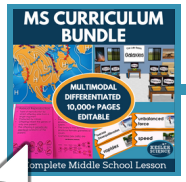
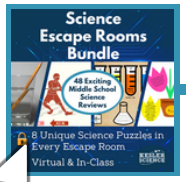
What Can Kesler Science Do for You?

4th - 8th grade science teachers love our Life, Earth, and Physical Science materials! With these easy and engaging materials, teachers can save planning time and put their focus back on the teaching that really matters.



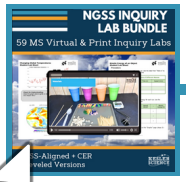
5E LESSONS

Two-week lessons with over 100 topics



ESCAPE ROOMS

Engaging activities for review



INQUIRY LABS

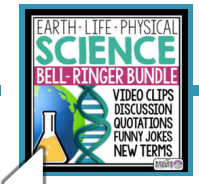
Three different levels to fit every student

AMAZING ANCHORS

Anchoring phenomenon to book-end your lessons

SUB PLANS

Never worry about planning for a sub again.



WARM-UPS

Bellringers for the entire year

STATION LABS

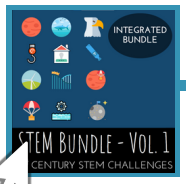
Student-led exploration

INTERACTIVE NOTEBOOKS

Bring science journals to life.

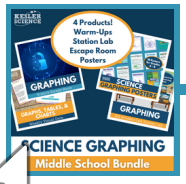
WIKI TICKETS

Quick formative assessments



STEM CHALLENGES

Real-world STEM problem-solving

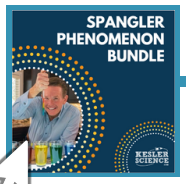


GRAPHING

Table and charts and graphs ... OH MY!

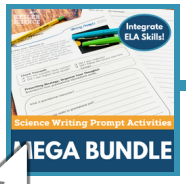
SCIENCE READING COMPREHENSION

Leveled reading passages with mini-activities



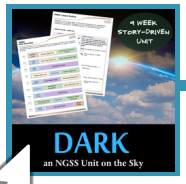
SPANGLER COLLABORATION

Exclusive Steve Spangler lessons and videos



WRITING PROMPTS

Writing activities covering 100+ topics



EXPLORIES

Story-driven units with integrated activities

The Kesler Science Professional Learning Network (PLN) group on Facebook has a huge community of engaged and supportive science teachers - come join us!

KESLER SCIENCE

Name: _____

Date: _____

Did We Just Defeat Extinction?

Back in the 90's, one of the biggest stories to come out of the science world was Dolly the sheep. 🐑 Dolly was the first cloned mammal ***ever***. Scientists inserted the contents of a stem cell into a donor egg. When the cell started to grow into an embryo, it was implanted into a full-grown female sheep to grow like a regular lamb.

Once Dolly was born, the science team waited 7 months to share the news with the world. 😬 When word ***did*** get out, we were asking some serious questions: What exactly are we capable of? Should we be messing around with this sort of thing?

30 years later, cloning animals doesn't usually make a big news splash. We've cloned pigs, dogs, cats, cows and even rhesus monkeys. But recently, a science company made a shocking claim to push the envelope even further...resurrecting animals that have been extinct for thousands of years!

But here's the thing — what they did is very different from cloning Dolly.

Their target was the **dire wolf**, this massive predator that roamed North America until about 13,000 years ago. Scientists pulled DNA from preserved skulls and bones and sequenced them. They then identified 14 genes that created the most distinct "dire wolf" characteristics, like white fur and a large head.

Here's where things get interesting. They didn't capture those genes and use them directly. Instead, they edited **gray wolf** DNA to match the dire wolf DNA so the gray wolves would ***appear*** to be dire wolves.

