

origin

Return To [Primary Lesson Plans](#)

**Title:** Origin of Coal

**Level:** Primary - Intermediate ( 1 - 4 )

**Time:** Each activity varies - average 20 minutes for each depending on age/level of student

**KERA Goals:** 1.2, 1.4, 1.5 - 1.9, 2.7, 2.8, and 6.2

**Objective:** Student will demonstrate knowledge that coal is a fossil fuel.

### **Background Information: What is Coal?**

Coal is a black or brownish-black rock that is made from plants that lived and died about 100 to 400 million years ago. Because coal is made of once living plants, it is called a fossil fuel.

Millions of years ago much of our land was covered by swamps. In these swamps were very large plants and trees that grew to extreme heights. As these plants and trees died they fell into the swamp waters. This process continued for many years forming layer upon layer of dead plants. These heavy, soggy layers eventually formed a material called peat. Over time, dirt, sand and clay covered the plants. The weight of the layers, heat and pressure caused the peat to become rich carbon deposits. After millions of years of change, these carbon deposits formed four different types of coal. One type of coal is bituminous. Of all the states, Illinois has the largest reported bituminous coal reserves.

### **Activities:**

#### 1. COAL=SUM DIFFERENCE

Prehistoric

#### 2.DESIGNS FOUR ENERGY

Coal

#### 3. ENERGY PICTO-SPELL FACT

It took many millions of years for coal to form.

#### 4. FIND-AN-ENERGY-PHRASE

Coal is a fossil fuel formed from plant remains.

#### 5. FIVE-WAY ENERGY WORD SEEK

Fossil

#### 6. SPELLING DEMONS AND ENERGY

Peat is the initial form of coal. Bituminous.

#### 7. SUM ENERGY WORDS

Fossil

8. THIRD LETTER SQUARE PHRASE

Sometimes an outline of an ancient plant can be seen in lumps of coal.

1. A Math Magic Word Puzzle

**COAL = SUM DIFFERENCE**

D 15	L 16	R 17	I 18	O 19	S 20	I 21	T 22
T 23	I 24	S 25	E 26	I 27	L 28	N 29	O 30
S 31	N 32	O 33	E 34	N 35	T 36	R 37	I 38
R 39	T 40	S 41	I 42	E 43	C 44	S 45	C 46
E 47	A 48	M 49	S 50	H 51	R 52	A 53	T 54
P 55	U 56	T 57	I 58	P 59	E 60	R 61	U 62

28	60	52	38	39	22	38	46	54	27	61
27	43	26	13	19	28	19	27	17	15	17
+	-	-	+	+	+	+	-	-	+	-

--	--	--	--	--	--	--	--	--	--	--

Directions: What word can you spell? Add or subtract the problems and then find the answers in the letter code. Put the letters in the boxes.

**Instructions for Exercise:**

Students will solve 11 addition and subtraction problems. Match the answers with the letter code. Transfer the letters above the answers to the line of 11 boxes to spell an interesting word. For example, the answer of 55 has the letter P in the letter code.

origin

## A Math Magic Word Puzzle ANSWERS

### COAL = SUM DIFFERENCE

D 15	L 16	R 17	I 18	O 19	S 20	I 21	T 22
T 23	I 24	S 25	E 26	I 27	L 28	N 29	O 30
S 31	N 32	O 33	E 34	N 35	T 36	R 37	I 38
R 39	T 40	S 41	I 42	E 43	C 44	S 45	C 46
E 47	A 48	M 49	S 50	H 51	R 52	A 53	T 54
P 55	U 56	T 57	I 58	P 59	E 60	R 61	U 62

