Broward County Public Schools

CARE

Curriculum Assessment Remediation Enrichment

Grade LEVEL 3
Science CARE Assessment #5

CURRICULUM	
Body of Knowledge	**Physical Science**
Big Idea	**10: Forms of Energy**
Benchmark(s)	SC.3.P.10.1 Identify some basic forms of energy such as light, heat, sound, electrical, and mechanical. SC.3.P.10.2 Recognize that energy has the ability to cause motion or create change.

Energy, Motion and Change

In this activity students will recognize that energy has the ability to cause motion or change.

Materials
Ping-Pong ball
Straws

Student Task

Use the straw to move the ping-pong ball across the desk without it falling on the floor.

Safety
No sharing of straws. Straws should not be used to hit ball after it has been used on or in mouth.
Dispose of straws.

Journal Writing
What form of energy was used to move the straw across the table without it falling on the floor?
Describe the motion of the ball.
Describe any change that happened during the task performed.

Teacher Notes

Give pairs of students a ping-pong ball and 2 straws (one straw for each child).
Project the task on the board.
Tell the students that the activity that they are about to perform includes these three concepts: Energy, Motion, Change
Read the task to the students.
Give students 10 minutes to complete the task including the journal writing.
Have students brainstorm with their partner and decide on a method to move the ball.

Students should verify with teacher before they perform the activity.
After 10 minutes ask group(s) to share out.
*Students may have used their straw to propel the ball across the table to their partner.
*Students might have used the straw to blow air on the ball to propel it across the table to their partner.
Ask students what type of energy was used to move the ball?
Possible answers may include: mechanical energy, wind energy
Ask students what type of motion did they observe?
Possible answers may include: a rolling ball
Ask students what type of change did they observe?
Possible answers: the ball moved from one side of the desk to the other side, the ball changed position.

Explain to the students that if they hit the ball with the straw that they used mechanical energy, which put the ball in motion (the ball to roll across the table), a change in the position of the ball occurred as a result of the energy that was applied.

Explain to the students that if they blew air through the straw onto the ball they used mechanical energy - energy of motion to make the ball roll across the table, a change in the position of the ball occurred as a result of the mechanical energy that was applied.
Note: Mechanical energy can be either kinetic energy (energy of motion) or potential energy (stored energy). Wind has mechanical energy in the form of kinetic energy because it is moving)

Project the following picture (also attached at the end of this document as a page by itself)

Ask students what type of energy is being used to fry the egg.
Possible answers may include: heat energy
Ask students, does the energy being applied cause any motion or change?
Possible answers may include: that the egg changed from liquid to solid, that as the egg fried it appears to move up and down.

Explain to the students that heat energy caused the egg to change from a liquid to a solid and that during the change the egg appeared to move up and down as the egg was being cooked.

KEY Vocabulary
Energy
Mechanical Energy
Heat Energy
Motion
Change

ESE Strategies
The activity incorporates the following strategies:
Seat student near positive role model; orally check for understanding of key points; Write key points on board/overhead; provide wait time for question responses; allow extra time for exam; allow flexible settings.

ESOL Strategies
This activity incorporates the following strategies.
Flexible setting (A4); Concise language(B1); Observation (C9); Interactive word wall (D5); Peer pair (E4); Ask clarifying question (G5)

This assignment can be scored using the rubric provided in the link below

http://www.nsta.org/elementaryschool/connections/201011ReuseThatNotebookRubric.pdf

ASSESSMENT

Grade 3 Mini Assessment 5 is attached at the end of this document

Grade 3 Mini Assessment 5 is also in Virtual Counselor

After testing: Score test and plan for remediation, reteaching and enrichment.
Differentiate instruction based on Assessment score:

- 80-100 % == Enrichment
- 70 - 79 % == Remediation
- < 70 == Reteach

Ideas for implementation of your plan might include but not limited to the following:

- Stations (Centers)
- Small group- Teacher or peer as facilitator
- Whole Group- only if the entire class needs this
- Peer Tutor

Ideas for tracking progress might include but not limited to the following.

