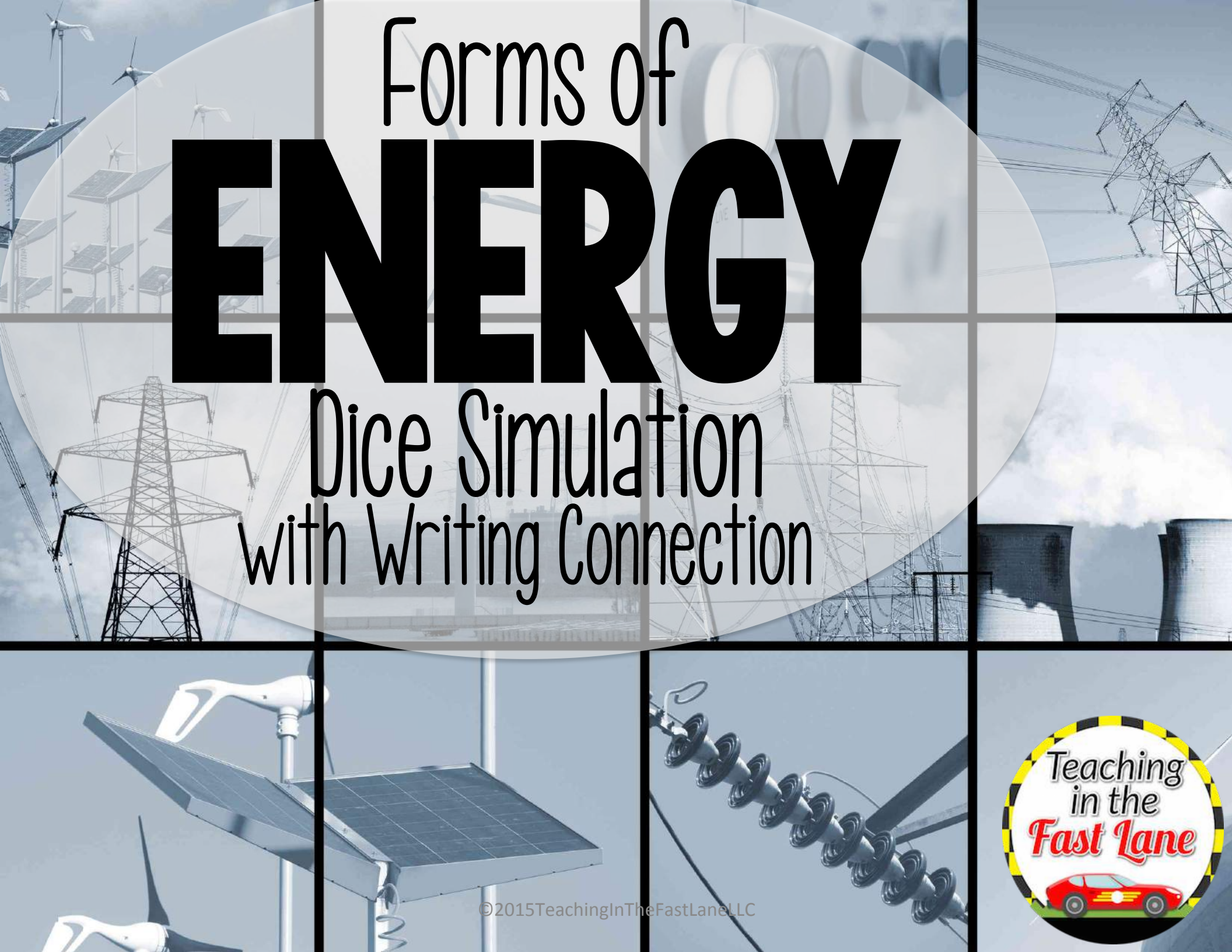
# Forms of ENERGY

## Dice Simulation

### with Writing Connection



Teaching in the Fast Lane

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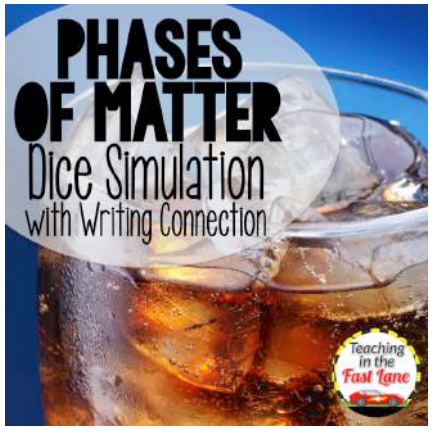
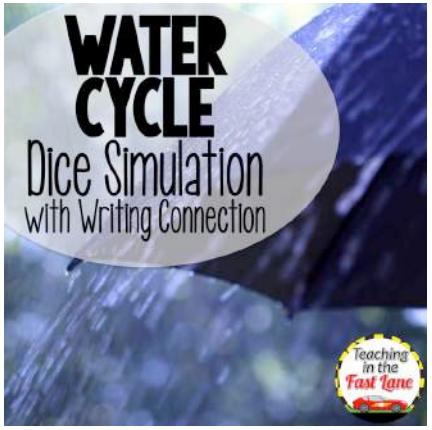
# Teaching in the Fast Lane

## FOR MORE SIMULATIONS!




**TURKEY IN HIDING**
Dice Simulation
**AND WRITING CONNECTION**

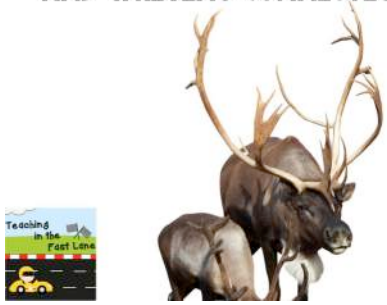


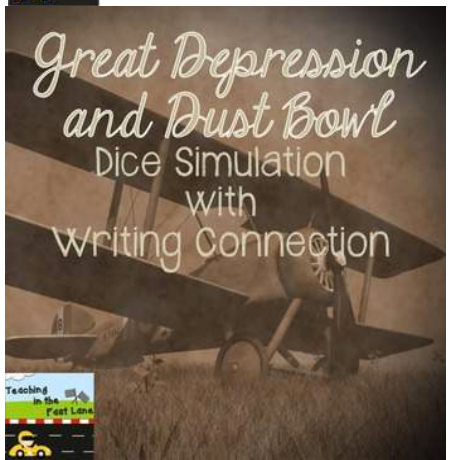


**CIRCULATION OF A DOLLAR**
Dice Simulation
**AND WRITING CONNECTION**



**REINDEER GAMES**
Dice Simulation
**AND WRITING CONNECTION**







## MANY MORE TO COME!

# INCLUDED IN THIS PRODUCT:

- Teacher and student directions for simulation
- Recording sheet
- Sample recording sheet
- Teacher directions for narrative
- Sample narrative based on sample recording sheet
- Rubric for narrative
- Signs for each location with directions
  - For large classes, I would make multiple copies of each poster and directions, so that lines at each don't get too long.

**You will need six dice to complete this simulation. I recommend the large foam dice that can be found at the dollar store.**

# NOTE TO TEACHER

This is a simulation meant to reinforce students' knowledge of the transfer of energy through its different forms. This simulation is a great way to connect science and writing within your curriculum.

# TEACHER DIRECTIONS FOR SIMULATION

- Print and laminate each of the location signs and student directions.
- Hang the location signs and student directions around your classroom and place one die by each poster.
- Hand out recording sheets to students and review the directions with them:
  - Directions are found on the next page
- Monitor students as they travel around the classroom during the simulation and complete their recording sheet.
- Assign students to their starting location.
  I do this by numbering students off #1-6 and assign them to the following locations:
  - 1. Light Energy
  - 2. Sound Energy
  - 3. Mechanical Energy
  - 4. Thermal Energy
  - 5. Electrical Energy
  - 6. Chemical Energy

# DIRECTIONS FOR SIMULATION

- After each student has their starting location, they should begin to circulate.
- At each location, roll the die and read the event associated with the number rolled. Use the underlined words to record your progress and travel to the next location.
- Once you have established your location, travel there quietly and wait in line to roll the die.
  - If your directive is to stay in the same location, then go to the end of the line and take another turn rolling the die.
- Students should continue to travel from location to location until they complete their recording sheet or time is up.
  - I would recommend allowing students to complete the simulation for about 10-15 minutes.

