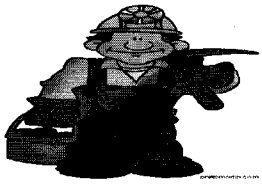
INTRODUCTION



This year my Cedar Coal Unit, entitled Kids "DIG" COAL it's a Fact! ,was developed based on the results of a pre-assessment that my group of 48, Third Grade (Departmentalized Reading-Language Arts) students were given. The pretest was based on their background knowledge about a broad range of topics dealing with the Coal Mining Industry. Typically, I had always done K-W-L Charts with my students but they became bored with them and couldn't supply much information about a topic they knew very little about. The direction my coal unit took came after analyzing the test results. It was obvious that, I had to be very basic so my students could have a deeper understanding about this precious resource that is very close to home. Most of the students had never before studied about Coal because teachers in (K-2nd grade) do not go in depth to the capacity that (3rd-5th grade) teachers do. Our Coal Unit always becomes multi-disciplinary/cross-curricular due to the amount of core content that can be covered during this time. This can be uncovered in the multitudes of student work children 'dug' up. Items covered in this unit had to be aligned with the *Common Core Standards* that have been broken down into *Essential Skills*.

Reading/Language Arts (Writing, Listening, Speaking, and Viewing)

- Ask and answer questions to demonstate understanding of a text, referring explicitly to the text as the basis for the answers.
- Read and comprehend informational texts, including history, social
- studies,science,and technical texts.
- Work independently, with partners, or in cooperative groups effectively, while collaborating and building on others' ideas.
- Demonstrate correct usage of standard English grammar when writing or speaking.
- Make real-world connections related to our Coal Study Unit.
- Gather and collect data based on research projects.

Science and Social Studies

- Recognize that Earth's materials or Natural Resources such as (Coal, Oil, and Gas) change over time, and become either renewable or non-renewable resources.
- Identify and Locate the Coal Producing States on a Map.

The best part of this unit had to be the amount of student involvement and active engagement. The students had to gather all Cedar supplied reading materials, such as Coal, Appalachian Fiction, Kentucky and Kentucky Author Studies (George Ella Lyons, Paul Brett Johnson, and Cynthia Rylant), Rocks and Minerals, Videos, Coal Samples and others. Students were asked to create kid-friendly, "I Can Statements" to understand the educational objectives I had set for them. For example, one student wrote ....."I Can ask questions about the Coal Related books I read." Students had to draw pictures that went along with our New Vocabulary. Students did Google searches for Interactive Coal Game Websites and got to play some of the games that coal mining families played. They also got to design a game called, *Can You Dig It?* by writing the questions for the game which will be explained in detail later. These "Kids "Dig" Coal!

DESCRIPTION OF THE ACTIVITIES

Handwriting Activities Photos (1-5):

1. Students are actively engaged in this Interactive Smartboard lesson. They create a Word Ladder that transforms words by changing their initial, medial, or final consonants or vowels to create new words. They start with 'coal' and end with 'tree'.
2. In the Word Center, this student showed off how many words she could make from the word surface (mine), when the letters are arranged in order from a, e, c, f, u, r, s.
3. At the Science/Social Studies Center students worked on the *Let's Learn About Coal* Coloring Booklets to gain background information about a resource they knew little about.

4. Students worked on a Sticky Note Activity for Reading on Kentucky Coal Facts.
5. This is the most beneficial process for teaching students to become distinguished writers. It is called a "Do What?"/ Restate?Answer. It teaches students how to answer open response items. This Do What? Organizer was completed during reading.

Spelling Activities Photos (6-16):

6. There is a Three Tiered Chart of Words in my classroom pocket chart. It contains high frequency words, reading words, and content area word about coal.
7. Students worked in centers cooperatively using Scrabble letter tiles to create a Crossword Puzzle of Coal Words.
8. This student stamped out one-syllable words from our Coal Word Wall List.
9. This Interactive lesson was a word search where students located Coal Words.
10. These students played Million Dollar Pyramid and Charades describing a coal vocabulary word on the Random Picker Machine on the Smartboard (behind boy).
11. -12 Students played an active engagement lesson called Alpha Plates, where each plate has a consonant or vowel letter on it and they are timed on a Interactive Clock how fast they can spell words from our Coal Study unit.
13. This Making Words Lesson involved using letter tiles to create words from the word surface such as: saucer, cause, café, face, sure, scar, fur, scarf, cure, and others.
14. This booklet called, *Coal Mining Counts,* was set up at a center for students to work on.
15. After a few days, students accumulated many words in their Alpha Boxes about Coal.
16. This student stamped coal words from the Tier Three Chart and will write the syllables.

English Activities Photos(17-22):

17. MacKenzie created a Rebus (story that replaces words with pictures) on mining coal.
18. Students worked on Fact and Opinions of the Coal Industry and had to do each others sentences that they created, I truly could see from this lesson that they grasped coal!
19. After working on Poetry in English, students created Couplets (two-line rhyming poem) about Coal.
20. This closed procedure activity on Bituminous Coal was found on Promethean Planet which is an Interactive board hub with lessons. The children used handheld Activotes and got

to program in their answers.

21. Gavin completed a crossword puzzle on Energy Resources on the internet.

22. Students connected Subjects to their Predicates to make a complete thought about coal.

Reading Activities Photos (23-28):

23. Students used their Non-fiction Text Features to answer questions about *Protecting the Environment*.

24. During Self-Selected Reading and Accelerated Reader this child read independently the book, "*A is for Appalachia* and tested his comprehension on the computer.

25. Students worked on Brain Pop Jr. on the Smartboard about Natural Resources.

26. This activity discussed clean coal tech-knowledgies but was a bit difficult for students, we compared it to a processing plant and they understood this much better.

27. These students are looking at the array of books dealing with our Coal Study Unit.

28. Students learned about the different types of coal mines, drift mines, slope mines, and shaft mines. We did a bodily-kinesthetic activity to remind them about each.

Math Activities Photos (29-30):

29. This student connected consecutive numbered dots to create a dragline which is used in surface mining.

30. Cole did his Coal Fair project in the area of Math. He calculated, by using power bills, that we use 71 pounds of coal per day to light just the fluorescent lighting in our school.

Science Activities Photos (31-36):

31.-32. These are Coal Fair projects that students did based on Coal Formation.

33. Children learned about all of the safety equipment that a coal miner wears to work.

34. *Let's Review*, was a lesson on Promethean Planet which discussed the properties of rocks.

35. Students, as an assessment, had to successfully complete twenty-seven Coal Mining Unit tasks at Centers and write a reflection. They worked independently and cooperatively.

36. Children observed Igneous, Sedimentary, and Metamorphic Rocks and classified them.

Social Studies Activities Photos (37-45):

37. Jordan shows off his Social Studies project on Coal Energy.

38. Students compared, by using map skills, amounts of Coal and Oil resources in the U.S.

39. We made a web with yarn of the many coal by-products.

40. In our Social Studies text, students found out about the dangers of roof falls.

41. Using a blank United States Map and Marker, students listed the Coal Producing States.

42.-45. These students received extra credit points for doing their project in the area of Social Studies, which was an area they were having difficulty in. It increased their GPA.

Hands-On Activities: See Student Center Folder (Photos already included)

This was a part of their assessment, to complete all of the center assignments.

Computer Center Activities Photos (46-56):

46. Students used the Active Board to put together puzzles of a roof bolter machine.

47. Students answered questions about our Coal Unit using the Activotes Response System.

48. The boys and girls divided into teams, to answer Coal questions that the students came up with, while playing our *Can You Dig It?* game using the Active Response Systems.

49. This is a picture of the Can You Dig It? scoreboard where the two teams competing against one another were the Miners vs. Environmentalists. They came up with this.

50. The Random Name Generator on http://www.classtools.net lands on a word that the student has to define.

51. The Mining Concentration game allowed students to recall mining pictures under a lump of coal that created a picture of old mining methods.

52.-53. These students tested on *Mama is a Miner,* and received immediate feedback at the Computer Center.

54. Students enjoyed doing all of the hands-on games on the Smartboard dealing with coal.

55. Our Buzzer (Response) Game allows my students to "light up" when answering questions on our Coal Unit.

56. One of the frequented websites we visited was EIA Energy Kids to learn about how coal transforms in to energy. They learned about kinetic, potential, and chemical energy.

Art Activities Photos (57-73):

57. Children can really 'dig' the photo shoot they had wearing coal miner's hat.

58. All students are showing off the way they decorated their Coal Unit Folders for centers.

59. Students worked with modeling clay to create a miner that works in low coal.

60. Students used tracing paper and scratch art paper to draw their favorite coal scene.

61.-73. My students who entered Art Projects in the Coal Fair display their work of 'heart.'

Music Center Activities:

Students sang, did an interpretive dance with motions, and acted out these coal unit favorites, "Changing Rocks", "Sixteen Tons", and "Workin' in a Coal Mine."

Coal Fair Participants/Projects Photos (74-79):

74.-76. These students were First Place, Second, and Third Place Winners in the Cedar Coal School Fair. First place projects will advance to the Cedar Regional Coal Fair.

77.-79. This Culminating Event, to close our 2010-2011 Coal Fair, displays a collage of outstanding student projects.

SUMMARY

Sometimes, I wish this paper could be longer so I could share in depth some of the stories about all of the things we accomplish during our Coal Study. As I mentioned before, these children had no background about coal as a natural resource. I took them from swamps (origin of coal) to coal (formation of coal) and mines to power lines. Even though our scope was somewhat broad, it could never replace the smiles on their faces when they could finally answer questions about things they never knew. Inclement weather didn't keep us from achieving our goals. To say the students were successful, would be an understatement. They made "I Can" statements that were easy for them to understand what was expected of them. Their successes can also be viewed when you see a completed Unit folder with an overwhelming amount of tasks. The unit was evaluated based on many things: Pretests on Coal, Post Tests, Do What? Organizers and Open Responses, Class Participation and doing a project in the Coal Fair, Completion of Center Tasks and their Reflections. The children had to write a reflection at each center they rotated to. The comments were always favorable. One would keep saying, "Can we work on this tomorrow?" I will close by quoting Maria Montessori, "The greatest sign of a success for a teacher…..is to be able to say, "The children are now working as if I did not exist." Can you "DIG" it? Kids can.

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Tab 12: CEDAR GRANT FINANCIAL ACCOUNTING.....NO MONEY USED

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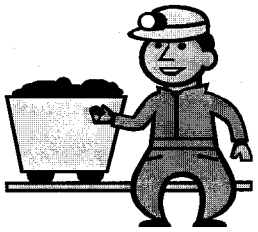
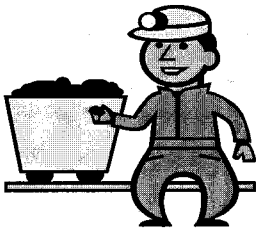


Coal Mining Unit Centers



Whole Group: Design a Coal Folder to place your Unit Work in.

Center 1: Let's Learn About Coal Coloring Book

Reflection: I am coloring and working on my coal booklet.

Center 2: Making Words Game with the letters in a, e, u, c, f, r, s

Reflection: I am using letter tiles to make words from the word surface

Center 3: Crossword Puzzle of Coal Words and Alpha Boxes

Reflection: We are making words that has to do with coal, while playing crossword with it.

Center 4: SmartBoard Interactive Games on Coal and Energy

http://www.eia.doe.gov/kids/energy.cfm?page=6

Reflection: I am finding words in the cross word puzzle and extra I also made a puzzle.

Center 5: Kentucky Sticky Note Reading Activity on Coal Resources.

Reflection: I am using a Kentucky book to find facts about coal.

Center 6: Social Studies Activity- Dry Erase (Geography) Map of

Coal Producing States in the United States.

Reflection: We used dry-erase maps to see the mat coal producing states.

Center 7: Rock Docs-Students observe various Rocks and Minerals with handheld lens and do the accompanying handout.

Reflection: We are observing rocks and writing about our favorite rock.

Center 8: Computer Center-Reading Comprehension Activity on Coal.

Reflection: _____

Center 9: Reading Center of Various Coal, Appalachian Fiction, and books on Kentucky. You may self-select a book to read in your reading range and test on the book for Accelerated Reader.

Reflection: (Title of Book and Score) _____

Center 10: Do What? Activity on an Open Response Item about Coal (When finished you may read the "Coal Mining Counts" booklets).

Reflection: We are doing activities in this coal booklet.

Center 11: Tier 3-(Content Area Words) Coal Word Wall Stampers. Stamp out and organize 1, 2, 3, and 4 syllable words.

Reflection: We are stamping one syllable coal words.

My dad is a Coal Miner. He is also an *Electrician.* He always wears a  and . He wears a  and  with reflective tape on them. He puts a  on his  to see underground. He packs his  everyday. He works shifts like 1st shift, 2nd shift and 3rd shift. He wears thermals in the Winter. He drives his  46 miles to and from work each day. He answers the  each day and delivers supplies to men when they need it.

Abbey D.

B4. She had to wash the dishes.

Mama is a Miner

Do What?	Restate/Answer
A. Identify three things that the children would do for fun.	A. Three things that the children would do for fun are: A1. King of the Mountains A2 Cooled themselves off above the grove A3. They played Mumble typeg
B. Describe Mama's role in the family and her responsibilities.	B. Mama's role in the family and her responsibilities were: B1. Give the kids a bath on Saturdays and dad's clothes and gave him a bath every day in the #3 washtub. B2. Mama had to tend and plant the garden. B3. She had to scrub with her nuckles the dust off the dirty clothes and her nuckles would be red as fire.

Do What?	Restate/Answer
A. Identify three thing children would do for fun.	A. Three things that the children would do for fun are: A1. King Of The Mountains A2. Cooled their selves off above the grove A3. They played Mumbletypeg
B. Describe Mama's role in the family and her responsibilities.	B. Mama's role in the family and her responsibilities were: B1. Give the kids a bath on Saturday and wash dads clothes and give him a bath every day in the #3 wash tub

D. What? Paragraph Answers

B2. Mama's had to tend and plant the garden.

B3. She had to scrub with her hands to the dust of the dirty clothes and her muscles would be red as fire.

B4. She had to wash the dishes.

C. Explain life in a company town.	Life in a company town was hard the house were in a row and they looked exactly the same and your only friends were the seventy-five kids that lived in the company row houses.

Do What?	Restate / Answer
A. Identify two methods used to mine coal.	A. Two methods used to mine coal are: Underground mining is when miners go under ground and mine. Surface mining is when miners stay on the surface and mine.
B. Describe how coal miners were paid for the work they did.	B. Coal miners were paid for the work they did with tokens called scrips, unlike what we get paid with today, dollar bills, and coins, they're way different from us today.

DO WHAT	RESTATE AND ANSWER
A. Identify two methods used to mine coal.	A. Two methods used to mine coal are deep-shaft mining and strip mining.
B. Describe how coal miners were paid for the work they did.	B. Coal miners were paid for the work they did in scrip, which could only be used at the company store.
C. Explain life in a company town.	C. Life in a company town was hard. Families had to live in company houses, attend company schools, and shop at the company store. The houses were shacks, which were poorly built. Miners didn't earn much money and could hardly provide enough for their families.

Name:_____

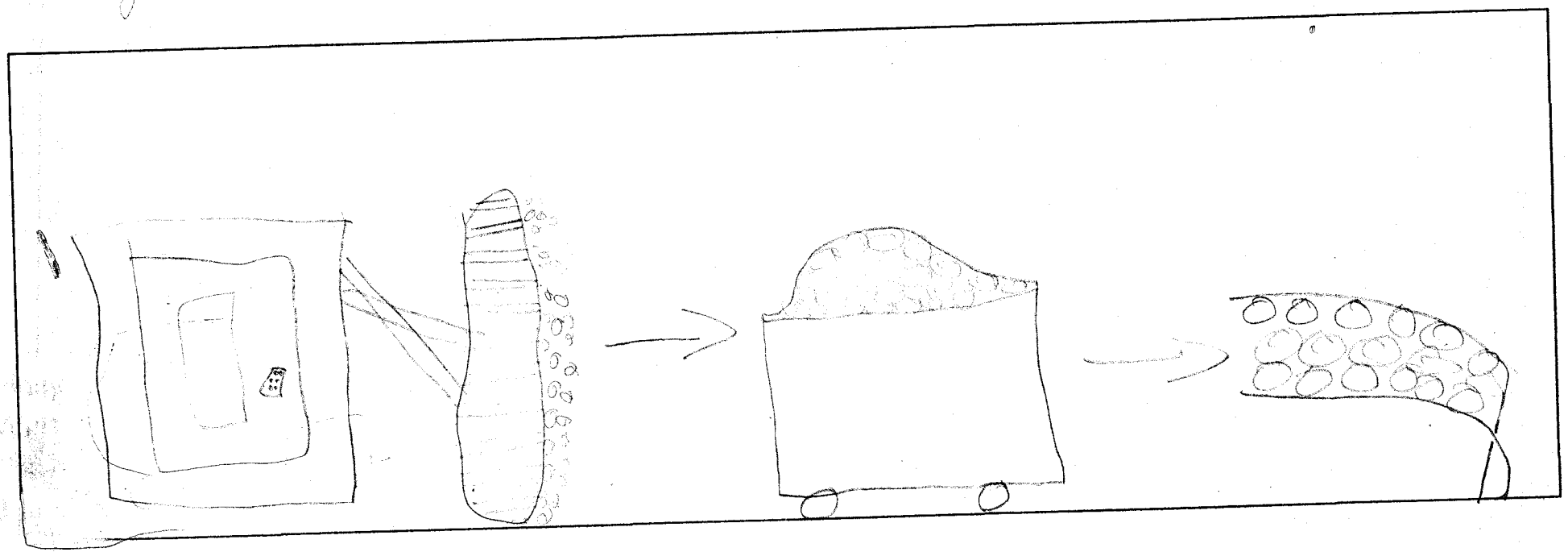
Write the following alliteration (tongue twister) three times in cursive and illustrate.

Continuous Miners crush coal carefully and carts carry chunks of coal to conveyors.

1. Continuous Miners crush coal carefully and carts carry chunks of coal to conveyors.

2. Continious Miners crush coal carefully andcarts carry chunks of coal to conveyors

3. Continious Miners crush coal carefully and carts carry chunks of coal to conveyors.



A miner

Down in the deep, dark shaft mine
I shoveled coal onto the old belt line.

Mining coal is not safe to do
Wear your gear and it will protect you.

My job is long I work all day
I don't get very much pay.

Video Notes from Brain Pop Jr. Cole S.

Coal

Natural Resorses - something of value we get from the envirment.

Fossil Fules - fuels fromed in the earth and made from the remains of plants and animals.

It takes millons of years for it to be replaced.

People are useing it faster than they can make it causeing animals to lose their homes.

You can transport coal by ~~ships~~ barges, trains, trucks

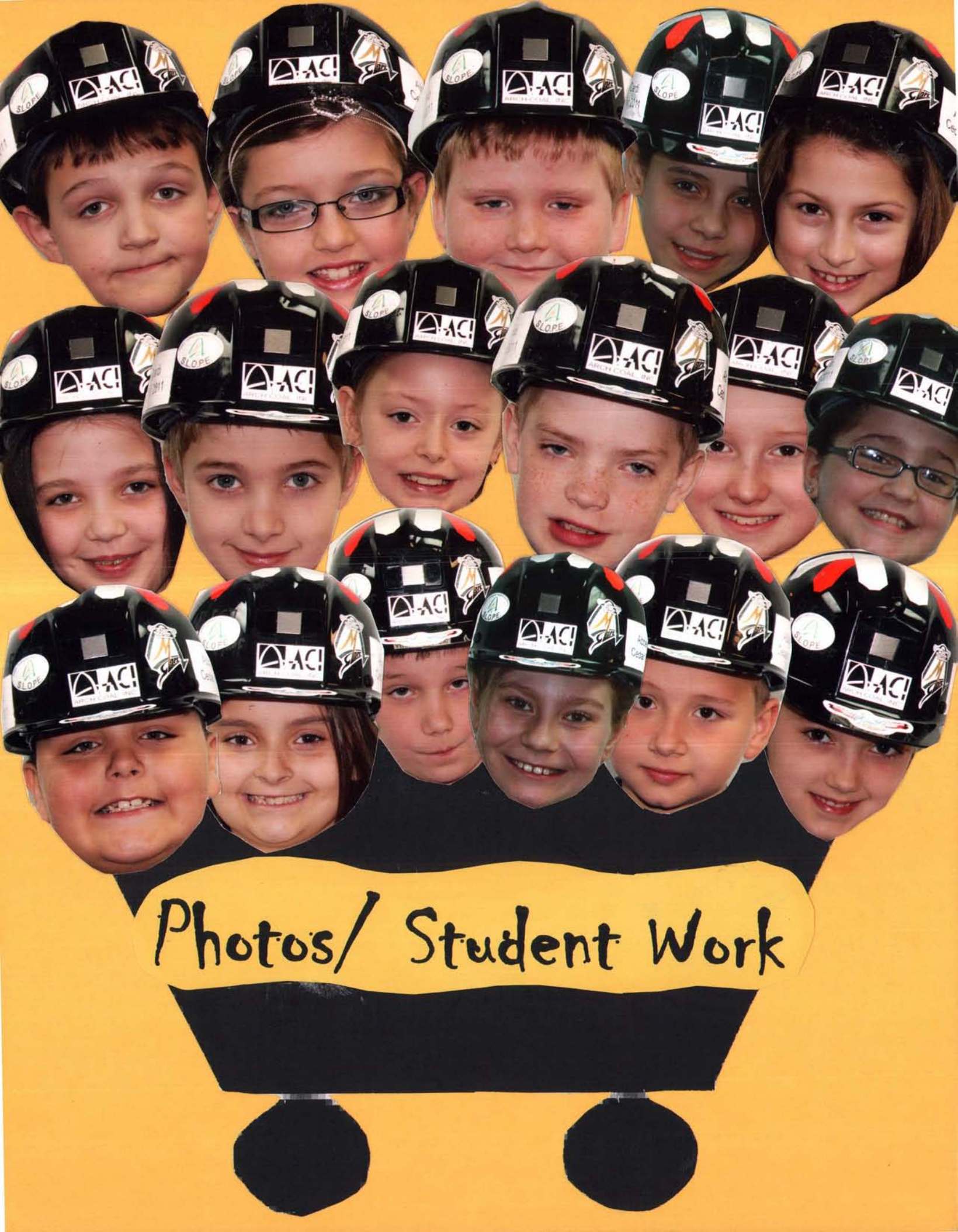
Oil spils in the oceans can hurt or kill animals.

Conserve - to save or portect something From loss of harm.

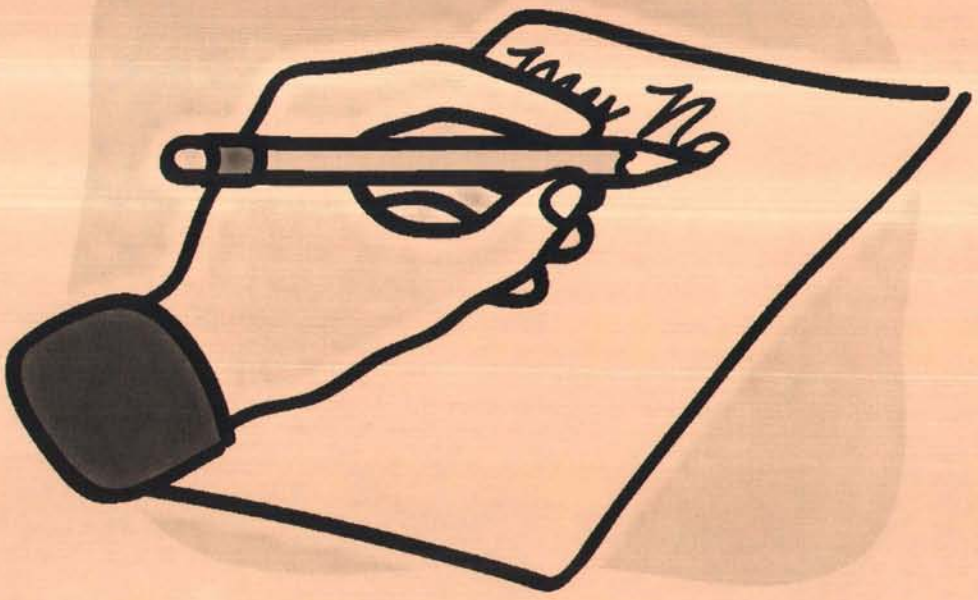
Rocks and miners make pottery

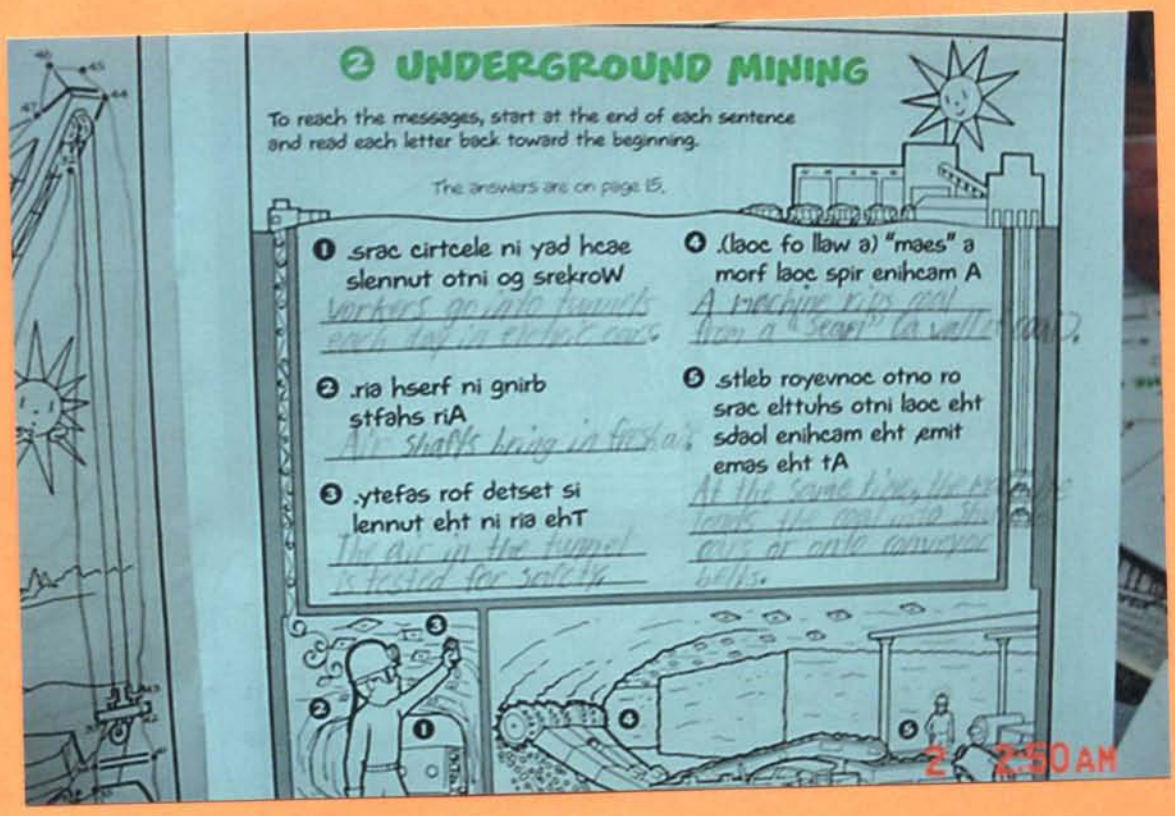
Spelling

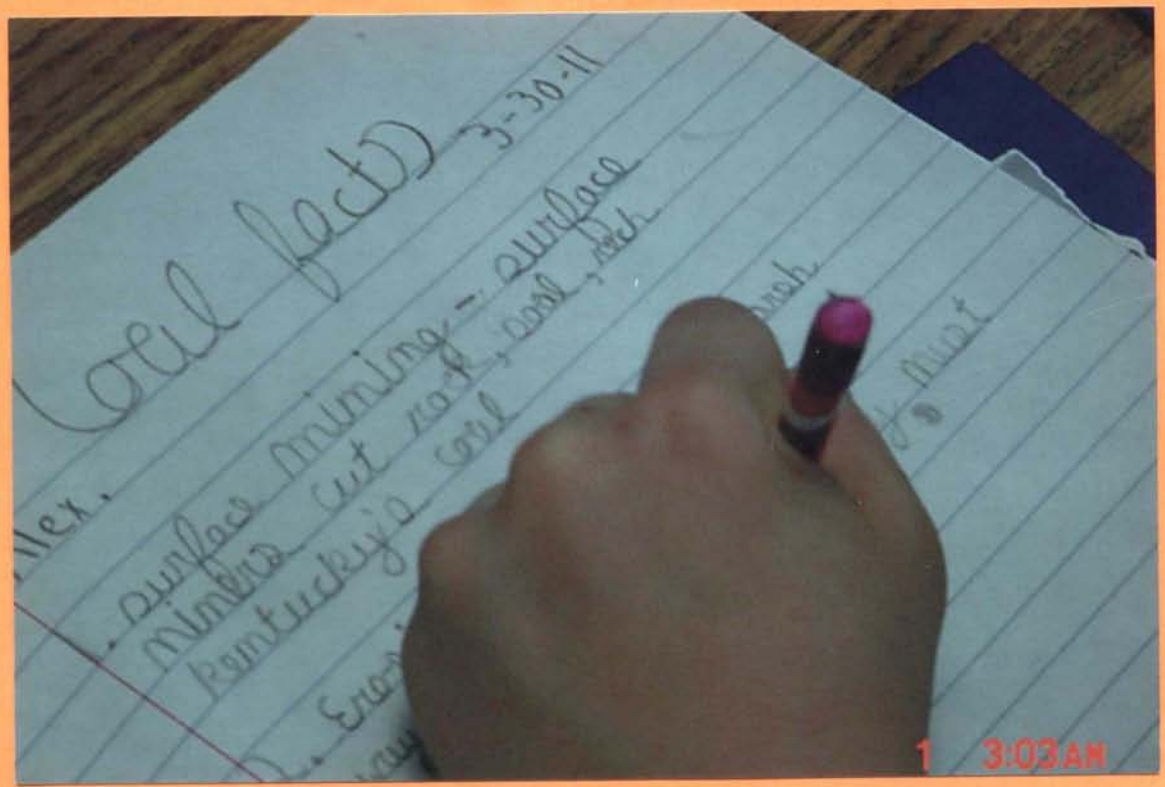
Copyright 2008 abcteach.com

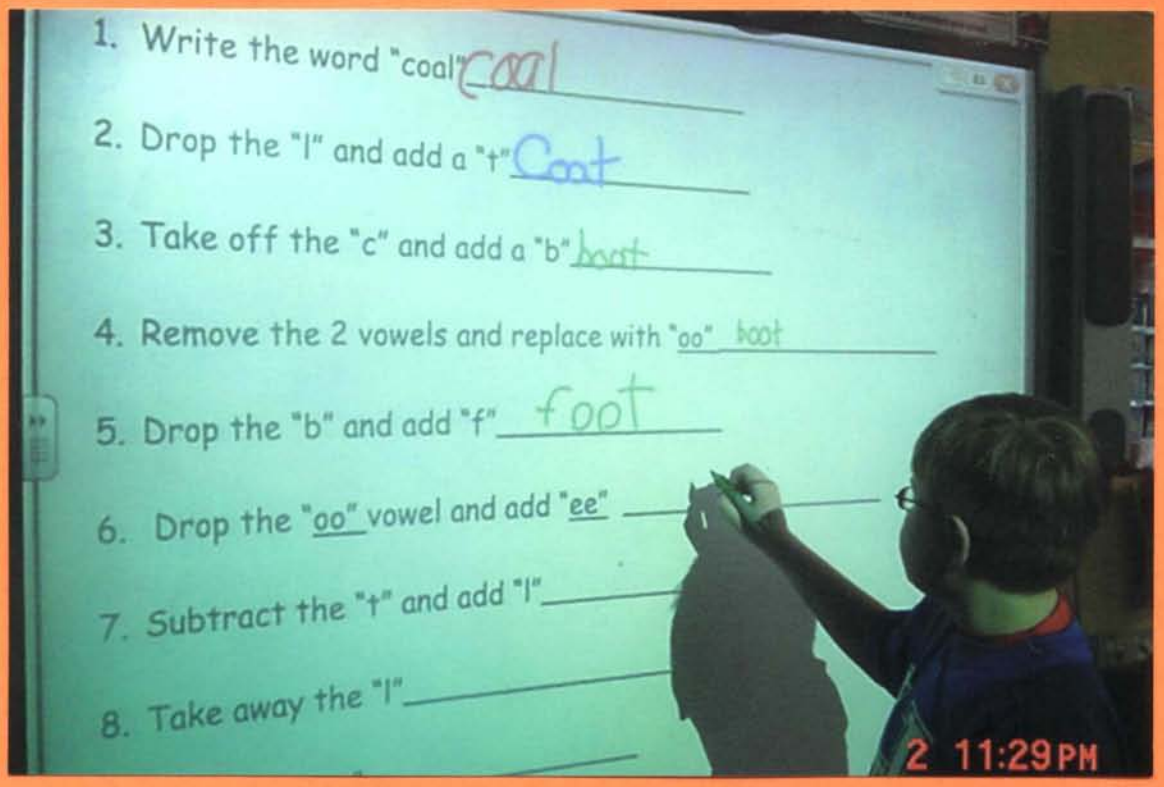

Photos/ Student Work

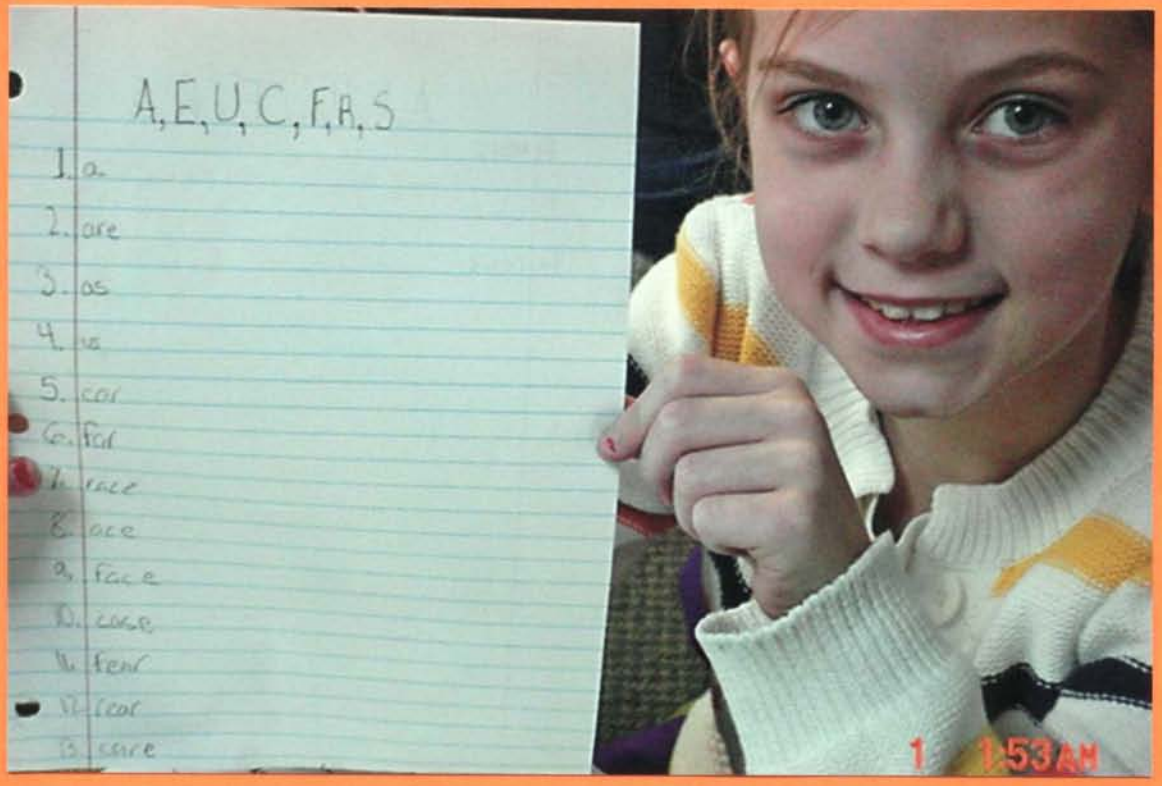
Handwriting

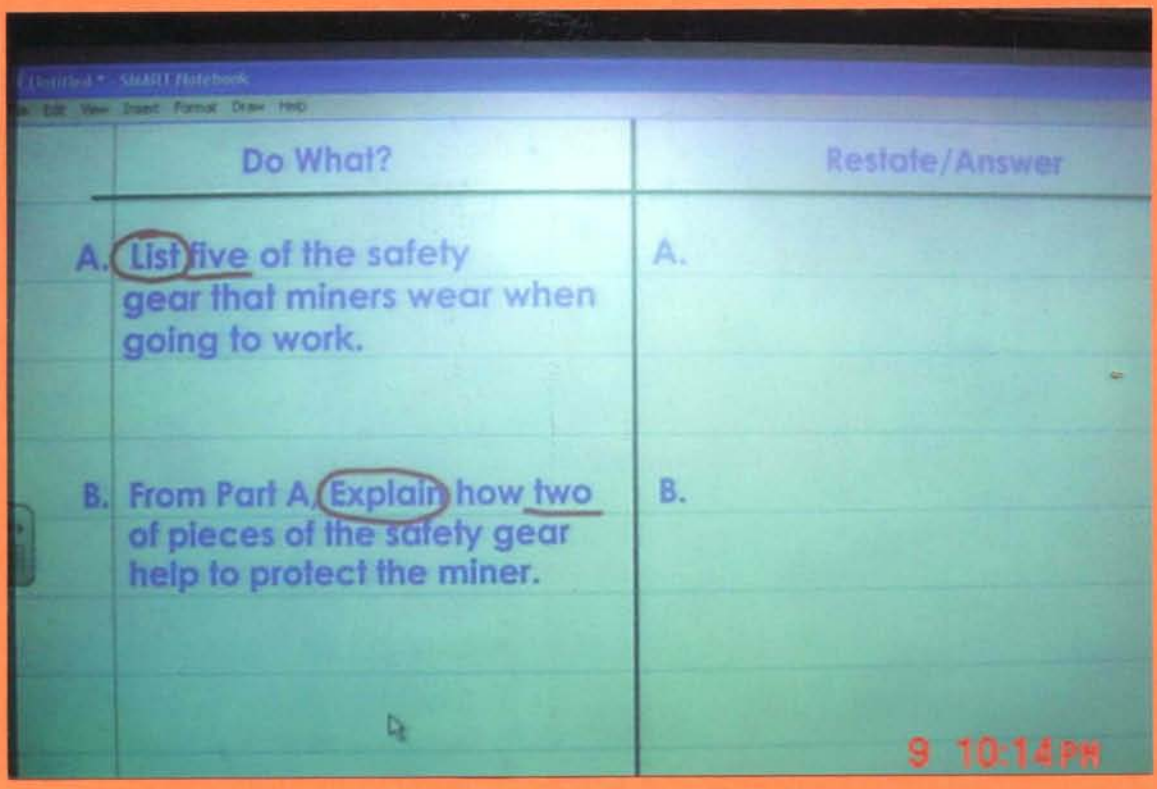



2 UNDERGROUND MINING
To reach the messages, start at the end of each sentence and read each letter back toward the beginning.
The answers are on page 15.
1 .srac cirtcele ni yad hcae slennut otni og srekroW
Workers go into tunnels each day in electric cars.
2 .ria hserf ni gnirb stfahs riA
Air shafts bring in fresh air.
3 .ytefas rof detset si lennut eht ni ria ehT
The air in the tunnel is tested for safety.
4 .(laoc fo llaw a) "maes" a morf laoc spir enihcam A
A machine rips coal from a "seam" (a wall of coal).
5 .stleb royevnoc otno ro srac elttuhs otni laoc eht sdaol enihcam eht ,emit emas eht tA
At the same time, the cutting machine loads the coal into shuttle cars or onto conveyor belts.
2 2:50 AM

