing?
- ▶ What proportion of products that you use do you think might be tested on animals?
- ▶ What might be some alternatives to testing products on animals?

Unit 1.06

Animal testing: Is it necessary?

Focus Word Chart

Word	Meaning	Forms			Related Words
		Inflectional	Basic Word Classes	Prefixes/ Suffixes	
rely	(v.) - to depend on	relies relied relying		reliable reliably reliant reliance	
react	(v.) - to respond	reacts reacted reacting	act	reaction reactive reactivity reactionary reactor	enact actor
alternative	(adj.) - other, different		alternate (v.)	alternatively alternate (n.) alternative (n.)	alter alteration
justify	(v.) - to show or prove to be right	justifies justified justifying	just	justifiable justifiably justification	justice adjust
proportion	(n.) - fraction; quantity; compared amounts	proportions proportioned proportioning	portion	proportionate proportional disproportionate	

Unit 1.06

Animal testing: Is it necessary?

Problem of the Week



Many different groups, from makeup companies to cancer research labs, use animal testing. Some look for **alternatives** to animal tests.

Others try to **justify** their work, saying that animal testing saves money and human lives. It is difficult to find **reliable** statistics about how many animals are used for testing in the U.S. each year. One estimate is 21 million animals.

Some people **react** differently to animal testing depending on what kind of animal is being used.

Using dogs, for example, may seem worse than using rats. A large **proportion** of test animals are rats, mice, and other rodents. Some organizations have estimated that 90% of research animals in the U.S. are rodents.

Option 1: According to the estimates given above, how many of the 21 million test animals are rodents?

- A) 17,800,000
- B) 18,000,000
- C) 18,500,000
- D) 18,900,000

Option 2: The Humane Society estimates that 3.5 million cats and dogs are euthanized, or killed, each year due to overpopulation. According to the US Department of Agriculture, about 100,000 cats and dogs were used for animal testing in 2005.

Based on the information above, fill in the blank:

About ____ times as many dogs and cats are euthanized due to overpopulation as are used for animal testing each year. (Hint: to solve the problem quickly, use exponents.)

Answer: 35 (3.5 million / 100,000, or $3.5 \times 10^6 / 1 \times 10^5$)

Math Discussion Question: When researchers estimated that 21 million animals are used for testing in the U.S. each year, they were not counting invertebrate animals, like shrimp, fish, worms, and flies. Some people say invertebrates aren't really animals. They think that although invertebrates can **react** to stimuli (a shrimp, for example, will move away from an electric shock), they cannot feel pain. Invertebrates make up a much larger **proportion** of test animals than even rats and mice. They are not covered by the rules that help protect vertebrates like cats, rats, and chimps. Is this unequal treatment **justified**? Many of us have a gut feeling that a rabbit is worth more than a fruit fly. We kill bugs, but when a pet dies, we cry. Can we **rely** on these feelings to help us make fair decisions about animal testing? Or should we develop an **alternative** system that treats all animals the same?

Animal testing: Is it necessary? Debating the Issue



GO!

1. Get ready...

Pick one of these positions (or create your own).

A Animal testing should be allowed for all drugs, makeup, lotions, soaps and shampoos. Because animals and humans share so many genes, this is the best way for scientists to predict the reactions that humans will have to these substances, and thereby prevent large numbers of people from becoming sick.

B Animal testing should never be allowed. It is cruel to cause pain to innocent animals, and if scientists were not allowed to do it, they would rely on other ways to test drugs and cosmetics.

C Animal testing should only be allowed for important drugs that could be used to treat serious diseases in humans. The pain that animals experience is justifiable if it saves human lives. Makeup, lotions, soaps, and shampoos should not be tested on animals because they do not benefit human health.

D Animal testing that causes animals a lot of pain should never be allowed because the benefits to humans do not justify this. Animal testing should be permitted only in circumstances where the animals will not be seriously hurt.

E _____

2. Get set...

Be ready to provide evidence to back up your position during your class discussion or debate. Jot down a few quick notes:

Be a strong participant by using phrases like these.

I believe that...

I agree with you because. . .

You make a good point, but have you considered...

Can you show me evidence in the text that supports what you said?

TEACHER

Whatever the debate format, ask students to use academically productive talk when arguing their positions. In particular, students should provide reasons and evidence to back up their assertions. It may be helpful to read these sample positions to illustrate some possibilities, but students should be encouraged to take their own positions about the issue at hand.

Unit 1.06

Animal testing: Is it necessary?

Science Activity

For years, cosmetics companies have **relied** on animal testing to make sure products are safe. In Draize testing, makeup is applied directly to the eyes of a living rabbit. The rabbits are observed, and then killed. When Professor Seemy's students hear about these painful tests, some **react** with horror.