# LIGHT ENERGY

# LIGHT ENERGY

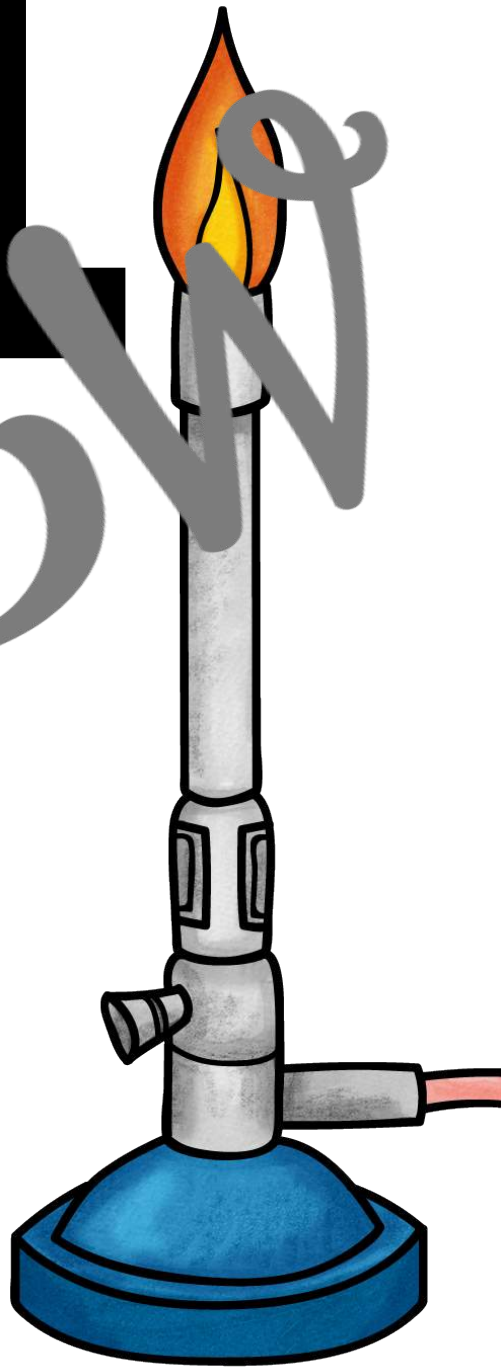
1. You can feel the thermal energy coming off of you!
2. You are taken in by a solar panel and transformed into electrical energy.
3. You find a plant and transform into chemical energy through photosynthesis.
4. You are taken in by a solar panel and transformed into electrical energy.
5. You can feel the thermal energy coming off of you!
6. You find a plant and transform into chemical energy through photosynthesis.

# SOUND ENERGY

# SOUND ENERGY

1. Your vibrations move speaker parts and transform into mechanical energy.
2. Your vibrations echo off a canyon wall and remain sound energy.
3. Your vibrations cause friction resulting in thermal energy.
4. Your vibrations echo off a canyon wall and remain sound energy.
5. Your vibrations move speaker parts and transform into mechanical energy.
6. Your vibrations cause friction resulting in thermal energy.