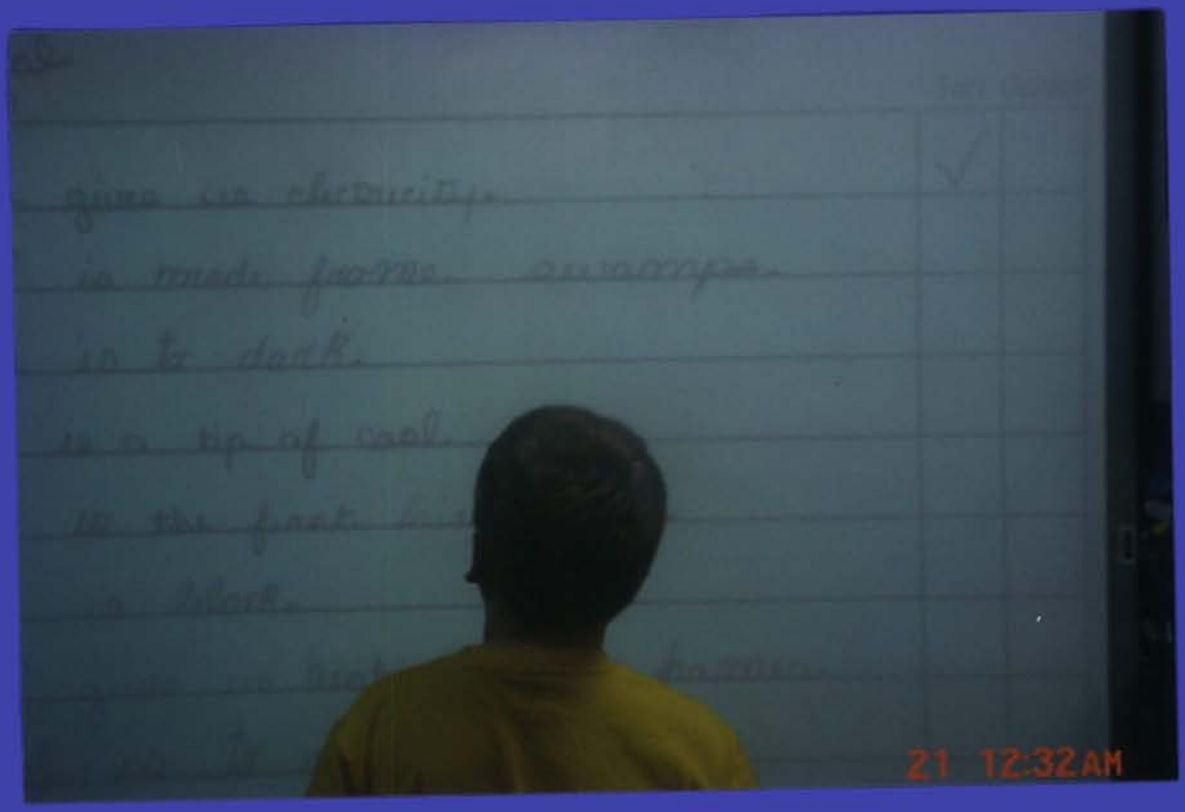

Coal facts 3-30-11
1 3:03 AM


1. Write the word "coal" coal
2. Drop the "l" and add a "t" Coat
3. Take off the "c" and add a "b" boat
4. Remove the 2 vowels and replace with "oo" boot
5. Drop the "b" and add "f" foot
6. Drop the "oo" vowel and add "ee"
7. Subtract the "t" and add "l"
8. Take away the "l"
2 11:29 PM


A, E, U, C, F, R, S
1. a
2. are
3. as
4. us
5. car
6. far
7. race
8. ace
9. face
10. case
11. fear
12. rear
13. sare
1 1:53 AM


Do What?
Restate/Answer
A. List five of the safety gear that miners wear when going to work.
A.
B. From Part A, Explain how two of pieces of the safety gear help to protect the miner.
B.
9 10:14 PM

English

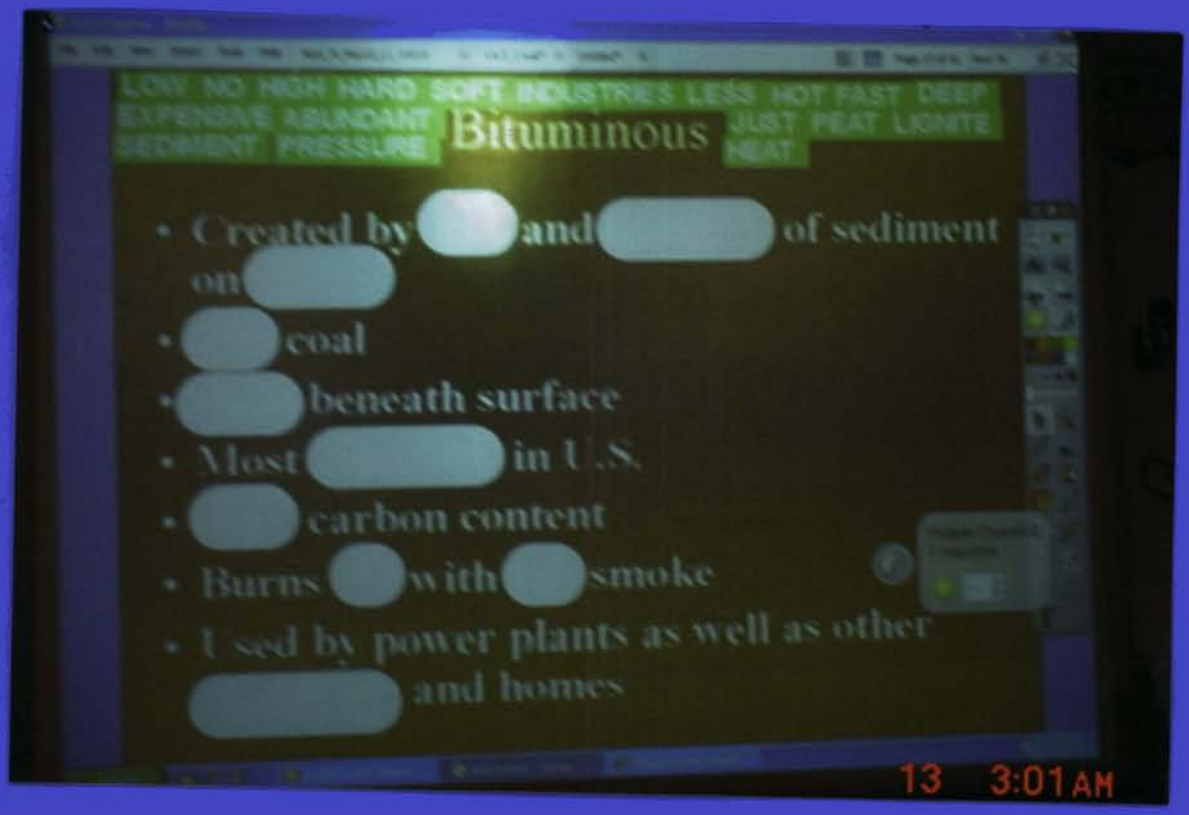


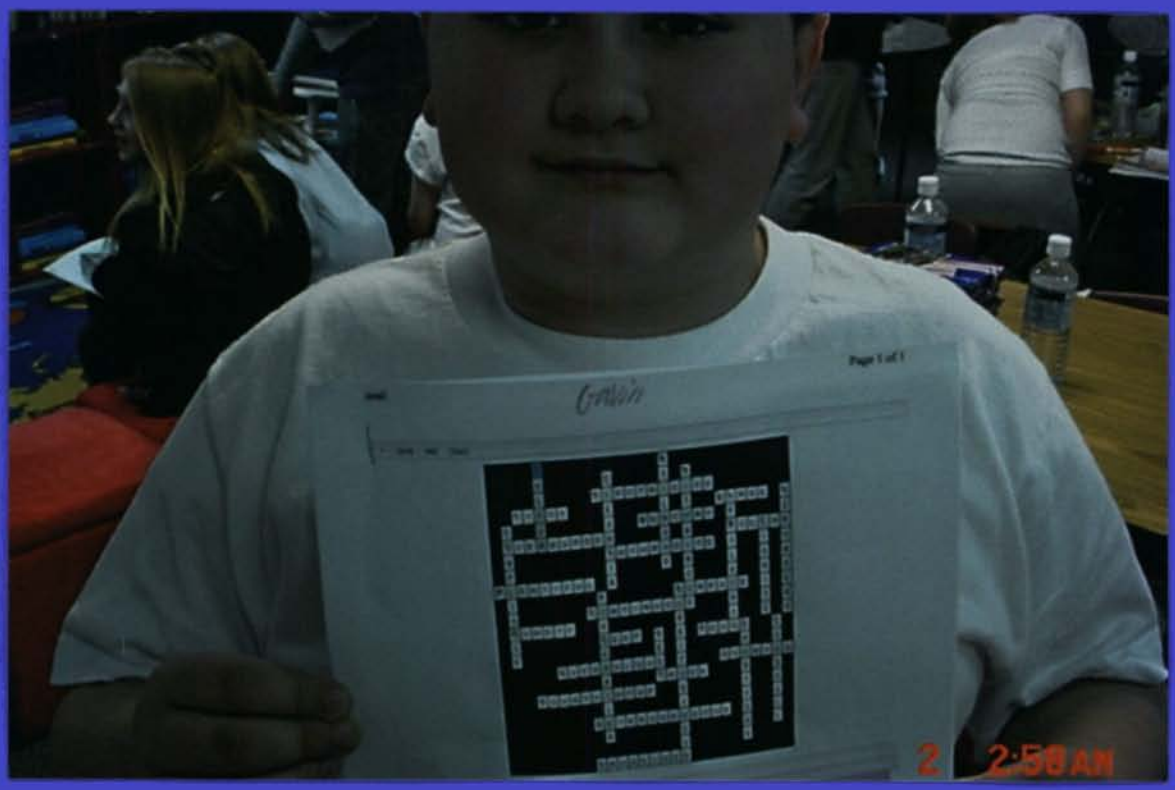
Down in the deep, dark shaft mine
I shoveled coal onto the old belt line.

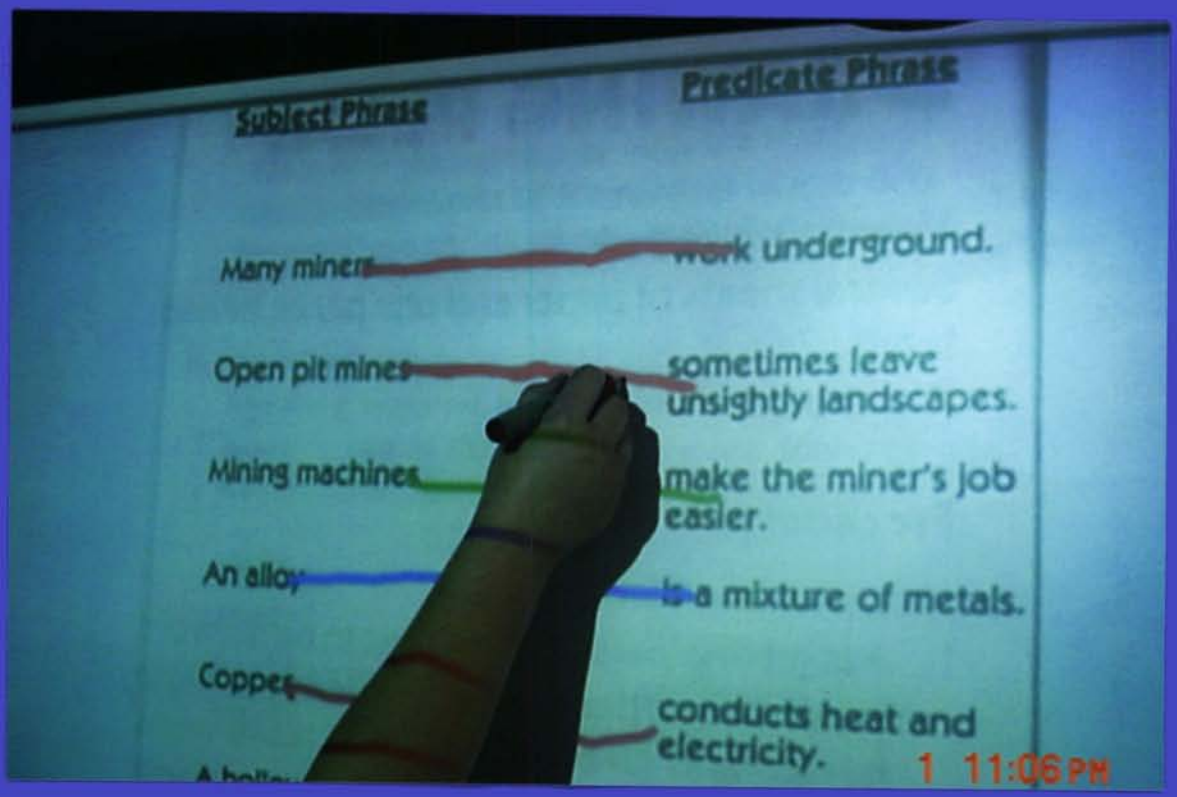
Mining coal is not safe to do
Wear your gear and it will protect you.

My job is long I work all day
I don't get very much pay.

14 2:02AM


LOW NO HIGH HARD SOFT INDUSTRIES LESS HOT FAST DEEP
EXPENSIVE ABUNDANT
SEDIMENT PRESSURE
Bituminous
JUST PEAT LIGNITE
HEAT
• Created by and of sediment on
• coal
• beneath surface
• Most in U.S.
• carbon content
• Burns with smoke
• Used by power plants as well as other and homes
13 3:01 AM


2 2:58 AM


Subject Phrase
Predicate Phrase
Many miners
work underground.
Open pit mines
sometimes leave unsightly landscapes.
Mining machines
make the miner's job easier.
An alloy
is a mixture of metals.
Copper
conducts heat and electricity.
1 11:06 PM

COAL MINING SIMILES

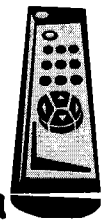
Def. Similes are words that use "like" or "as" to compare one thing to another.

Logan April 15, 2011

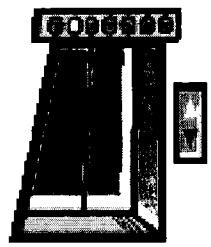
1. The Coal was……. as Black as Night.
2. A continuous miner has teeth…….like bear claws.
3. The underground mine was…….as deep as a river.
4. The food in his dinner bucket was……as cold as ice.
5. The miner's hands were……..as rough as sandpaper.
6. A long wall miner produces coal…….as quick as lightning.
7. My dad's steel-toed boots are……like tough tree bark.
8. Reflective tape is…….as orange as a pumpkin.
9. A turbine's steam is…….as hot as fire.
10. Dad's hard hat is old……like the hills.

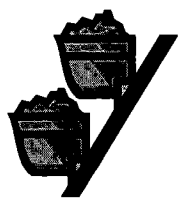
Coal Mining Rebus

My  works in an underground mine operating a

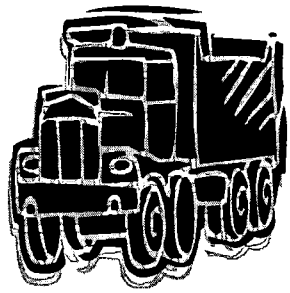
 . He controls it with a  . The  on the

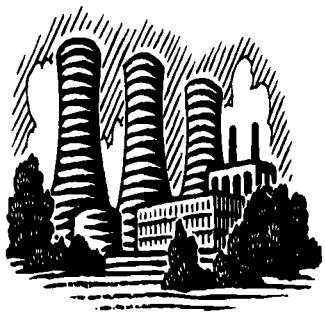
 Machine grind out the and extract it from a seam.

The  gets the coal and it is placed on an 

which, takes it to the surface. A huge  carries the

 and separates it from the slate. Then the 

goes through a  and pours into a  ,and

 then it is transported to a local  .

MacKenzie Maynard

Name Chrissy  Date 4-19-2011

Coal

Topic

Statement	Fact	Opinion
Coal is a non-renewable resource.	✓	
It is a natural resource.	✓	
Barack Obama is against coal.		✓
Miss McCoy loves coal.		✓
Peat is the first layer of coal formation	✓	
Everybody dislikes coal.		✓
Coal gives us asphalt	✓	
Coal is a fossil fuel.	✓	

Chrissy Kirk

Coal Acrostic English

Super !! ☺
4 Distinguished

CoolClips.com

Makes responsible choices.

In everyday life we have miners.

Nobody can replace coal miners,

Everything we have comes from coal and coalminers.

Reduce, reuse, recycle, sure we do that but

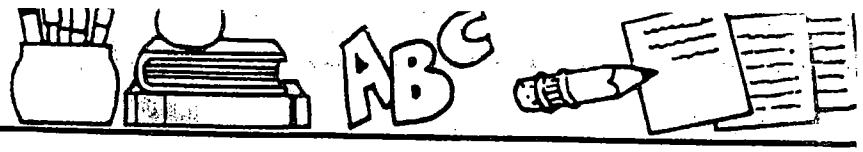
Some people take it very seriously and want

coal gone! Everything we use comes from coal.

COAL KEEPS THE LIGHTS ON!!

-2

Week 27 – Energy



Day		
1	Language Arts	a. we drived our car to westbrook mall on saturday b. jenny and todd they losted all their energy by the end of the day
2	Science	a. light, electricity, sound, and heat ~~they~~ are forms of energy. b. can you see feel or hear they
3	Social Studies	a. do new york city need more energy than a small town b. people in new york city ~~they use~~ used to much energy and everything stopped
4	Math	a. colleen and joe has three kinds of paper for their experiment on solar energy b. does people in the united states use more energy than other people in the world
5	Creative Arts	a. you is making sound energy when you play a trombone a trumpet or a flute b. the central high school band it maked a lot of sound energy

-1

1a. We drove our car to Westbrook Mall on Saturday.

✓ b. Jenny and Todd lost their energy by the end of the day.

✓ 2a. Light, electricity, sound, and heat are forms of energy.

✓ b. Can you see, feel, or hear them?

3a. Does New York City need more energy than a small town?

✓ b. People in New York City used to much energy and everything stopped

✓ 4a. Colleen and Joe have three kinds of paper for their experiment on solar energy.

-1 b. Do people in the United States use more energy than any other people in the world?

5a. You are making sound energy when you play a trombone, a trumpet, or a flute.

b. The High School Band makes a lot of sound energy.

Coal Couplets

1. Down in the deep dark shaft nine
I shovel coal on the old belt line.

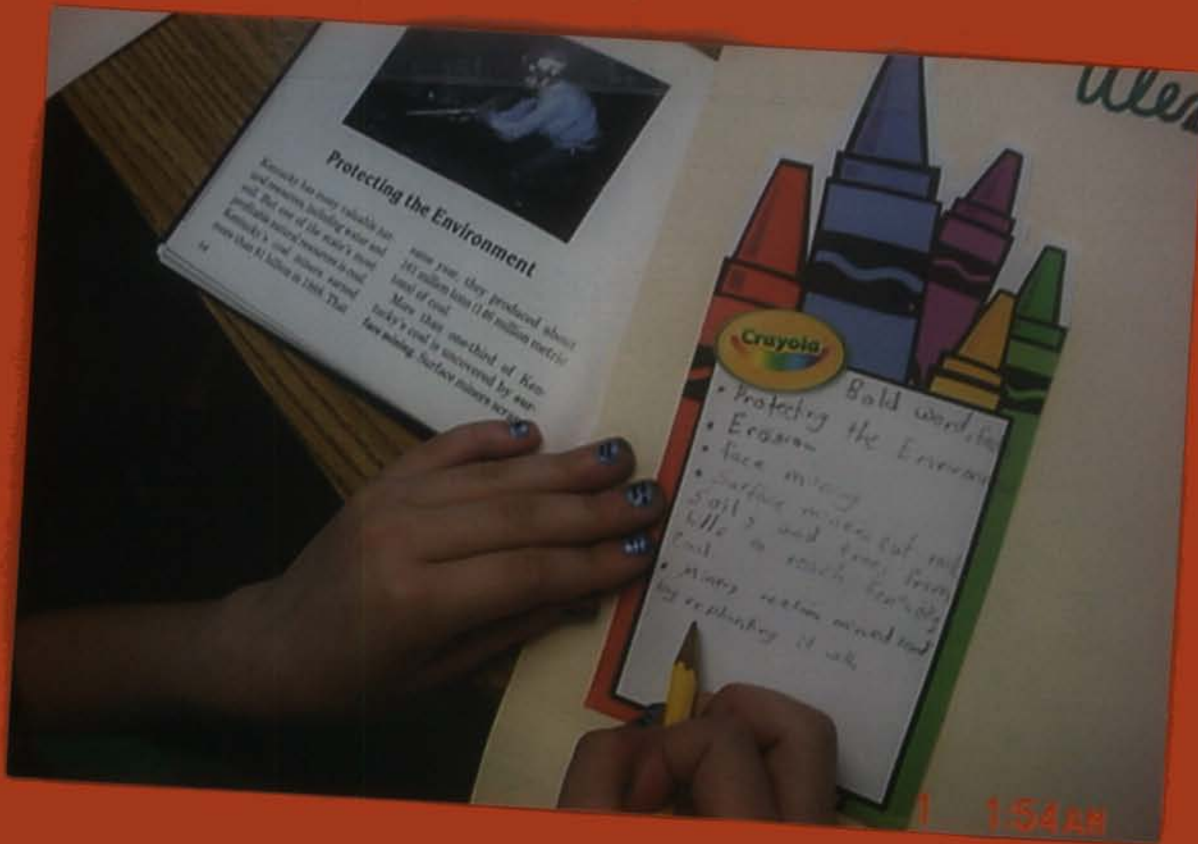
2. Mining coal is not safe to-day
Wear your gear and it will protect you

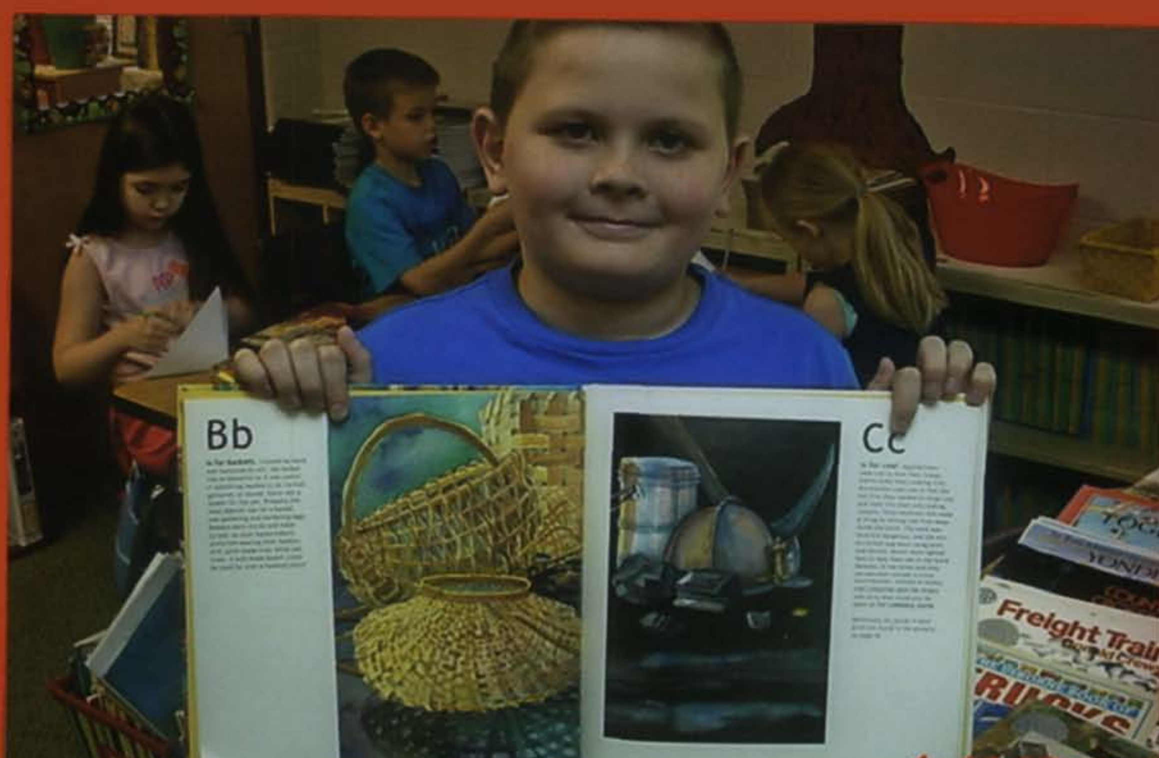
3. My job is long I work all day
I don't get very much pay.

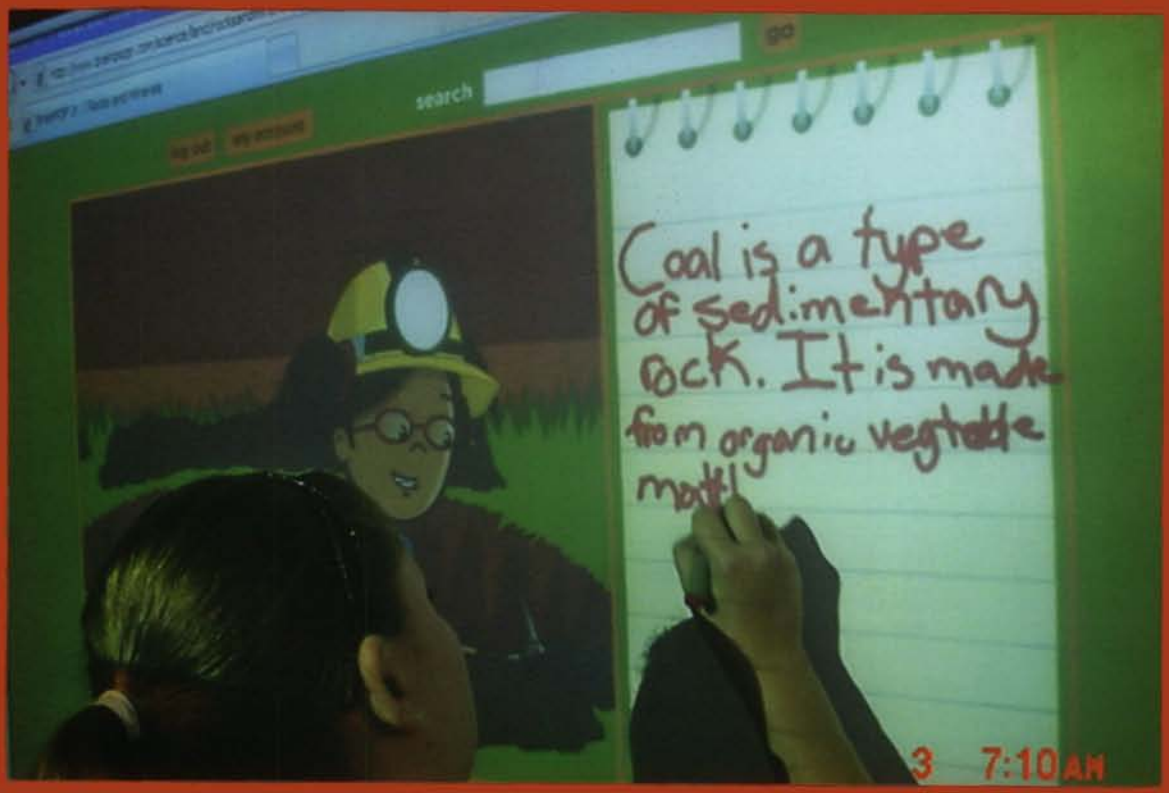
by: Celia Wiedel

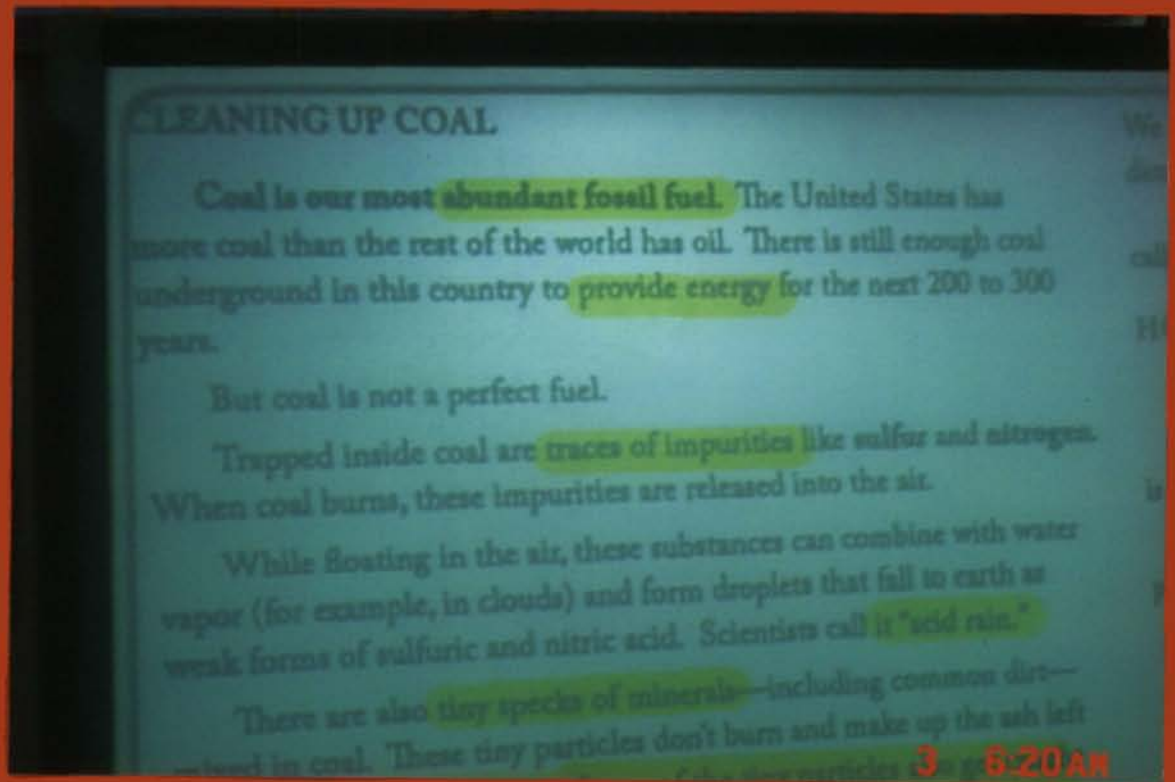
Reading

Copyright 2008 abcteach.com


Protecting the Environment
Crayola


Bb
Cc
Freight Train


search
Coal is a type of sedimentary rock. It is made from organic vegtable matt
3 7:10 AM


CLEANING UP COAL
Coal is our most abundant fossil fuel. The United States has more coal than the rest of the world has oil. There is still enough coal underground in this country to provide energy for the next 200 to 300 years.
But coal is not a perfect fuel.
Trapped inside coal are traces of impurities like sulfur and nitrogen. When coal burns, these impurities are released into the air.
While floating in the air, these substances can combine with water vapor (for example, in clouds) and form droplets that fall to earth as weak forms of sulfuric and nitric acid. Scientists call it "acid rain."
There are also tiny specks of minerals—including common dirt—
3 6:20 AM


TWO LITTLE TRAINS
IN COAL COUNTRY
Aunt Chip and the Great Triple Creek Dam Affair
Dump Truck
1 2:54 AM


1 2:19 AM

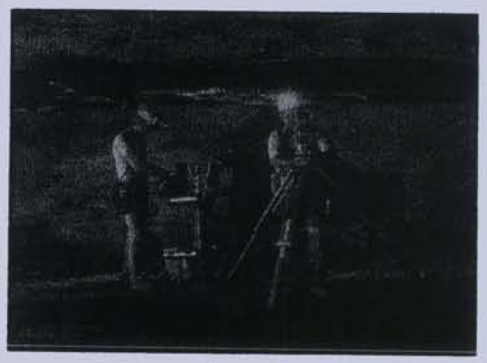
gently jolts to a stop. The door is pulled open, and Bill thinks about the day of work ahead of him.

Although the room in front of him is big and well lit, Bill knows that he must take a short walk through the dark, so he switches on the light of his cap lamp. He moves through the mine with his cap lamp lighting the way to the **mantrip** loading area.

Mantrip

The mantrip takes 10 to 12 miners deeper into the mine to the location where they will be working that day. Once on the mantrip, the miners turn off their cap lights as the headlights on the mantrip flicker on and it begins to move forward.

The mantrip travels through the mine and passes under a **conveyor belt** carrying freshly mined coal. A fellow worker is on the side of the conveyor belt, scooping up coal that has fallen onto the floor. Bill travels further into the mine.

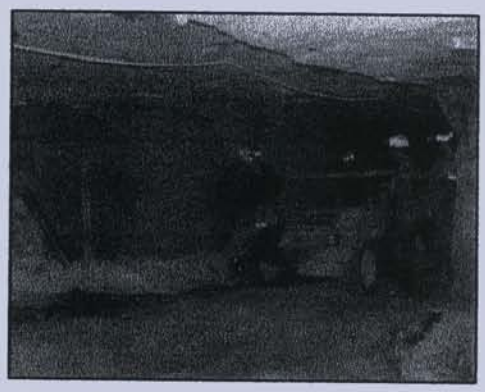


Surveyors

They pass **surveyors** who are using technology called Global Positioning System (GPS) to make a map of the mining operation. Finally, as Bill nears the area where he is going to mine coal for the day; he passes a large machine called a scoop. The **scoop** is used to carry materials and equipment around the mine.

As the mantrip slows to a stop, the crew of miners from the previous shift stops working. They get ready to get on the mantrip as Bill gets off. For these miners, their work day is just ending, but for Bill it is just beginning. The mine is in operation 24 hours a day. The two work shifts exchange hellos and good-byes, and the mantrip pulls away. Bill turns on his cap lamp and is ready to begin his work.

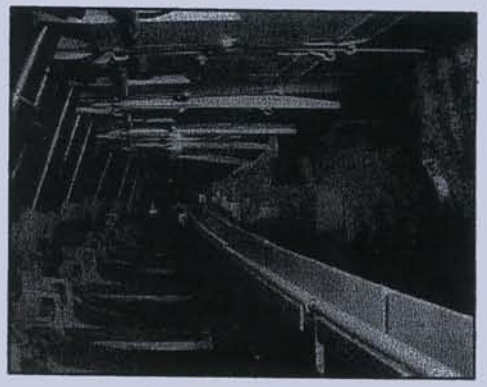
Scoop



Rock dust has been applied to cover all coal surfaces.