- Teacher observation and questioning
- Journal/Notebook evidence of learning

REMEDIATION / RETEACH

Reteach

Use the following lesson to reteach the benchmarks. In this activity students will use an online digital lesson to review mechanical energy (potential and kinetic), as well as to identify various types of energy.

Unit 4 Lesson 1 (Additional Teacher Notes are attached to this document)

Teacher Lesson

Student Lesson

ESE Strategies
The activity incorporates the following strategies:
Seat student near positive role model; orally check for understanding of key points; Write key points on board/overhead; provide wait time for question responses; allow extra time for exam; allow flexible settings.

ESOL Strategies
This activity incorporates the following strategies.
Flexible setting (A4); Concise language (B1); Observation (C9); Interactive word wall (D5); Peer pair (E4); Ask clarifying question (G5)

Remediate

Teacher Notes

Have students watch "Getting to Know: Energy" video from discovery education located in BEEP.

http://app.discoveryeducation.com/player/view/assetGuid/FD5D90B6-3C2F-4651-A32E-495045ECC2BA

(Login using your BEEP login information if prompted)

After the students have viewed the video have them work in pairs to observe the classroom for the following forms of energy: light, heat, sound, electrical, and mechanical.

Students should describe all the different forms of energy being used in the classroom in their science notebooks.

Students should also describe the motion or change that would occur for each form of energy when it's applied.

This assignment can be scored using the rubric provided in the link below

http://www.nsta.org/elementaryschool/connections/201011ReuseThatNotebookRubric.pdf

ESE Strategies
The activity incorporates the following strategies:
Seat student near positive role model; orally check for understanding of key points; Write key points on board/overhead; provide wait time for question responses; allow extra time for exam; allow flexible settings.

ESOL Strategies
This activity incorporates the following strategies.
Flexible setting (A4); Concise language (B1); Observation (C9); Interactive word wall (D5); Peer pair (E4); Ask clarifying question (G5)

ENRICHMENT

For students who have mastered the benchmarks, assign students the following activity to complete. Materials can be found in the Delta Science Kits.

Lesson: Wind Me Up
In this activity students build a wind-up boat, which uses the stored energy of a rubber band to motor around a bathtub (or any other body of water you choose to use!)

Have students write to explain in their science notebooks the type of energy that is being utilized to make the boat move.

Materials
a styrofoam tray
rubber bands of various sizes
a paperclip
scissors
pencil
ruler

https://www.cdm.org/wp-content/uploads/2014/04/Boing-WindMeUp1.pdf

Project Based Rubric is attached.

ESE Strategies
The activity incorporates the following strategies:
Seat student near positive role model; orally check for understanding of key points; Write key points on board/overhead; allow extra time for exam; allow flexible settings.

ESOL Strategies
This activity incorporates the following strategies.
Flexible setting (A4); Concise language (B1); Observation (C9); Peer pair (E4); Ask clarifying question (G5)

Project-based Learning Rubric

Score Levels	Content	Conventions	Organization	Presentation
4	• Is well thought out and supports the solution to the challenge or question • Reflects application of critical thinking • Has clear goal that is related to the topic • Is pulled from a variety of sources • Is accurate	• No spelling, grammatical, or punctuation errors • High-level use of vocabulary and word choice	• Information is clearly focused in an organized and thoughtful manner • Information is constructed in a logical pattern to support the solution	• Multimedia is used to clarify and illustrate the main points • Format enhances the content • Presentation captures audience attention • Presentation is organized and well laid out
3	• Is well thought out and supports the solution • Has application of critical thinking that is apparent • Has clear goal that is related to the topic • Is pulled from several sources • Is accurate	• Few (1 to 3) spelling, grammatical, or punctuation errors • Good use of vocabulary and word choice	• Information supports the solution to the challenge or question	• Multimedia is used to illustrate the main points • Format is appropriate for the content • Presentation captures audience attention • Presentation is well organized
2	• Supports the solution • Has application of critical thinking that is apparent • Has no clear goal • Is pulled from a limited number of sources • Has some factual errors or inconsistencies	• Minimal (3 to 5) spelling, grammatical, or punctuation errors • Low-level use of vocabulary and word choice	• Project has a focus but might stray from it at times • Information appears to have a pattern, but the pattern is not consistently carried out in the project • Information loosely supports the solution	• Multimedia loosely illustrates the main points • Format does not suit the content • Presentation does not capture audience attention • Presentation is loosely organized
1	• Provides inconsistent information for solution • Has no apparent application of critical thinking • Has no clear goal • Is pulled from few sources • Has significant factual errors, misconceptions, or misinterpretations	• More than 5 spelling, grammatical, or punctuation errors • Poor use of vocabulary and word choice	• Content is unfocused and haphazard • Information does not support the solution to the challenge or question • Information has no apparent pattern	• Presentation appears sloppy and/or unfinished • Multimedia is overused or underused • Format does not enhance content • Presentation has no clear organization