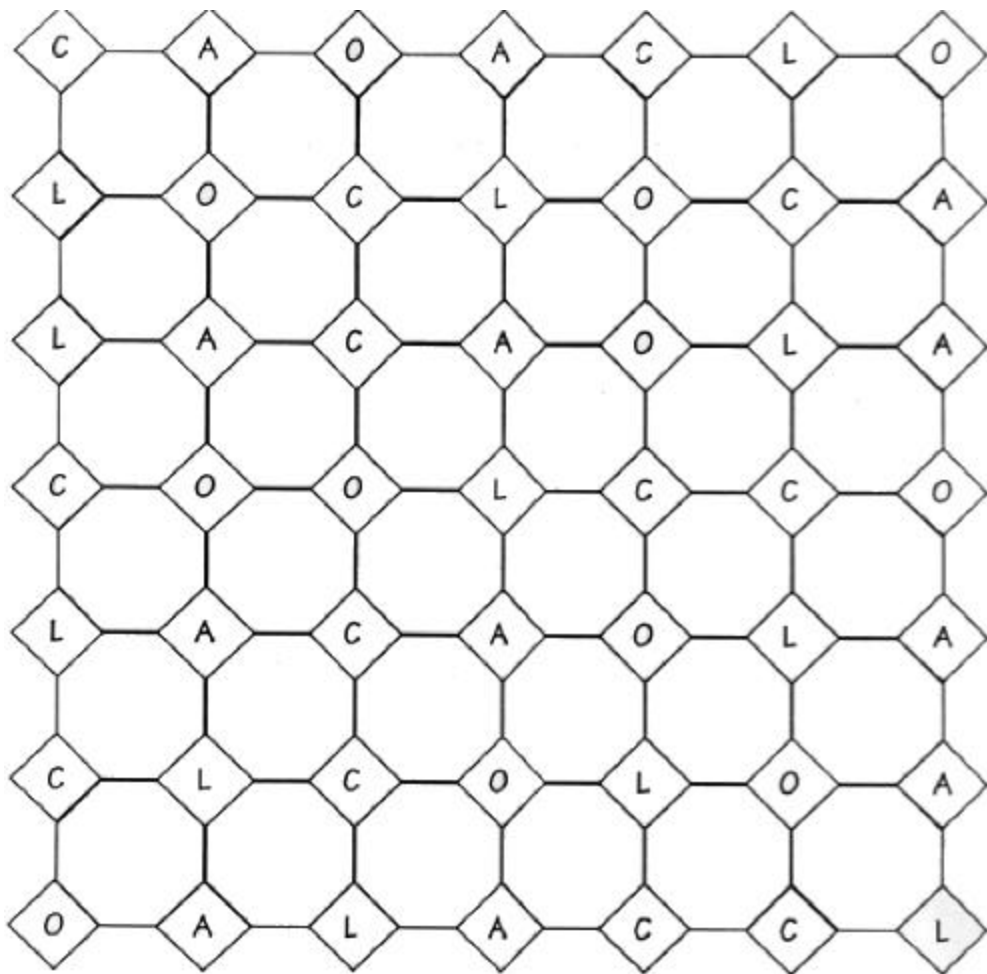
28	60	52	38	39	22	38	46	54	27	61
27	43	26	13	19	28	19	27	17	15	17
+	-	-	+	+	+	+	-	-	+	-
55	17	26	51	58	50	57	19	37	42	44

P	R	E	H	I	S	T	O	R	I	C
---	---	---	---	---	---	---	---	---	---	---

## 2. A Pattern Play Word Puzzle

### DESIGNS FOUR ENERGY

origin



DIRECTIONS: Color all the octagons(8 sided figures) that have the same four letters around it that spell the word COAL.

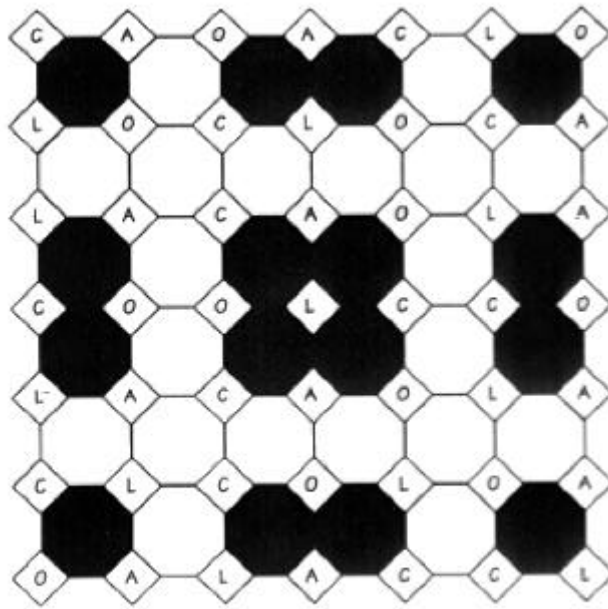
### Designs Four Energy Answers

#### Instructions for Exercise:

Students will color or shade all the octagons with the bordering letters that spell COAL. The letters do not have to be in the same order as the word COAL. When the puzzle is complete, students will see a pleasing geometric shape.