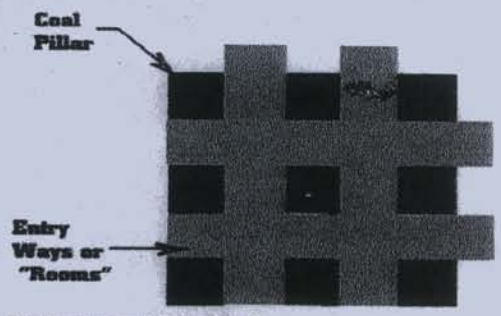
The work crew approaches the **face**, which is where the coal is mined. They each have different jobs. Bill's friend Jim sprays a white dust made of powdered limestone on the mine walls. This is called **rock-dusting**. The purpose of rock-dusting the area in the mine is to contain or minimize coal dust combustions, aid in the lighting of the mine and to reduce health hazards.

Two types of underground mining are used in Illinois. **Longwall mining** is the newest underground mining technique. A "**longwall miner**" is pulled mechanically back-and-forth across a face of coal that is usually several hundred feet long. In longwall mining the roof is allowed to collapse in a planned sequence. More coal is rmoved during longwall mining.



Longwall Miner

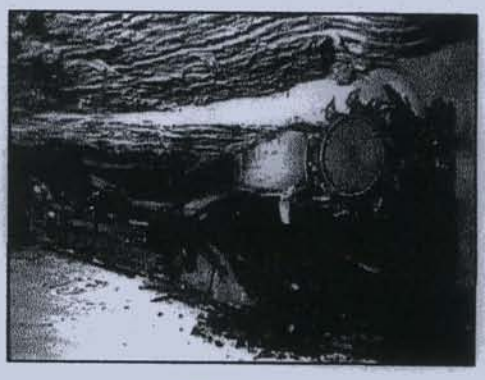
Room and Pillar



Black areas are blocks of coal
Colored areas are mined areas where coal has been removed.

However, Bill works in a mine that uses the "room and pillar" method of mining. **"Room and pillar" mining** refers to the fact that large pillars of coal are left standing in the mine to keep the roof from sagging.

Bill works with a very large machine called a **continuous miner**. He loves working with this machine because he thinks it looks like a dragon. The continuous miner, with its sharp teeth, is a machine that actually breaks the coal loose from the face. As the coal drops to the floor, large steel arms swoosh back and forth, sweeping the coal from the floor and pulling it onto a conveyor.



Continuous Miner

The conveyor pours the coal into a **ram car.** One of Bill's friends, Rosie operates the ram car. When the buggy is full of coal, it is driven to a conveyor belt. Rosie dumps the coal from the ram car onto the conveyor belt where it can be carried out of the mine.

Ram Car carries coal from the continuous miner to the conveyor belt.

When Bill finishes mining in one area, he moves the continuous miner out and moves to a new face where there is more coal. Once Bill has finished in an area, a coal miner goes in with a machine called a roof bolter. The **roof bolter** drills holes up to nine feet into the ceiling, or **roof**, of the mine. After the hole has been drilled, a tube of glue and a long steel bolt is inserted into the hole. The roof bolts support the roof, making it safe for the coal miners.

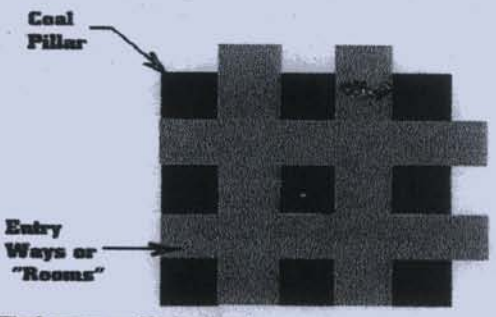
Roof Bolter

After several more cuts, Bill moves the continuous miner back to the first place he cut. He looks at his watch and realizes it is time for lunch. Just as he leaves the continuous miner, his friend Rosie, pulls up in the ram car. They both leave their machines and get their dinner buckets. They enjoy their lunch together deep in the mine, and after resting for a few minutes, return to their machines. The workers mine coal all day long.

Lunch Break

At the end of the day, Bill is very tired. Just as Bill is thinking about how tired he is, he sees a mantrip pull up with the next shift of workers. Relieved, he leaves his machine, grabs his dinner bucket and heads toward the mantrip. He says hello to the new shift of coal miners, climbs into the mantrip and turns off his cap lamp. The mantrip takes Bill to the cage.

Room and Pillar



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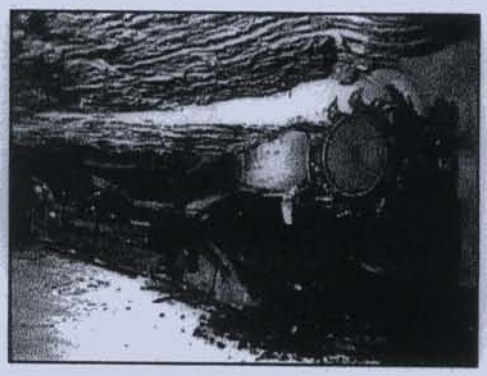

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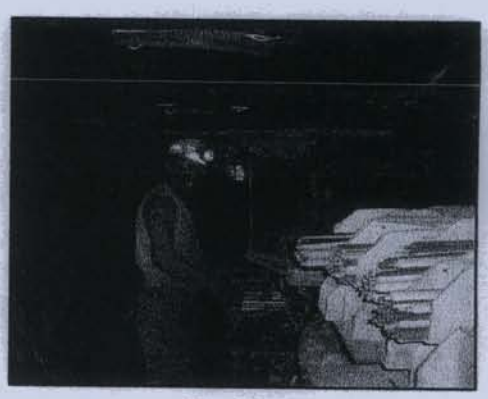

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All the miners are tired after a long hard day of work, and they are not talkative as they ride the cage up to the top. Bill loves the feeling of being lifted out of the mine. When the cage stops at the surface, everyone takes a deep breath of fresh air and walks toward the wash house. Bill hangs his cap lamp on the rack so that the battery can charge and be ready for another day. He takes a shower, changes clothes, says goodbye to everyone and travels back to his home. Tomorrow will be another day for mining.

Coal miners walking to wash house

GLOSSARY

Cage – an elevator used to move workers and supplies into and out of a shaft mine.

Cap lamps – a lamp fitted on the front of a hard hat and attached to a battery on the miner's belt. It is worn by each worker in an underground mine to provide lighting. It contains a wet-cell 4-volt battery. (Also called a head lamp)

Coal seam – a bed or layer of coal.

Continuous miner – machine that grinds coal from the working face of an underground mine and continuously loads it into a ram car (or shuttle car or buggy).

Conveyor belt – a continuously moving strip on which coal is transported.

Dinner bucket – a plastic or metal lunch box containing food and drinks for the miner's mid-shift meal.

Earplugs – a device worn in the ear for protection against loud noises.

Face – area in an underground mine where coal is being mined.

Gas detector - used to measure gases in the air and is attached to the miner's belt.

Gloves – protective covering for the hands.

Hard hat – adjustable, hard-plastic hat worn at all times on the mine site. The hard hat protects the miner's head and ears.

Longwall – a newer method of underground mining in which large blocks of coal are removed in a singly pass. This technique produces more coal in less time than any other underground mining method.

Longwall miner – a mining machine that has two main components: a spinning drum lined with cutting blades that moves back and forth along the long wall of coal, and 204 self-advancing electro hydraulic roof shields per 1000 feet that protect the miners from falling coal. The rotating shearing blades move back and forth across the coal, cutting it from the face and transporting it away in an automatic conveyor.

Mantrip – a vehicle used for transporting workers to and from the face in an underground mine.

Miner's belt – a wide leather belt used to carry the battery that powers the miner's cap lamp. The gas detector is also attached to the belt.

Ram Car – a low, long, wide-bodied vehicle used to haul coal from the working face to a conveyor belt in an underground mine. Also called a shuttle car or buggy.

Rock-dusting – crushed limestone is sprayed over exposed coal to reduce the risk of coal dust combustion, aid in the lighting of the mine and reduce health hazards.

Roof – ceiling of the area where coal is being mined.

Roof bolter – a machine used to install long steel rods, or bolts, into holes to hold the layers of rock in the roof together in an underground mine; also, the miner who operates a roof bolting machine.

Room and pillar – a method of underground mining that leaves blocks of coal, or pillars, in place to help support the roof of the mining area.

Safety glasses –large, hard-plastic eyeglasses that fit close on a miner's face to protect his eyes.

Scoop – a battery or diesel-powered machine, having a large flat bucket attached to the front, used to clean up loose coal or to transport supplies in an underground mine.

Self-rescuer – a portable respirator that allows the miner to breathe safely for about an hour if there are dangerous gases in the mine.

Steel-toed boots – boots having a band of steel over the toe area to protect the feet.

Surveyor – a mining engineer who makes maps of mining operations.

Wash house – a large building at the mine site were workers shower and change clothes.

Questions from the Story

1. Bill greets his fellow workers and changes his clothes in the bath house? T (F) wash house
2. A gas detector measures what type of gas? Methane gas
3. Miners use a lantern to light their path ahead? If false, explain. T (F) a cap light
4. Discuss the function of a mantrip. It takes 10 - 12 miners at a time deeper into the mine to the spot they will to the be working hard
5. Tell the difference between a conveyor belt and a scoop.
6. Bill works in a mine that uses the longwall method of mining? T (F) rooms
7. Miners mine coal at the seam? If false, explain. T (F) The face is the pillar area in an underground mine where coal is being mined
8. If miners do not use picks for mining coal in an underground mine, what machinery is used? Continous miner or a longwall miner
9. Define a ram car. A ram car is used to haul coal. to a conveyor belt in an underground mine.
10. A roof bolter drills holes up to nine feet into the ceiling? If false, explain. (T) F

COMPANY ROW ON WILLOW GROVE

IN COAL COUNTRY

Ten two-story white houses sat in a row between two raising hills covered with yellow and white violets in the spring. Weeping willow trees lined the banks of the creek that flowed behind Company Row. Two miners families lived side by side in each home and there was about seventy-five children who lived and played there also. The Company houses never looked clean or painted because Coal was used in the furnace for heat and in the stove to cook food. The fires sent smoke and soot up the chimneys it had an awful smell and something in it made the paint peel off the houses. Everything around Company Row had a film of soot on it all the time. First, The men that worked at the Black Diamond Mine dug coal from deep in the earth to make a living. While Papa was putting on his denims, steel toed boots, and miners hat that had a light on it, ready for work, everyone else was getting ready for bed. Papa carried a silver lunch bucket and walked a mile to the mines each day to work. It was important work and he was proud to do it. I listened for whistle, that was the signal that ended Papa's hoot-owl shift. Often I would run to meet him and he would be covered in

dirt and grime but, his eyes were always smiling back at me. I would carry his silver lunch bucket for him. When we got home, Mama took the number three tub and filled it with water and heated it on our huge stove. She would drape a blanket across one corner of the kitchen, so Papa could wash off the coal dust. Papa got a bath everyday after work but, we only got one bath a week on Saturday's. The coal that Papa and the other men dug out of the earth was dragged out of the mines in small cars pulled by mules. It was them sent up into a tall building called a tipple. The tipple was where the coal sorted and washed. The water that washed the coal ran into the creek, and the dust from the coal turned the water black. Papa sometimes worked the picking table at the tipple to sort out rocks from the good coal. The good coal was dumped into railroad cars waiting under the tipple. The rest was hauled away to a gob pile. There were gob piles all over Willow Grove. Gob piles is where all the children would run to the tops and play king of the mountain. When the gob piles caught on fire the smell was awful and it would smolder for days, after the fire was gone the stone and ash that was left over was called red dog. The roads in Willow Grove were made out of the sharp red-dog stone. Train tracks ran along side Company Row to transport the coal to power plants and steel mills on the Ohio River. The coal cars moved all day and night. We could hear the clang of steel as the

train cars were hitched to the engine. Often, the load was to much for the engine. It groaned, the tracks squeaked, and the wheels screeched as the brakeman spread sand on the rails to get the car moving. Sometimes the houses shook as the trains went by. As morning broke we all took buckets and gathered up the lumps of coal that had rolled off the cars during the struggle the night before. Vibrations made some of the tracks come apart. When that happened, the paddy man came to repair it. He rode a flatcar, that he pedaled himself. He sang a song while he worked to help pass the time as he placed the spikes on the tracks. Next, as for Mama she worked hard like Papa. She planted our garden, canned vegetables for winter and stored the quart jars of beans, tomatoes, and peas in the earthen room in the cellar. Mama baked her special rye bread in the oven every day in the iron stove. Many times that was our meal. Rye bread out of the oven, fried potatoes, and sliced tomatoes. Mama did all our clothes washing by hand. The water had to be carried back to the house after it was pumped by hand from down the creek. Mama, then poured the water into a copper boiler and heated it over a huge stove. She scrubbed our clothes on a washboard with a stiff brush. Mama's hands were always red and wrinkled when she finished. Then, in the summer, when the weather was hot, all the kids that lived on Company Row often climbed the hills above the grove. There we

would cool themselves off by standing underneath Bernice Falls. The water flowed from a natural spring on the ridge above, it was cool, clean, and tasted sweet. Anytime the miners families needed or wanted anything all we had to do was to walk the red-dog stone road to the Company Store. You could find and get almost anything there. Papa would treat us to an Eskimo Pie every payday. We kids played all kinds of games to keep us occupied. We played hopscotch in the dirt, and our favorite game was mumbletypeg. In the evenings we would build bonfires along the creek and roast potatoes on a willow stick. As the season changed into Fall, the hills were ablaze with color. We took burlap sacks and gathered up hickory nuts, and butternuts to drag them home. Papa would shell them and spread them on the porch roof to dry. Mama used the nutmeats in cookies at holiday time. When Winter came and the ground was covered with snow we would climb to the top of Baker's Ridge. Using leftover tin from our roofs as sleds we rode them down through the snow covered woods. The black creek was frozen, so we shared each others skates so everyone would have a turn skating on the frozen creek. When we got home we hung our wet clothes over the stove to dry and warmed ourselves in Mama's kitchen. Last, Christmas on Company Row was the best time of the year. Papa would cut down a fresh tree on the ridge, and we would pull it home on our tin sled.

Mama placed a candle on the end of each branch. The tree was lighted once, on Christmas Eve. Our stocking bulged with tangerines, nuts, and hard cinnamon candies. The house smelled of Christmas tree, roasted goose, and all the other good things Mama had made. There was no whistle to call Papa to the mine. This time with my family felt special and it was.

Cole Stanley

Ms. McCoy (Writer's Workshop)

April 13, 2011

The important thing about Caal

is that it gives us electricity

It is a natural reasorse.

It has carbon.

It's a sedimentary rock.

And it provides us with by-products acksbres

But it can't burn when it has ash on it

But the important thing about

coal is that it gives use electricity

ERT The Magic School Bus: Inside the Earth

-0
10/10

Name: _____

Date: _____

A+

1. Everybody read to find...on page 9 where rocks come from?

Most of the solid part of the earth is made of great masses of rock.

2. Everybody read to find...on page 11 what are rocks made of?

Rocks are made of minerals.

3. Everybody read to find...on page 15 what soil is?

Soil is made up of ground-up rock, mixed with clay, bits of dead leaves, sticks, and small pebles.

4. Everybody read to find...on page 16 if rocks are under you?

Most of the rock in the earth's crust is covered with soil or water.

5. Everybody read to find...on page 18 what sedimentary means?

Sedimentary - "to settle"

6. Everybody read to find...on page 22 what the Empire State Building is made of?

The Empire State Building is made out of LIMESTONE.

7. Everybody read to find...on page 24 what metamorphic means?

Metamorphic - "to change"

8. Everybody read to find...on page 30 what a volcano is?

A Volcano is an opening in the earth's crust where melted rock can flow out.

9. Everybody read to find...on page 30 what the three different shapes of volcanoes are?

The three different shapes of volcanoes are: Cinder Cone, Composite, and Shield.

10. Everybody read to find...on page 37 what type of rock granite is?

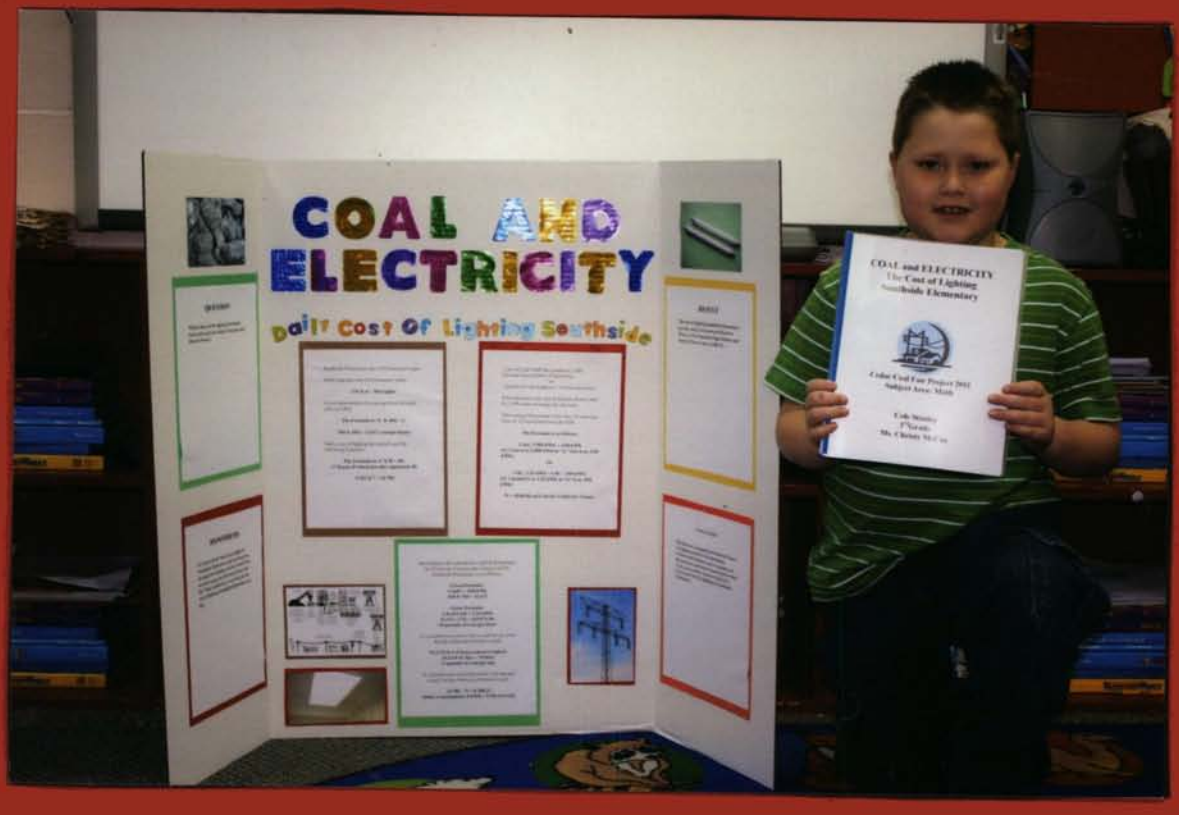
The rock Granite is an Igneous Rock.

Do What?	Restate/Answer
A. List five of the safety gear that miners wear when going to work.	A. Five of the safety gear that miners wear when going to work are: A1. A1. ear plugs A2. reflective strips A3. gloves A4. hard hat A5. Safety glasses
B. From part A, Explain how two peices of the Safety gear help to protect the miner	B. Two peices of the safety gear helps to protect the miner by: hard hat: It is hard so if there

Do What?	Restate/Answer
	B. is a roof fall or rocks fall on the miners head it protects the scull from cracking.
	A. Safety glasses: When the Continuous Miner mines the coal little peices of coal could shoot up over the Continuous Miner and hit's a miner in the eye the safety glasses protect that from happening.

Math


START WITH NO. 1 AND
CONNECT THE DOTS
1 2:58 AM


COAL AND
ELECTRICITY
Daily Cost Of Lighting Southside

6. What type of instrument did you mine with?

pick

7. Was this a good tool to use? Yes or No

8. Explain why or why not. What might have worked better and why?

Hard and Soft Chocolate Chip Cookie Mining

Name:_____

1. Describe the condition of the surface that is being mined, extracted, or excavated.

_____

2. What is the number of Coal Deposits on the surface?

_____

3. Estimate the number of Coal Deposits that will be found underground.

_____

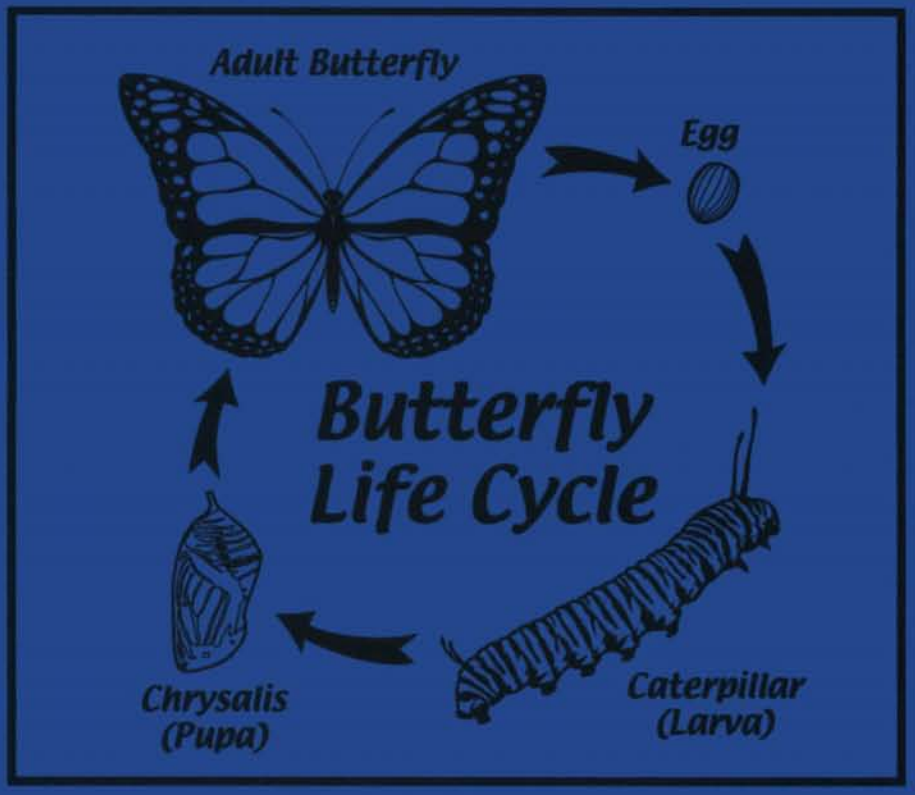
4. What was the total number of coal deposits that were found?

_____

5. How many successful coal deposits did you mine?

_____

Science



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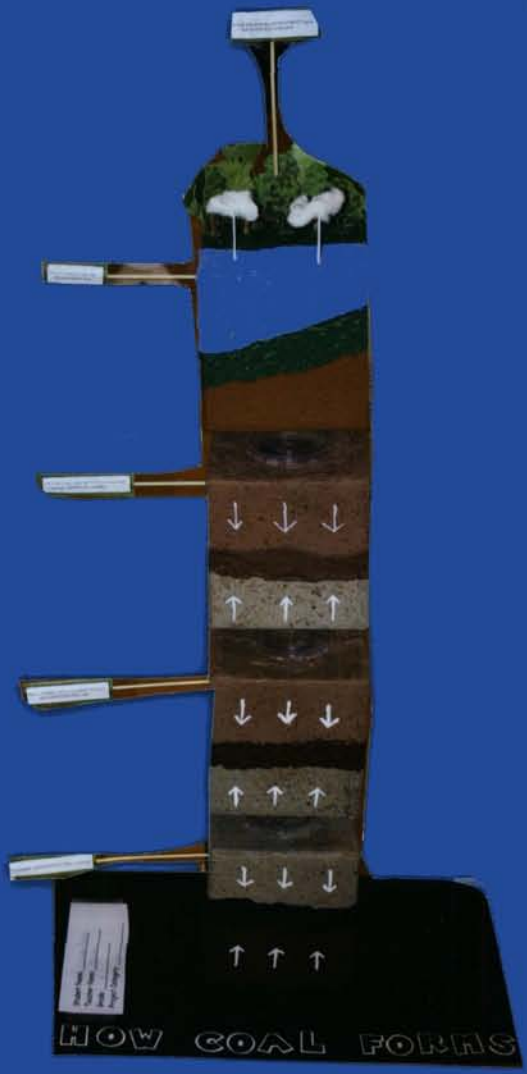
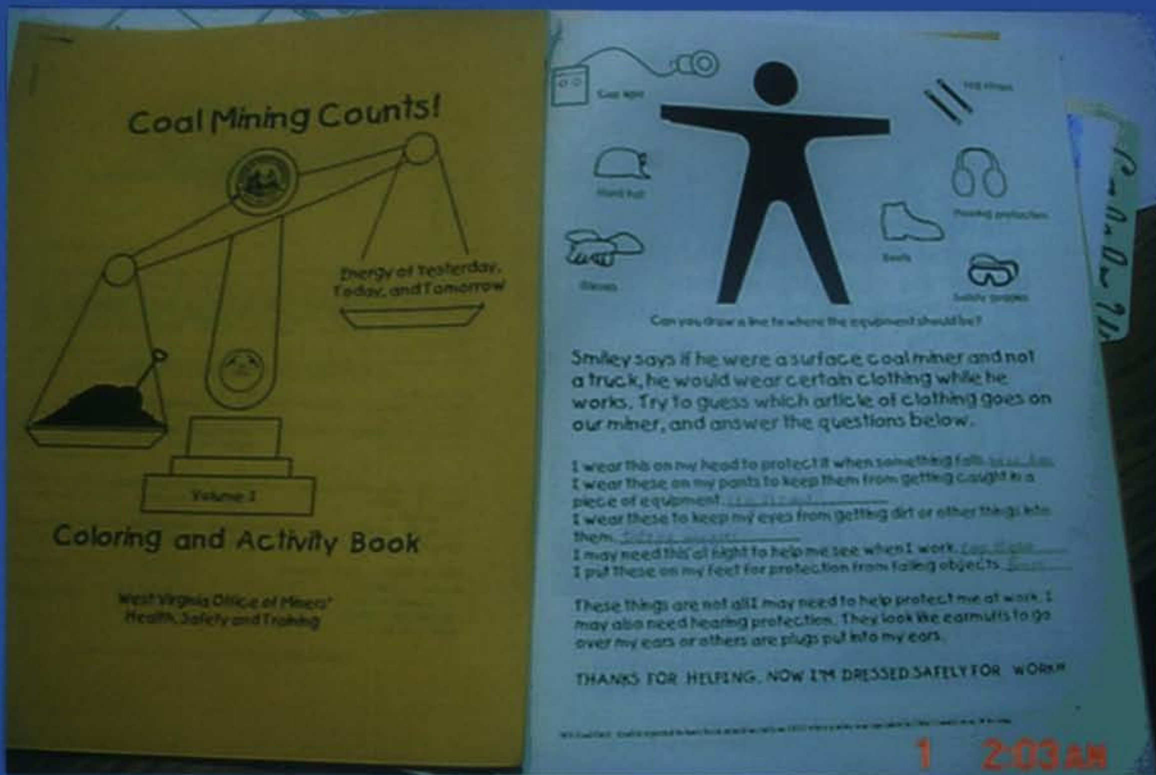
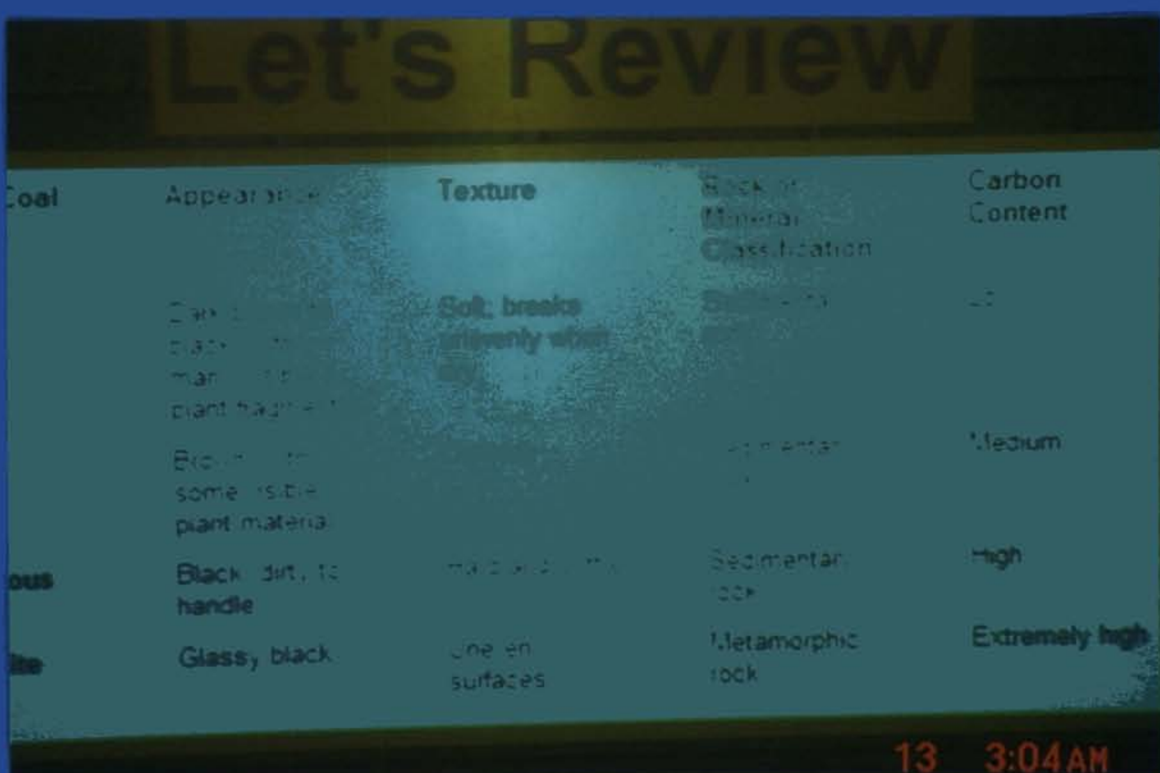
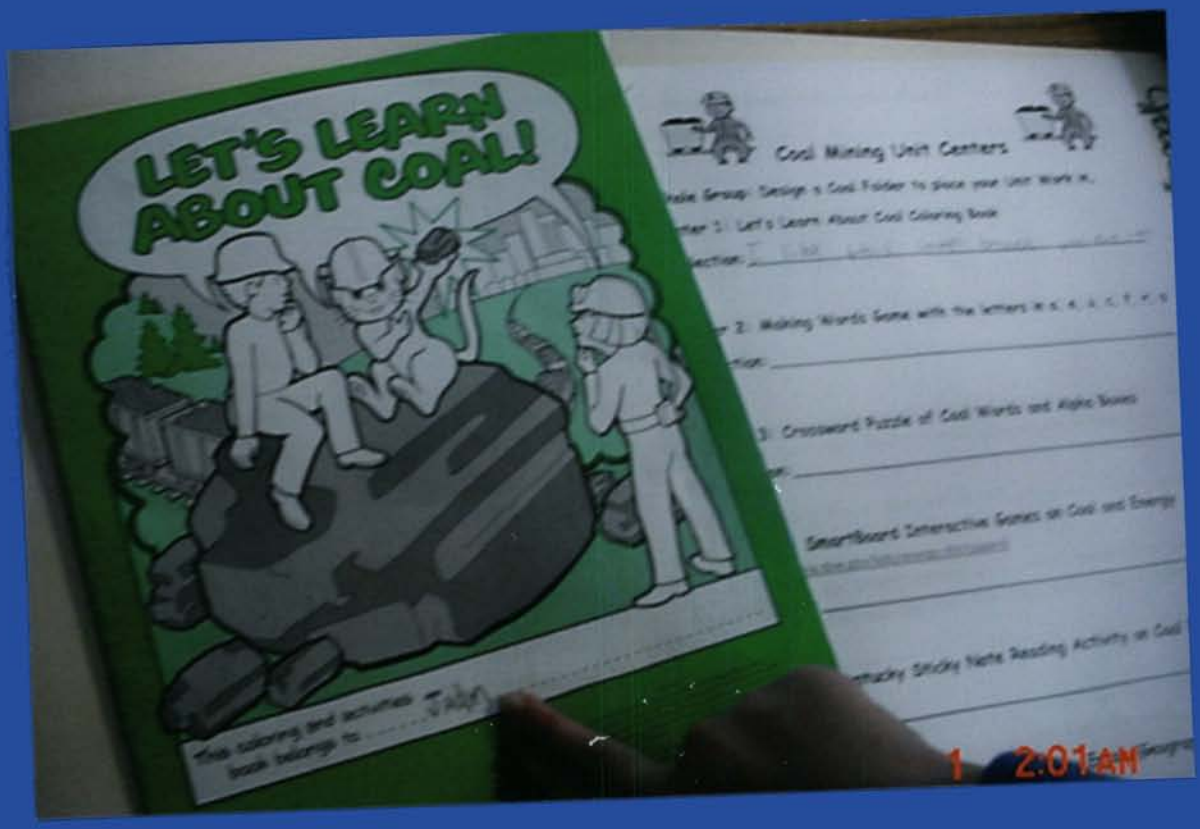
PROBLEM
COAL FORMATION
PROCEDURE
BEFORE
AFTER
HYPOTHESIS
DATA
MATERIALS
CONCLUSION


HOW COAL FORMS


Coal Mining Counts!
Energy of Yesterday, Today, and Tomorrow
Coloring and Activity Book
West Virginia Office of Miners' Health, Safety and Training
Smiley says if he were a surface coal miner and not a truck, he would wear certain clothing while he works. Try to guess which article of clothing goes on our miner, and answer the questions below.
These things are not all I may need to help protect me at work. I may also need hearing protection. They look like earmuffs to go over my ears or others are plugs put into my ears.
THANKS FOR HELPING. NOW I'M DRESSED SAFELY FOR WORK!!
1 2:03AM


Let's Review
Texture
Carbon Content
Medium
High
Glassy, black
Metamorphic rock
Extremely high
13 3:04AM


LET'S LEARN ABOUT COAL!
Coal Mining Unit Centers
1 2:01 AM

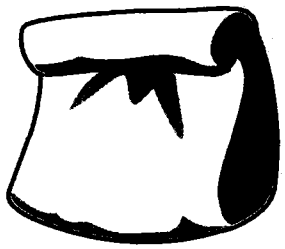

COMMON SEDIMENTARY ROCKS
1 2:22 AM

Natural Resources
Hard Quiz

score: 5/5

Name Mccoy,Varney

1.



Moby brings his lunch in a paper bag every day. What can he do instead to save paper?

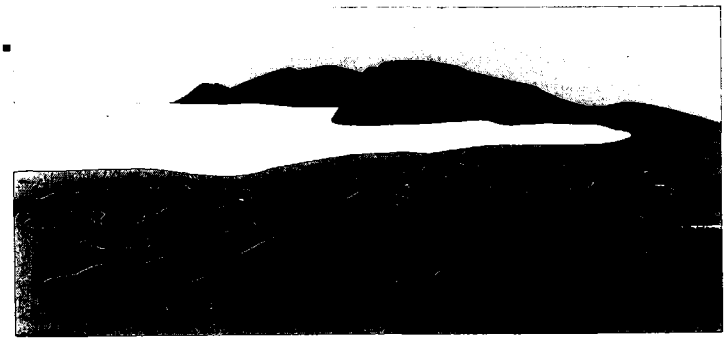
A. Eat fruit and vegetables.

B. Recycle glass and metal.

C. Ride the bus to school.

(D.) Use a reusable lunch box.

2.



People can CONTAMINATE an area with harmful chemicals. What does CONTAMINATE mean?

A. to clean up

B. to recycle

C. to search

(D.) to pollute

3. Which is a renewable natural resource?

A. coal

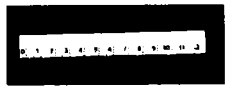
(B.) wind

C. oil

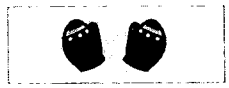
D. rock

4. Which is made from rocks and minerals?

(A.) 

B. 

C. 

D. 

5. Which statement is FALSE?

A. People use resources faster than they can be replaced.

B. Fossil fuels take millions of years to form in the earth.

C. People can use solar energy to light and power homes.

(D.) Recycling is the only way to conserve natural resources.

My favorite rock is...

My favorite rock is ~~Malachite~~. This rock has many colors, it is kind of looks like a dark rainbow. It also looks like it is covered in moss.

It feels hard, scratchy, and oh one of it's edge has a point to it.

It sounds like a dice if you drop it on a surface.

It smells like the outdoors on a sunny day.

It is shiny

6. Everybody read to find...on page 22 what the Empire State Building is made of?

The Empire State Building is made of Limestone.

7. Everybody read to find...on page 24 what metamorphic means?

Metamorphic comes from a word that means to change

8. Everybody read to find...on page 30 what a volcano is?

A Volcano is an opening in the Earth's crust where melted rock can flow out.