1) Introduction

2) Forms of energy

VOCABULARY

How would you define energy?

Energy is the ability to make something move or change.

MISCONCEPTIONS

If you've ever been around a puppy, you may have heard someone say it "has a lot of energy" or it's "energetic." What do you think this means?

The word "energy" comes from the Greek word meaning "to be active." The word "energetic" means that something has energy. It's also another word for "active." Puppies wiggle, jump, play, and don't seem to stay in one place for very long. They're very active!

ENGAGE

What types of energy did you use today while you were getting ready for school?

The alarm clock woke you up. You turned the lights on in your room. That was electrical and light energy. You took a warm shower. That used heat energy. Heat energy also helped cook your breakfast. You used energy when you walked to school.

3) Types of energy

EVALUATE

Can you name one type of energy and give an example of how it moves or changes something?

Electrical energy makes light bulbs light, microwaves cook, and phones make calls. Sound energy allows you to hear the phone ring or a TV program.

Is there anything in the picture that is a source of sound and heat energy?

The kettle is hot, and it also makes sound when it boils.

4) Mechanical energy

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CORE CONCEPTS

Where do you think the roller coaster car's potential energy is greatest? What about its kinetic energy?

The car's potential energy is greatest at the top of the hills. Kinetic energy is greatest at the bottom.

VOCABULARY

What is mechanical energy?

Mechanical energy is the total potential and kinetic energy of an object.

5) Everyday energy use

EVALUATE

What are some other ways heat energy is used at school or at home?

Heat lamps keep food warm in the cafeteria. Heat is used to cook food and warm the building. Heat is also used to warm the pool. At home, heat energy helps cook food and keeps the rooms warm.

6) Identify PE and KE

EXTEND AND REFLECT

Where else do you see kinetic energy being used every day?

We see kinetic energy when we see any moving object, such as a car moving, a person running, a bird flying, a ball falling to the ground.

CORE CONCEPTS

How would you describe potential energy and kinetic energy?

Potential energy is stored energy due to position or condition. Kinetic energy is energy due to motion.

Suppose you're biking down a hill. What types of energy do you have when you?re halfway down the hill?

You have both potential energy and kinetic energy.

7) Energy from light

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8) Sum it up

SYNTHESIS

What happens to your bike if you roll down a hill without peddling or touching the brakes? What energy changes are happening?

The bike will go faster and faster. Potential energy, or stored energy, is changing into kinetic energy, or energy of motion.

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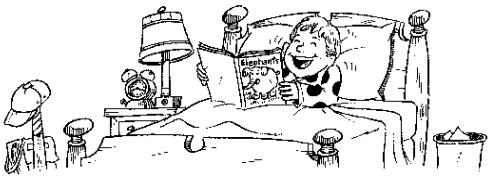
Science Grade 3
Mini-Assessment #5

Directions: Choose the letter of the best answer.

1. Manuel's mother reminded him to turn on his lamp when reading at night.



Which two forms of energy are involved when Manuel turns on his lamp?
A. Light is produced and sound energy is used.
B. Light is produced and electrical energy is used.
C. Sound energy is produced and electrical energy is used.
D. Electrical energy is produced and sound energy is used.

2. Which type of energy produces a rainbow?

A. mechanical energy
B. sound energy
C. light energy
D. heat energy

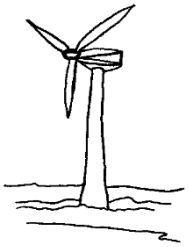
3. Which picture **BEST** shows an example of mechanical energy?