## DESIGNS FOUR ENERGY

origin



















COAL

### 3. A-Picture-Spell Word Puzzle

ENERGY PICTO-SPELL FACT

origin

				
SH-R-	AS-R-NAUT	SM-KESTAC-	-ED-L	CA-D-
				
-A-L	A--IGATOR	D-N-SAUR	-O-E	W-L-
				
PUPP-	B--VER	D-E-S	-LOWER	C--N
				
-L-UDS	C-ME-	PO-AT-	--RK	PY-A-ID

I \_ \_ \_ \_ \_  
\_ \_ \_ \_ \_

DIRECTIONS: Spell an energy sentence by filling in the blanks with the missing letters.

**Answers to Energy Picto-Spell Fact:**

A Picture-Spell Word Puzzle

**ENERGY PICTO-SPELL FACT**

				
SHIRT	ASTRONAUT	SMOKESTACK	MEDAL	CANDY
				
MAIL	ALLIGATOR	DINOSAUR	NOSE	WOLF
				
PUPPY	BEAVER	DRESS	FLOWER	CORN
				
CLOUDS	CAMEL	POTATO	FORK	PYRAMID

IT TOOK MANY MILLIONS OF YEARS FOR COAL TO FORM.

4. An A-Maze-In Phrase Word Puzzle

**FIND-AN-ENERGY-PHRASE**

REMAINS	COAL	IS	A
PLANT	IS	FOSSIL	FUEL
FROM	PLANT	A	REMAINS
FOSSIL	A	IS	COAL
FUEL	PLANT	A	FORMED
PLANT	FROM	FOSSIL	FUEL

origin

FROM	FORMED	FUEL	REMAINS
PLANT	FROM	IS	COAL
FORMED	PLANT	REMAINS	FROM
COAL	FOSSIL	FUEL	FORMED
IS	FROM	FOSSIL	FUEL
A	REMAINS	PLANT	REMAINS

**COAL IS A FOSSIL FUEL FORMED FROM PLANT REMAINS.**

DIRECTIONS: Draw a line to connect the words in the sentence.

**Answer for Find-An-Energy-Phrase**

**Instructions for Exercise:**

Students will draw a continuous line connecting the nine words in the sentence, COAL IS A FOSSIL FUEL FORMED FROM PLANT REMAINS. Begin from one of the four COAL words on the outer edges and move forward, either right or left, but never slantwise. There is only one correct route.

REMAINS	COAL	IS	A
PLANT	IS	FOSSIL	FUEL
FROM	PLANT	A	REMAINS
FOSSIL	A	<b>IS</b>	<b>COAL</b>
FUEL	PLANT	<b>A</b>	FORMED
PLANT	FROM	<b>FOSSIL</b>	FUEL
FROM	<b>FORMED</b>	<b>FUEL</b>	REMAINS
PLANT	<b>FROM</b>	IS	COAL
FORMED	<b>PLANT</b>	<b>REMAINS</b>	FROM



origin

COAL	FOSSIL	FUEL	FORMED
IS	FROM	FOSSIL	FUEL
A	REMAINS	PLANT	REMAINS

COAL IS A FOSSIL FUEL FORMED FROM PLANT REMAINS.

### 5. A Word Seek Word Puzzle

#### FIVE-WAY ENERGY WORD SEEK

	F		S	I			
	O	S			L		
		O				I	
			O				L
F		F	O	S	S	I	L
		F		S			L
F			O		L		
	O			S		L	

**FOSSIL**

DIRECTIONS: How many fossils can you find? Spell the word by filling in the boxes.

