Reaching Extremes...
A Study of Human Body Systems and Homeostasis

Scenario:
You are an avid canoe enthusiast out for a paddle across Rampart Reservoir on a cool October afternoon. As is often the case, a sudden storm settles in over the reservoir in record time, turning a pleasant time on the water into a scary event. To make matters worse, the wind and water spray as well as the plunging temperatures has you canoeing in temps that are now near 0 degrees F. Sure, you have a windbreaker to put on, but let’s face it... you are getting cold, FAST!!! As you paddle towards the shore in the distance, you realize you probably still have 30 minutes in the canoe and can’t help but wonder:

How will my body maintain homeostasis in this extreme situation?

Your task:
• Identify the human body system primarily and directly affected by exposure to such cold temperatures.
• Explain how this body system functions normally. Compare and contrast that information with how this system responds to extreme cold to help you maintain warmth.
• Discuss how other body systems work to help you maintain your core body temperature.
• Research two or more animals that call cold environments, like Antarctica, “home.” How have these animals adapted to life in the extreme cold?

Assignment specifics:
✓ As a team, review the assignment and devise a fair way to divide the work.
  o Who will research what?
  o What standards do you have for the information researched?
  o What expectation do you have for everyone’s full involvement?
  o What plan do you have if people don’t follow through?
✓ Research depth of knowledge: identify, define, use related vocabulary correctly, and sequence your information so others can understand, provide evidence & explain your presentation ideas clearly.
✓ Develop a series of visual aids (4 or 5 minimum) along with talking points to help you with an oral presentation of this topic.
✓ Combine and cite your sources as a group to hand in separately.
✓ Prepare, practice and deliver a presentation to your class. Anticipate questions from your classmates.

Class-based resources: Ideas to get you started...
1. Anatomy and Physiology textbooks plus your Biology textbook
Reaching Extremes...
A Study of Human Body Systems and Homeostasis

Scenario:
You are a deep sea diver who loves the thrill of diving in deep waters to explore sunken treasures. You are careful to follow all the rules of diving including monitoring how much air you have in your tank and how long you can stay deep down. Without warning, your gauges fail, leaving you without information about the air in your tank. You have to think quickly to save your life! You ask yourself:

How will my body maintain homeostasis in this extreme condition?

Your task:

- Identify the human body system primarily and directly affected by exposure to such high pressures.
- Explain how this body system functions normally. Compare and contrast that information with how this system responds to high pressure to help you survive.
- Discuss how other body systems work to help you maintain stability in deep waters. What consequences will you have to avoid for you to reach the surface alive?
- Research two or more animals that call the deep ocean waters “home.” How have these animals adapted to life in the deep?

Assignment specifics:

- As a team, review the assignment and devise a fair way to divide the work.
  - Who will research what?
  - What standards do you have for the information researched?
  - What expectation do you have for everyone’s full involvement?
  - What plan do you have if people don’t follow through?

- Research depth of knowledge: identify, define, use related vocabulary correctly, and sequence your information so others can understand, provide evidence & explain your presentation ideas clearly.

- Develop a series of visual aids (4 or 5 minimum) along with talking points to help you with an oral presentation of this topic.

- Combine and cite your sources as a group to hand in separately.

- Prepare, practice and deliver a presentation to your class. Anticipate questions from your classmates.

Class-based resources: Ideas to get you started...

1. Anatomy and Physiology textbooks plus your Biology textbook
Reaching Extremes…
A Study of Human Body Systems and Homeostasis

Scenario:
It’s a warm Sunday afternoon in Colorado Springs. Amazingly, you have finished your homework and find that you have some time on your hands. You decide to go for a hike in the foothills near Manitou Springs to enjoy views of the red rocks that jut up from the valley floor.

You’ve walked about 45 minutes from your car (you got your license last week... remember?) and are rounding a bend in the trail when you find yourself face to face with a large mountain lion. He appears to have been watching you for awhile, and is crouched low and growling. You feel a flood of fear pass over you and you think:

How will my body maintain homeostasis in this extreme situation?

Your task:
- Identify the human body system primarily and directly affected by high fear situations.
- Explain how this body system functions normally. Compare and contrast that information with how this system responds during emergencies to help you survive.
- Discuss how other body systems work to help you maintain stability in high anxiety situations. What signs indicate your body is no longer maintaining stability and is in danger.
- Research two or more animals that are hunted by others. How do these animals use fear and instinct to help them survive?

