rely | react | alternative | justify | proportion

This week's issue:
ANIMAL TESTING: IS IT NECESSARY?

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? Since animals share many genes and organs with humans, scientists say that testing new products on animals first can protect humans from potentially harmful effects of these products.

Many pharmaceutical researchers rely on animal testing to determine if new medicines could cause harmful or fatal reactions in humans. Researchers **justify** their choice by saying that only a small **proportion** of research animals are used in painful and dangerous tests.

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. These animal rights defenders say that even one animal used in dangerous testing is too many. Many of these people are willing to buy shampoo or laundry detergent that is a bit more expensive in order to avoid products tested on animals. Companies that use **alternative** methods of testing their products benefit from advertising to these consumers.

What do you think? 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?

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USE THE FOCUS WORDS *and alternate parts of speech

rely *(verb)* to depend

Sample Sentence: Why do we **rely** on animals when we test our products for safety?

Turn and Talk: Whom do you **rely** on for advice when you are facing a difficult problem?

react *(verb)* to respond

Sample Sentence: If animal testing is designed to protect humans, then why do so many people **react** negatively to it?

Turn and Talk: How would you **react** if you found out that an animal you knew was being mistreated?

alternative *(adjective)* other, different

Sample Sentence: Companies that use **alternative** methods of testing products advertise to people who avoid products tested on animals.

Turn and Talk: Instead of arguing, what are some **alternative** ways of solving a disagreement?

***alternative** *(noun)* different option or possibility

Sample Sentence: Dancing and playing team sports are **alternatives** to exercising in a gym.

Turn and Talk: What are some **alternatives** to taking medicine when you have a headache?

justify *(verb)* to show or prove to be right; to defend

Sample Sentence: Some people argue that helping humans does not **justify** animal testing.

Turn and Talk: Is it possible to **justify** copying someone else's homework?

proportion *(noun)* fraction; compared amounts; amount as compared to a whole

Sample Sentence: Only a small **proportion** of medical researchers inflict pain or harm on animals.

Turn and Talk: What **proportion** of your classmates have you known for more than two years?

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DO THE MATH

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 by 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. Experimenting on 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 2.4 million dogs and cats are euthanized, or killed, each year due to overpopulation. According to the U.S. Department of Agriculture, nearly 100,000 cats and dogs were used for animal testing in 2010.

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.)

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. Can we **justify** this unequal treatment? 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?

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THINK SCIENTIFICALLY

The students in Mr. Seemy's class are arguing about the morality of using animals in medical research. "I'm really passionate about stopping animal testing," says Kyra. "I think about my dog, Jasper, and I think, 'What if it were him?' I know he can feel happy or sad, trusting or afraid. I can't stand to imagine him in a painful experiment."

"I can understand why you **react** so strongly to animal suffering," says Aliyah, "but I'm passionate about the value of medical research. My mom is diabetic, and she would probably be dead now if it weren't for past research on insulin using pancreases from dogs. I believe the benefit to my mom and millions of people like her **justifies** animal research. "

"I've read about the research you're talking about," says Kyra. "Those dog experiments led to the discovery of insulin almost a hundred years ago. But there are all kinds of **alternatives** to animal research these days—computer simulations and things like that. Scientists have even started working on what they call "organs-on-chips." They're not computer chips; they're little devices that use real, living human cells from various human organs. They can test drugs on lung cells or heart cells, and they can simulate real blood and air flow. It's a more lifelike situation than just working with cells in a test tube or something."

"That's great," says Aliyah. "But scientists still need to be able to test drugs and other treatments on whole living animals, or they won't be able to predict how a treatment might affect a whole living person. What if you use a lung-on-a-chip to prove that a new asthma medication is safe for lung cells, but you don't find out that the same medicine causes brain tumors? Studying the drug in rats before using it on people could save human lives."