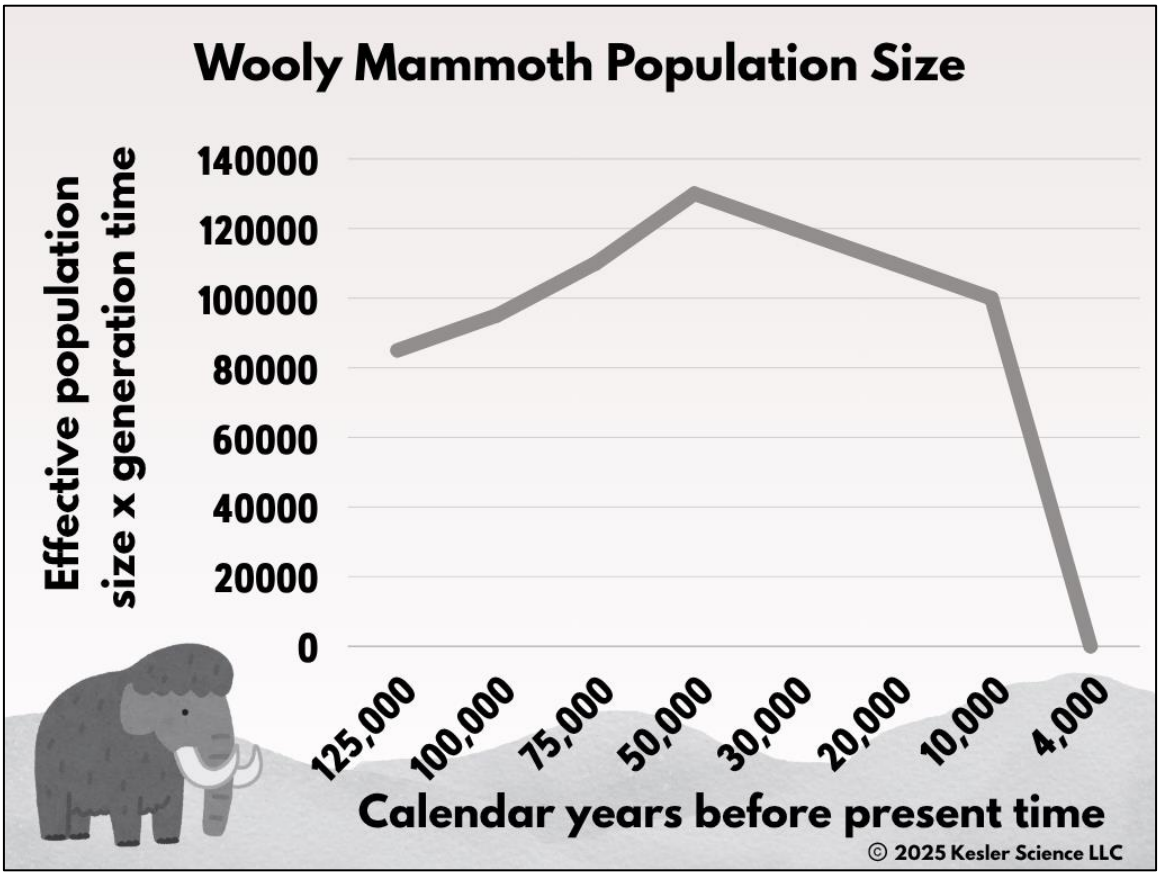
The result? Some absolutely majestic, white-furred wolves that *look* fierce, but technically, they're still 100% gray wolves. There are still thousands of differences between the genes of a dire wolf and a gray wolf. Is this really cheating extinction?

The scientists who created the "dire wolf" pups are now working toward editing Asian elephant DNA to match woolly mammoth DNA. The result could be impressive animals built for roaming the arctic plains! Can we even imagine what that would look like - or how it would affect our environment?

Extinction is complicated - when we lose species to extinction today, it is largely due to habitat loss or changes in their environment. Putting cloned or gene-edited animals back in the same space wouldn't make the habitat any more friendly to their survival!

Check out the graph on the next page — it gives our best guess at how **woolly mammoth populations** changed over thousands of years.

Did We Just Defeat Extinction?



1. What is the independent variable on this graph?

_____

_____

2. What trends do you see in the woolly mammoth population size over time? At what points did the populations seem to change the most?

_____

_____

3. The generation time is the age gap between a parent and offspring generation. Scientists think mammoths would not reproduce until about age 15.