9. Everybody read to find...on page 30 what the three different shapes of volcanoes are?

Cinder Cone Volcano, Composite Volcano, Shield volcano.

10. Everybody read to find...on page 37 what type of rock granite is?

Granite is an Igneous type rock.

ERT The Magic School Bus: Inside the Earth

Name: Chrissy Carreona Kirk
Date: _____

1. Everybody read to find...on page 9 where rocks come from?

Most of the rock is solid part of the Earth is made of great masses of rock. The small rocks that we collect are just pieces that broke off from the huge masses.

2. Everybody read to find...on page 11 what are rocks made of?

Rocks are made of minerals.

3. Everybody read to find...on page 15 what soil is?

Soil is made of ground up rock, mixed with clay, bits of dead leaves, sticks, and small pebbles

4. Everybody read to find...on page 16 if rocks are under you?

Most of the rock in the Earth's crust is covered with soil or water

5. Everybody read to find...on page 18 what sedimentary means?

Millions of years ago wind blew dust and sand into lakes and oceans. The dust and sand settled to the bottom in layers called sediment. Seashells formed layers of sediment, too. Sedimentary comes from the word "to settle"

Social Studies

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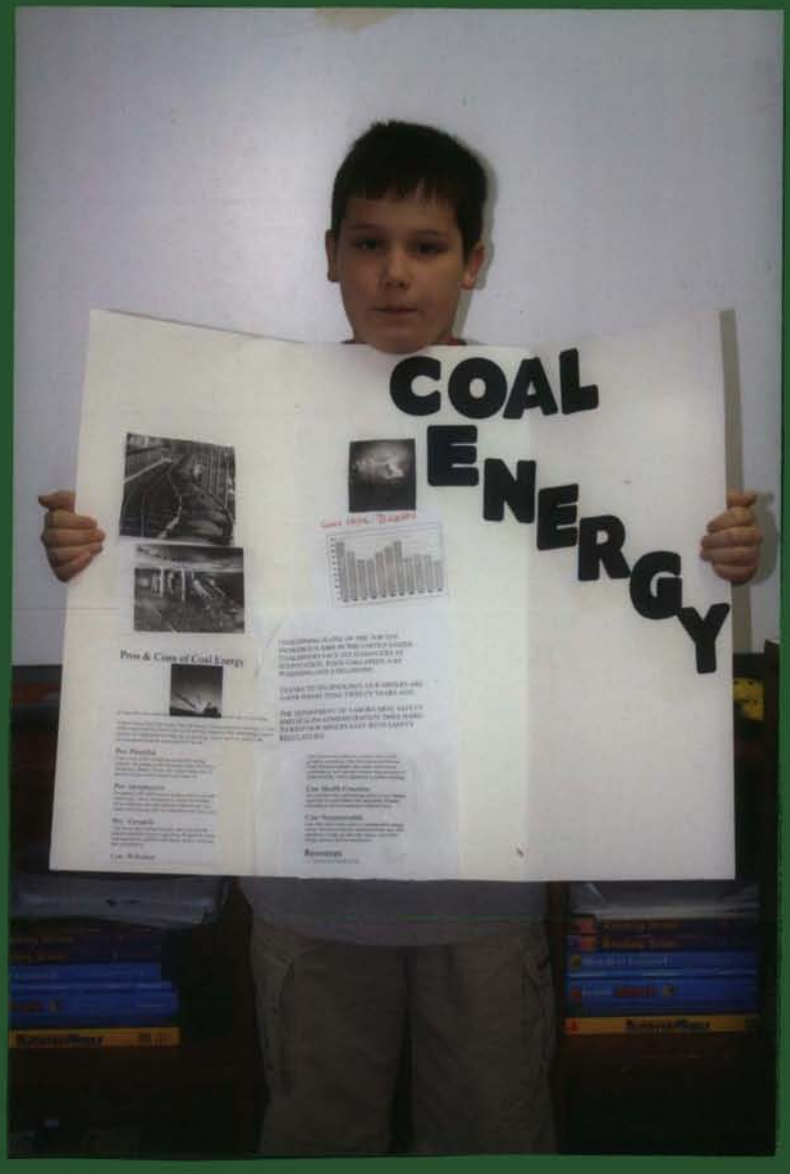
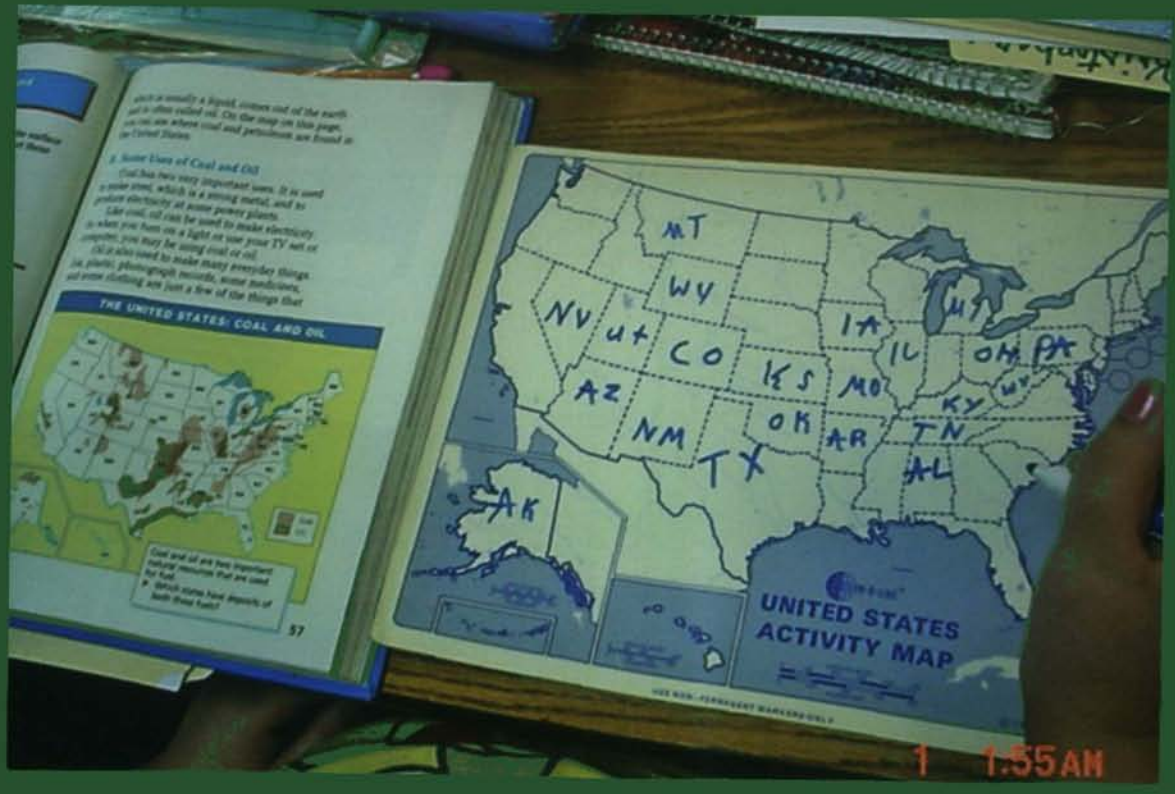
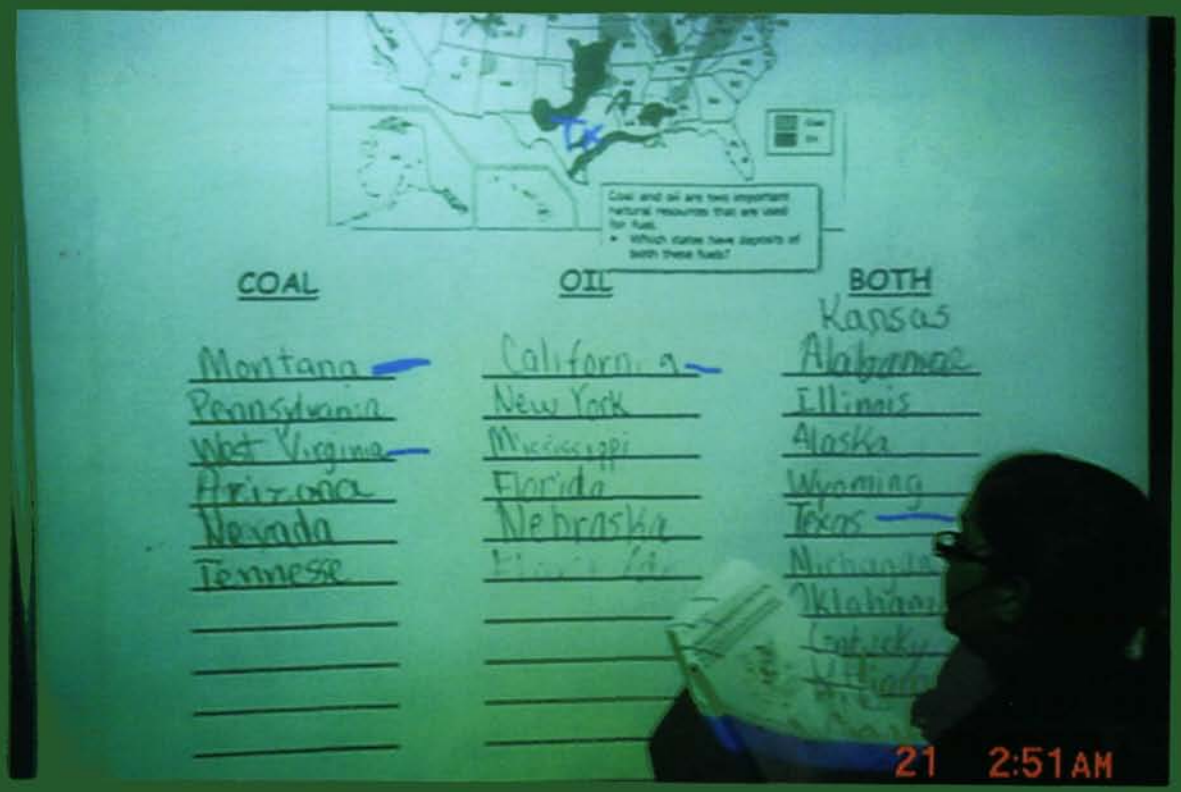
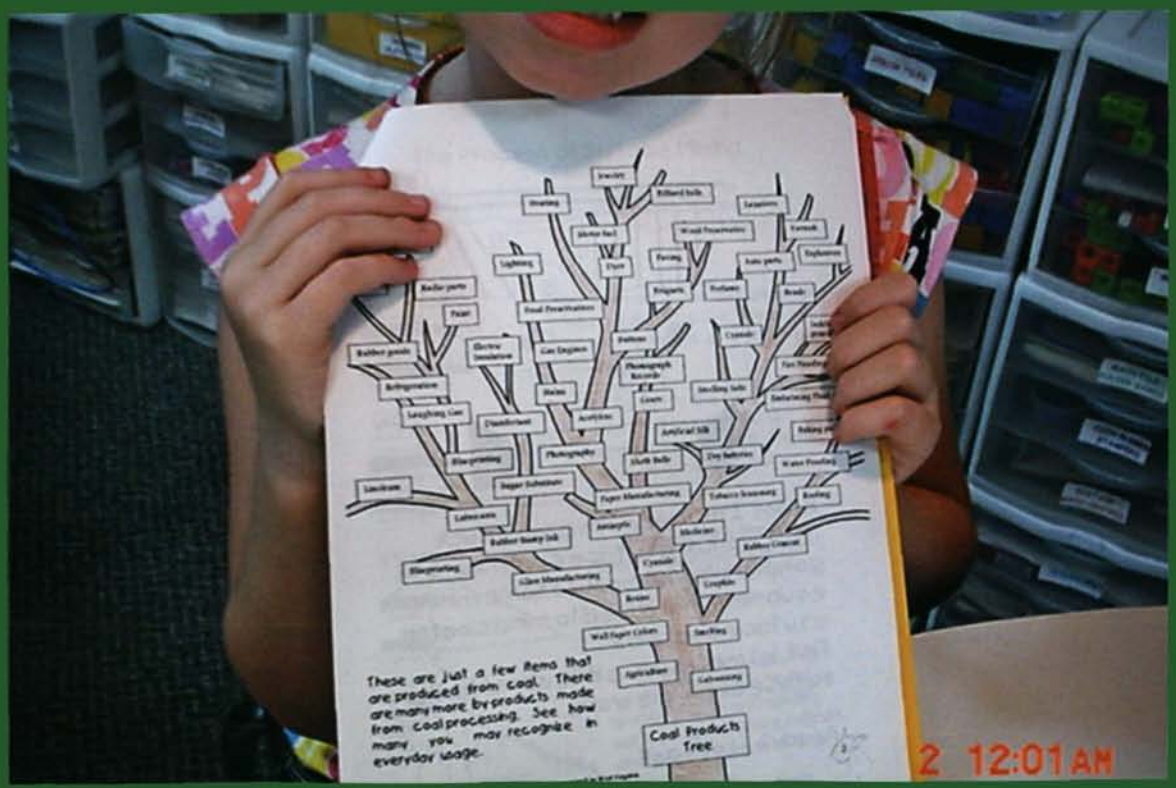
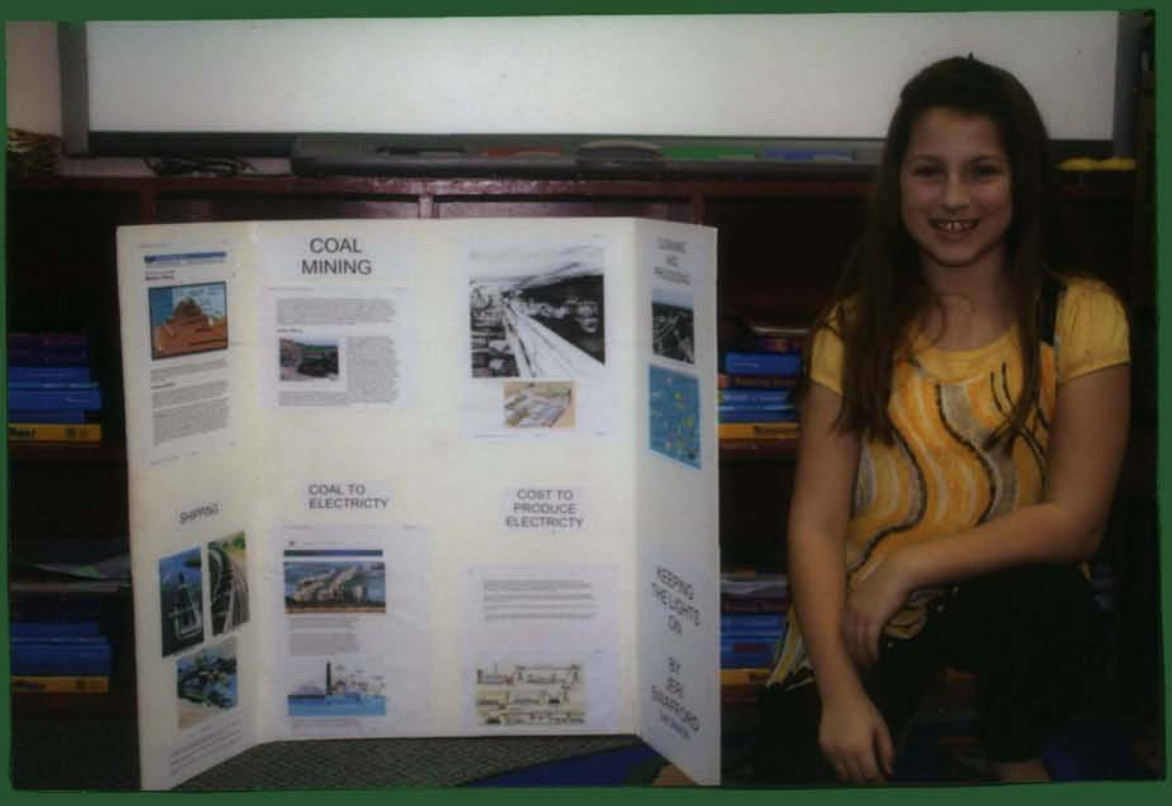

COAL
ENERGY
Pros & Cons of Coal Energy


1 1:53 AM


THE UNITED STATES: COAL AND OIL
MT
WV
NV
UT
CO
KS
MO
IA
IL
OH
PA
AZ
NM
OK
AR
TN
KY
TX
AL
AK
UNITED STATES ACTIVITY MAP
1 1:55 AM


Coal and oil are two important natural resources that are used for fuel.
• Which states have deposits of both these fuels?
COAL
OIL
BOTH
Montana
Pennsylvania
West Virginia
Arizona
Nevada
Tennessee
California
New York
Mississippi
Florida
Nebraska
Kansas
Alabama
Illinois
Alaska
Wyoming
Texas
21 2:51 AM


These are just a few items that are produced from coal. There are many more by-products made from coal processing. See how many you may recognize in everyday usage.
Coal Products Tree
2 12:01 AM


COAL
MINING
COAL TO
ELECTRICTY
COST TO
PRODUCE
ELECTRICTY


THEY
SAW

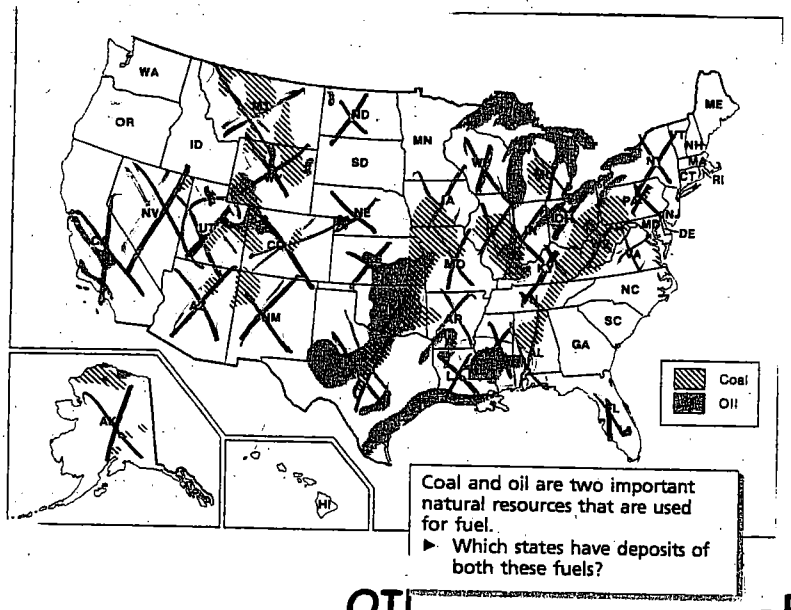

WESTBANK
1975


Matewan
Massacre

Comparing Coal and Oil Producing States on a United States Map

Name:_____

Look at the map below and list the states that are Coal Producers only, Oil Producers only, and the states that have both Coal and Oil.



Coal and oil are two important natural resources that are used for fuel.

▶ Which states have deposits of both these fuels?

☺ A+

COAL	OIL	BOTH
MT	NE	CA
NV	WI	WY
IA	FL	CO
TN	TX	UT
KY	LA	MO
WV	MS	IL
VA	CA	IN
AR	ND	MT
NM		OH
		AL
		AR
		KS

1. Which fossil fuel is the most abundant on the map? Coal ✓

2. Which state is the largest coal producing state? Wyoming ✓

3. Which state is the largest oil producing state? Texas ✓

Coal Facts

Page 54-61

Fact: Celia

1. In 1988 coal miners produced about 161 million tons of coal.

2. More than one-third of Kentucky's coal is uncovered by surface mining.

3. Surface miners scrape or blast off the tops of hills and mountains.

4. erosion - The wearing away of the earth's surface by the forces of water, wind, or ice.

5. surface miners cut rock, soil, and trees from hills to reach Kentucky's coal.

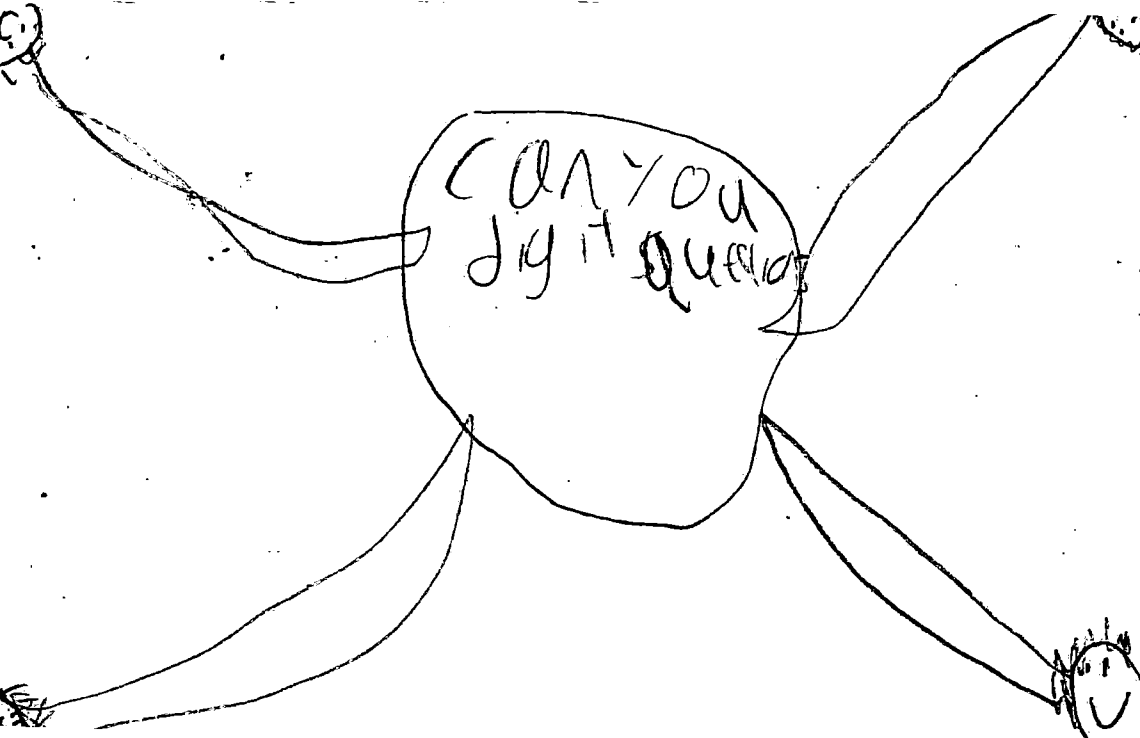
6. Acid collects in pools of water at abbanded mines. Rain carries the acidic water into nearby streams and rivers, where the acid kills fish and plants.

3. Miners reclaim mined land by replanting it with trees and flowers.

• what machine tears coal off walls and onto a conveyor belt? Answer: continuous miner

•

coal miners   teams   envyromentalist


CAN YOU
DYI QUEST

Gavin

1. What is the two different types of mining?

2. What are some tools coal miners use?

3. What is the most rare type of coal?

1. Underground and Surface
2. steel-toed boots, ear plugs, hard hats, self-resuers, methane gas detector, knee pads.
3. Anthracite

1 one Tool that coal miners carry around

Answer: pick, shovle

2 how DO coal miners Dig coal

Answer: with a mechine

3

4

5

Anna Stepp 4-11-11

1. What are the 4 typs of coal?
2. What are 3 things miners wear?
3.

Xristopher

1 What is the coal we live close to
(bituminous)
2 What is the largest type of coal
Anthracite
3 What is the smallest type of coal
peat

What does reflective tape do?
·Reflective tape is a safety tool ;it lets other miners see the other miner if that other miner is driving the ram car.

2. What is one of the machines coal miners use ·one of the machines coal miners use are a continous miner.

Coal Question

4-11-11

1. What is a belt-line:
a belt-line is that it cares coal outside
2. What does the cart do with coal in it.
it dups it on the belt-lin
3. What does coal do:
Get eletrcity

Tayleigh questions 4-11-11

1. How is coal made Answer: rocks fall off the eggaes then the wind blo then the sand blows away the sun shines then the coal miner goes underground and digs for coal and makes it into leckriste.

2. Tell what coal rervents Answer: Makeup.

Questions

1. how meny type of coal mines ar there
Answer: 3

2. how meny people can run a continus miner at a time.
Answer: 1

3 what is the second layer of coal
Answer: Lignite

what are 2 tools a miner uses.

- countinas miner
- Shovel

what are the 3 tipes of shifts

- 1 shift
- 2 shift
- 3 shift

The 4 types of coal formation in order.

- Peat
- Lignite
- Anthracite
- Bituminus

Caleb

1. Do you have to use pencil and paper

2.

Alexis Blair

1. What is the most expensive tip of coal. (Bituminous)

2. What are three you need to were in the coal mines.
- hard hat
- Steel toe shoes
- Reflective strip

3. What is not a tip of coal
peat

1. what are the 4 tipes of Coal

anwer antracite, bitumunuse, peat, subbitum onus

2. What is coal made of

anwer ronon tress then they fall in swamp oo.

3 what do we need coal for

anwer: electriaity, Some make-up

1. Coal tips
2. is coal dead trees
3. What is coal made out of

What are 3 tools a miner uses

- ear plugs
- hard hat
- light

What are to2 types of coal

- Lignite
- Anthercite

Chapter Abbey

1. Is a Continous Miner a machine or a person?

Answer: machine

2. How many feet dose a coleminer go underground?

Answer: 200

3. What is the most expensive coal

Answer: Anthracite

1. What is the first step to forming coal?
Answer: Peat

2. How is coal formed?
Answer: Trees that fall into swamps and rotten and sediment grow on top of the rottened trees

3. What are the fours steps of forming coal?
Answer: Peat, Bituminous, Sub-Bituminous, Anthricite

1. What is the first step to forming coal?

(a) Peat

(B) Bituminous

(c) Anthricite

Answer: (a) Peat

2. How is

Dalton

1 What did they apply on the mine walls
2 What is used to scoop coal off the mine floore
3 What is the forth and hardest etage of coal

Coal questions for can you dig it!

1 What are the things coal miners use to be safe.

- gas detector
- hard hat
- stealed toed boots
- methane detector

2. What are the 4 layers of coal.

- peat

- Lignite
- Anthrercite
- Bitumienoas

3) What is the most expensive coal is.

- Bitumonoas

Jeri

1. What is the most expensive type of coal (bituminous)
2. where does the train take the coal (powerplant)
3. what song does ernie Kold sing (16 tons)

Questions

1. How do you Baby Can you dig it?
2. Can you talk during the game?
3. Do you hide under your chair.

1 How mine, oat is miht in a naber
100

2 How do you

3

Gracie

What do miners use the methane detector for

to detect methane

What do miners use the self rescuer for

to give the miners extra air

What do miners use the steel toed boots for

they use steel toed boots to protect their feet

Aiannd

1. how does coal work? K?
Ans. By Energy

2. Where is coal mostly found
Ans. In the surface

3. What tak the coal to another country
Ans. Export

What is the atmim of
the r

1

2.

3.

4-11-11

What are three safety things when going to the mines? steeled toed boots, Hard Hat, Safety Glasses

What are two types of coal? Anthracite, Bituminous

What is the type of coal found mostly around? Bituminous

1. What song does Erin Ford sing? Answer: (16 tons)

2. What is the most expensive type of coal? Answer: B: Tarmanocs

3. Where does the train take the coal

(Power plant)

1. What do coal miners use with coal. earplugs, helment, safty glasses, [illegible] and minaselous.

2. how do coalminers work. diging coal under ground.

3. What can you make with coal. light electricel e re shaker [illegible] toothbrush. plug ins, tvs, camras, bs, computer, and, flashlights

Jaley

1. What is the accessorie that coal miners wear that hold eccential tools like a battery pack.

Answer: belt

2. What is the number 1 coal producing state?

Answer: Westconcin

3. Name the 4 type of coal.

Answer: Lignite, Anthracite, Bituminous, Peat.

Hunter

1 No yealling During the Game

2 Be nice and don't push

3 Play By the rules

Coal Questions 4-11-11

What are the four types of coal?
Sub-Bituminous, Bituminous, Anthracite, Lignite

When was coal formed?
Millions of years ago.

What is the most exspensive type of coal?
Anthracite.

Zach

Name 4 of the layers of coal? Lignite, Bituminous, peat and Anthracite.

How long does it take for coal to grow back? millions of years.

How does the miners helmet protect them? it keeps them safe from coal knocking the brains out of them.

1. What are the types of coal?

2. how many types of coal are there?

3. What is a surface miner?

4. What is a urdeground miner?

All the miners are tired after a long hard day of work, and they are not talkative as they ride the cage up to the top. Bill loves the feeling of being lifted out of the mine. When the cage stops at the surface, everyone takes a deep breath of fresh air and walks toward the wash house. Bill hangs his cap lamp on the rack so that the battery can charge and be ready for another day. He takes a shower, changes clothes, says goodbye to everyone and travels back to his home. Tomorrow will be another day for mining.

Coal miners walking to wash house

GLOSSARY

Cage – an elevator used to move workers and supplies into and out of a shaft mine.

Cap lamps – a lamp fitted on the front of a hard hat and attached to a battery on the miner's belt. It is worn by each worker in an underground mine to provide lighting. It contains a wet-cell 4-volt battery. (Also called a head lamp)

Coal seam – a bed or layer of coal.

Continuous miner – machine that grinds coal from the working face of an underground mine and continuously loads it into a ram car (or shuttle car or buggy).

Conveyor belt – a continuously moving strip on which coal is transported.

Dinner bucket – a plastic or metal lunch box containing food and drinks for the miner's mid-shift meal.

Earplugs – a device worn in the ear for protection against loud noises.

Face – area in an underground mine where coal is being mined.

Gas detector - used to measure gases in the air and is attached to the miner's belt.

Gloves – protective covering for the hands.

Hard hat – adjustable, hard-plastic hat worn at all times on the mine site. The hard hat protects the miner's head and ears.

Longwall – a newer method of underground mining in which large blocks of coal are removed in a singly pass. This technique produces more coal in less time than any other underground mining method.

Longwall miner – a mining machine that has two main components: a spinning drum lined with cutting blades that moves back and forth along the long wall of coal, and 204 self-advancing electro hydraulic roof shields per 1000 feet that protect the miners from falling coal. The rotating shearing blades move back and forth across the coal, cutting it from the face and transporting it away in an automatic conveyor.

Mantrip – a vehicle used for transporting workers to and from the face in an underground mine.

Miner's belt – a wide leather belt used to carry the battery that powers the miner's cap lamp. The gas detector is also attached to the belt.

Ram Car – a low, long, wide-bodied vehicle used to haul coal from the working face to a conveyor belt in an underground mine. Also called a shuttle car or buggy.

Rock-dusting – crushed limestone is sprayed over exposed coal to reduce the risk of coal dust combustion, aid in the lighting of the mine and reduce health hazards.

Roof – ceiling of the area where coal is being mined.

Roof bolter – a machine used to install long steel rods, or bolts, into holes to hold the layers of rock in the roof together in an underground mine; also, the miner who operates a roof bolting machine.

Room and pillar – a method of underground mining that leaves blocks of coal, or pillars, in place to help support the roof of the mining area.

Safety glasses –large, hard-plastic eyeglasses that fit close on a miner's face to protect his eyes.

Scoop – a battery or diesel-powered machine, having a large flat bucket attached to the front, used to clean up loose coal or to transport supplies in an underground mine.

Self-rescuer – a portable respirator that allows the miner to breathe safely for about an hour if there are dangerous gases in the mine.

Steel-toed boots – boots having a band of steel over the toe area to protect the feet.

Surveyor – a mining engineer who makes maps of mining operations.

Wash house – a large building at the mine site were workers shower and change clothes.

Questions from the Story

1. Bill greets his fellow workers and changes his clothes in the bath house? T (F) wash house
2. A gas detector measures what type of gas? Methane gas
3. Miners use a lantern to light their path ahead? If false, explain. T (F) a cap light
4. Discuss the function of a mantrip. It takes 10 - 12 miners at a time deeper into the mine to the spot they will be working. a is attached to the
5. Tell the difference between a conveyor belt and a scoop.
6. Bill works in a mine that uses the longwall method of mining? T (F) rooms pillar
7. Miners mine coal at the seam? If false, explain. T (F) The face is the area in an underground mine where coal is being mined
8. If miners do not use picks for mining coal in an underground mine, what machinery is used? Continous miner or a longwall miner
9. Define a ram car. A ram car is used to haul coal to a conveyor belt in an underground mine.
10. A roof bolter drills holes up to nine feet into the ceiling? If false, explain. T (F)

COAL CODE DETECTION

100% ✓ ☺ A+

U 1	22 - 1 - 7 - 10 - 4 - 12 - 20 / 2 - 13 - 21 - 13 -	14	J
M 2		15	T
O 3	21 - 16 / 13 - 22 / 1 - 22 - 20 - 5 / 18 - 25 - 20 -	16	G
A 4		17	V
D 5	21 / 4 / 12 - 3 - 4 - 6 / 22 - 20 - 4 - 2 / 13 - 22 /	18	W
L 6	6 - 3 - 12 - 4 - 15 - 20 - 5 / 6 - 20 - 22 - 22 / 15 -	19	K
R 7		20	E
B 8	25 - 4 - 21 / 15 - 18 - 3 - 25 - 1 - 21 - 5 - 7 - 20 -	21	N
X 9	5 / 10 - 20 - 20 - 15 / 8 - 20 - 6 - 3 - 18 / 15 /	22	S
F 10		23	P
Q 11	25 - 20 / 16 - 7 - 3 - 1 - 21 - 5 / 22 - 1 - 7 - 10 -	24	Z
C 12		25	H
I 13	4 - 12 - 20.	26	Y

Write the coal fact below:

Surface Mining Is Used When A Coal
Seam Is Located Less Than
Twohundred Feet Below The Ground
Surface

ECTIONS: Be a code detective and search for the coal fact. Use the code then write the coal fact on the lines.

Center 22: Play Eggspert-

Reflection:_____

Center 23:Do Coal Reading Passage and Test Fluency

Reflection:_____

Center 24: Bring in a Guest Speaker that will talk to students about Coal Mining.

Reflection:_____

Center 25: Coal Fair Culminating School Event

Reflection:_____

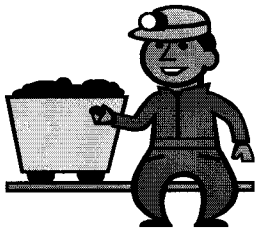
Center 26: Trip to the Regional Coal Fair in Pikeville, KY.

Reflection:_____

Center 27: Paint a Mural of What we Learned

Reflection:_____

Coal Mining Unit Centers



Whole Group: Design a Coal Folder to place your Unit Work in.

Center 1: Let's Learn About Coal Coloring Book

Reflection:_____

Center 2: Making Words Game with the letters in a, e, u, c, f, r, s

Reflection:_____

Center 3: Crossword Puzzle of Coal Words and Alpha Boxes

Reflection:_____

Center 4: SmartBoard Interactive Games on Coal and Energy

http://www.eia.doe.gov/kids/energy.cfm?page=6

Reflection:_____

Center 5: Kentucky Sticky Note Reading Activity on Coal Resources.

Reflection:_____

Center 6: Social Studies Activity- Dry Erase (Geography) Map of

Coal Producing States in the United States.

Reflection:_____

Center 7: Rock Docs-Students observe various Rocks and Minerals with handheld lens and do the accompanying handout.

Reflection:_____

Center 8: Computer Center-Reading Comprehension Activity on Coal.

Reflection:_____

Center 9: Reading Center of Various Coal, Appalachian Fiction, and books on Kentucky. You may self-select a book to read in your reading range and test on the book for Accelerated Reader.

Reflection: (Title of Book and Score)_____

Center 10: Do What? Activity on an Open Response Item about Coal (When finished you may read the "Coal Mining Counts" booklets).

Reflection:_____

Center 11: Tier 3-(Content Area Words) Coal Word Wall Stampers. Stamp out and organize 1, 2, 3, and 4 syllable words.

Reflection:_____

Center 12: Alpha Plates Game-Active Participant Game where the students use paper plates that have alphabet letters on them, to spell out the Coal Unit Vocabulary Word from the definition I say.

Reflection:_____

Center 13: http://www.classtools.net (Random Picker Game) on the Interactive SmartBoard. Students play Charades with Coal Words.

Reflection:_____

Center 14: Activotes Response System-Students use the quick response clickers to answer questions about our Coal Unit and things they have learned.

Reflection:_____

Center 15: Writing Center-Write a Haiku, Acrostic, Rebus, Couplet, or Shape Poem about Coal.

Reflection:_____

Center 16: Act Out Coal Songs and Sing them.

Sixteen Tons, Workin' In a Coal Mine, Coal Miner's Daughter.

Reflection:_____

Center 17: Read *The Important Book,"* by Margaret Wise Brown and write- The Important Thing about Coal is_____.

Reflection:_____

Center 18: Cookie Mining and Muffin Mining.

Reflection:_____

Center 19: Create a Web of Clean Coal Tech"KNOWLEDGE"ies Using Yarn.