#### Five-Way Energy Word Seek

#### Instructions for Exercise:

Students will find the word FOSSIL across or down. Some of the letters in the squares can be used to spell the word FOSSIL while others will not allow the word to be spelled. There are five FOSSIL words and one has already been found.

origin

**Answer to FIVE-WAY ENERGY WORD SEEK (lower case letters)**

	<b>F</b>		<b>S</b>	<b>I</b>			
f	<b>O</b>	<b>S</b>	s	i	<b>L</b>		
	s	<b>O</b>				<b>I</b>	
	s	f	<b>O</b>	s	s	i	<b>L</b>
<b>F</b>	i	<b>F</b>	<b>O</b>	<b>S</b>	<b>S</b>	<b>I</b>	<b>L</b>
	l	<b>F</b>	o	<b>S</b>	s	i	<b>L</b>
<b>F</b>			<b>O</b>		<b>L</b>		
	<b>O</b>			<b>S</b>		<b>L</b>	

**FOSSIL**

**6. A Spell-Well Word Puzzle**

**SPELLING DEMONS AND ENERGY**

P WRITE	E ONCE	A PAST	T RAISE
I PIECE	B COMEING	S LOOSE	I AMUNG
T QUEIT	T EVERY	H WHICH	E READY
I MANY	N ANOTHER	U BEFOUR	I LAID
M HURD	T MEANT	I NONE	I COULD
A OFTEN	N HEER	L SURPRISE	F KNEW
O LITTLE	R FRIEND	O COLA	M ASKED
U TONIT	O BECAUSE	F AGAIN	C WENT
O FIRST	S ACK	A CAUGHT	L ONCE

origin

P \_ \_ \_ \_ \_  
\_ \_ \_ \_ \_

Directions: Use the letters above the words with the correct spelling to fill in the blanks.

### Answer to Spelling Demons and Energy

#### INSTRUCTIONS FOR EXERCISE:

Students will decide which of the words are spelled correctly. Begin from the top space on the left that is marked with a large dot and move across each of the word-letter boxes. Place the letters that are above the correct spelling words on the dotted lines. Skip the boxes that have spelling demons ( misspelled words). When the exercise is completed, there will be a true energy statement, PEAT IS THE INITIAL FORM OF COAL.

Extension: The word, BITUMINOUS, can be spelled using the letters of the demons.

### SPELLING DEMONS AND ENERGY

P WRITE	E ONCE	A PAST	T RAISE
I PIECE	B COMEIN	S LOOSE	I AMUN
T QUEI	T EVERY	H WHICH	E READY
I MANY	N ANOTHER	U BEFOU	I LAID
M HUR	T MEANT	I NONE	I COULD
A OFTEN	N HEE	L SURPRISE	F KNEW
O LITTLE	R FRIEND	O COLA	M ASKED
U TONIT	O BECAUSE	F AGAIN	C WENT
O FIRST	S ACK	A CAUGHT	L ONCE

**PEAT IS THE INITIAL FORM OF COAL.**

### 7. An Outline To Find Word Puzzle

An Outline To Find Word Puzzle

## SUM ENERGY WORDS



8

DIRECTIONS: Color the spaces that have the numbers with the sum of eight.  
What word have you spelled?




### 8. A Skip Letter Word Puzzle

A Skip Letter Word Puzzle

### THIRD LETTER SQUARE PHRASE

S	F	E	O	A	S	M	N	E	E	A	E	T	N	N
B														I
O														C
L														I
N														M
E														I
A														N
A														E
N														E
O														L
C														S
I														N
C														U
T														A
L	F	N	T	O	A	U	S	L	O	P	P	N	M	T

start



**DIRECTIONS:** Use every third letter to discover what Mr. Alumpa Coal is saying.



### ANSWERS to Third Letter Square Phrase


origin

A Skip Letter Word Puzzle

### THIRD LETTER SQUARE PHRASE

S	F	E	O	A	S	M	N	E	E	A	E	T	N	N	
B														I	
O														C	
L		S	O	M	E	T	I	M	E	S				I	
N		A	N	O	U	T	L	I	N	E				M	
E		O	F											I	
A		A	N											N	
A		A	N	C	I	E	N	T						E	
N		P	L	A	N	T								E	
O		C	A	N										L	
C		B	E											S	
I		S	E	E	N									N	
C		I	N											U	
T		L	U	M	P	S								A	
	L	F	N	T	O	A	U	S	L	O	P	P	N	M	T

**SOMETIMES  
AN  
OUTLINE  
OF  
AN  
ANCIENT  
PLANT  
CAN  
BE  
SEEN  
IN  
LUMPS  
OF  
COAL.**



Acknowledgment: Illinois Department of Commerce & Community Affairs and Office of Coal Development & Marketing

Return To [Primary Lesson Plans](#)