

Grade 4 - Physical Science ELECTRIC CIRCUITS

Assessment Task A

Teacher Preparation: The students will need access to wires, batteries, and light bulbs.

Student preparation: The students will need to build a series and a parallel circuit using two light bulbs for each circuit.

Task:

Build a circuit with 2 bulbs in series. Explain what happens if you disconnect one bulb. Why?
Build a circuit with 2 bulbs in parallel. Explain what happens if you disconnect one bulb. Why?

Big Ideas

- *Series , parallel circuits*

Essential Concepts:

- Students will understand the characteristics of series and parallel circuits.

Performance Standards addressed by this task

Science	1 c; 4 a; 5 b, f; C; 7 b, c
Mathematics	
Language Arts	

Grade 4 - Physical Science ELECTRIC CIRCUITS

Assessment Task A

Rubric

5 Achieved the standard with honors	<ul style="list-style-type: none">• able to build a circuit with two light bulbs in series• able to build a circuit with two light bulbs in parallel• able to explain that if you disconnect a lightbulb in a series circuit, you break the only path there is to conduct electricity, so the bulbs go out• able to explain that if you disconnect a light bulb in a parallel circuit, the rest stay on because they each have a separate path back to the battery
4 Achieved the standard	able to build both circuits, but the explanation has a few errors
3 Nearly achieved the standard	partially able to build both circuits, but the explanation has a major errors
2 Below the standard	little or no success in building both circuits or in explaining how they work
1 Little evidence of achievement	inappropriate response/little evidence of understanding

**Grade 4 - Physical Science
ELECTRIC CIRCUITS**

Assessment Task A

Task:

Build a circuit with 2 bulbs in series. Explain what happens if you disconnect one bulb. Why?

Build a circuit with 2 bulbs in parallel. Explain what happens if you disconnect one bulb. Why?

Grade 4 - Physical Science ELECTRIC CIRCUITS

Assessment Task B

Teacher Preparation: The students will need access to wires, batteries, and light bulbs.

Student preparation: The students will need to build a series and a parallel circuit using two light bulbs for each circuit.

Task:

1. Build a series circuit with two light bulbs.
2. Draw and label a diagram of the circuit.
3. Build a parallel circuit with two light bulbs
4. Draw and label a diagram of the circuit.
5. Choose one circuit to write about. Clearly explain how this circuit works. What are its advantages and disadvantages compared to the other type of circuit?
6. If you were to add more bulbs to the series circuit, what would happen? Why?
7. If you were to add more bulbs to the parallel circuit, what would happen? Why?

Big Ideas

- *Conductors, insulators,*
- *Series , parallel circuits*
- *Transfer of electric energy to heat*

Essential Concepts:

- *Students will understand the characteristics of series and parallel circuits.*
- *Students will understand how to use trial and error to solve scientific problems.*

Performance Standards addressed by this task

Science	1 c; 4 a; 5 b, f; C; 7 b, c
Mathematics	
Language Arts	

Grade 4 - Physical Science ELECTRIC CIRCUITS

Assessment Task B

Rubric

<p>5 Achieved the standard with honors</p>	<ul style="list-style-type: none"> • able to build, diagram and label a series and a parallel circuit • able to explain how circuit works: series, the electricity flows from one bulb to the next parallel, each bulb has its own path back to the battery • able to explain advantages/disadvantages of series circuit all bulbs need to be working in order for any of them to work; however, when you add more bulbs they all get dimmer. This is because adding bulbs in series makes it harder for electricity to flow (more resistance) • able to explain advantages/disadvantages of parallel circuit each bulb works by itself - you don't need to have them all on in order for one to work; in addition, when you add more light bulbs they all stay about the same (They may actually get a bit dimmer, but not as drastically as in a series circuit)
<p>4 Achieved the standard</p>	<ul style="list-style-type: none"> • able to build, diagram and label a series and a parallel circuit • able to explain advantages/disadvantages and how the circuits work with few errors
<p>3 Nearly achieved the standard</p>	<ul style="list-style-type: none"> • partially able to build, diagram and label the circuits • partially able to explain advantages/disadvantages and how the circuits work, but with serious gaps in understanding
<p>2 Below the standard</p>	<ul style="list-style-type: none"> • little or no success in building, diagramming and labeling the circuits, or • being able to explain advantages/disadvantages or how the circuits work
<p>1 Little evidence of achievement</p>	<p>inappropriate response/little evidence of understanding</p>