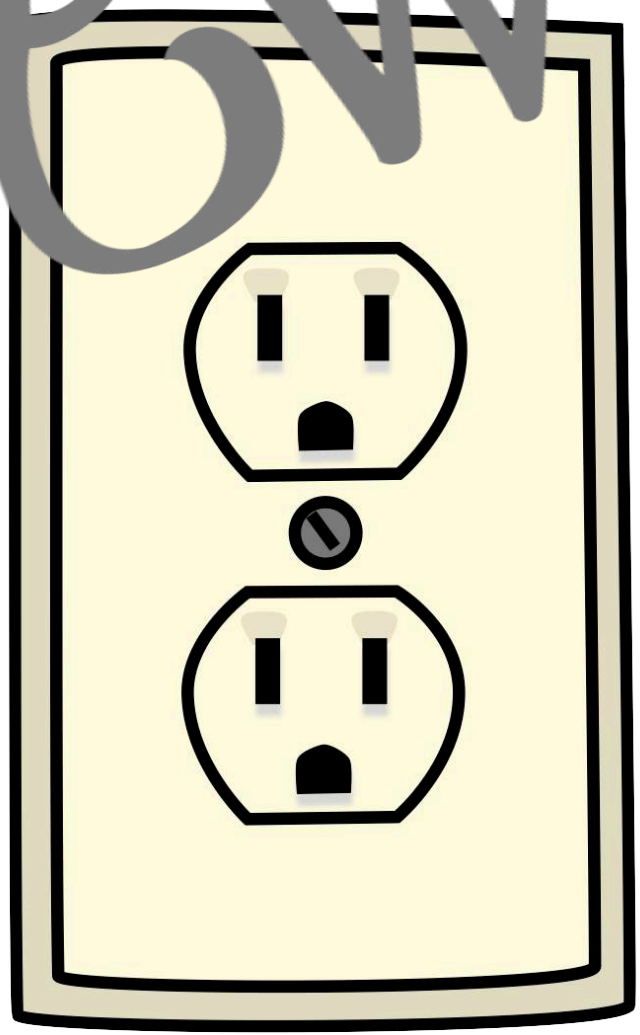
# THERMAL ENERGY



# THERMAL ENERGY

1. Your heat is transformed into a flame emitting light energy.
2. Your heat is used to complete a reaction transforming you into chemical energy.
3. Your heat is transformed into electrical energy.
4. Your heat is transformed into a flame that gives off sound energy.
5. Your heat is transformed into electrical energy.
6. You find a plant and transform into chemical energy through photosynthesis.

