

Summative 1: Systems in Action

Overall Expectation(s): 3. Demonstrate an understanding of different types of systems and the factors that contribute to their safe and efficient operation. (8s20).

Your Goal: Demonstrate an understanding of the following topics:

Systems

- Identify various types of systems (e.g., mechanical systems, body systems, optical systems, mass transit systems, Aboriginal clan systems, health care systems) (8s30).
- Identify the purpose, inputs, and outputs of various systems (8s31)
- Identify the various processes and components of a system that allow it to perform its function efficiently and safely (8s32)

Safe and Efficient Operation

- Compare, using examples, the scientific definition with the everyday use of the terms work, force, energy, & efficiency (8s33)
- Understand and use the formula $\text{work} = \text{force} \times \text{distance}$ to establish the relationship between work, force, and distance moved parallel to the force in simple systems (8s34)
- Calculate the mechanical advantage of various mechanical systems (8s35) (Create an example)
- Explain ways in which mechanical systems produce heat, and describe ways to make these systems more efficient (8s36)
- Describe systems that have improved the productivity of various industries (8s37)
- Identify social factors that influence the evolution of a system (8s38)

Consider the following vocabulary:

- | | | | |
|---|--|---|--|
| <input type="checkbox"/> action-at-a-distance | <input type="checkbox"/> machine | <input type="checkbox"/> fulcrum | <input type="checkbox"/> wheel and axle |
| <input type="checkbox"/> contact force | <input type="checkbox"/> mass | <input type="checkbox"/> inclined plane | <input type="checkbox"/> automated system |
| <input type="checkbox"/> energy | <input type="checkbox"/> output force | <input type="checkbox"/> lever | <input type="checkbox"/> components |
| <input type="checkbox"/> force | <input type="checkbox"/> potential energy | <input type="checkbox"/> mechanical system | <input type="checkbox"/> consumer |
| <input type="checkbox"/> friction | <input type="checkbox"/> mechanical advantage | <input type="checkbox"/> mechanism | <input type="checkbox"/> criteria |
| <input type="checkbox"/> gravitational potential energy | <input type="checkbox"/> spring scale | <input type="checkbox"/> pulley | <input type="checkbox"/> non-mechanical system |
| <input type="checkbox"/> gravity | <input type="checkbox"/> weight | <input type="checkbox"/> screw | <input type="checkbox"/> productivity |
| <input type="checkbox"/> ideal mechanical advantage | <input type="checkbox"/> work | <input type="checkbox"/> simple machine | <input type="checkbox"/> qualitative assessment |
| <input type="checkbox"/> input force | <input type="checkbox"/> efficiency | <input type="checkbox"/> useful output work | <input type="checkbox"/> quantitative assessment |
| <input type="checkbox"/> kinetic energy | <input type="checkbox"/> 1 st , 2 nd , 3 rd class lever | <input type="checkbox"/> wedge | |

Option 1: Systems in Action Mind Map

Mind maps are used to generate, visualize, structure, and classify ideas, and as an aid in study, organization, problem solving, decision making, and writing. A mind map is a diagram used to represent words, ideas, tasks, or other items linked to and arranged around a central key word or idea. Start your graphic organizer with the words “Systems in Action” in the middle. Use a pencil so you can make changes as you learn more information. Add to your graphic organizer with pictures and science vocabulary as you read through the chapter.

Option 2: Systems in Action Key Concept Review

The following questions provide a review of structures and forces and can be found in your Investigating Science and Technology textbook. Answer the questions in your Science notebook.

- Page 105 #1, 2, 3, 5, 8
- Page 112 #1, 2, 3, 6, 7, 8
- Page 124 #9, 11, 17
- Page 152 #2, 12

Option 3: Systems in Action Review

Using any of the following imaginative ideas, create a review of the systems in action and forces concepts.