A.

C.

B.

D.



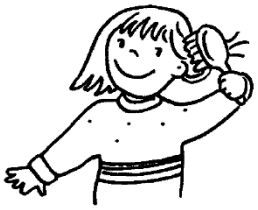
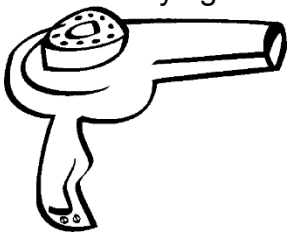
4. Below is a table showing examples of sound energy. Use the numbers to order the sounds from loudest to quietest.

SOUNDS HEARD OUTSIDE

Number	Sound Produced
1	Whispered speech
2	Car horn beeping
3	Jackhammer breaking up sidewalk
4	Basketball bouncing

In which of the following are the sounds listed from loudest to quietest?
A. 2, 3, 4, 1
B. 3, 2, 4, 1
C. 3, 4, 1, 2
D. 3, 4, 2, 1

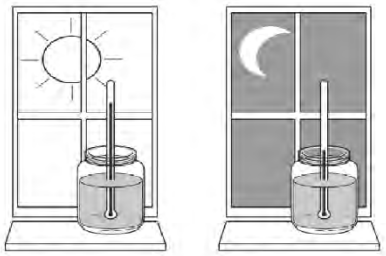
5. Alyssa, Yue, Nicole, and Cherish are shown getting ready for the day.

<table>
<tr><td>Alyssa is brushing her hair.
  </td><td>Yue is blow-drying her hair
  </td></tr>
<tr><td>Nicole is brushing her teeth.
  </td><td>Cherish is turning off her alarm clock.
  </td></tr>
</table>

Which girl is using heat and electrical energy?

A. Yue
B. Alyssa
C. Nicole
D. Cherish

6. Study the drawings below.



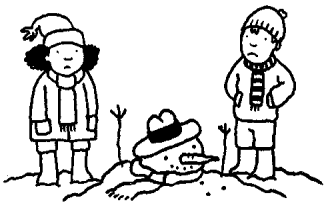
Which form of energy caused the observed difference in temperature?

A. gravitational
B. electrical
C. heat
D. sound

7. Which of the following is an example of energy causing change?

A. a windmill spinning
B. a bicycle sitting in a garage
C. a toy car sitting on the ground
D. a campfire that has been put out

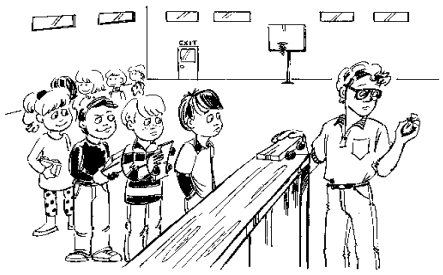
8. Janelle and her brother built a snowperson. The next morning, the snowperson had melted.



Which type of energy **most likely** caused the change in the snowperson?

A. electrical
B. heat
C. light
D. mechanical

9. Angel and his classmates released toy cars on a ramp. Each car was held at the top of the ramp and released.



Which type of energy caused the motion of the cars?

A. heat energy
B. sound energy
C. light energy
D. mechanical energy

10. Fiona and her classmates are investigating how the height, or steepness, of a ramp affects a ball's motion. The students rolled the same ball down three different ramps and measured the time it took the ball to reach the bottom of each ramp. The table below shows the students' data.

Ramp	Length (cm)	Height (cm)	Travel Time to Bottom of Ramp (sec)
Ramp 1	150	30	1.5
Ramp 2	150	45	1.2
Ramp 3	150	60	1.0

The students know that the greater the ball's energy, the faster it moves. Based on their data, what can the students conclude about the relationship between ramp height and the energy of the ball?

A. The data show no relationship between the height of the ramp and the energy of the ball.
B. The ball on the lowest ramp had the most energy because it moved the fastest.
C. The ball on the highest ramp had the least energy because it moved the slowest.
D. The data show that the higher the ramp, the greater the ball's energy.