# ELECTRICAL ENERGY

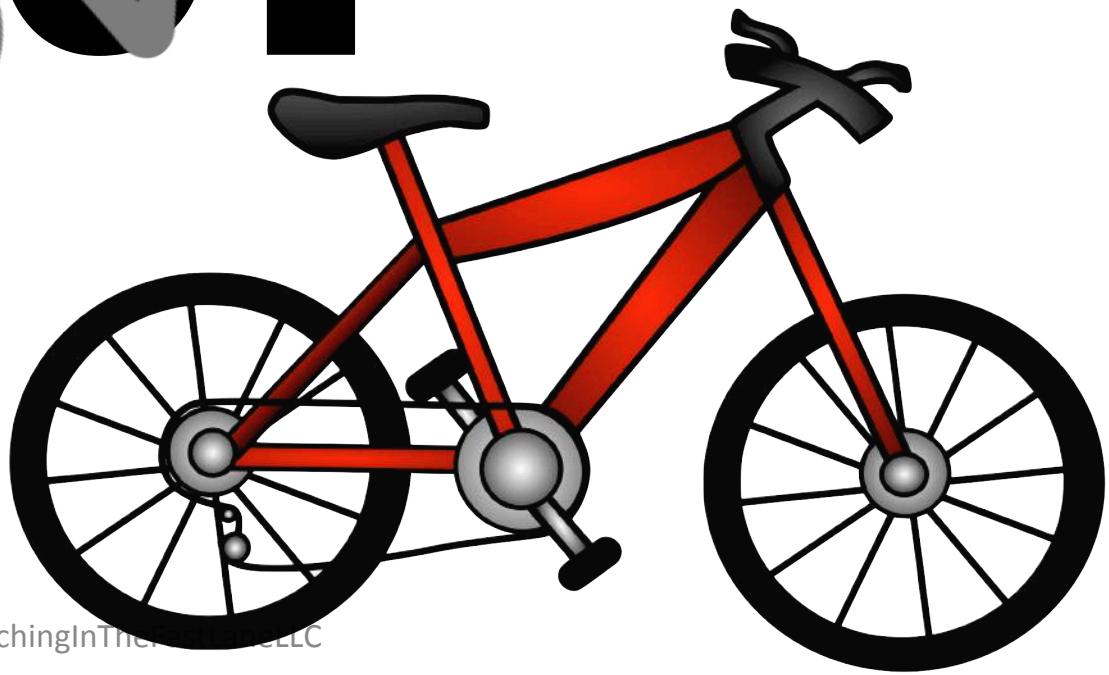


# ELECTRICAL ENERGY

1. You enter a light bulb and emit light energy.
2. You power an electrical guitar and release sound energy.
3. You power a fan that uses mechanical energy.
4. You are used to power a radio transforming into sound energy.
5. You are used to charge a battery and remain electrical energy.
6. When powering a lamp you lose some thermal energy through your wiring.

# MECHANICAL ENERGY



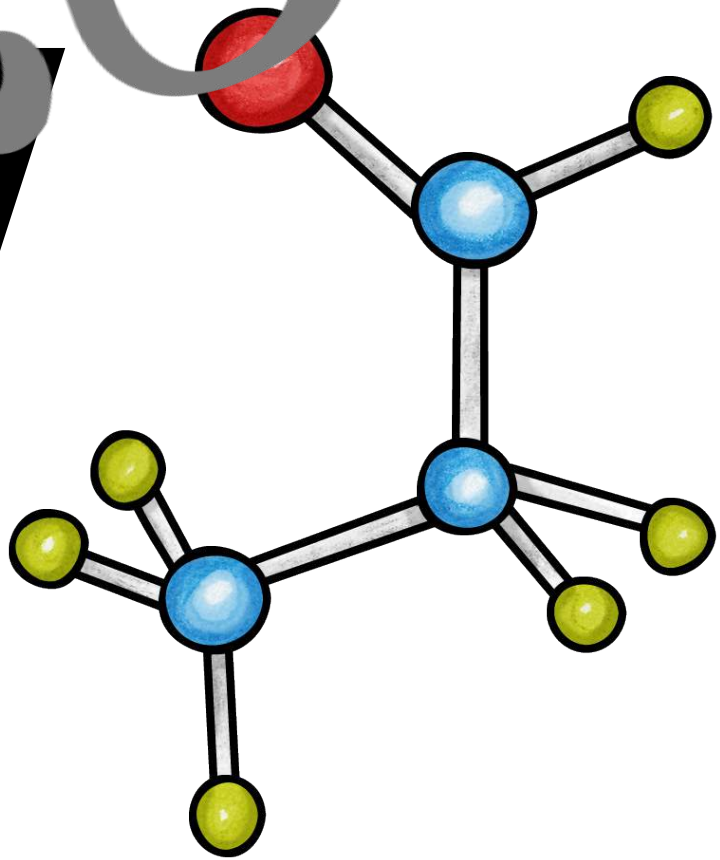


# MECHANICAL ENERGY

1. Your movement creates friction and gives off thermal energy.
2. Rubbing two sticks together you are able to give off a spark of light energy.
3. Your action is able to transform into electrical energy.
4. Clapping your hands together creates sound energy.
5. By striking a match, you create a reaction transforming into chemical energy.
6. Dragging your feet across the carpet creates friction emitting thermal energy.

# CHEMICAL ENERGY





# CHEMICAL ENERGY

1. Your reaction causes a spark emitting <u>light energy</u>.
2. Your reaction causes a spark emitting <u>thermal energy</u>.
3. You cause a combustion allowing an engine to have <u>mechanical energy</u>.
4. Your heat is transformed into a flame that gives off <u>sound energy</u>.
5. Your reaction is transformed into <u>electrical energy</u>.
6. Your reaction gives off a boom of <u>sound energy</u>.