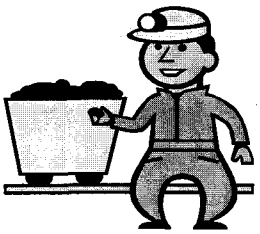
Reflection:_____

Center 20: Play the *"Can You Dig It." Game.*

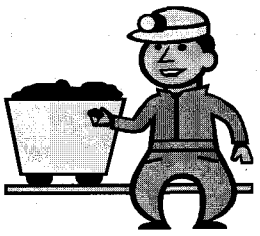
Reflection:_____

Center 21: Play the Agree and Disagree Game (Response Paddles) for Questioning about our Coal Unit.

Reflection:_____



Coal Mining Unit Centers



Whole Group: Design a Coal Folder to place your Unit Work in.

Center 1: Let's Learn About Coal Coloring Book

Reflection: I am Doing 12 page, drawing a eleacity

Center 2: Making Words Game with the letters in a, e, u, c, f, r, s

Reflection: Making words for sufoce

Center 3: Crossword Puzzle of Coal Words and Alpha Boxes

Reflection: I am finding in crossword puzzle.

Center 4: SmartBoard Interactive Games on Coal and Energy

http://www.eia.doe.gov/kids/energy.cfm?page=6

Reflection: I am finding in crossword puzle

Center 5: Kentucky Sticky Note Reading Activity on Coal Resources.

Reflection: I am taking notes about coal(coping from the Book)

Center 6: Social Studies Activity- Dry Erase (Geography) Map of

Coal Producing States in the United States.

Reflection: Briting words on states for cool

Center 7: Rock Docs-Students observe various Rocks and Minerals with handheld lens and do the accompanying handout.

Reflection: lobling for rocks and collation

Center 8: Computer Center-Reading Comprehension Activity on Coal.

Reflection: _____

Center 9: Reading Center of Various Coal, Appalachian Fiction, and books on Kentucky. You may self-select a book to read in your reading range and test on the book for Accelerated Reader.

Reflection: (Title of Book and Score) _____

Center 10: Do What? Activity on an Open Response Item about Coal (When finished you may read the "Coal Mining Counts" booklets).

Reflection: _____

Center 11: Tier 3-(Content Area Words) Coal Word Wall Stampers. Stamp out and organize 1, 2, 3, and 4 syllable words.

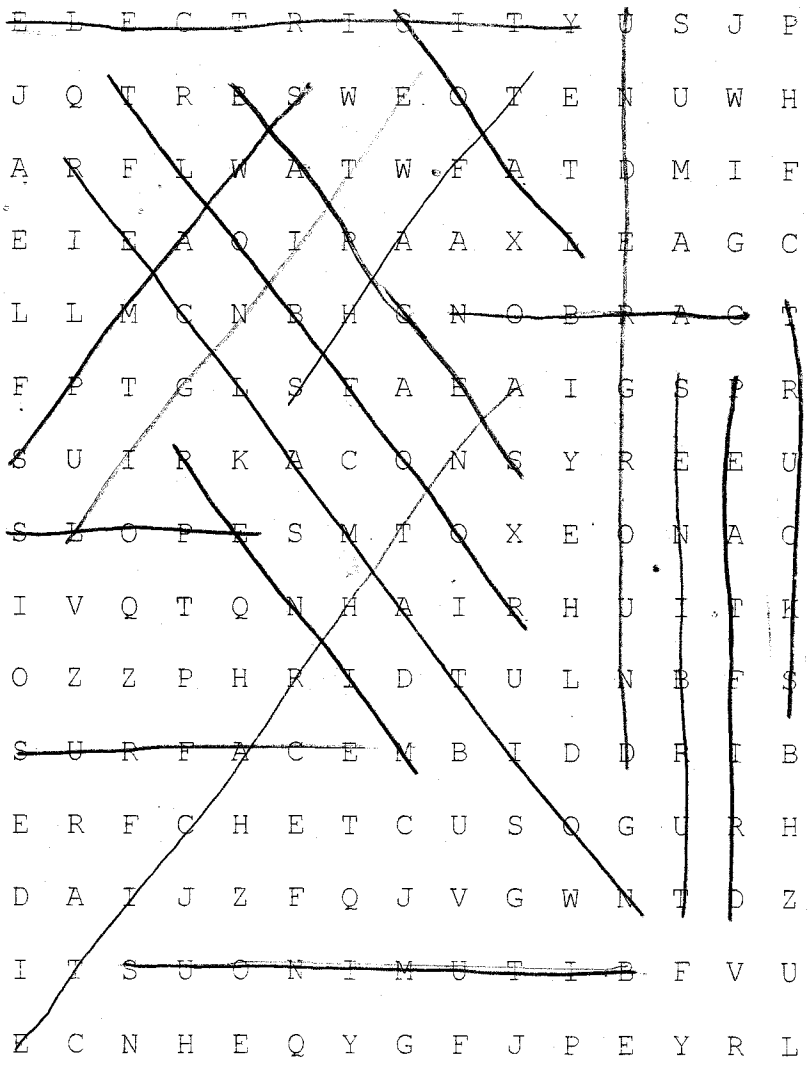
Reflection: I am using stupers making cool words

Malachite

Shylar 4-4-11

- It's colorful
- It's rough
- It's a light rock
- It's a hard rock
- It's smells like rain
- It came from a collation

Skylar



ANTHRACITE
CARBON
ELECTRICITY
PEAT
SHAFT
SWAMPS
UNDERGROUND

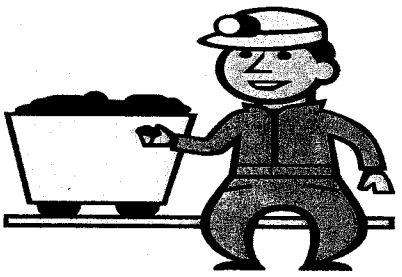
BARGES
COAL
LIGNITE
RECLAMATION
SLOPE
TRUCKS

BITUMINOUS
DRIFT
MINER
ROOFBOLT
SURFACE
TURBINES

A Kid-Friendly Guide of Kentucky Coal Facts

by: Ms. McCoy's 3rd Graders at Southside Elem.

1. Coal is a very hard rock
2. Coal sometimes can be shiny
3. Coal sometimes can not brack
4. Coal has four types of names
5. Coal is a black rock
6. Coal is really hard and even scratch



COAL MINING
TEACHER MADE WORD ACTIVITY
From Coal to Tree

Name: Shylar

1. Write the word "coal" coal
2. Drop the "l" and add a "t" coat
3. Take off the "c" and add a "b" boat
4. Remove the 2 vowels and replace with "oo" boot
5. Drop the "b" and add "f" foot
6. Drop the "oo" vowel and add "ee" feet
7. Subtract the "t" and add "l" feel
8. Take away the "l" fee
9. And add a "tr" tree
10. Write your new word: free

The important thing about coal

is that it gives us electricity.

It is hard like carbon.

It has no color.

It's hard and black.

And it shiny.

But it can't walk on the floor.

But the important thing about

coal is that it is cool.

Spelling

Put the words in alphabetical order.

1. Black
2. coal
3. dig
4. fuel
5. heat
6. miner
7. ton
8. train

train heat ton dig coal

fuel black miner

Spelling

1. train___ carries coal
2. Heat___ feeling of hotness
3. ton___ unit of weight equals 2000 pounds
4. Dig___ to turn up the ground
5. coal___ type of fuel
6. Feul___ burns to supply heat
7. Black__ dark color
8. miner_ someone who mines coal

train	miner	dig
coal	black	heat
ton	fuel	

Spelling Unscramble

1. loac- coal
2. otn- ton
3. lbkca- black
4. rnati- train
5. igd- dig
6. felu- fuel
7. rimen- miner
8. ahte- heat

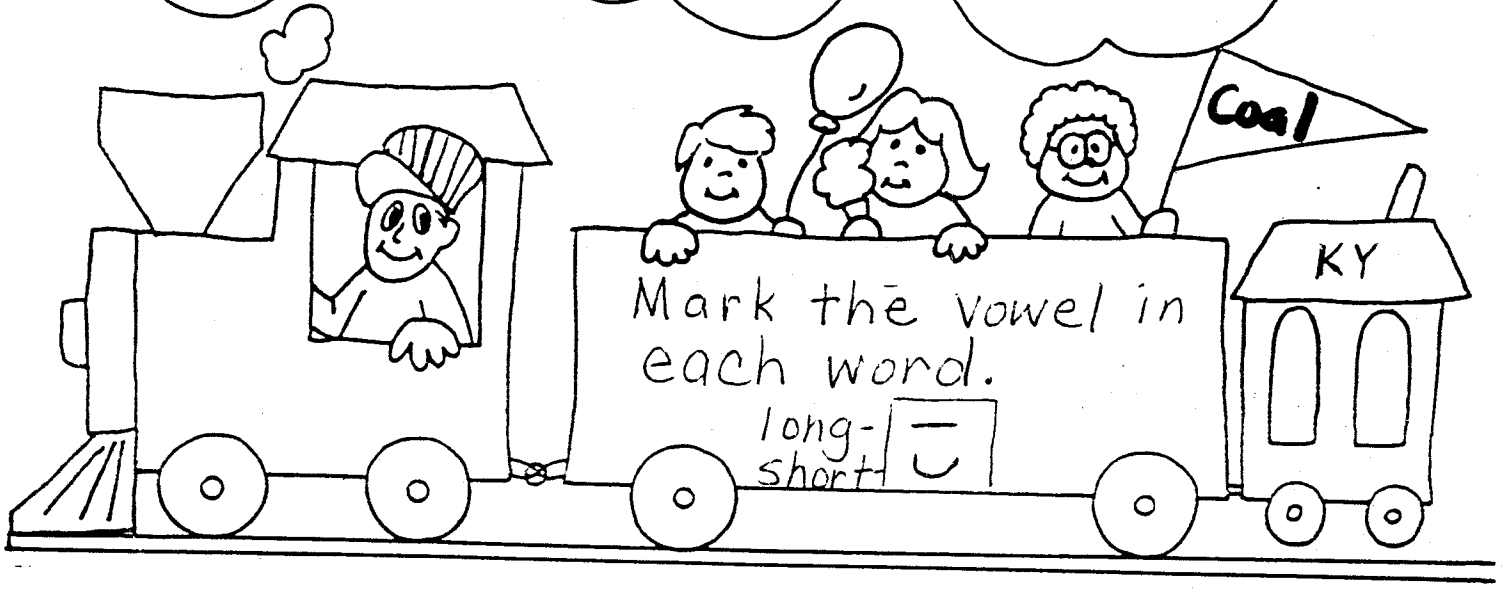
train miner dig

coal black heat

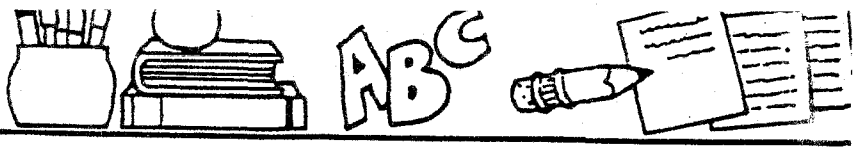
ton fuel

Coal Phonics

1. truck
2. dig
3. black
4. heat
5. coal
6. miner
7. ton
8. fuel
9. burns
10. carries
11. mines
12. supply



Week 27 – Energy



Day		
1	**Language Arts**	a. we drived our car to westbrook mall on saturday b. jenny and todd they losted all their energy by the end of the day
2	**Science**	a. light electricity sound and heat they is forms of energy b. can you see feel or hear they
3	**Social Studies**	a. do new york city need more energy than a small town b. people in new york city they once used to much energy and everything stopped
4	**Math**	a. colleen and joe has three kinds of paper for their experiment on solar energy b. does people in the united states use more energy than other people in the world
5	**Creative Arts**	a. you is making sound energy when you play a trombone a trumpet or a flute b. the central high school band it maked a lot of sound energy

1a. We drovel our car to the mall on saturday.

b. Jenny and Todd, they lost all their engry by the end of the day.

2. a. Light electricity sound and heat thry is forms of engy

b. Can you see fee or hear them.

3. a. Does new york need more engry than a small twon.

b People in new york city they once used to much energy and everything stopped.

4a. Colleen and joe has three kinds of paper for their experment on solar energy.

b. Do people in the United States use more energy than other people in the world.

5a. You are making sound energy when you play a trombone a trumpet or a flute

b. The central high school band it maked a lot of sound energy

Word Wall Coal Words
(A TEACHER MADE ACTIVITY)

1. A vehicle that carries coal is called a cart.
2. Coal is excavated from a seam.
3. Peat is the top or first layer of coal.
4. methane are methods to carry coal in water.
5. Men or women who work in mines are called self-rescuer.
6. The third layer of coal is sub-Bituminous.
7. carbon is where coal was first formed.
8. A shaft is a mine that is cut across.
9. The second layer of coal is bituminous.
10. To restore land to its original state is called westvirginia
11. To carbon is to carry from one place to another.
12. A cart is a method of carrying coal by rail.
13. The hardest and fourth layer of coal is adanbam.
14. Things that are taken from the land are battery pack.
15. A slope is a mine that is straight down.

ERT The Magic School Bus: Inside the Earth

Name: Skylar
Date: 3/11/11

1. Everybody read to find...on page 9 where rocks come from?

Most of the solid part of the earth

2. Everybody read to find...on page 11 what are rocks made of?

Rocks are made of minerals.

3. Everybody read to find...on page 15 what soil is?

soil is made of ground-up rocks, mixed with clay, bits of dead leaves, sticks, and small pebbles

4. Everybody read to find...on page 16 if rocks are under you?

Most of the rocks in earth's crust is covered with soil or water.

5. Everybody read to find...on page 18 what sedimentary means?

Over time, the layers hardened into the sedimentary rock we see today

6. Everybody read to find...on page 22 what the Empire State Building is made of?

The Empire state Building is made of lime-tone.

7. Everybody read to find...on page 24 what metamorphic means?

metamorphic means to change

8. Everybody read to find...on page 30 what a volcano is?

A valcano is an opening in the earth's crust where melted rock can flow out.

9. Everybody read to find...on page 30 what the three different shapes of volcanoes are?

Cinder cone valcano, composite valcano, shield valcano.

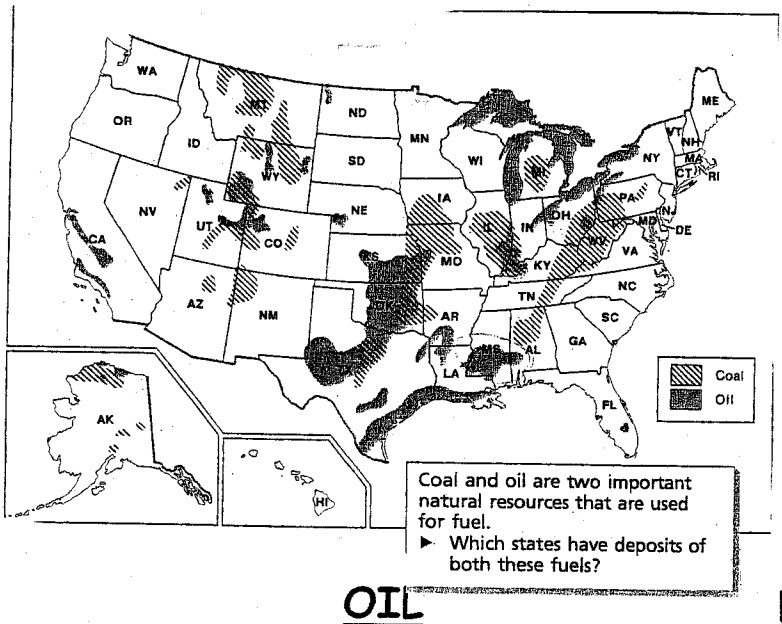
10. Everybody read to find...on page 37 what type of rock granite is?

The type of a granite is: Igneous.

Comparing Coal and Oil Producing States on a United States Map

Name: Shylar

Look at the map below and list the states that are Coal Producers only, Oil Producers only, and the states that have both Coal and Oil.



Coal and oil are two important natural resources that are used for fuel.

▶ Which states have deposits of both these fuels?

COAL	OIL	BOTH
WV Ho	ms FL	AL OK
nm AK	LA	OH
AZ	MI	WY
AL	WY	ms
WV	OK	PA
MT	CA	Co
Ky	NY	UT
IN	UT	Tx
MI	CO	lhs
MO	ND	Oa
IA	KY	nm

1. Which fossil fuel is the most abundant on the map? Both

2. Which state is the largest coal producing state? WV

3. Which state is the largest oil producing state? OK

Write each pair of words in ABC order.

1. heat coal
   1. coal
   2. heat

2. black fuel
   1. black
   2. fuel

3. train dig
   1. dig
   2. train

4. ton miner
   1. miner
   2. ton

5. miner heat
   1. heat
   2. miner

6. heat coal
   1. coal
   2. heat

7. coal black
   1. black
   2. coal

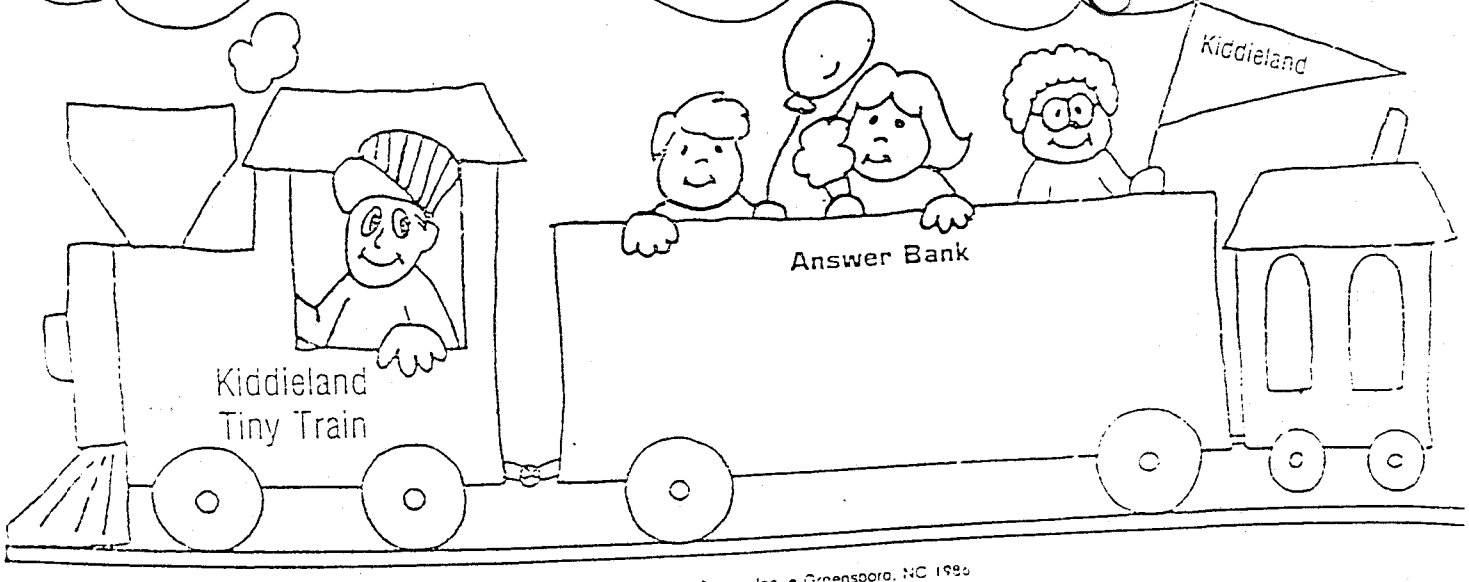
8. fuel train
   1. fuel
   2. train

9. dig ton
   1. dig
   2. ton

10. miner coal
    1. coal
    2. miner

11. ton fuel
    1. fuel
    2. ton

12. dig coal
    1. coal
    2. dig



Coal Couplets

1. Way dourm deep in the mine
I shovle the coal on the old lift-line.

2. mining coal is not safe to do
Wear your gear and it will protect you

3. My jod is long I work all day
I don't get very much to pay

by: Taylor Vipperman

A Code Word Puzzle

COAL CODE DETECTION

U
M
O
A
D
L
R
B
X
F
Q
C
I

22 - 1 - 7 - 10 - 4 - 12 - 20 / 2 - 13 - 21 - 13 -

21 - 16 / 13 - 22 / 1 - 22 - 20 - 5 / 18 - 25 - 20 -

21 / 4 / 12 - 3 - 4 - 6 / 22 - 20 - 4 - 2 / 13 - 22 /

6 - 3 - 12 - 4 - 15 - 20 - 5 / 6 - 20 - 22 - 22 / 15 -

25 - 4 - 21 / 15 - 18 - 3 - 25 - 1 - 21 - 5 - 7 - 20 -

5 / 10 - 20 - 20 - 15 / 8 - 20 - 6 - 3 - 18 / 15 /

25 - 20 / 16 - 7 - 3 - 1 - 21 - 5 / 22 - 1 - 7 - 10 -

4 - 12 - 20.

14 J
15 T
16 G
17 V
18 W
19 K
20 E
21 N
22 S
23 P
24 Z
25 H
26 Y

Write the coal fact below:

Suface mining Is used when a coal seam Is located less than Twopundred Feet Below The Ground surface

ECTIONS: Be a code detective and search for the coal fact. Use the code then write the coal fact on the lines.

Name: Skylar

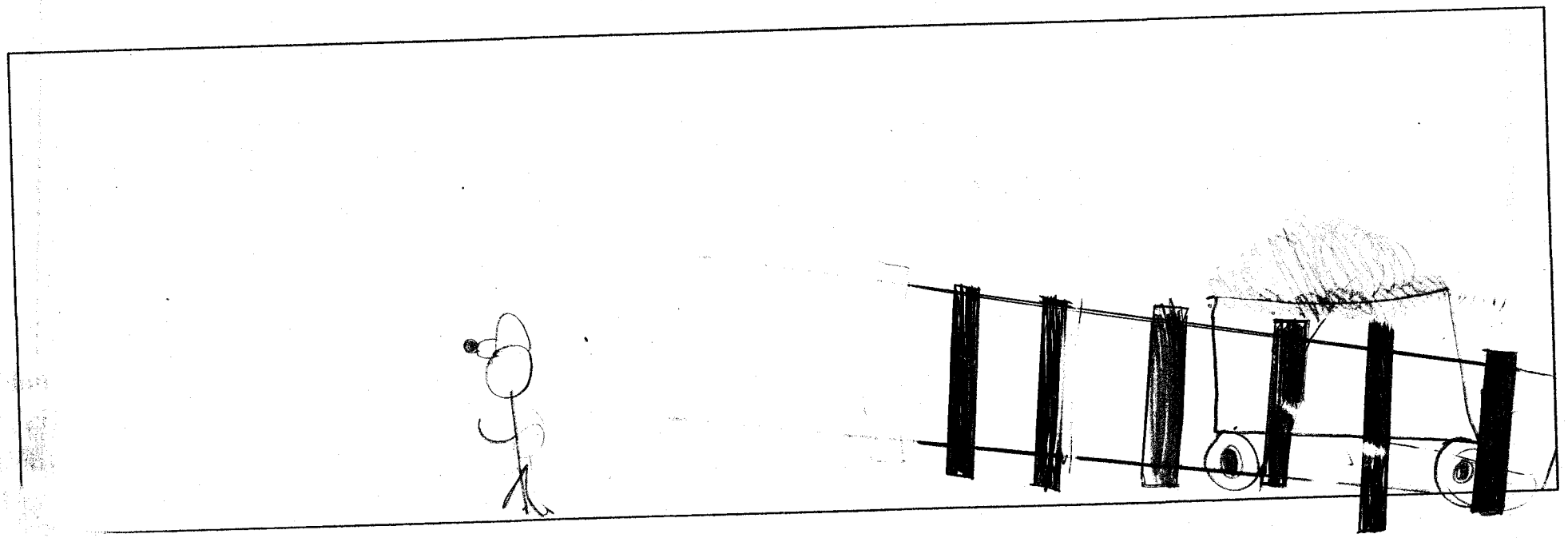
Write the following alliteration (tongue twister) three times in cursive and illustrate.

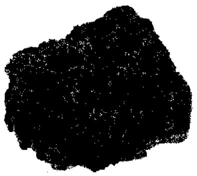
Continuous Miners crush coal carefully and carts carry chunks of coal to conveyors.

1. Continuous miners crush coal carefully and carts carry chunks of coal to conveyors.

2. Continuous miner crush coal and carts carry chunks of coal to conveyors.

3. Continuous miners crush coal carefully and carry chunks of to conveyors.





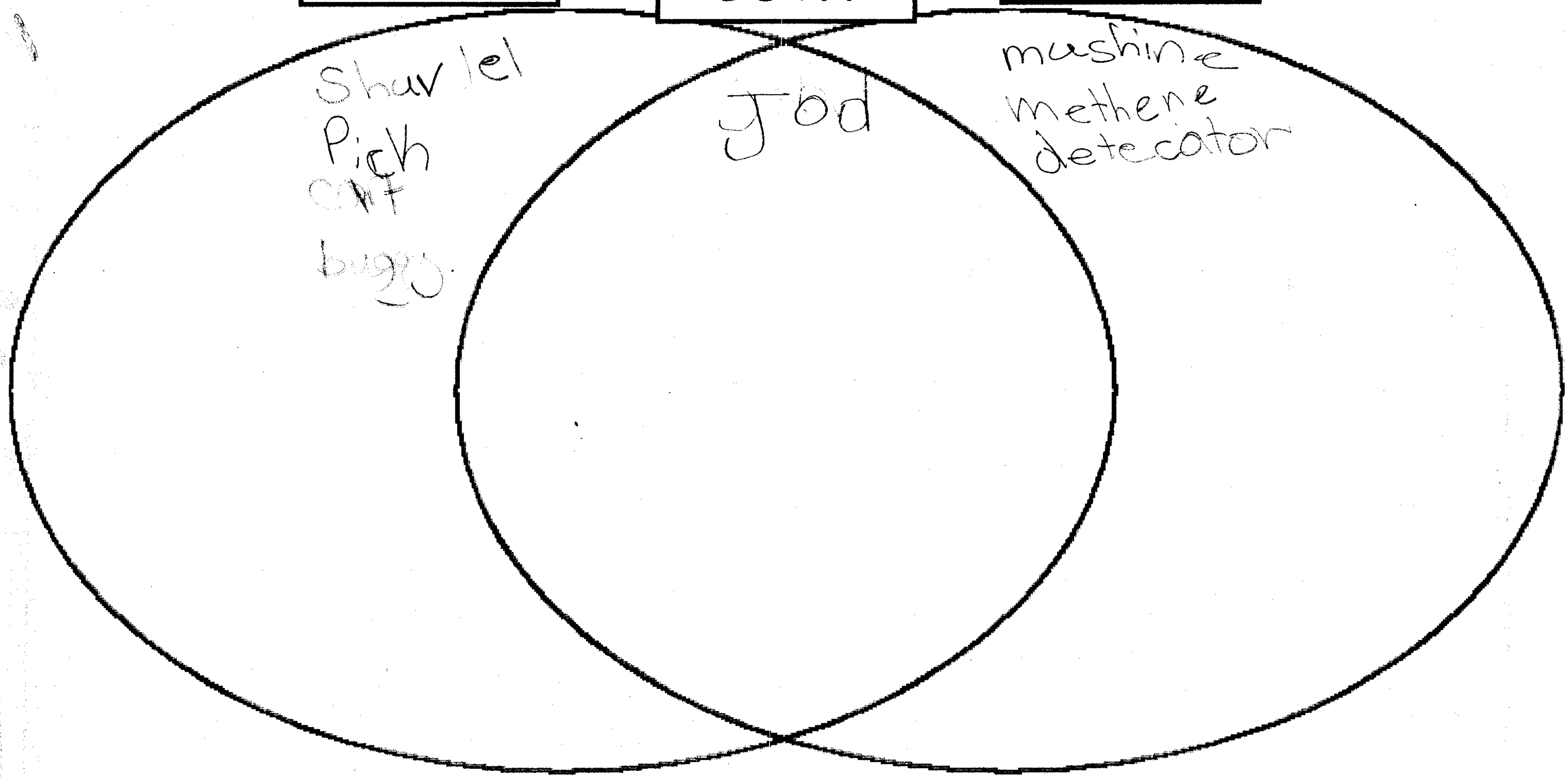
COAL

Coal Mining Venn Diagram

Compare and Contrast Mining Long Ago and Mining Today

COAL

COAL MINING LONG AGO	BOTH	COAL MINING TODAY



I Do it with you

Hard and Soft Chocolate Chip Cookie Mining

Name:_____

1. Describe the condition of the surface that is being mined, extracted, or excavated.

_____

2. What is the number of Coal Deposits on the surface?

_____

3. Estimate the number of Coal Deposits that will be found underground.

_____

4. What was the total number of coal deposits that were found?

_____

5. How many successful coal deposits did you mine?

_____

6. What type of instrument did you mine with?

_____

7. Was this a good tool to use? Yes or No

8. Explain why or why not. What might have worked better and why?

_____

_____

_____

_____

_____

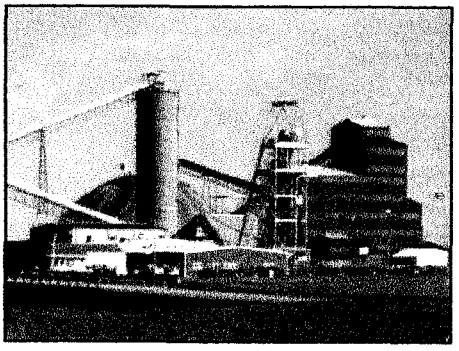
_____

_____

_____

WORKING IN AN UNDERGROUND COAL MINE

Bill Smith lives in southern Illinois. Every morning at 5:30, Bill packs his **dinner bucket** and leaves his house for his shift at the underground coal mine. Bill mines underground because the **coal seam** or layer of coal is more than 200 feet below the surface. He has worked in the mine since 1992. Bill works the day shift from 7:00 in the morning until 3:00 in the afternoon.



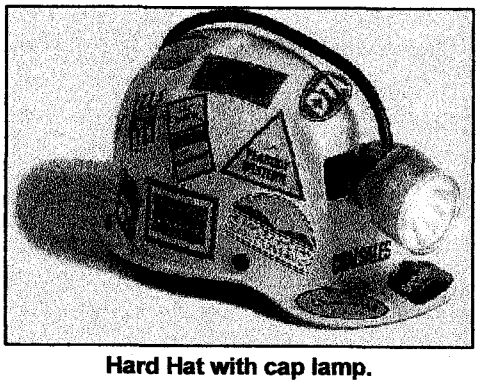
Surface facilities of an underground coal mine.

Inside the wash house work clothes hang from the ceiling.

Bill reports to the mine with his lunch in his dinner bucket. Before going into the mine, Bill enters a large building called a **wash house**. In the wash house, Bill meets his fellow workers and changes into his work clothes and gathers his safety gear.

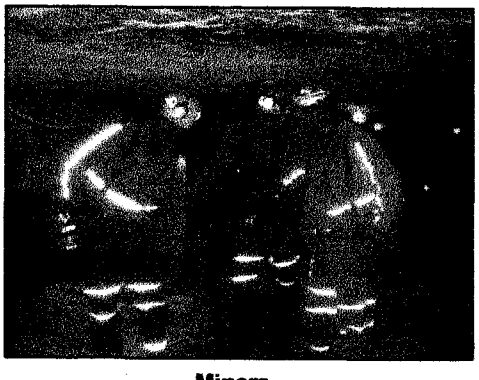
He wears a **work shirt**, **overalls**, and **steel-toed boots**. His clothes are made of heavy, tough material and have **reflective strips** on them, and the **steel-toed boots** are made with steel in the front and top to protect his feet. Bill completes his outfit by putting on his hard hat, a wide leather belt, a **gas detector**, a **self-rescuer**, and **safety glasses**. The **hard hat** is worn to protect his head and ears. The **gas detector** is used to measure gases in the air. Some of these gases, such as **methane**, can be dangerous to the coal miners. The **self-rescuer** is a portable respirator that allows a coal miner to breathe safely for one hour if an unacceptable level of dangerous gases is detected in the air of the mine. **Safety glasses** are worn to protect his eyes from dust in the air.

As Bill leaves the wash house with his co-workers, they all take a fresh set of **ear plugs** to protect their hearing from loud noises. Miners operate heavy equipment and work with tools all day; so **gloves** are necessary to protect their hands.



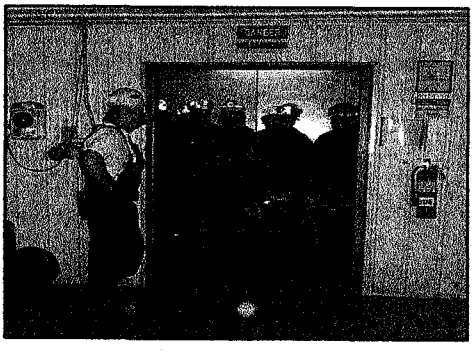
Hard Hat with cap lamp.

Bill pulls on his cap lamp from the rack were the lamps' batteries have been recharging all night. The **cap lamp** is attached to the front of the hard hat and is used to light the way in the total darkness of the underground coal mine. The light is mounted on the hard hat to provide light in the direction the miner is looking.



Miners

With dinner buckets in hand, the coal miners' move toward the cage. The **cage** is the elevator that takes workers down and up out of the mine. Bill opens the gate on the cage, and the coal miners file in. Someone pushes the button to go down, and a loud bell rings out, warning all that they are about to begin descending into the mine. Bill and his friends chat as they go down deeper and deeper into the earth. The ride only takes a minute or two, and the cage slows as it reaches the bottom and



Cage carrying miners below ground.

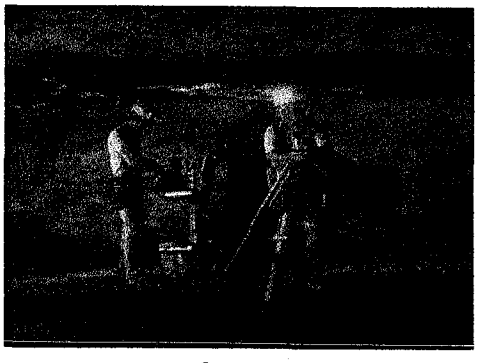
gently jolts to a stop. The door is pulled open, and Bill thinks about the day of work ahead of him.

Although the room in front of him is big and well lit, Bill knows that he must take a short walk through the dark, so he switches on the light of his cap lamp. He moves through the mine with his cap lamp lighting the way to the **mantrip** loading area.

Mantrip

The mantrip takes 10 to 12 miners deeper into the mine to the location where they will be working that day. Once on the mantrip, the miners turn off their cap lights as the headlights on the mantrip flicker on and it begins to move forward.

The mantrip travels through the mine and passes under a **conveyor belt** carrying freshly mined coal. A fellow worker is on the side of the conveyor belt, scooping up coal that has fallen onto the floor. Bill travels further into the mine.



Surveyors

They pass **surveyors** who are using technology called Global Positioning System (GPS) to make a map of the mining operation. Finally, as Bill nears the area where he is going to mine coal for the day; he passes a large machine called a scoop. The **scoop** is used to carry materials and equipment around the mine.

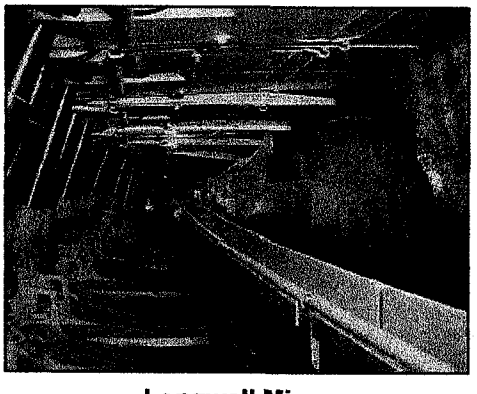
As the mantrip slows to a stop, the crew of miners from the previous shift stops working. They get ready to get on the mantrip as Bill gets off. For these miners, their work day is just ending, but for Bill it is just beginning. The mine is in operation 24 hours a day. The two work shifts exchange hellos and good-byes, and the mantrip pulls away. Bill turns on his cap lamp and is ready to begin his work.

Scoop

Rock dust has been applied to cover all coal surfaces.

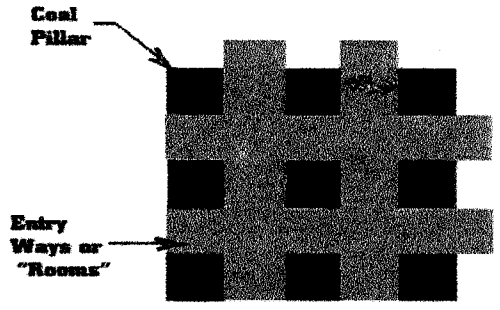
The work crew approaches the **face**, which is where the coal is mined. They each have different jobs. Bill's friend Jim sprays a white dust made of powdered limestone on the mine walls. This is called **rock-dusting**. The purpose of rock-dusting the area in the mine is to contain or minimize coal dust combustions, aid in the lighting of the mine and to reduce health hazards.

Two types of underground mining are used in Illinois. **Longwall mining** is the newest underground mining technique. A "**longwall miner**" is pulled mechanically back-and-forth across a face of coal that is usually several hundred feet long. In longwall mining the roof is allowed to collapse in a planned sequence. More coal is rmoved during longwall mining.