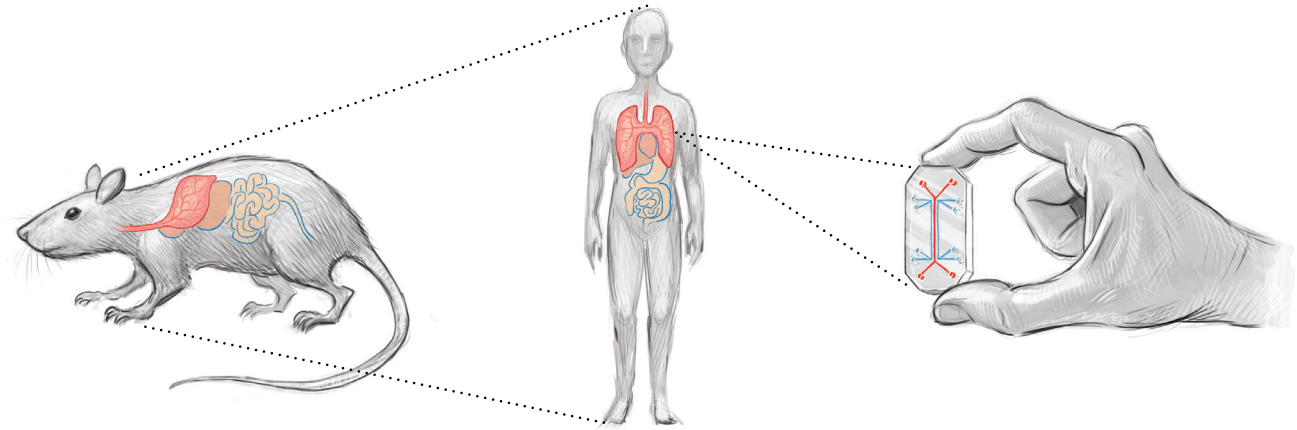
"You're both raising a really interesting issue about models," says Mr. Seemy. "When you test a medication on a rat or on one of these new organs-on-a-chip, you're using the rat or the chip as a model of a real human. The model represents the thing you really want to know about—the human—without putting the human at risk."

"It's hard to think of either a rat or a chip as a model of a person," says Anna. "Neither of them looks like a person."

"True, but a model in this sense doesn't have to look like the thing it represents," says Mr. Seemy. "Models can be things that just represent an aspect of how something works."

"I'd be happy to see the **proportion** of medical research that uses animal testing drop," says Aliyah. "But only if we can really **rely** on **alternative** models to be at least as good as animals at representing human biology."

Consider a live rat and a lung-on-a-chip (containing human lung cells) as possible models in an experiment on the effect of a medication on human lung tissue. In what ways do you think the rat is the better model (representation) in which to test new drugs? In what ways do you think the chip is the better model of a living human?



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DEBATE THE ISSUE

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

A

❑ Animal testing is necessary and should be allowed.

OR

B

❑ Animal testing is not necessary and should never be allowed.

OR

C

❑ Animal testing should only be allowed for lifesaving medical breakthroughs.

OR

CREATE YOUR OWN

❑ _____

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Jot down a few notes on how to support your position during a discussion or debate.

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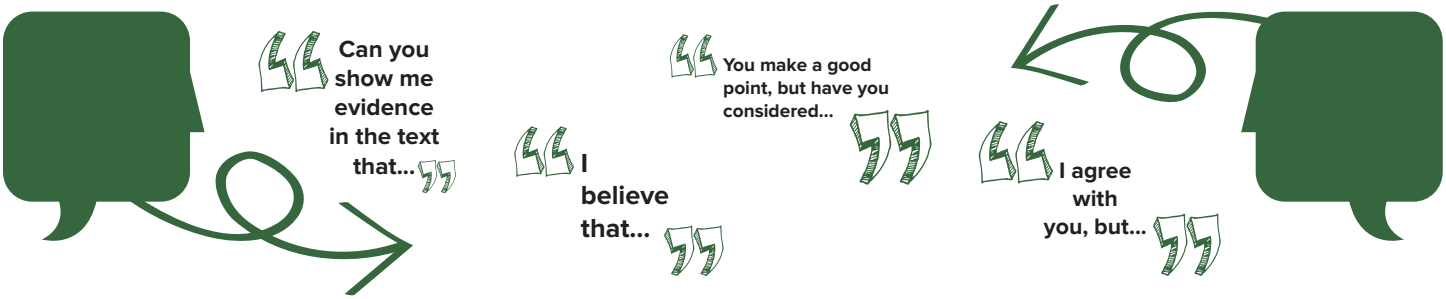
Be a strong participant by using phrases like these:



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TAKE A STAND

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

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