Energy in Motion: Kinetic Energy

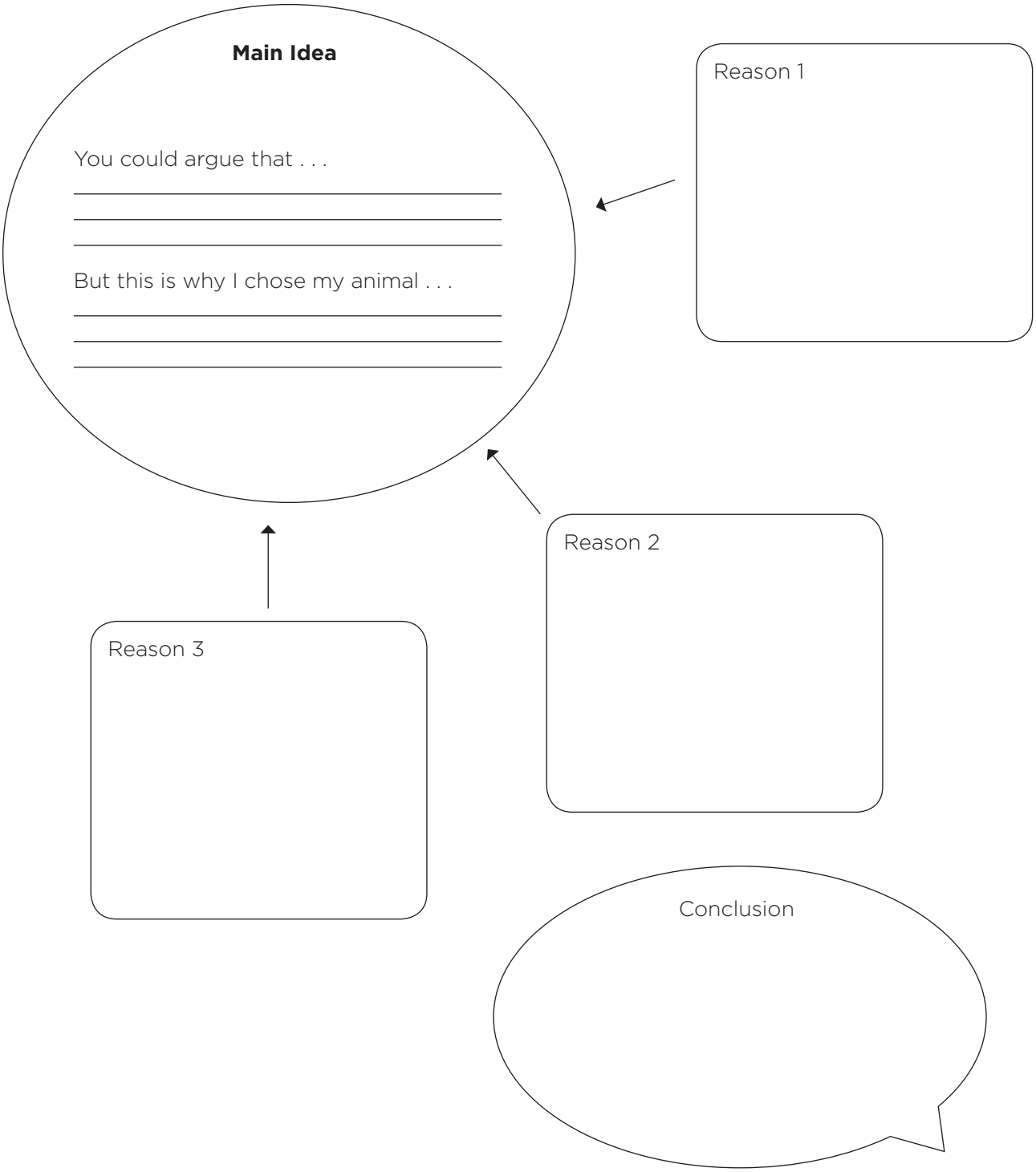
When you think about animals running, what do you see? Do you see the fastest animal, the cheetah, running across the African plains? Do you see your dog or cat running across your backyard? All animals and humans use energy to do everything, every day. We will be finding out how much energy an animal uses when they are in motion, or their kinetic energy.

Project Tasks

A local zoo wants to open a new exhibit focusing on animals with high kinetic energy. Write a proposal to the zoo for the animals you want to see in the exhibit. Research animals of your choice and compare the animals' mass and the animals' velocity (speed) to find the animals' kinetic energy. After your research, create a bar graph that represents your animals' kinetic energy. Also pick one or two of your animals to create a line graph showing the animal's kinetic energy over its life span. Present this to the class through a persuasive presentation, and your classmates will act as the zoo representatives.

1. Review the rubric provided before completing the graph and proposal.
2. Research three or more animals of your choice. Be sure to collect information on the animal's mass and the velocity (speed). You will need this for the graphs.
3. To find kinetic energy, use the following formula: Ek=1/2m(v*v)
4. Using the app *Graphs* or something comparable, input your data into the correct area for either your *x* axis or your *y* axis. Create a bar graph representing your animals' kinetic energy you calculated from their mass and velocity. Create a line graph to represent an animal's kinetic energy over its lifespan. Be sure to include a title and label for each part of your graph.
5. You will create a short presentation using an approved technology program of your choice. Think about the following questions as you create your presentation.
   - What do the zoo representatives need to know about my animals?
   - How can I make my graph easy to follow?
   - Do I have my bar graph and line graph included?
   - Do my graphs include mass, velocity, and kinetic-energy calculations?
   - Is my proposal organized?
   - Is my proposal persuasive?
   - Does the proposal include all of my information?
6. Use the graphic organizer to collect your thoughts.

Zoo Proposal



Scoring Rubric

	1 SIGNIFICANT REVISION NEEDED	2 SOME REVISION NEEDED	3 PROFICIENT	4 EXCEEDS EXPECTATIONS
Objective 1: Students will create a bar graph to compare the relationship between mass and velocity of three or more animals and create a line graph to show one or more animal's kinetic energy over time.	• Student creates a graph, but not about animals. • Student inputs incorrect or inappropriate data. • There are no labels on *x* or *y* axis. • There is no title on graph. • Animal data are not labeled. • If the student uses colors, a key is not included.	• Student creates a graph about animals. • Animal data do not include mass or speed of animal(s). • Labels on either *x* or *y* axis, but not both. • Title on graph is incomplete. • Not all of animal data are labeled. • If the student uses colors, key only labels a few, not all colors.	• Student creates an organized bar graph and line graph about animals. • Graph includes animals' mass and speed. • *x* and *y* axes are correctly labeled. • Graph is titled. • All animal data are labeled. • If the student uses colors, each color is correctly labeled on the key.	• Student creates an organized bar graph and line graph. • Graph includes animals' mass and speed. • Both the *x* and *y* axis are labeled correctly. • Clever and accurate titles are present. • All animal data are labeled. • The student uses colors and labels each color correctly on the key. • Pictorial representation of the animals researched is present.
Objective 2: The students will create a proposal to the zoo and share with the class through a short presentation.	• Student does not create presentation.	• Student creates a presentation, but does not include graph or all of the information.	• Student creates a proposal that includes graphs and the majority of the information about their animals.	• Student creates an effective and persuasive proposal on their animals' kinetic energy and specifies what animal should be chosen.