Longwall Miner

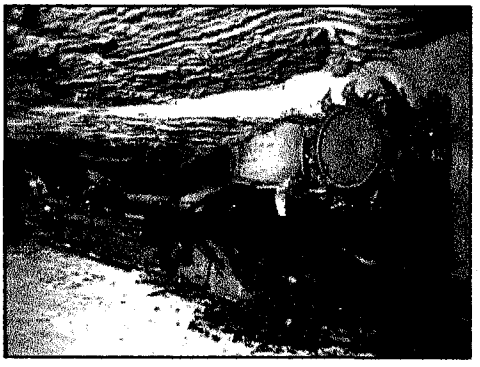
Room and Pillar



Black areas are blocks of coal
Colored areas are mined areas where coal has been removed.

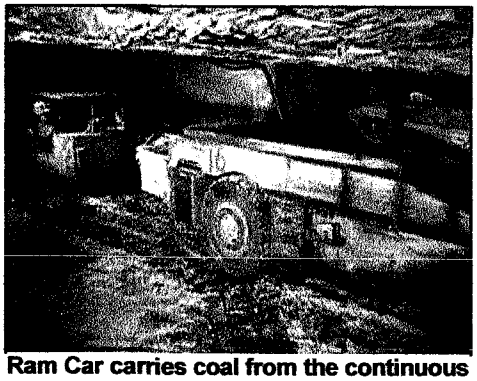
However, Bill works in a mine that uses the "room and pillar" method of mining. "**Room and pillar" mining** refers to the fact that large pillars of coal are left standing in the mine to keep the roof from sagging.

Bill works with a very large machine called a **continuous miner**. He loves working with this machine because he thinks it looks like a dragon. The continuous miner, with its sharp teeth, is a machine that actually breaks the coal loose from the face. As the coal drops to the floor, large steel arms swoosh back and forth, sweeping the coal from the floor and pulling it onto a conveyor.



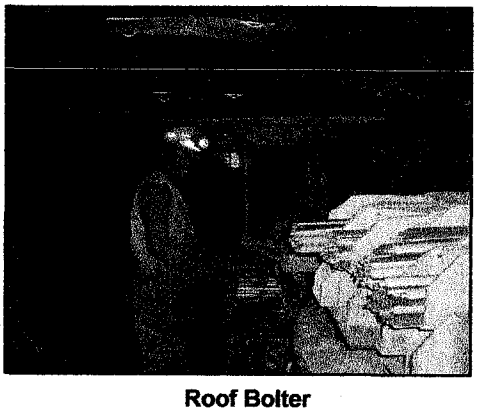
Continuous Miner

The conveyor pours the coal into a **ram car.** One of Bill's friends, Rosie operates the ram car. When the buggy is full of coal, it is driven to a conveyor belt. Rosie dumps the coal from the ram car onto the conveyor belt where it can be carried out of the mine.



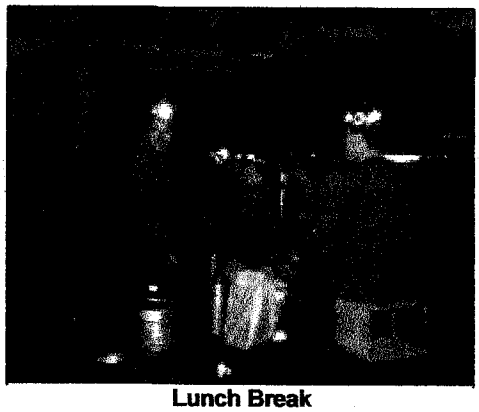
Ram Car carries coal from the continuous *miner to the conveyor belt.*

When Bill finishes mining in one area, he moves the continuous miner out and moves to a new face where there is more coal. Once Bill has finished in an area, a coal miner goes in with a machine called a roof bolter. The **roof bolter** drills holes up to nine feet into the ceiling, or **roof**, of the mine. After the hole has been drilled, a tube of glue and a long steel bolt is inserted into the hole. The roof bolts support the roof, making it safe for the coal miners.



Roof Bolter

After several more cuts, Bill moves the continuous miner back to the first place he cut. He looks at his watch and realizes it is time for lunch. Just as he leaves the continuous miner, his friend Rosie, pulls up in the ram car. They both leave their machines and get their dinner buckets. They enjoy their lunch together deep in the mine, and after resting for a few minutes, return to their machines. The workers mine coal all day long.



Lunch Break

At the end of the day, Bill is very tired. Just as Bill is thinking about how tired he is, he sees a mantrip pull up with the next shift of workers. Relieved, he leaves his machine, grabs his dinner bucket and heads toward the mantrip. He says hello to the new shift of coal miners, climbs into the mantrip and turns off his cap lamp. The mantrip takes Bill to the cage.

All the miners are tired after a long hard day of work, and they are not talkative as they ride the cage up to the top. Bill loves the feeling of being lifted out of the mine. When the cage stops at the surface, everyone takes a deep breath of fresh air and walks toward the wash house. Bill hangs his cap lamp on the rack so that the battery can charge and be ready for another day. He takes a shower, changes clothes, says goodbye to everyone and travels back to his home. Tomorrow will be another day for mining.

Coal miners walking to wash house

GLOSSARY

Cage – an elevator used to move workers and supplies into and out of a shaft mine.

Cap lamps – a lamp fitted on the front of a hard hat and attached to a battery on the miner's belt. It is worn by each worker in an underground mine to provide lighting. It contains a wet-cell 4-volt battery. (Also called a head lamp)

Coal seam – a bed or layer of coal.

Continuous miner – machine that grinds coal from the working face of an underground mine and continuously loads it into a ram car (or shuttle car or buggy).

Conveyor belt – a continuously moving strip on which coal is transported.

Dinner bucket – a plastic or metal lunch box containing food and drinks for the miner's mid-shift meal.

Earplugs – a device worn in the ear for protection against loud noises.

Face – area in an underground mine where coal is being mined.

Gas detector - used to measure gases in the air and is attached to the miner's belt.

Gloves – protective covering for the hands.

Hard hat – adjustable, hard-plastic hat worn at all times on the mine site. The hard hat protects the miner's head and ears.

Longwall – a newer method of underground mining in which large blocks of coal are removed in a singly pass. This technique produces more coal in less time than any other underground mining method.

Longwall miner – a mining machine that has two main components: a spinning drum lined with cutting blades that moves back and forth along the long wall of coal, and 204 self-advancing electro hydraulic roof shields per 1000 feet that protect the miners from falling coal. The rotating shearing blades move back and forth across the coal, cutting it from the face and transporting it away in an automatic conveyor.

Mantrip – a vehicle used for transporting workers to and from the face in an underground mine.

Miner's belt – a wide leather belt used to carry the battery that powers the miner's cap lamp. The gas detector is also attached to the belt.

Ram Car – a low, long, wide-bodied vehicle used to haul coal from the working face to a conveyor belt in an underground mine. Also called a shuttle car or buggy.

Rock-dusting – crushed limestone is sprayed over exposed coal to reduce the risk of coal dust combustion, aid in the lighting of the mine and reduce health hazards.

Roof – ceiling of the area where coal is being mined.

Roof bolter – a machine used to install long steel rods, or bolts, into holes to hold the layers of rock in the roof together in an underground mine; also, the miner who operates a roof bolting machine.

Room and pillar – a method of underground mining that leaves blocks of coal, or pillars, in place to help support the roof of the mining area.

Safety glasses –large, hard-plastic eyeglasses that fit close on a miner's face to protect his eyes.

Scoop – a battery or diesel-powered machine, having a large flat bucket attached to the front, used to clean up loose coal or to transport supplies in an underground mine.

Self-rescuer – a portable respirator that allows the miner to breathe safely for about an hour if there are dangerous gases in the mine.

Steel-toed boots – boots having a band of steel over the toe area to protect the feet.

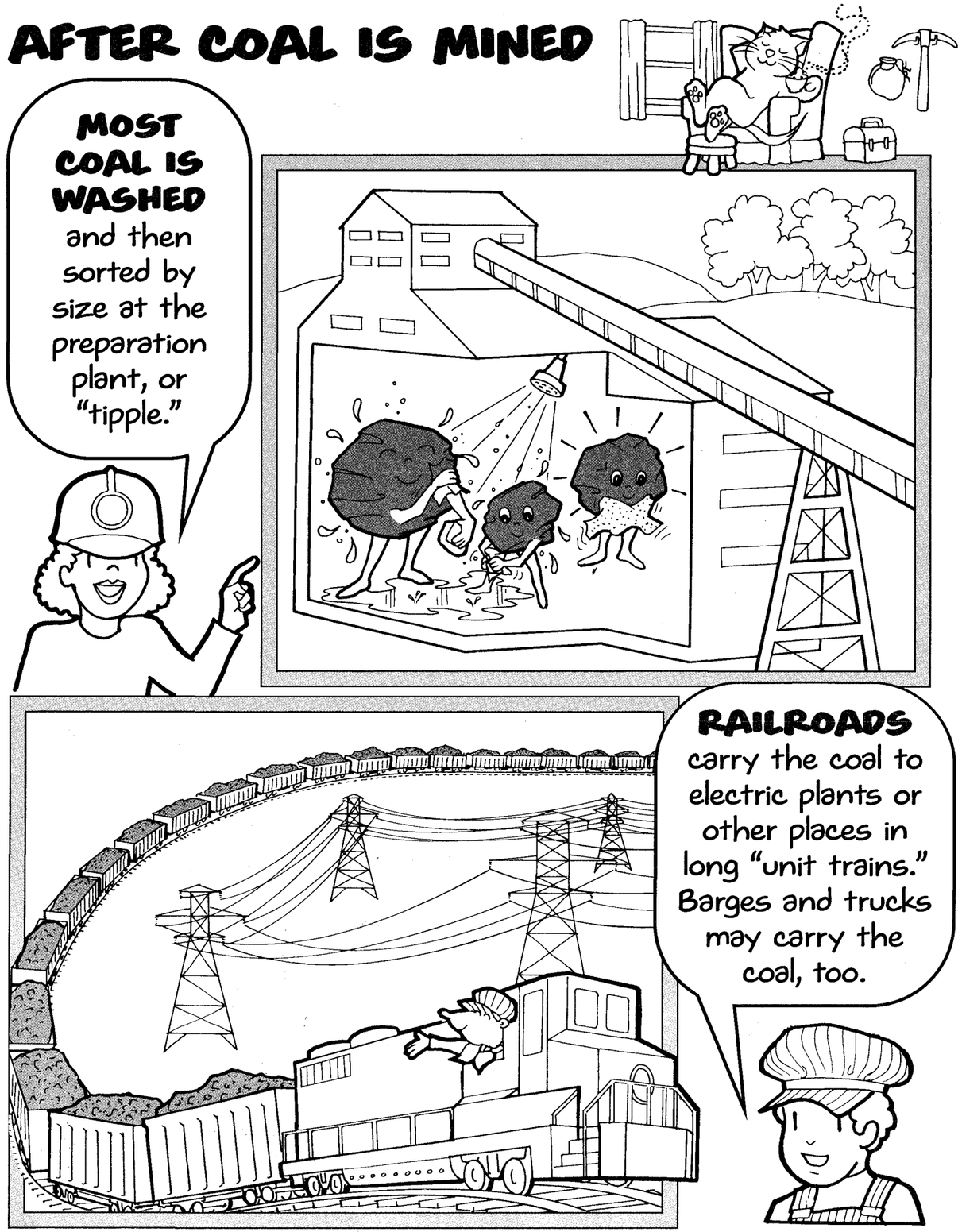
Surveyor – a mining engineer who makes maps of mining operations.

Wash house – a large building at the mine site were workers shower and change clothes.

Questions from the Story

1. Bill greets his fellow workers and changes his clothes in the bath house? T (F)
2. A gas detector measures what type of gas? methane
3. Miners use a lantern to light their path ahead? If false, explain. T (F)
4. Discuss the function of a mantrip. They use mantrip light. it heas the way
5. Tell the difference between a conveyor belt and a scoop. scoop up coal and or conveyor belt up fresh coal
6. Bill works in a mine that uses the longwall method of mining? (T) F
7. Miners mine coal at the seam? If false, explain. (T) F
8. If miners do not use picks for mining coal in an underground mine, what machinery is used? So they can get coal
9. Define a ram car. conveyor pours coal
10. A roof bolter drills holes up to nine feet into the ceiling? If false, explain. (T) F

AFTER COAL IS MINED



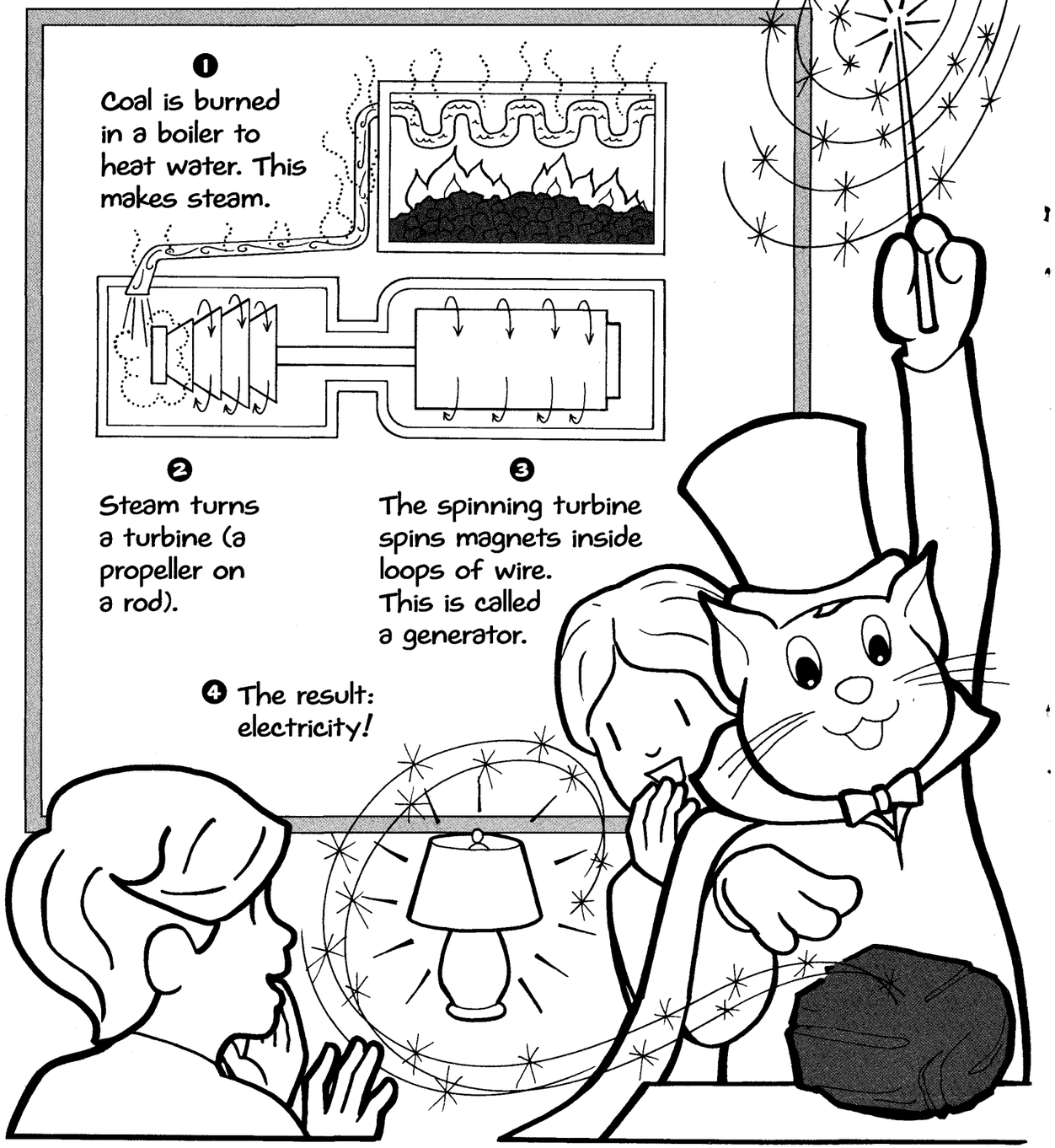
AT ONE TIME

in our history, everyone depended on coal for vital basic needs. That's why it was known as "King Coal"!

The answers can be found on page 15.

TODAY, we use coal to make:

ELECTRICITY

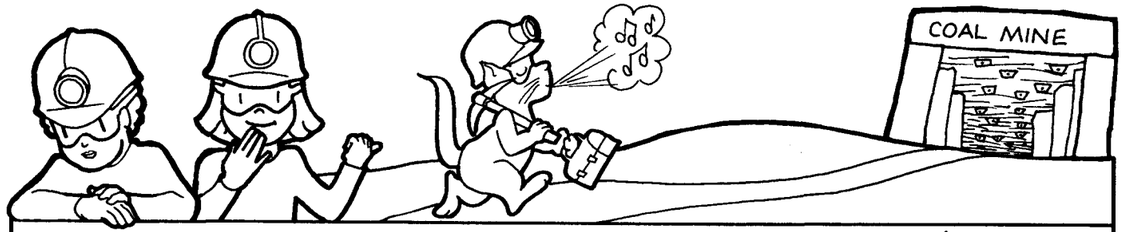


❶ Coal is burned in a boiler to heat water. This makes steam.

❷ Steam turns a turbine (a propeller on a rod).

❸ The spinning turbine spins magnets inside loops of wire. This is called a generator.

❹ The result: electricity!



❷ UNDERGROUND MINING

To reach the messages, start at the end of each sentence and read each letter back toward the beginning.

The answers are on page 15.

❶ .srac cirtcele ni yad hcae slennut otni og srekroW

❷ .ria hserf ni gnirb stfahs riA

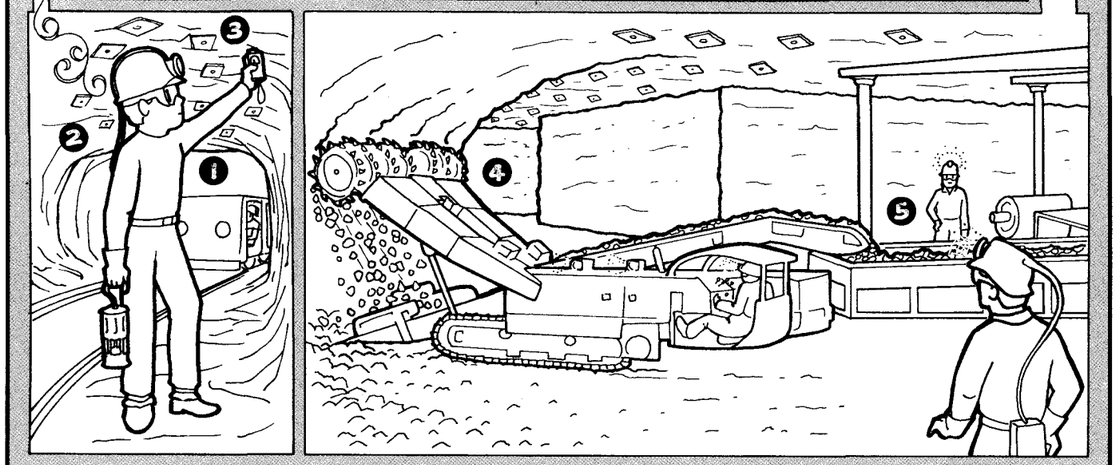
❸ .ytefas rof detset si lennut eht ni ria ehT

❹ .(laoc fo llaw a) "maes" a morf laoc spir enihcam A

A machine rips coal a "steam" Ca wall of coal.

❺ .stleb royevnoc otno ro srac elttuhs otni laoc eht sdaol enihcam eht ,emit emas eht tA

At the same time, the machine loads the coal into shuttle cars or conveyor belts.



With longwall mining, a machine is pulled along a wall of coal that may be more than 1,000 feet long. The machine breaks up the coal and drops it onto a conveyor.

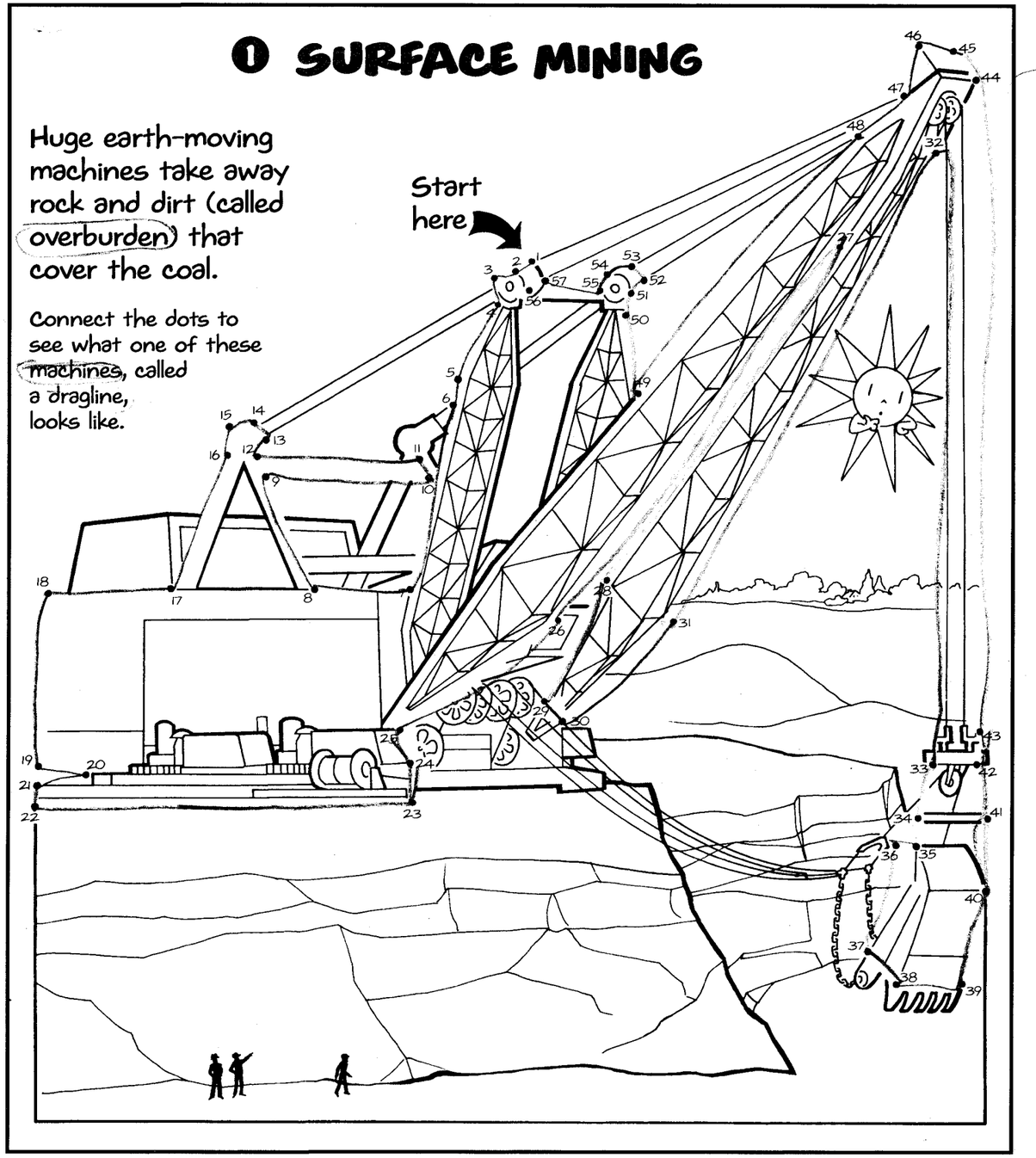
WE GET COAL

by digging it out of the earth. This is called mining. There are 2 kinds of mining:

1 SURFACE MINING

Huge earth-moving machines take away rock and dirt (called overburden) that cover the coal.

Connect the dots to see what one of these machines, called a dragline, looks like.



OTHER THINGS

Find and circle the one thing in each box that coal helps produce.

STONES TREES SUN
LEAVES STICKS
MOUNTAINS STEEL
CLOUDS HILLS PLANTS
FOREST SUN MEADOW
ANIMALS JUNGLE
SWAMPS MOUNDS
VALLEYS CANYONS
MARSHES STONES
TREES LEAVES SUN
STICKS MOUNTAINS
CLOUDS HILLS PLANTS

OCEANS WAVES SAND ISLANDS
PEBBLES WIND BREEZES
BEACHES TIDE SEAGULLS
WHALES SUN SHELLS SEAWEED
CLOUDS RAINBOWS FERTILIZERS
WIND WARM HOT WET GLARE
SEA SURF FLOAT SEASHORE
COASTLINE SEACOAST STONES
DEEP WHITECAPS SAIL SWIM

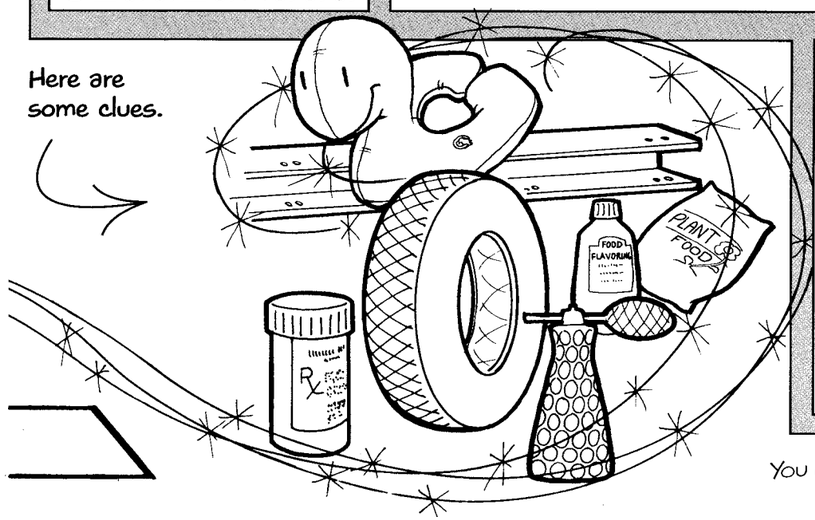
FLOWERS PLANTS SHRUBS
VINES LILACS ROSES
BUTTERCUPS DAISIES
FERNS GRASS CLOVER
WEEDS LILACS IRISES
MARIGOLDS PANSIES
VIOLETS PLASTICS
DAFFODILS FLOWERS
PLANTS SHRUBS VINES
ROSES WEEDS
BUTTERCUPS DAISIES

TREES MAPLES ELMS PINES
CEDARS DOGWOOD ASH OAKS
MEDICINES FIRS
COTTONWOOD SPRUCE
BIRCHES WALNUT TREES
PUSSY WILLOW SUMAC ASH
HICKORY CHESTNUT ELMS
HEMLOCK BEECH MAPLES
PINES CEDARS DOGWOOD ASH
OAKS COTTONWOOD

FRUITS BERRIES PEARS
RASPBERRIES CHERRY APPLES
BLUEBERRIES LEMON
STRAWBERRIES CITRUS
PEACHES GRAPES BANANAS
ORANGES PINEAPPLES
TOMATOES MELONS OLIVES
LEMON PERFUMES PEARS
MANGO CRAB APPLES
LIMES GRAPEFRUIT
CUCUMBERS PAPAYA

RED BLUE GREEN PINK WHITE
YELLOW ORANGE PURPLE
FOOD FLAVORS RED VIOLET
TURQUOISE GREEN CRIMSON
ROSE BLACK BROWN GOLD
LAVENDER SCARLET TAN RED
BLUE PINK WHITE YELLOW GOLD
ORANGE PURPLE VIOLET
TURQUOISE CRIMSON RED

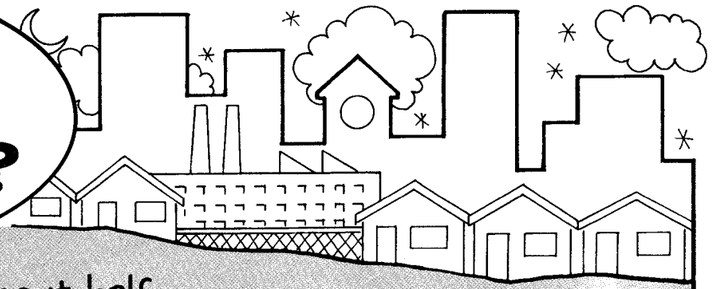
Here are some clues.



ANIMALS BIRDS ROBINS
BLUEBIRDS BLUE JAYS
CARDINALS DEER
RACCOONS FISH
EAGLES SPARROWS
RUBBER RABBITS
BEARS FISH HAWKS
MOUSE SQUIRRELS
BLACKBIRDS CANARIES
FOXES CHICKADEES
TIGERS ROBINS FISH
BLUEBIRDS BLUE JAYS

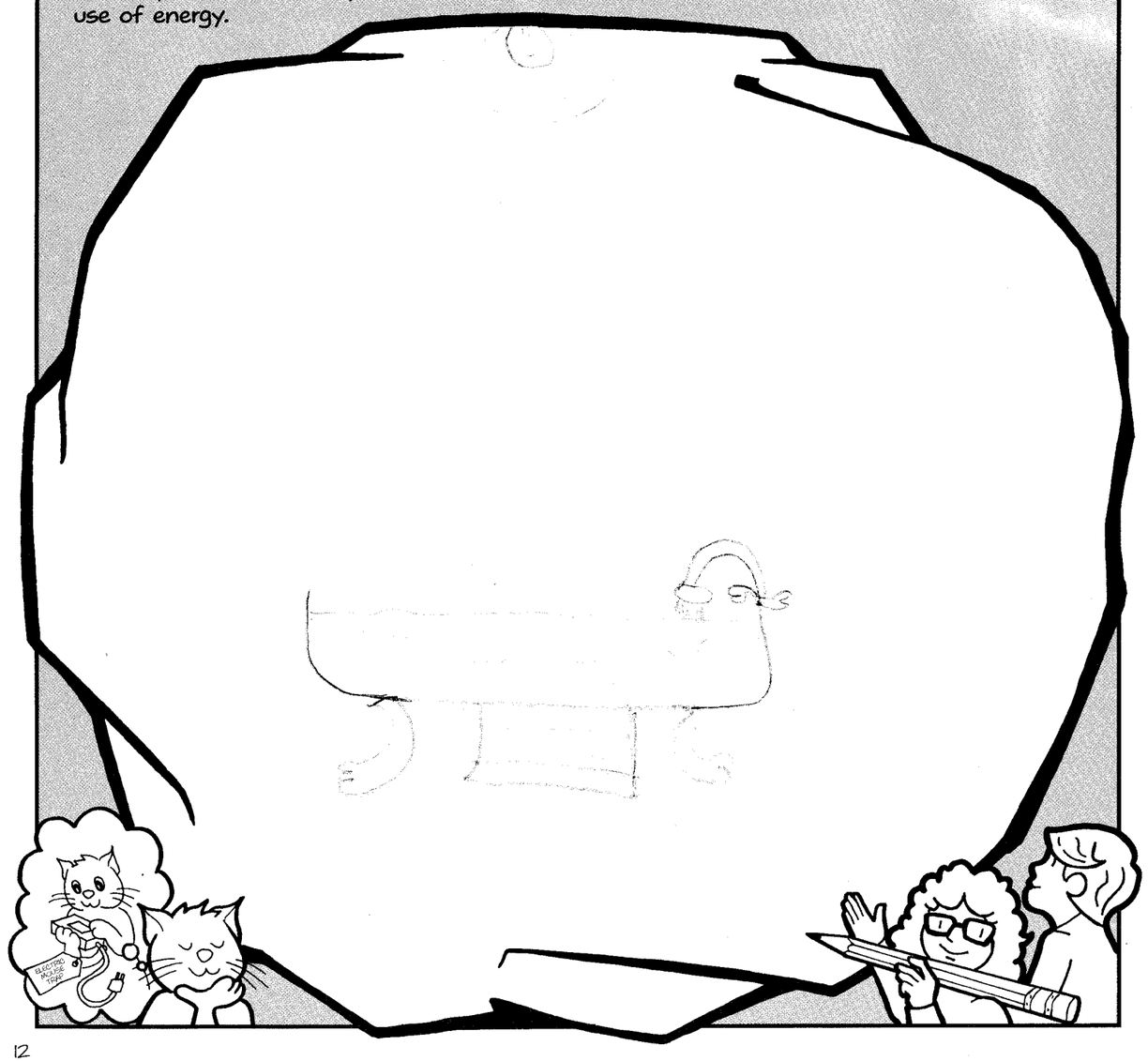
You can find the answers on page 15.

WHY IS COAL IMPORTANT?

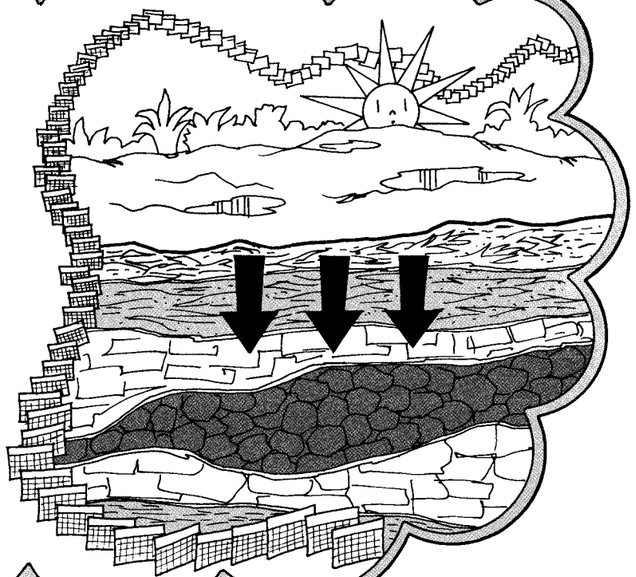


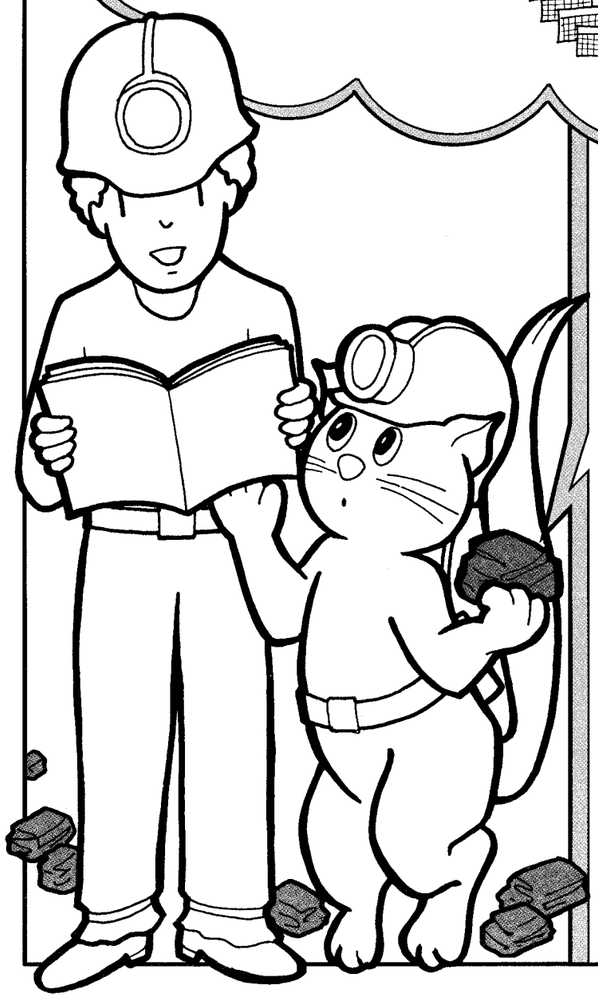
Because coal provides about half of our nation's electricity!

Draw a picture of one important use of energy.

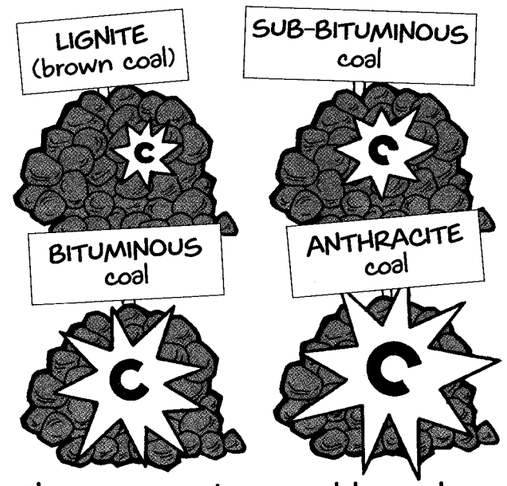


The Weight of the mud and sand created great Pressure and Heat. Over time, this caused the peat to turn to coal.





There are **4 DIFFERENT TYPES** of coal.



The more carbon coal has, the more energy it has.