Science Grade 3 Mini-Assessment #5 KEY

Question	Answer	Benchmark	DOK
1	B	**SC.3.P.10.1** Assessed as SC.5.P.10.1	2
2	C	**SC.3.P.10.1** Assessed as SC.5.P.10.1	2
3	D	**SC.3.P.10.1** Assessed as SC.5.P.10.1	2
4	B	**SC.3.P.10.1** Assessed as SC.5.P.10.1	1
5	A	**SC.3.P.10.1** Assessed as SC.5.P.10.1	2
6	C	**SC.3.P.10.2** Assessed as SC.5.P.10.2	2
7	A	**SC.3.P.10.2** Assessed as SC.5.P.10.2	2
8	B	**SC.3.P.10.2** Assessed as SC.5.P.10.2	2
9	D	**SC.3.P.10.2** Assessed as SC.5.P.10.2	2
10	D	**SC.3.P.10.2** Assessed as SC.5.P.10.2	2

Answer 1: B
Answer A is incorrect because the lamp's operation involves light and electrical energy, not sound energy.
Answer B is correct because electrical energy is transformed into the light energy given off by the bulb.
Answer C is incorrect because the lamp's operation involves light and electrical energy, not sound energy.
Answer D is incorrect because the lamp's operation involves light and electrical energy, not sound energy.

Answer 2: C
Answer A is incorrect because a rainbow is produced by light energy, not mechanical energy.
Answer B is incorrect because a rainbow is produced by light energy, not sound energy.
Answer C is correct because a rainbow is produced by light energy.
Answer D is incorrect because a rainbow is produced by light energy, not heat.

Answer 3: D
Answer A is incorrect because using a toaster involves heat, light, and electrical energy.
Answer B is incorrect because a burning candle produces heat and light energy.
Answer C is incorrect because a whistle produces sound energy.
Answer D is correct because the moving blades of a wind turbine possess mechanical energy, which is used to generate electrical energy.

Answer 4: B
Answer A is incorrect because this is not the correct order of sounds from loudest to quietest.
Answer B is correct because this is the correct order of sounds from loudest to quietest.
Answer C is incorrect because this is not the correct order of sounds from loudest to quietest.
Answer D is incorrect because this is not the correct order of sounds from loudest to quietest.

Answer 5: A
Answer A is correct because Yue is using heat and electrical energy by using her hair dryer.
Answer B is incorrect because Alyssa is not using heat or electrical energy.
Answer C is incorrect because Nicole is not using heat or electrical energy.
Answer D is incorrect because Cherish is not using heat or electrical energy.

Answer 6: C
Answer A is incorrect because gravity is not responsible for the observed difference in temperature.
Answer B is incorrect because electrical energy is not responsible for the observed difference in temperature.
Answer C is correct because removal of the Sun's heat caused the observed drop in temperature
Answer D is incorrect because removal of sound energy did not cause the observed drop in temperature.

Answer 7: A
Answer A is correct because a turning windmill is an example of wind energy causing motion.
Answer B is incorrect because the bicycle is neither moving nor changing form.
Answer C is incorrect because the toy car is neither moving nor changing form.
Answer D is incorrect because changes in matter are no longer occurring, since the fire has been extinguished.

Answer 8: B
Answer A is incorrect because electrical energy would not have changed the snowperson.
Answer B is correct because heat would have caused the snowperson to melt.
Answer C is incorrect because light energy would not have caused the greatest change in the snowperson.
Answer D is incorrect because mechanical energy would not have changed the snowperson.

Answer 9: D
Answer A is incorrect because heat energy did not cause the cars to move.
Answer B is incorrect because sound energy did not cause the cars to move.
Answer C is incorrect because light energy did not cause the cars to move.
Answer D is correct because mechanical energy caused the cars to move.

Answer 10: D
Answer A is incorrect because the data clearly show that the ball's speed and energy do increase with ramp height.
Answer B is incorrect because it is an inaccurate interpretation of the data.
Answer C is incorrect because it is an inaccurate interpretation of the data.
Answer D is correct because the data clearly show that the ball's speed and energy increase with ramp height, indicating that gravity's pull on the ball increases as the ramp's steepness increases.