Name_____ #___ Date____

# FORMS OF ENERGY DICE SIMULATION

| | | | |
|---|---|---|---|
| 1 | Begin | 11 | |
| 2 | | 12 | |
| 3 | | 13 | |
| 4 | | 14 | |
| 5 | | 15 | |
| 6 | | 16 | |
| 7 | | 17 | |
| 8 | | 18 | |
| 9 | | 19 | |
| 10 | | 20 | |

# SAMPLE RECORDING SHEET

# FORMS OF ENERGY DICE SIMULATION

| | | | |
|---|---|---|---|
| 1 | Begin as chemical energy | 11 | Thermal energy |
| 2 | Light energy | 12 | Light energy |
| 3 | Thermal energy | 13 | Thermal energy |
| 4 | Electrical energy | 14 | Sound energy |
| 5 | Light energy | 15 | Mechanical energy |
| 6 | Electrical energy | 16 | Chemical energy |
| 7 | Sound energy | 17 | Sound energy |
| 8 | Mechanical energy | 18 | Thermal energy |
| 9 | Chemical energy | 19 | Light energy |
| 10 | Sound energy | 20 | Thermal energy |

# TEACHER DIRECTIONS FOR NARRATIVE

- After completing the dice simulation, students are ready to write a narrative from the point of view of energy being transformed from one form to another.
- Students should use their recording sheet (the locations they visited) to write a narrative piece about their adventure.
- By following the recording sheet and adding details, students will have a narrative describing their adventure. It is also important for students to use their science vocabulary in the narrative.
- It is alright for students to not use all of the locations on their recording sheet, but they should include at least five events.
- A rubric for the narrative is included

# SAMPLE NARRATIVE

I began life as a chemical reaction. The bang that I underwent let out such a guttural boom that it shook me to my very core causing me to undergo the transformation into my favorite state, being sound energy. I love to feel the vibrations of being sound energy floating through the air. I prefer to travel slow at low frequencies, but enjoy a sprint of high frequency from time to time.

I continued to travel as a wave until I reached a tight space. My vibrations caused quite a bit of friction, and I felt myself warming into thermal energy. Before I knew it I was being captured and harnessed to create electrical energy.

Electrical energy is my least favorite of forms because I don't like to be trapped, and that is exactly how I feel when traveling through a wire. Wires though are still far better than living out life stuck in a battery. The last time I was captured in a battery I stayed sitting on a store shelf for months before finally being put to use. This is not the type of life I want to live.

Fortunately this stint of electrical energy was short lived as I was immediately used to light the factory. I would have to say that light energy is my second favorite form to take. It isn't quite as freeing as being a sound wave, but it is liberating to provide light to organisms below. I savored my time as a photon shining down on the factory floor but before I knew it I was being sucked into a solar panel.

I underwent the transformation to become electrical energy yet again. The process of being pulled from the solar panel was one that I do not wish to undergo ever again, but I understand that it is a necessary evil. However, I soon started to worry about where I would wind up.

Soon I felt myself coursing through wires and bursting out of speaker as sound. I let out a wild call to my energy friends in celebration!

# RUBRIC FOR FORMS OF ENERGY DICE SIMULATION NARRATIVE

| | 1 point | 3 points | 5 points |
|---|---|---|---|
| **Grammar, Mechanics, & Spelling** | Many mistakes that make it difficult for the reader to understand. | A few mistakes, but the reader can still understand. | Only 1-2 mistakes and the reader can understand. |
| **Organization and Coherence** | The story does not make sense or follow order of events. | The story follows order of events, but lacks coherence. | The story follows a logical order and is coherent. |
| **Events from recording sheet** | Includes 3 or less events from the simulation. | Includes 4-5 events from the simulation. | Includes 6 or more events from the simulation. |
| **Added Scientific Vocabulary** | No details are added. Academic vocabulary is not present | A few obvious details are added along with some academic vocabulary. | Many imaginative details are added. Clear use and knowledge of academic vocabulary is present. |





Total Score __/20

**Thank you for your purchase. If you have time, please rate this product and leave me some feedback on how I can improve my products. All constructive criticism is greatly appreciated.**

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