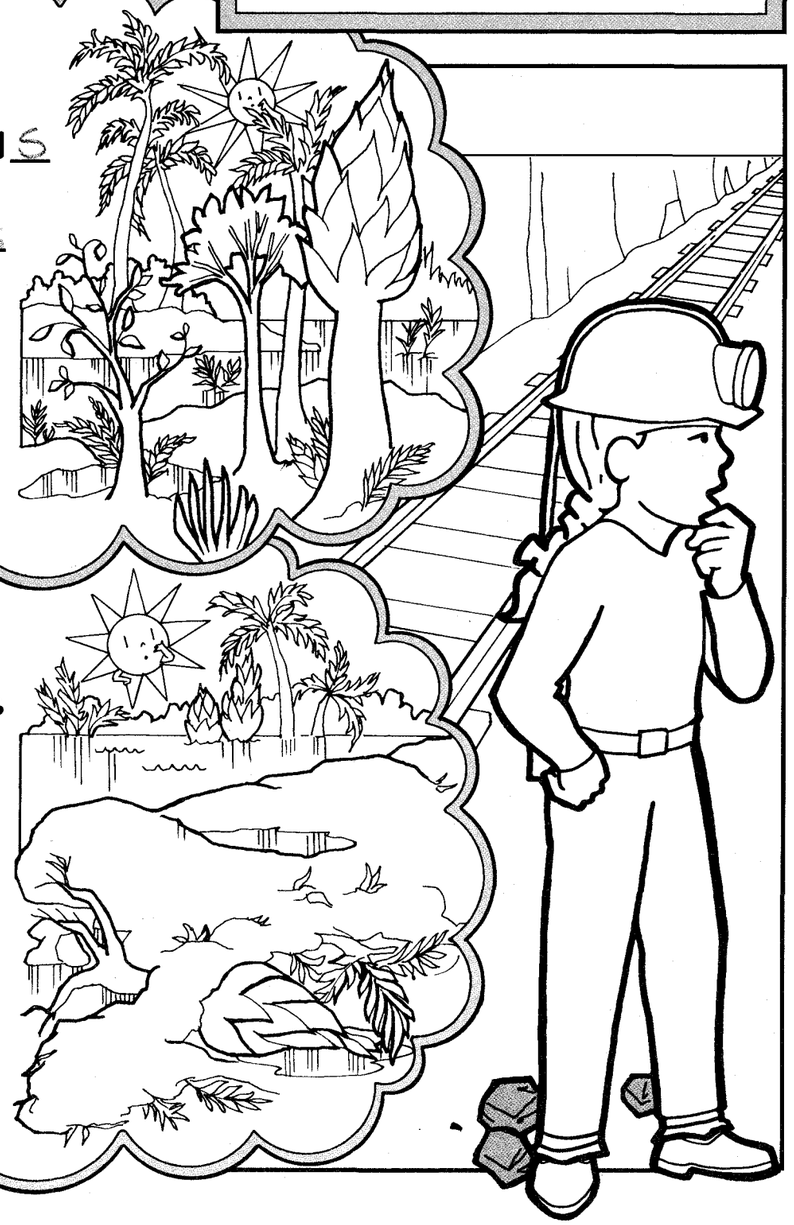
Lignite has the least. Anthracite has the most energy.

The answers can be found on page 15.

COAL COMES FROM INSIDE THE EARTH!

Use this word list to complete the sentences below.

MUD	PRESSURE	MILLIONS
COAL	SAND	WEIGHT
PEAT	SWAMPS	HEAT



❶

MILLIONS of years ago, SWAMPS covered much of America. Giant trees and plants grew here.

❷

When the plants died, they were buried by SAND and MUD. A spongy material called PEAT was formed from the rotting plants.

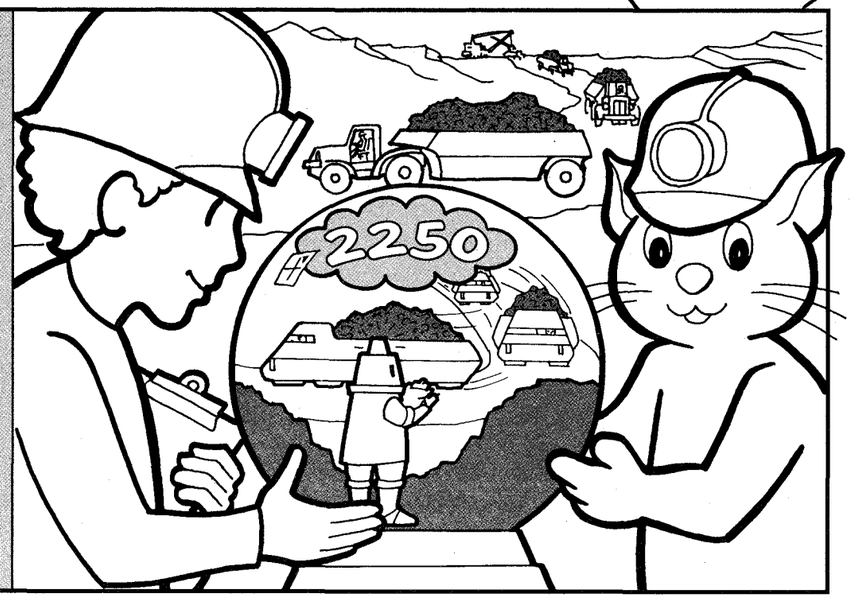
THE ADVANTAGES OF COAL

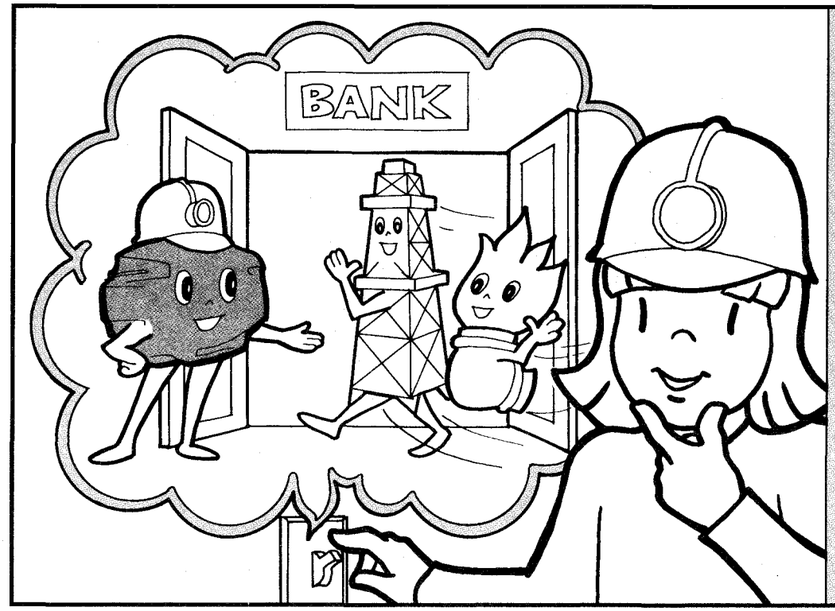
Unscramble the sentences below to find out why coal is such a good source of energy.

❶

Lots coal we of have!

we have lots of coal





❷

Than coal other cheaper is fuels!

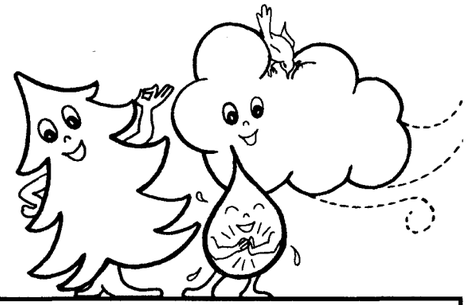
Coal other cheaper is fuels

In other words, if we use coal found in the U.S., we don't have to depend as much on other countries for our energy!

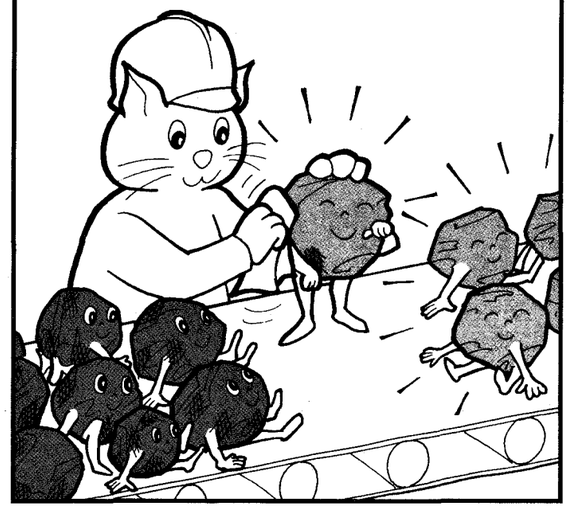
The answers are on page 15.

COAL AND OUR ENVIRONMENT

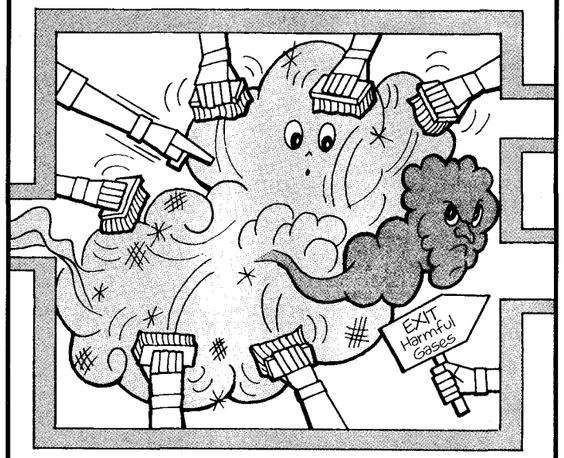
To keep coal from harming our land, air and water:

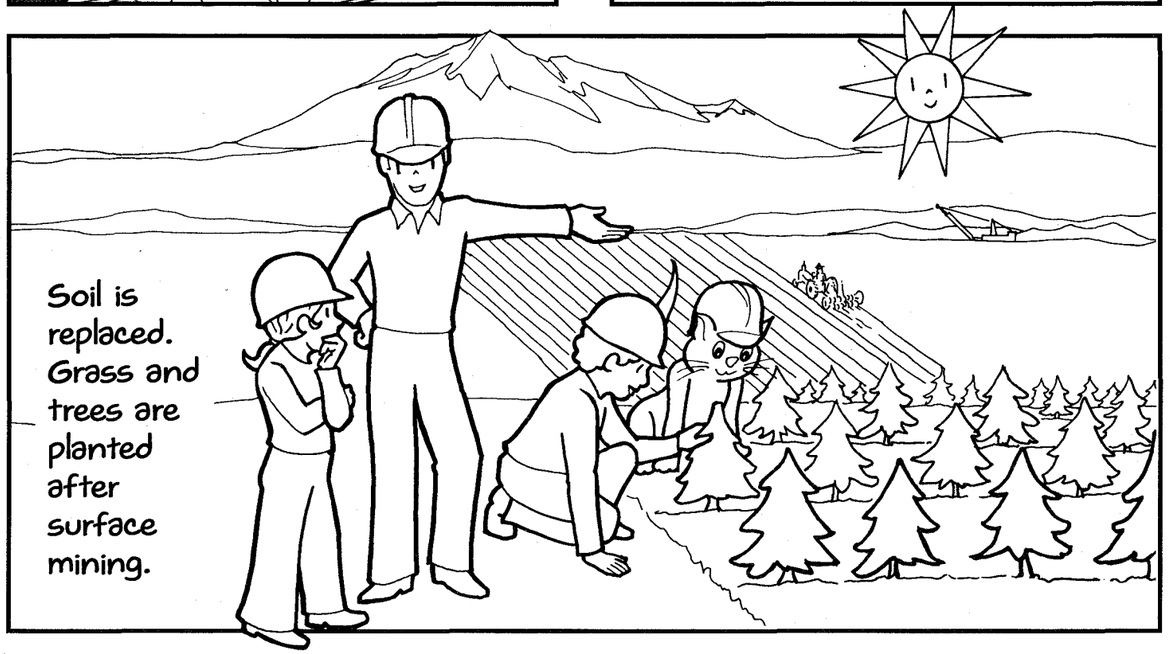


Coal is cleaned before being burned.



"Scrubbers" take out most of the harmful gases.

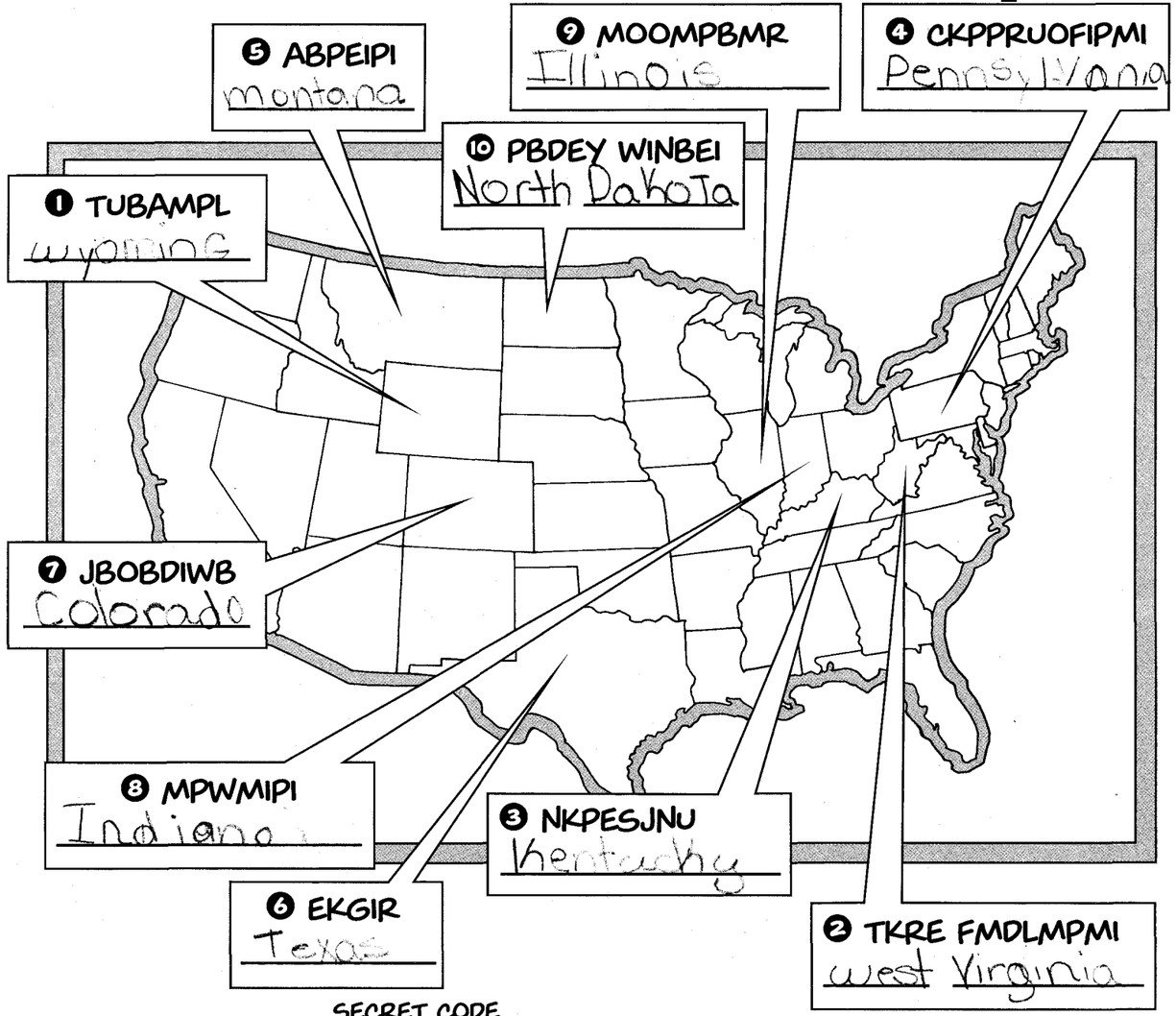


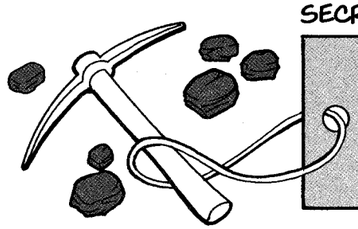


Soil is replaced. Grass and trees are planted after surface mining.

WHERE IS COAL PRODUCED IN THE U.S.?

Use the secret code below to find the top 10 states for producing coal. (State #1 produces the most coal; state #10, the least.)





SECRET CODE

A=M	F=V	K=E	P=N	U=Y	X=F
B=O	G=X	L=G	Q=Q	V=B	Y=H
C=P	H=Z	M=I	R=S	W=D	Z=J
D=R	I=A	N=K	S=U		
E=T	J=C	O=L	T=W		

The answers are on page 15.

WHAT IS COAL?

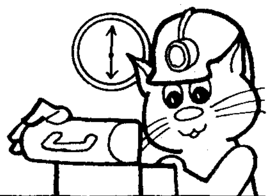
It's a black rock that's made up mostly of carbon. It's the most plentiful fuel we have!

When coal is burned, it gives off energy!

2009 Edition

Channing Bete Company, One Community Place, South Deerfield, MA 01373
PS61919
(09-09-A)

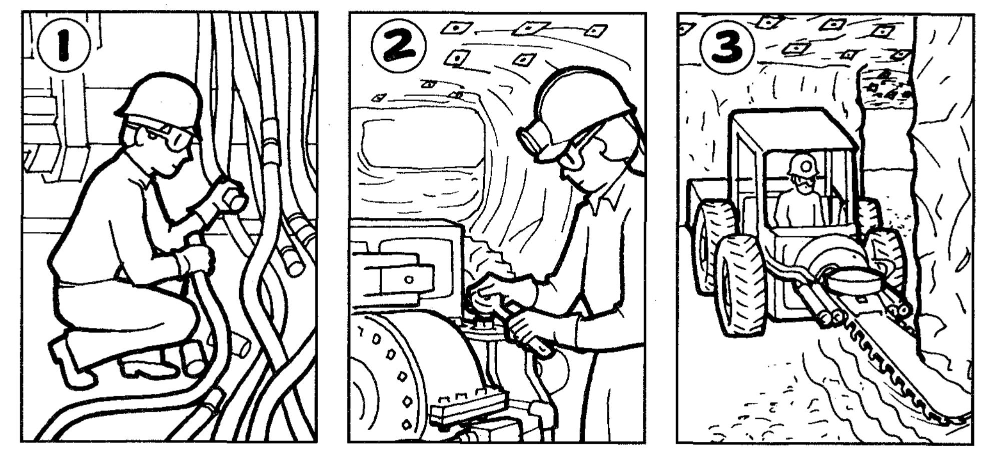
COAL MINING PROVIDES JOBS FOR LOTS OF PEOPLE!



Match each shape in the messages below to one in the box to the right. Write down the letter inside the shape.

A E G I M O Q S U
C F H L N P R T Y

1. E V E C T R I C I A N
2. m a c h a n i c
3. e q u i p m e n t o p e r a t o r
4. s a f e t y e n g i n e e r



The answers are below.

ANSWERS

PAGE 3
1. Wyoming
2. West Virginia
3. Kentucky
4. Pennsylvania
5. Montana
6. Texas
7. Colorado
8. Indiana
9. Illinois
10. North Dakota

PAGES 4-5
1. Millions of years ago, swamps covered much of America. Giant trees and plants grew here.
2. When the plants died, they were buried by sand and mud. A spongy material called peat was formed from the rotting plants.
3. The weight of the mud and sand created great pressure and heat. Over time, this caused the peat to turn to coal.

PAGE 7
1. Workers go into tunnels each day in electric cars.
2. Air shafts bring in fresh air.
3. The air in the tunnel is tested for safety.
4. A machine rips coal from a "seam" (a wall of coal).
5. At the same time, the machine loads the coal into shuttle cars or onto conveyor belts.

PAGE 9
heating, cooking

PAGE 11
steel, fertilizers, plastics, medicines, perfumes, food flavors, rubber

PAGE 13
1. We have lots of coal!
2. Coal is cheaper than other fuels!

PAGE 15
1. electrician
2. mechanic
3. equipment operator
4. safety engineer

So...

COAL GIVES US POWER

we can all depend on!

CEDAR, Inc.
P.O. Box 2152
Pikeville, KY 41502
Contact: John F. Justice
606-477-3456
jfjustice@setel.com
www.cedarinc.org

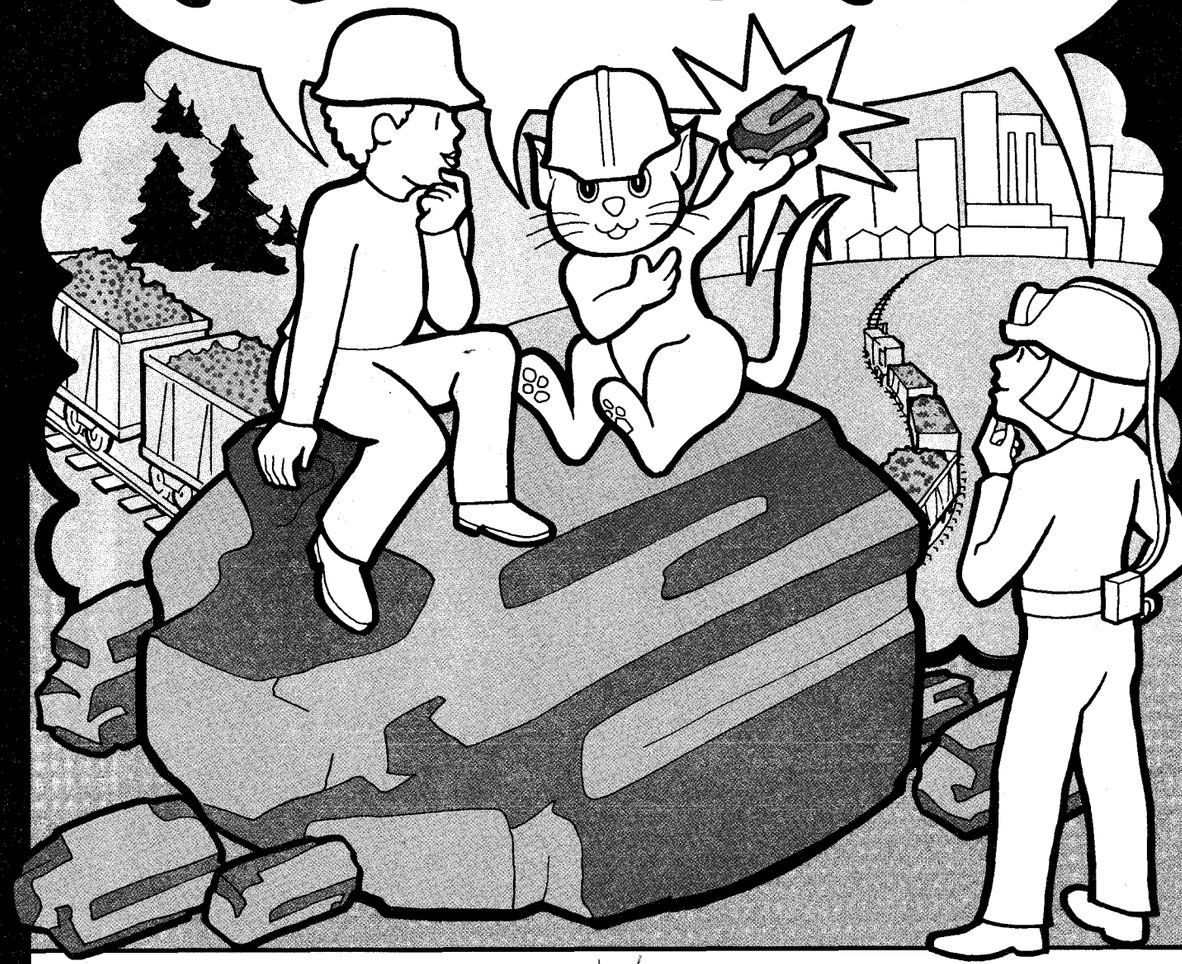
CEDAR of Southern West Virginia, Inc.
P.O. Box 477
Holden, WV 25625
Contact: Georgene Robertson
304-792-8433
grobertson@archcoal.com
www.cedarswv.com

CEDAR of Virginia, Inc.
P.O. Box 3841
Wise, VA 24293
Contact: Margie Horton
276-679-4211
Margie@virginiaminingassoc.com

CEDAR West, Inc.
1822 North Main Street
Madisonville, KY 42431
Contact: Meg Gatten
270-952-0191
dmgatten@msn.com
www.wkycedar.org

Channing Bete COMPANY

LET'S LEARN ABOUT COAL!



This coloring and activities book belongs to . Skylar Vipperman .....

USING WORDS YOU KNOW

-1 25/26

Name Skylar

Peat	Sufrace	Seam	Drift
cheat ✓	grace ✓	team ✓	thrift ✓
pleat ✓	place ✓	Dream ✓	Shift ✓
wheat ✓	lace ✓	Scream ✓	lift ✓
meat ✓	race ✓	stream ✓	sift ✓
defeat ✓	brace ✓	Cream ✓	swift ✓
beat X	pace ✓	steam ✓	
neat ✓	desplace ✓	beam ✓	

Name Skylar Vipperman

Date 4-19-11

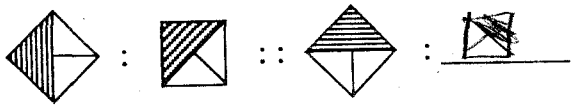
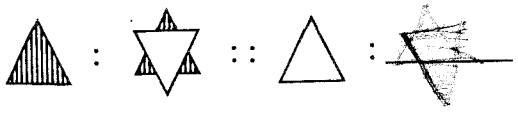
Topic

Statement	Fact	Opinion
My favorite color is purple.	✓	✓
Coal mining is really hard.		✓
My dad would very hard in the mines.		
Coal comes out a coalline.	✓	✓
Coal can be shiny.	✓	✓
Coal is heated.		✓
Coal is really hard to get.	✓	

Daily Analogies

Att 0

Day 4/19/11 Analogy Sayings

1	1. poor : rich : : strong : weak 2. sock : foot : : glove : hand
2	1. speak : spoke : : try : tried 2. 
3	1. four : eight : : two : four 2. duckling : duck : : kitten : cat
4	1. jelly : bread : : mustard : Hotdog 2. 
5	1. beginning : start : : ending : Finish 2. scissors : cut : : _____ ; scrub

Name: Skylar

-1 17
5 18

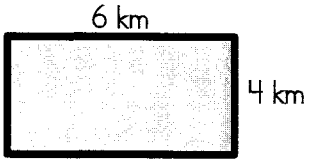
Area of a Rectangle

To find the area of a rectangle, multiply the length by the width.

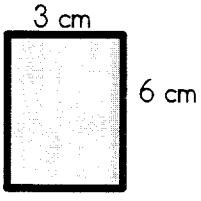
example: 4 m, 8 m

area = 4 m x 8 m = 32 square meters

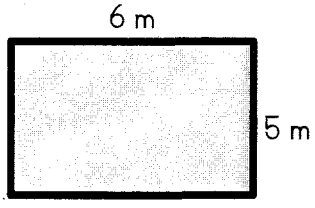
Find the area of each rectangle by multiplying.



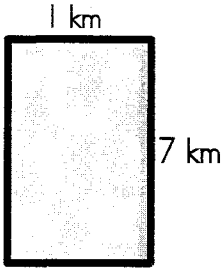
A=lxw
area = 4x6=24



A=lxw
area = 3x6=18

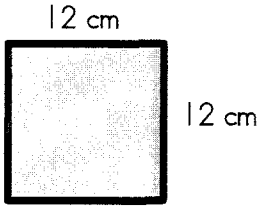


A=lxw
area = 5x6=30

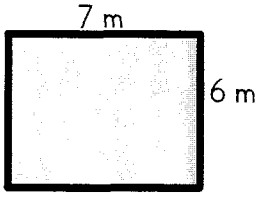


A=lxw
area = 1x7=7

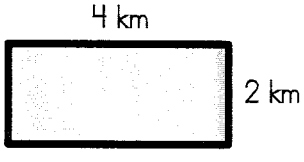
A=lxw
area = 3x11=33



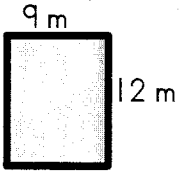
A=lxw
area = 12x12=144



A=lxw
area = 6x7=42



A=lxw
area = 2x4=8



A=lxw
area = 9x12=108

12
x 9
108

steel-toe-boot 3
coal 1

oil 2
gas 1
natural

C

Changing Rocks

(adapt to the tune of "Are You Sleeping?")

Igneous rocks, igneous rocks
Form when magma
Cools and hardens.
When magma cools quickly
Basalt and pumice are made.
Changing rocks, changing rocks.

Sedimentary, sedimentary
Rocks formed in layers,
Limestone and shale.
Broken pieces of matter
Are squeezed and pressed together.
Changing rocks, changing rocks.

Metamorphic, metamorphic
Rocks that were
Another kind before.
Changed by heat or pressure
Limestone becomes marble.
Changing rocks, changing rocks.

Skylar Surface April 12, 2011

1. surf
2. sure
3. are
4. fur
5. far
6. car
7. ace
8. face
9. case
10. surface
11. as
12. fuse
13. farc
14. race
15. arés
16. saucer
17. cass
18. safe
19. furs
20. surfs

Coal Unit Vocabulary: AlphaBoxes Name: Skylar

A Anthracite Ash Abandant Available Alternative Abanced	**B** Boots Basic Belt Berefit Bituminous	**C** Coal carbon consumers Convert ~~coal mines~~ Conveyor	**D** Deposits Dirt Dig Drift mine Deep mine
E electity Essential engry expensive environment	**F** fossil fuel fan funnel	**G** Gas group Generation Gases	**H** Helmet Heat
I	**J**	**K**	**L** lignite long wall
M minarls miners minchens	**N**	**O**	**P** Peat power plant pick
Q Quantity	**R** R	**S** Steam Shop Safty smoke Shuttle car Shuvle	**T** Transported turbine tunnel treeks
U underground underground miner	**V**	**W X**	**Y Z**

Skylar

Apirl 1, 2011

1. Kentucky has many valuable natural resources, indudeing water and soil. But one of the states most profitable natural resources is coal. Kentucky's coal miners earned more than $1 billion in 1988.

2 Surface miners cut rocks, soil, and trees from hills to reach Kentucky's coal.

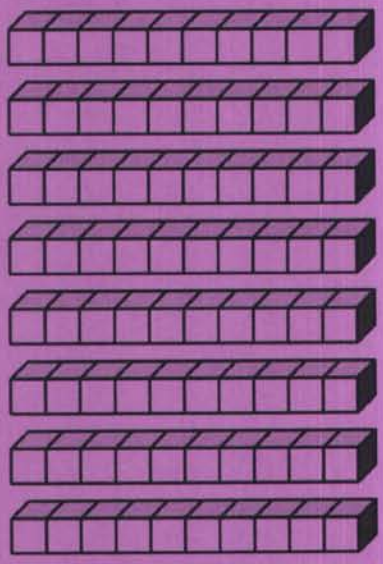
Skylar Cool Mining hat April 5, 2011

My dad wears the hat, so he doesn't hurt his head.

My dad made to change the light for underground.

My dad made the light so he can see in the dark.

Hands On



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Computer Center

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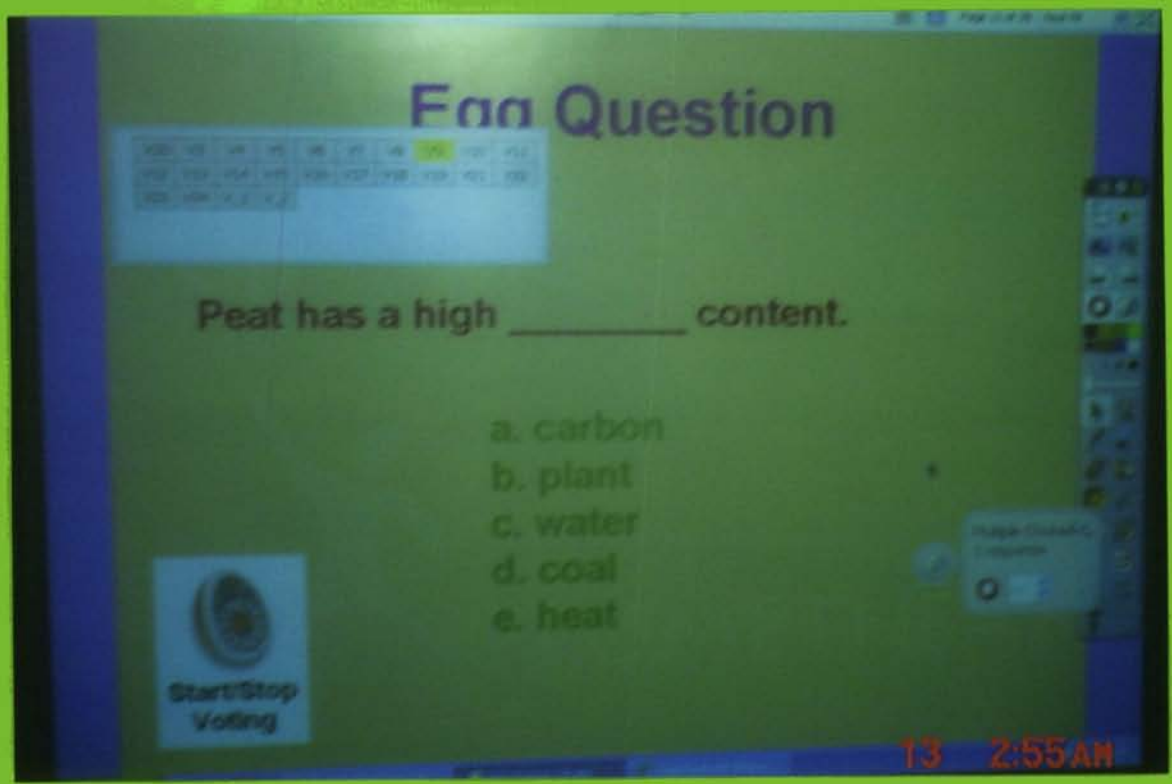
13 3:00AM


Egg Question
Peat has a high _____ content.
a. carbon
b. plant
c. water
d. coal
e. heat
Start/Stop Voting
13 2:55AM

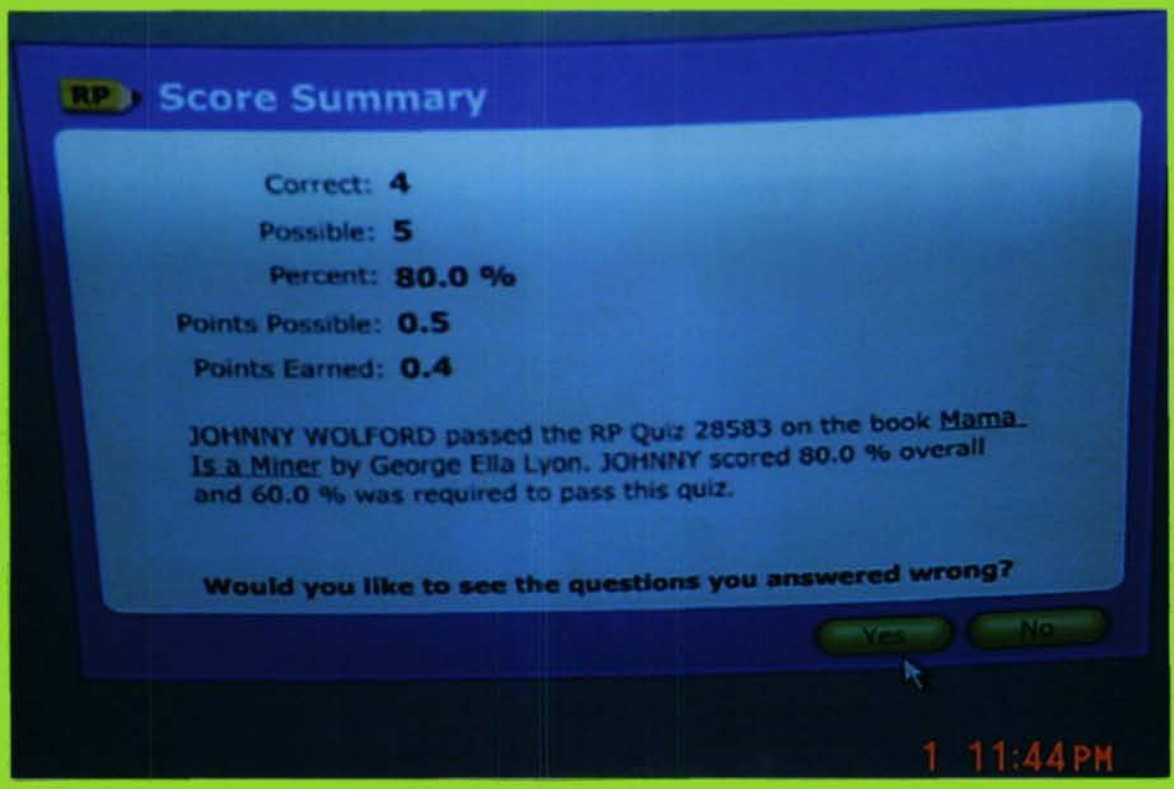

GRN-IRON
13 2:44AM

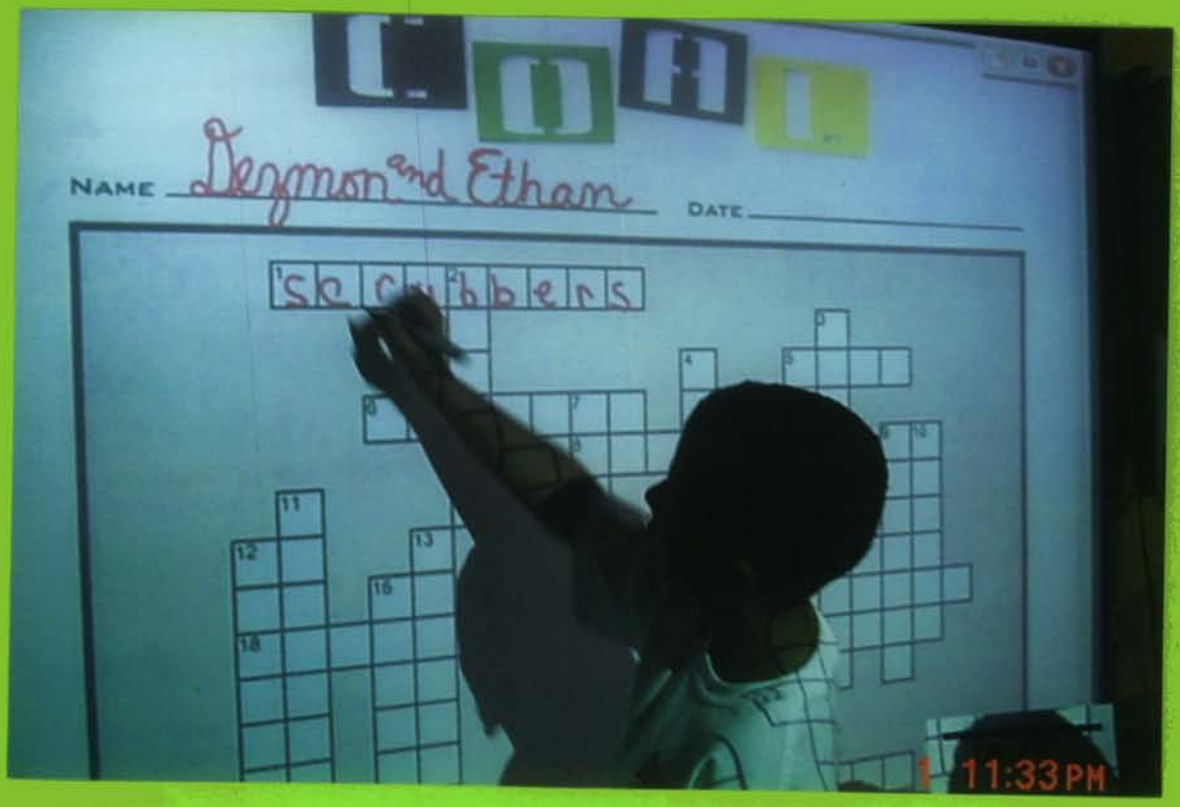

0
Blue Team
0
8
13 2:20AM


Remove
methane
electricity
roof bolt
energy
Peat
shovel
6 1:56 AM


6 1:09 AM


1 11:39 PM


RP
Score Summary
Correct: 4
Possible: 5
Percent: 80.0 %
Points Possible: 0.5
Points Earned: 0.4
JOHNNY WOLFORD passed the RP Quiz 28583 on the book Mama Is a Miner by George Ella Lyon. JOHNNY scored 80.0 % overall and 60.0 % was required to pass this quiz.
Would you like to see the questions you answered wrong?
Yes
No
1 11:44 PM


NAME Dezmon and Ethan
DATE
11:33 PM


2:52 AM


energy KIDS
What is Energy?
Energy Sources
Using & Saving Energy
History of Energy
Games & Activities
Games & Activities
Riddles
1 2:23 AM

energy KIDS
Energy Information Administration

For Teachers

Lesson Plans

Find energy related stories, hands-on activities, and research articles for your classroom! These curriculum-based lessons are separated by age-grade.