Assignment specifics:
- As a team, review the assignment and devise a fair way to divide the work.
  - Who will research what?
  - What standards do you have for the information researched?
  - What expectation do you have for everyone’s full involvement?
  - What plan do you have if people don’t follow through?
- Research depth of knowledge: identify, define, use related vocabulary correctly, and sequence your information so others can understand, provide evidence & explain your presentation ideas clearly.
- Develop a series of visual aids (4 or 5 minimum) along with talking points to help you with an oral presentation of this topic.
- Combine and cite your sources as a group to hand in separately.
- Prepare, practice and deliver a presentation to your class. Anticipate questions from your classmates.

Class-based resources: Ideas to get you started...
1. Anatomy and Physiology textbooks plus your Biology textbook
Reaching Extremes...
A Study of Human Body Systems and Homeostasis

Scenario:
You are a mountain climber exploring the high mountain peaks of the Andes Mountains in remote Argentina. As you near the summit of Mt. Aconcagua, elevation 22,840 ft, every step you take requires all your focus; your chest and your lungs feel as though they are burning from the challenge of climbing higher and higher. Although you can see the summit not far ahead, you know it will take you at least another hour to reach it, considering the painfully slow pace you are going. You begin to question whether or not you can make it to the top, and you wonder:

How will my body maintain homeostasis in this extreme situation?

Your task:
- Identify the human body system primarily and directly affected by prolonged exposure to high altitude.
- Explain how this body system functions normally. Compare and contrast that information with how this system responds during emergencies to help you survive.
- Discuss how other body systems work to help you maintain stability under extreme physical exertion at high altitudes. What physical signs indicate your body is in serious trouble?
- Research two or more animals that call the high mountains home. How have these animals adapted to life in high altitude extremes?

Assignment specifics:
- As a team, review the assignment and devise a fair way to divide the work.
  - Who will research what?
  - What standards do you have for the information researched?
  - What expectation do you have for everyone’s full involvement?
  - What plan do you have if people don’t follow through?
- Research depth of knowledge: identify, define, use related vocabulary correctly, sequence your information so others can understand, provide evidence & explain your presentation ideas clearly.
- Develop a series of visual aids (4 or 5 minimum) along with talking points to help you with an oral presentation of this topic.
- Combine and cite your sources as a group to hand in separately.
- Prepare, practice and deliver a presentation to your class. Anticipate questions from your classmates.

Class-based resources: Ideas to get you started...
1. Anatomy and Physiology textbooks plus your Biology textbook
Reaching Extremes...
A Study of Human Body Systems and Homeostasis

Scenario:
You are a super athlete who enjoys training and is known for excellent endurance in all sports. You decide to enter the “Iron Man Triathlon,” a race that involves extreme endurance in swimming, biking and running, all in the same race. You know the best athletes in the world can complete this grueling race in about 8 hours, and you hope to finish in the top 10 this year. You are on track to do so after a 2.4 mile swim and 112 mile bike ride, but half way through the 26.2 mile run, you feel as though you have “hit the wall.” You begin to question whether or not you can make it to the finish line, and you wonder:

How will my body maintain homeostasis in this extreme situation?

Your task:
- Identify the human body system primarily and directly affected by ultra long distance racing.
- Explain how this body system functions normally. Compare and contrast that information with how this system responds during high endurance demands to help you survive.
- Discuss how other body systems work to help you maintain stability when you have been racing for extended periods of time. What signs indicate that your body is running out of steam?
- Research two or more animals that are known for their endurance. How have these animals adapted to a life of high energy demand?

Assignment specifics:
- As a team, review the assignment and devise a fair way to divide the work.
  - Who will research what?
  - What standards do you have for the information researched?
  - What expectation do you have for everyone’s full involvement?
  - What plan do you have if people don’t follow through?
- Research depth of knowledge: identify, define, use related vocabulary correctly, and sequence your information so others can understand, provide evidence & explain your presentation ideas clearly.
- Develop a series of visual aids (4 or 5 minimum) along with talking points to help you with an oral presentation of this topic.
- Combine and cite your sources as a group to hand in separately.
- Prepare, practice and deliver a presentation to your class. Anticipate questions from your classmates.

Class-based resources: Ideas to get you started...
1. Anatomy and Physiology textbooks plus your Biology textbook