_____

_____

_____

_____

Weekly Phenomenon Graphing Activity Teacher Key

Blog Link: https://blog.keslerscience.com/phenomenon-and-graphing/did-we-just-defeat-extinction

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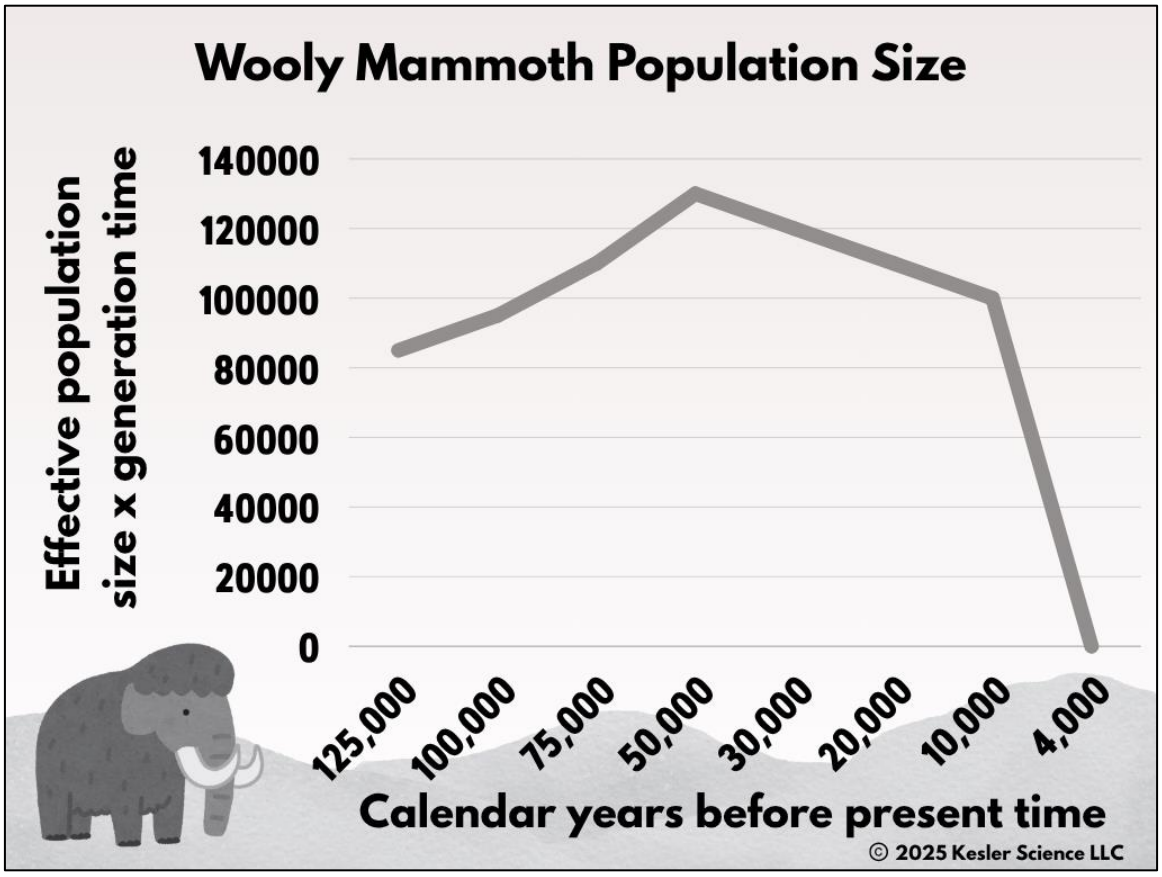

1. What is the independent variable on this graph?

   The independent variable is on the X-axis, indicating "calendar years before present time."

2. What trends do you see in the woolly mammoth population size over time? At what points did the populations seem to change the most?

   The woolly mammoth population was stable prior to 10,000 years ago. There was a sharp decline in the mammoth population between 10,000 years and 4,000 years ago.

3. The Y-axis shows "effective population size times generation time." Scientists estimate that the mammoth's *generation time* was about 15 years. What do you expect generation time to mean? (Hint: think of generations in a family)

   The generation time is the age gap between a parent and offspring generation. Scientists think mammoths would not reproduce until about age 15.