"How can companies **justify** torturing rabbits to sell makeup?" Shawn asks. "I've heard about some **alternatives**, like testing on artificial human skin."

"That's not a good alternative," argues Marcelina. "Testing on a piece of fake skin can't give the same results as testing on a live animal."

Is Marcelina right? Professor Seemy decides to find out.



This activity is designed to help you practice thinking like a scientist and to use this week's focus words. Sometimes the data are based on real research, but they should never be considered true or factual.

Question:

Will testing lipstick on artificial skin give the same results as Draize testing?

Hypothesis:

Testing lipstick on artificial skin will give the same results as Draize testing.

Materials:

- ▶ 5 kinds of lipstick that have been tested using the Draize method
- ▶ results from those 5 Draize tests
- ▶ 5 artificial skin samples
- ▶ Sterile lab
- ▶ Chemical MTT (a yellow chemical that turns blue when it is touching living tissue.)

TEACHER

Real Research

-The European Union banned animal testing for cosmetics, effective in March of 2009. This New York Times article talks about the push to develop artificial human skin in response to the ban. (The article was written in 2007, as companies were preparing to meet the deadline.) To make artificial skin, researchers culture human cells harvested during plastic surgery. The steps outlined in the procedure are based on actual tests (chemical MTT is real).

Carvajal, D. (2007, November 20). A new science, at first blush. The New York Times

Retrieved on November 13, 2009 from

http://www.nytimes.com/2007/11/20/business/worldbusiness/20cosmetics.html?pagewanted=1&_r=1&sq=epiderm&st=cse&scp=1

-This is a video advertisement for EpiDerm, a brand of artificial human skin meant to replace Draize testing. It explains the composition of EpiDerm and shows a real scientist using it for testing, describing the process step-by-step.

<http://www.mattek.com/pages/abstracts/528>

Procedure:

1. Cover each skin sample with a different kind of lipstick.
2. Cover each skin sample with chemical MTT.
3. By looking at the color of the chemical MTT, calculate the **proportion** of each skin sample that is still alive.
4. Call a chemical "safe" if more than 50% of the skin sample is still alive. Call a chemical "unsafe" if less than 50% of the sample is still alive.
5. Compare the results with Draize test results.

Data:

Lipstick Type	Draize Results		Artificial Skin Results	
A	<input checked="" type="checkbox"/> safe	<input type="checkbox"/> unsafe	<input checked="" type="checkbox"/> safe	<input type="checkbox"/> unsafe
B	<input checked="" type="checkbox"/> safe	<input type="checkbox"/> unsafe	<input checked="" type="checkbox"/> safe	<input type="checkbox"/> unsafe
C	<input type="checkbox"/> safe	<input checked="" type="checkbox"/> unsafe	<input type="checkbox"/> safe	<input checked="" type="checkbox"/> unsafe
D	<input type="checkbox"/> safe	<input checked="" type="checkbox"/> unsafe	<input type="checkbox"/> safe	<input checked="" type="checkbox"/> unsafe
E	<input checked="" type="checkbox"/> safe	<input type="checkbox"/> unsafe	<input checked="" type="checkbox"/> safe	<input type="checkbox"/> unsafe

Conclusion:

Is the hypothesis supported or not by the data?

Supported

What evidence supports your conclusion?

For the five lipsticks tested, the Draize test and the artificial skin test gave the same results.

How would you make this a better experiment?

Encourage students to consider sample size, number of trials, control of variables, whether the procedure is a true measure of the question, whether the experiment can be repeated by other scientists, data collection and recording systems, and other potential explanations for the outcome. Students should understand that these simple experiments represent the beginning of an exploration, not the end. If time permits, have students suggest how the experiment could be strengthened, emphasizing the use of the target words in the discussion.



Writing Prompt:

Is animal testing justified?

Support your position with clear reasons and specific examples. Try to use relevant words from the Word Generation list in your response.

Focus Words

rely | react | alternative | justify | proportion

A tool to help you think about your own writing!

Remember you can use focus words from any of the WG Units.

Check off what you accomplished:

Good Start

- ☐ Stated my own position
- ☐ Included 1 focus word

Pretty Good

- ☐ Stated my own position clearly
- ☐ Included 1-2 arguments
- ☐ Included 1-2 focus words

Exemplary

- ☐ Stated my own position clearly
- ☐ Included 1-2 arguments
- ☐ Included 1 counterargument
- ☐ Used 2-5 focus words

TEACHER

Ask students to write a response in which they argue a position on the weekly topic.

Put the writing prompt on the overhead projector (or the board) so that everyone can see it. Remind students to refer to the word lists in their Word Generation notebooks as needed.

[illegible]