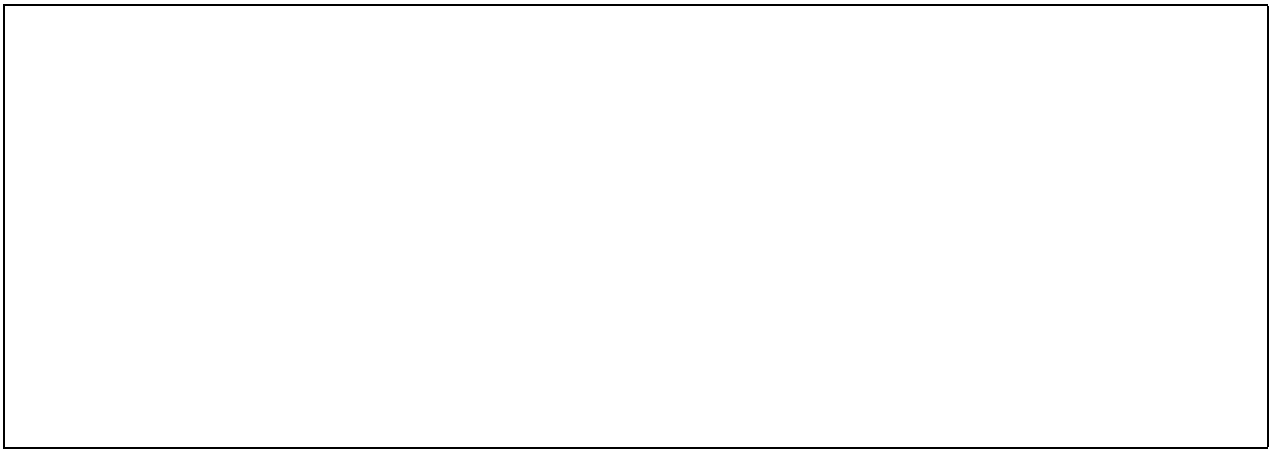
Grade 4 - Physical Science ELECTRIC CIRCUITS

Assessment Task B

Task:

1. Build a series circuit with two light bulbs.

Draw a diagram of the circuit using the secret language.



2. Build a parallel circuit with two light bulbs
3. Draw a diagram of the circuit using the secret language.



4. Choose one circuit to write about. Clearly explain how this circuit works. What are its advantages and disadvantages compared to the other type of circuit?

6. If you were to add more bulbs to the series circuit, what would happen? Why?

7. If you were to add more bulbs to the parallel circuit, what would happen?
Why?

Grade 4 - Physical Science

ELECTRIC CIRCUITS

Assessment Task C

Teacher Preparation: The students will need access to wires, batteries, and light bulbs.

Student preparation: The students will need to build and wire a house with circuits. This follow-up activity is to assess their writing and content understanding.

Task:

1. As part of a team, build your house with more than one circuit, each operating on a separate switch.
2. Once the house is built, troubleshoot any problems you may have encountered.
3. Write a narrative report outlining:
What you did to build your house
What problems you encountered, and how you attempted to solve them
How well your teamed worked together.

Big Ideas

- *troubleshooting*
- *wiring series , parallel circuits*
- *writing a narrative report*

Essential Concepts:

- *Students will understand the characteristics of series and parallel circuits.*
- *Students will understand how to use trial and error to troubleshoot problems.*
- *Students will convey a coherent message regarding the construction of their house, troubleshooting problems, and a self assessment as part of a team effort*

Performance Standards addressed by this task

Science	1 c; 4 a; 5 b, f; C; 7 b, c
Mathematics	
Language Arts	2 a, d

Grade 4 - Physical Science ELECTRIC CIRCUITS

Assessment Task C

Rubric

5 Achieved the standard with honors	<ul style="list-style-type: none">• able to explain in coherent writing how the house was built• able to troubleshoot any problem circuits, and explain how problems were solved• able to describe how well the team worked together to accomplish the task
4 Achieved the standard	<ul style="list-style-type: none">• able to explain in generally acceptable writing how the house was built• able to troubleshoot any problem circuits and give reasonable explanation of how problems were solved• able to describe how well the team worked together to accomplish the task
3 Nearly achieved the standard	<ul style="list-style-type: none">• attempt made to explain in writing how the house was built, how problems were solved, and how well the team worked together to accomplish the task; however, writing is generally incoherent and lacks common grammatical structure• may not have been able to troubleshoot any problem circuits
2 Below the standard	<ul style="list-style-type: none">• unable to explain in writing how the house was built, how problems were solved, and how well the team worked together to accomplish the task• unable to troubleshoot any problem circuits
1 Little evidence of achievement	<ul style="list-style-type: none">• inappropriate response/little evidence of understanding