Make sure to include pictures and science vocabulary. Some ideas to consider for your graphic organizer:

- | | | | | |
|---|--|--|--|-------------------------------------|
| <input type="checkbox"/> advertisement | <input type="checkbox"/> cheer | <input type="checkbox"/> diary | <input type="checkbox"/> label | <input type="checkbox"/> resume |
| <input type="checkbox"/> advice column | <input type="checkbox"/> comic Strip | <input type="checkbox"/> fable | <input type="checkbox"/> letter | <input type="checkbox"/> riddle |
| <input type="checkbox"/> announcement | <input type="checkbox"/> commercial | <input type="checkbox"/> fake Journalism article | <input type="checkbox"/> limerick | <input type="checkbox"/> song text |
| <input type="checkbox"/> apology letter | <input type="checkbox"/> complaint letter | <input type="checkbox"/> haiku | <input type="checkbox"/> menu | <input type="checkbox"/> speech |
| <input type="checkbox"/> autobiography | <input type="checkbox"/> create a 3-D drawing | <input type="checkbox"/> horoscope | <input type="checkbox"/> movie review | <input type="checkbox"/> spell |
| <input type="checkbox"/> bibliography | <input type="checkbox"/> create a postcard or brochure | <input type="checkbox"/> instructions | <input type="checkbox"/> myth | <input type="checkbox"/> story |
| <input type="checkbox"/> bylaw | <input type="checkbox"/> description | <input type="checkbox"/> interview | <input type="checkbox"/> newspaper | <input type="checkbox"/> storyboard |
| <input type="checkbox"/> card or letter | <input type="checkbox"/> design a flag | <input type="checkbox"/> invitation | <input type="checkbox"/> nursery Rhyme | <input type="checkbox"/> survey |
| <input type="checkbox"/> cartoon | <input type="checkbox"/> dialogue | <input type="checkbox"/> journal entry | <input type="checkbox"/> rap | |

FULL Name: _____

DUE Date: _____

Assessment Criteria - Summative Evaluation

| | Level 4 | Level 3 | Level 2 | Level 1 |
|---|---|---|---|--|
| <p>Systems</p> <ul style="list-style-type: none"> •Identify various types of systems (8s30) •Identify the purpose, inputs, & outputs of various systems (8s31) •Identify the various processes and components of a system that allow it to perform its function efficiently and safely (8s32) | <p>Student demonstrates a high degree of understanding of different types of systems.</p> | <p>Student demonstrates considerable understanding of different types of systems.</p> | <p>Student demonstrates some understanding of different types of systems.</p> | <p>Student demonstrates limited understanding of different types of systems.</p> |
| <p>Safe and Efficient Operation</p> <ul style="list-style-type: none"> •Compare, using examples, the scientific definition with the everyday use of the terms work, force, energy, & efficiency (8s33) •Understand and use the formula $\text{work} = \text{force} \times \text{distance}$ to establish the relationship between work, force, and distance moved parallel to the force in simple systems (8s34) •Calculate the mechanical advantage of various mechanical systems (8s35) •Explain ways in which mechanical systems produce heat, and describe ways to make these systems more efficient (8s36) •Describe systems that have improved the productivity of various industries (8s37) •Identify social factors that influence the evolution of a system (8s38) | <p>Student demonstrates a high degree of understanding of factors that contribute to the safe and efficient operation of systems.</p> | <p>Student demonstrates considerable understanding of factors that contribute to the safe and efficient operation of systems.</p> | <p>Student demonstrates some understanding of factors that contribute to the safe and efficient operation of systems.</p> | <p>Student demonstrates limited understanding of factors that contribute to the safe and efficient operation of systems.</p> |
| | <p>Student demonstrates a high degree of understanding of different types of systems and the factors that contribute to their safe and efficient operation.</p> | <p>Student demonstrates considerable understanding of different types of systems and the factors that contribute to their safe and efficient operation.</p> | <p>Student demonstrates some understanding of different types of systems and the factors that contribute to their safe and efficient operation.</p> | <p>Student demonstrates limited understanding of different types of systems and the factors that contribute to their safe and efficient operation.</p> |