- Primary
- Elementary
- Intermediate
- Secondary

Teacher Guide

Our teacher guide provides extension activities that use this website as a resource.

- More about the Teacher Guide »

Career Corner

A set of articles focusing on energy careers.

More about careers »

Submit a Lesson Plan

Send us your lesson plans so we can share them with others!

Submit a plan »

Field Trips

Energy Ant has visited a lot of cool energy sites like an offshore oil rig and a

hydropower plant! Read all about his adventures in his photo journals.

More about field trips »

Related Links

Find free or low-cost resources with our database of Energy Education Resources: K-12th grade. Plus, find links to other helpful energy sites.

More related Links »

Class Tools.Net - Random Picker
Students played Charades
with these Vocab. Words

methane

abundant

natural

underground

energy

slope

shaft

drift

gas

oil

swamp

trucks

trains

barges

transport

export

surface

self-rescuer

fossil fuel

battery pack

reflective tape

seam

carbon

coal

Lignite

Bituminous

Sub-Bituminous

Anthracite

electricity

pipelines

Peat

resource

canary

pick

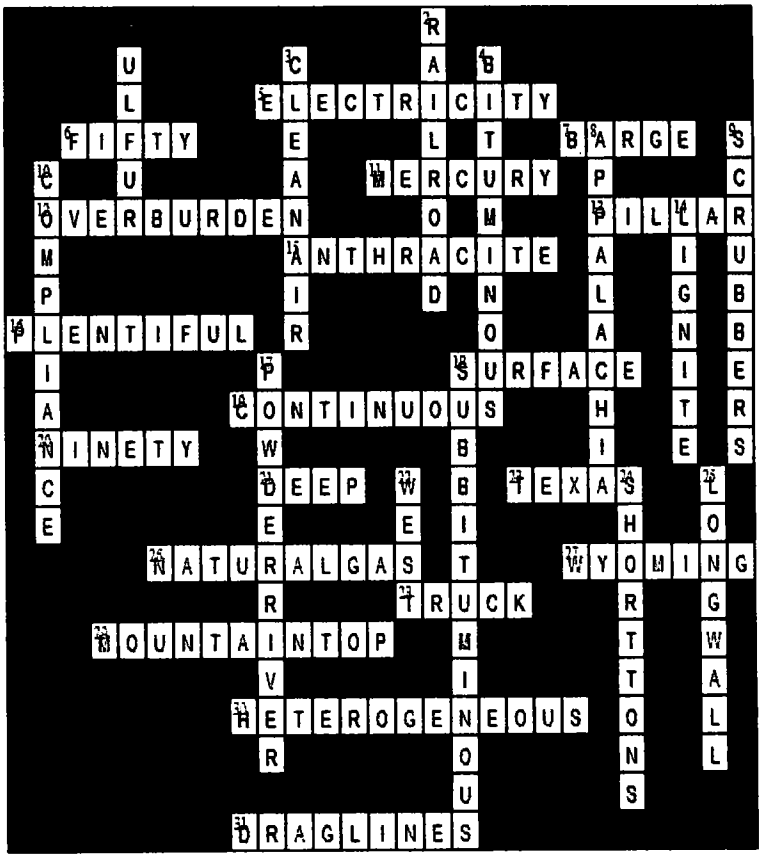
shovel

conveyor belt

roof bolt

Gavin

+ Game Hint Check



Across

Down

1. This substance in coal can cause acid rain.

2. Most coal is transported by _____.

3. _____ _____ Act Amendment of 1990.

4. A type of coal.

8. West Virginia is the largest coal producing state in _____.

9. These can be added to plants to help remove pollutants.

10. This term describes coal that contains relatively small levels of sulfur.

14. The lowest rank of coal.

17. This western region has the most subbituminous coal reserve in the U.S.

18. Wyoming produces a little bit of bituminous coal, but a lot of _____ coal.

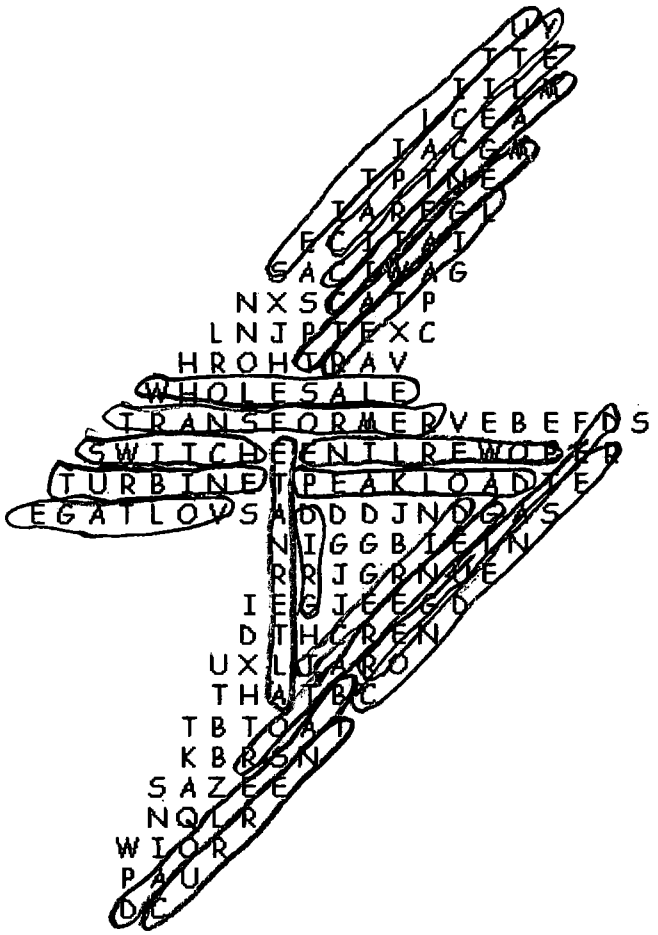
22. Coal in the _____ tends to have less sulfur but a lower heat content.

24. In the U.S., quantities of coal are usually measured in _____.

25. Special mining machinery used underground where the mine roof is allowed to collapse behind it as it advances.

Gavin

Electricity



Alternate
Baseload
Capacity
Conductor
Current
Direct
Electric
Generator
Grid
Magnetic
Megawatt
Peakload
Powerline
Regulated
Retail
Switch
Transformer
Turbine
Utilities
Voltage
Wholesale

Answer key

Art

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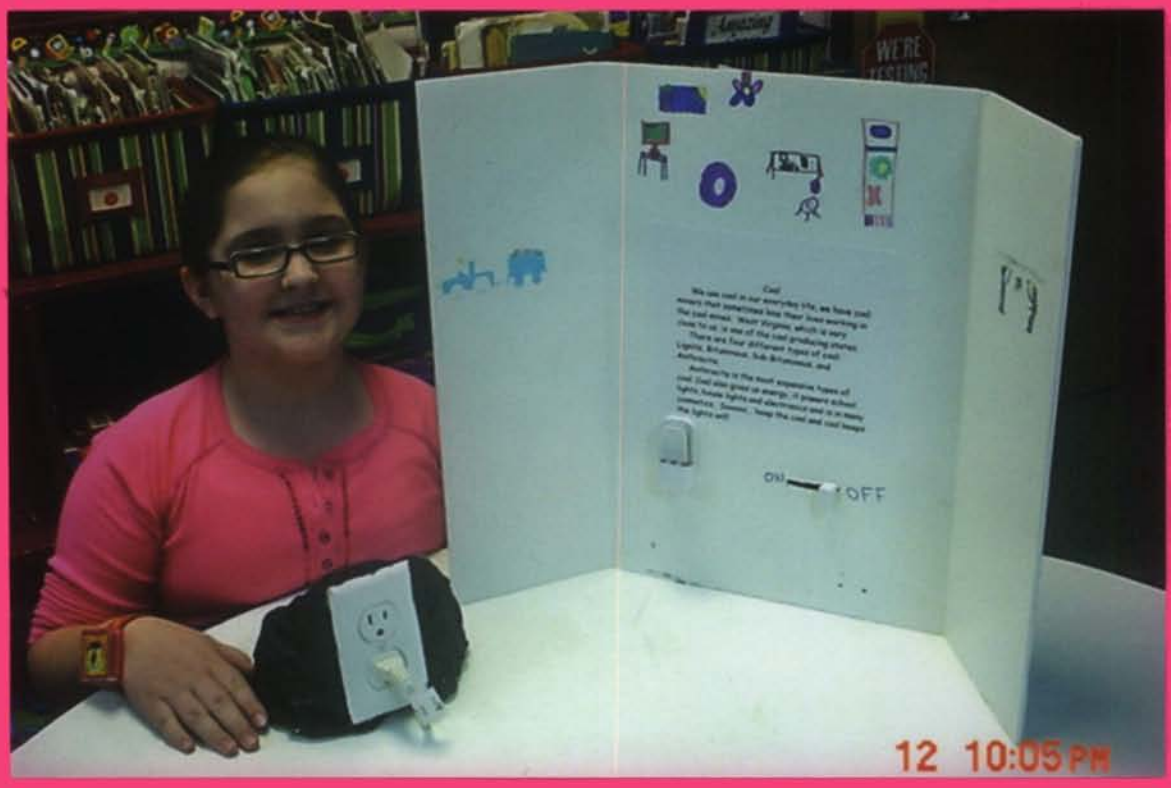
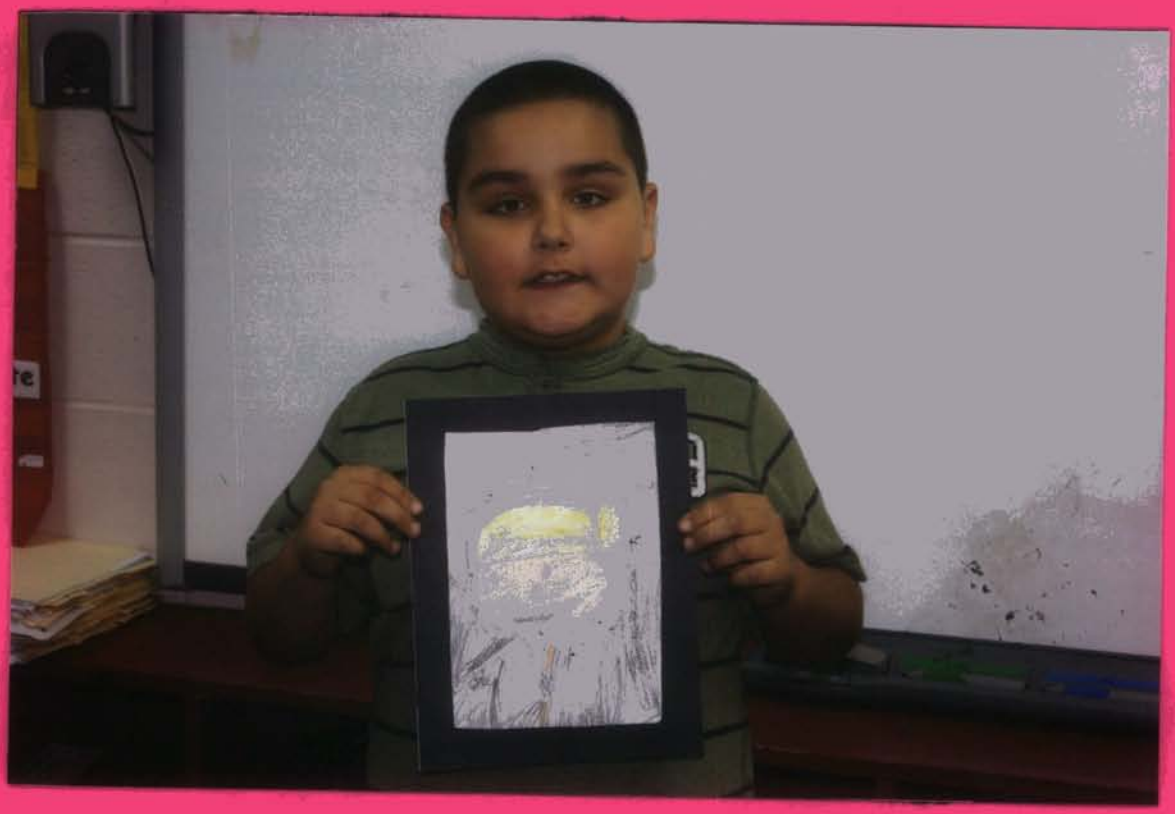
Kids "DIG" COAL it's a Fact!


COUNTRY
1 11:13 PM


WE'RE
ON
OFF
12 10:05 PM


1 9:17 PM


10 3:06 AM

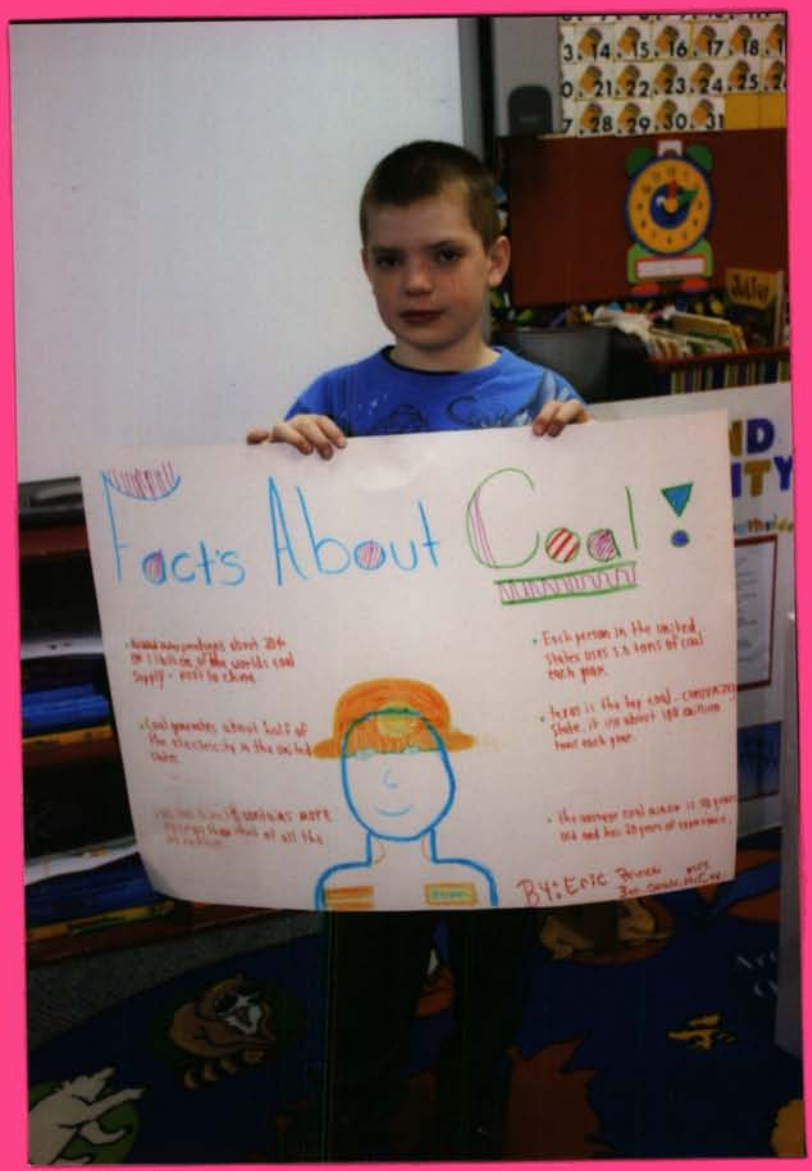



lignite
MINING SAFETY

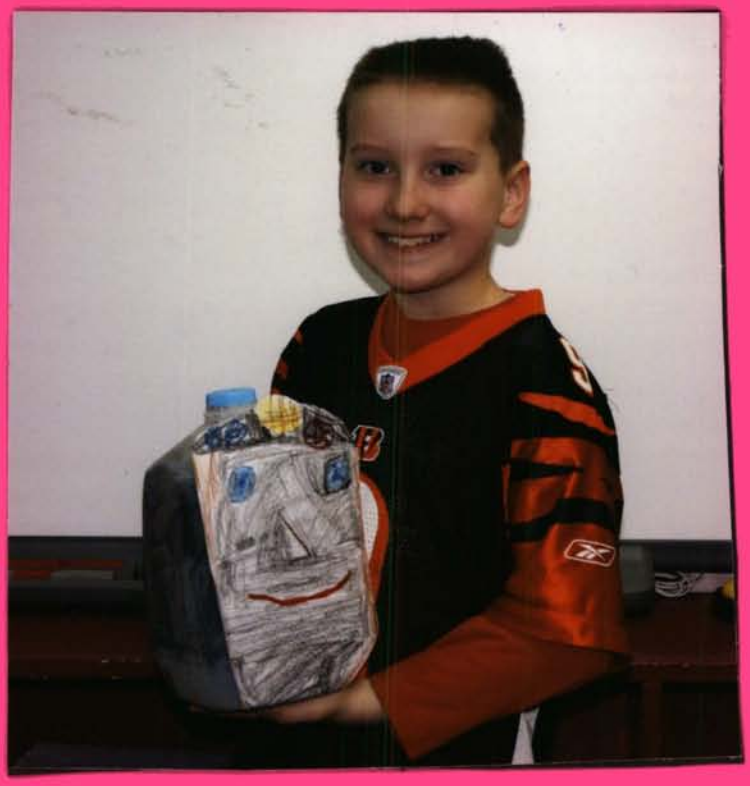

Distilled White
Vinegar

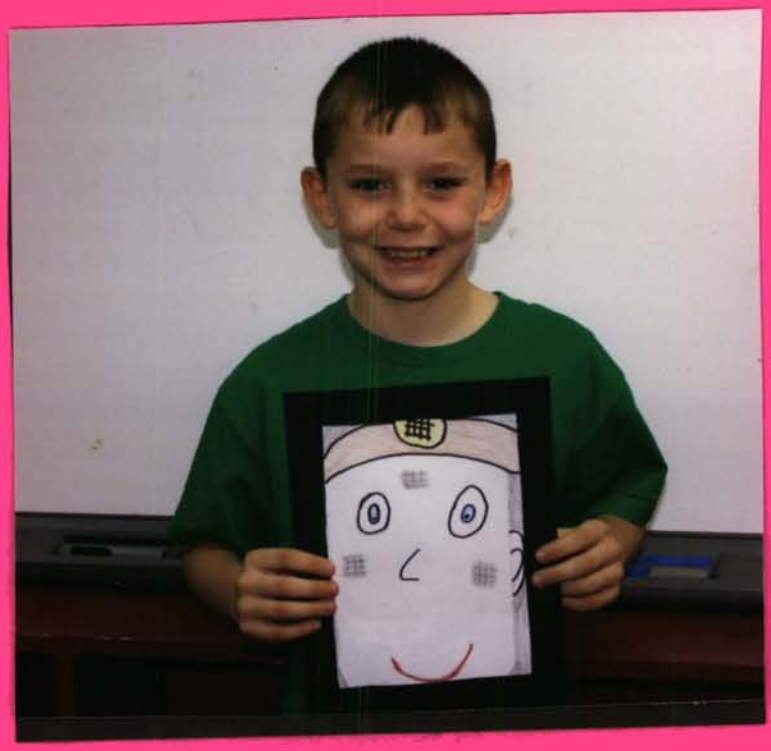

GONE...
BUT NOT FORGOTTEN
4:31 AM


Coal
We use coal in our everyday life, we have coal miners that sometimes lose their lives working in the coal mines. West Virginia, which is very close to us, is one of the coal producing states.
There are four different types of coal: Lignite, Bituminous, Sub-Bituminous, and Anthracite.
Anthracite is the most expensive types of coal. Coal also gives us energy. It powers school lights, house lights and electronics and is in many cosmetics. Soooo... keep the coal and coal keeps the lights on!!
ON
OFF


Facts About Coal!
Each person in the United States uses 5.5 tons of coal each year.


A
STITCH
IN
TIME

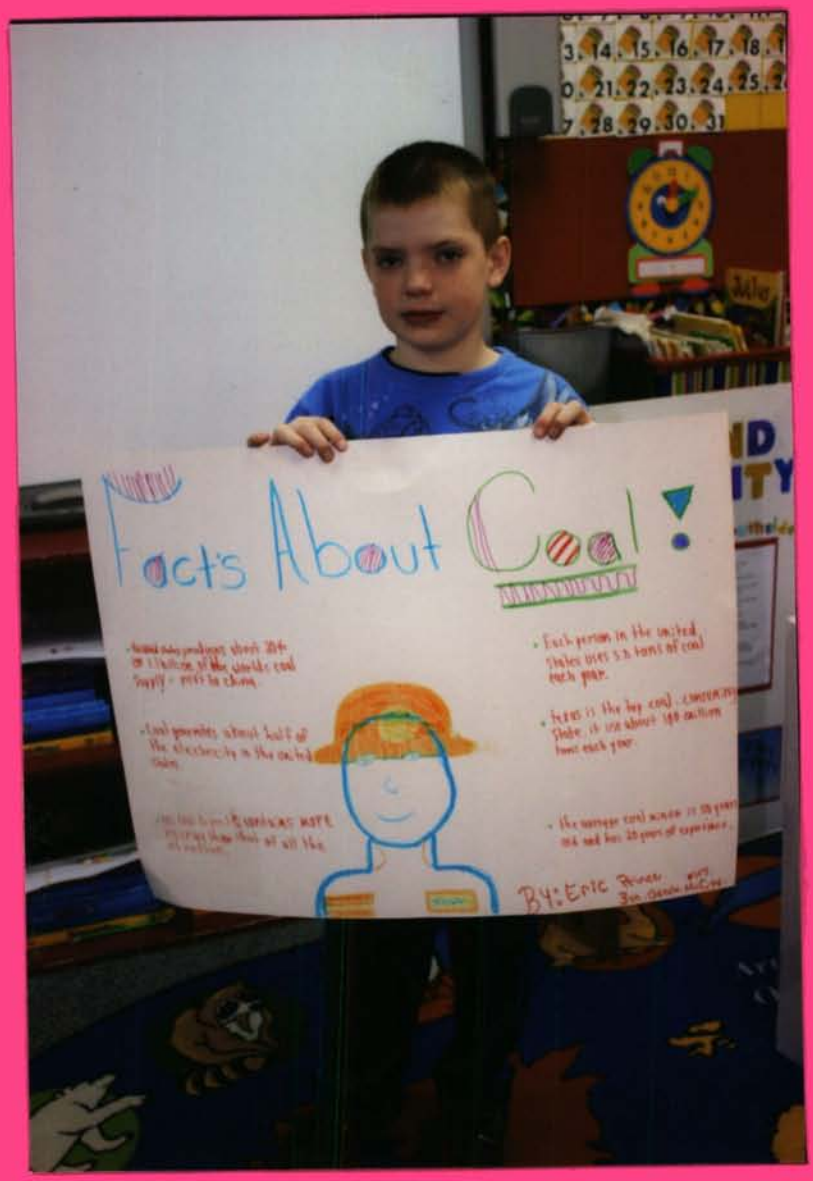


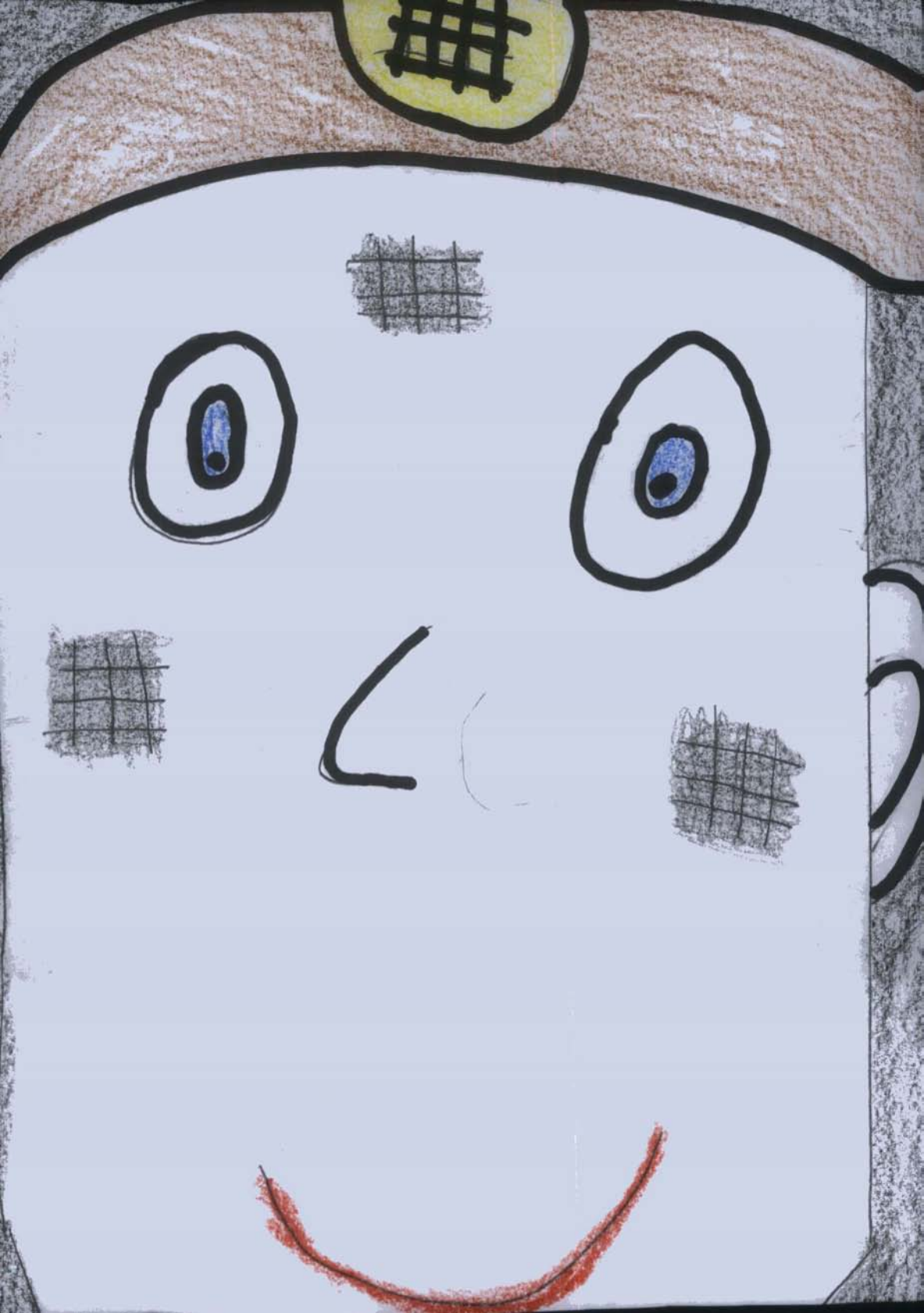


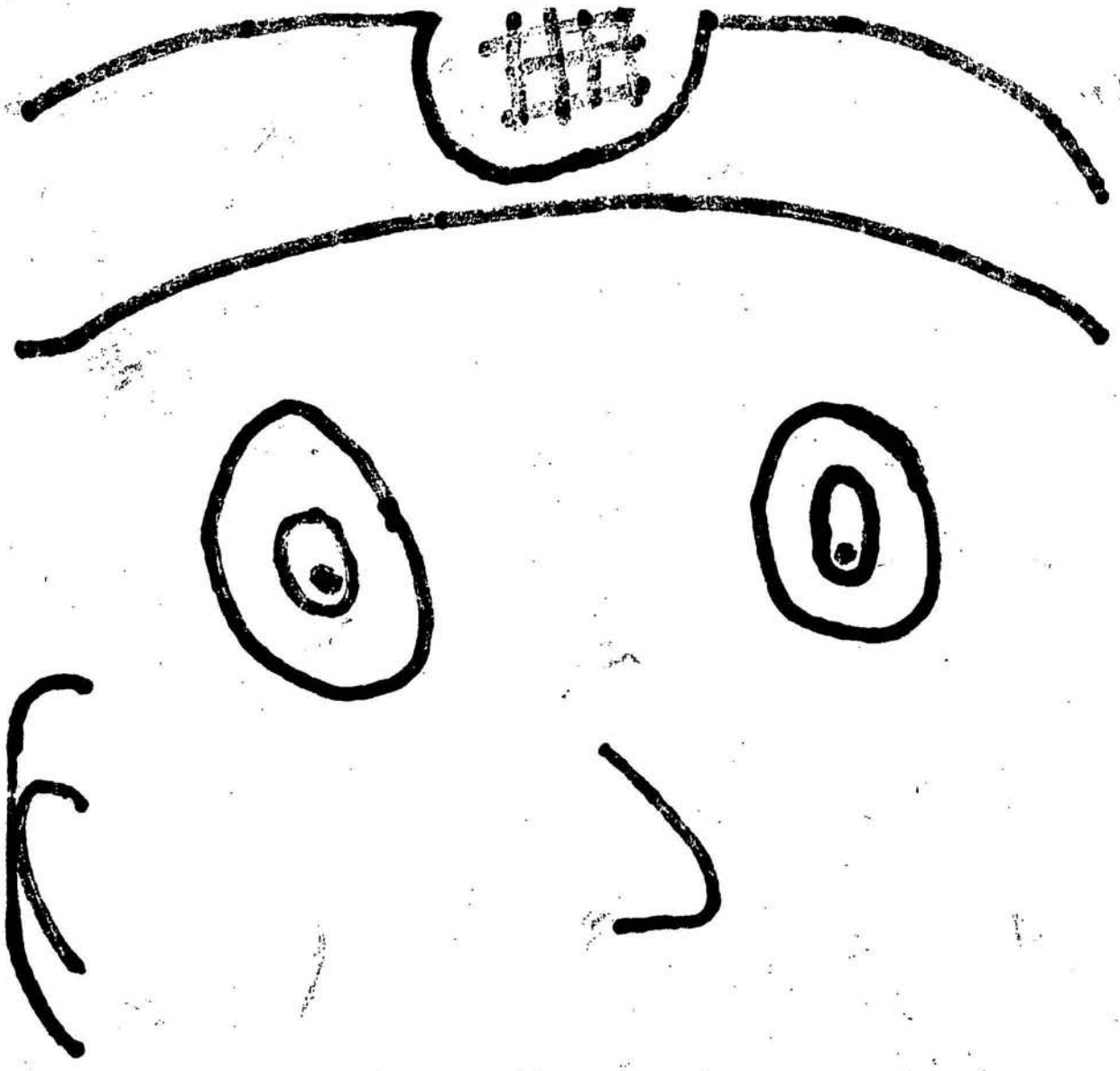

Distilled White
Vinegar


GONE...
BUT NOT FORGOTTEN
431AM


Coal
We use coal in our everyday life, we have coal
miners that sometimes lose their lives working in
the coal mines. West Virginia, which is very
close to us, is one of the coal producing states.
There are four different types of coal:
Lignite, Bituminous, Sub-Bituminous, and
Anthracite.
Anthracite is the most expensive types of
coal. Coal also gives us energy, it powers school
lights, house lights and electronics and is in many
cosmetics. Soooo... keep the coal and coal keeps
the lights on!!
ON
OFF


Facts About Coal!
• Each person in the United States uses 2.2 tons of coal each year.
• Texas is the top coal consuming State. It use about 148 million tons each year.
• The average coal miner is 39 years old and has 20 years of experience.
By: Eric





Student Name: Alex Curry

Teacher Name: Christy L. McCoy

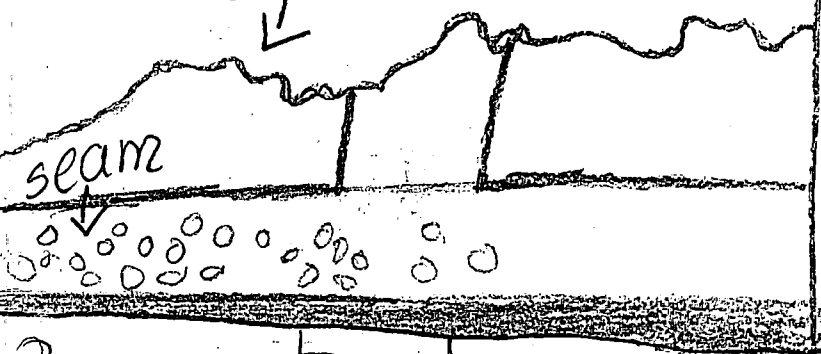
Grade: 3

Project Category: Art

1.

ground

seam

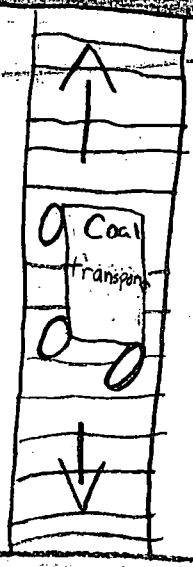


2

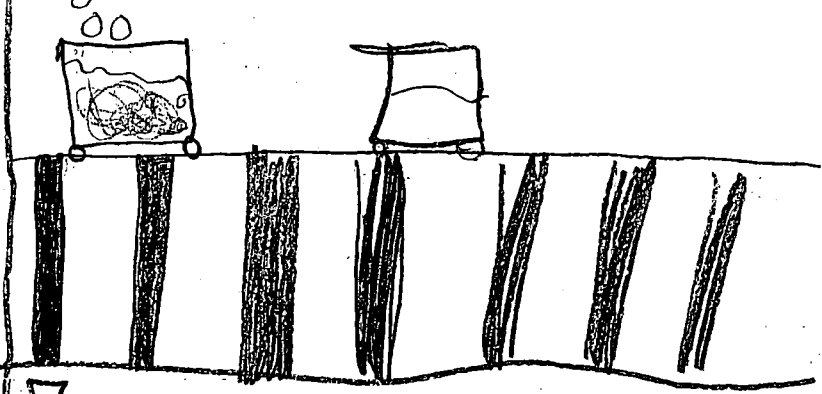
pickman

3

coal transporting

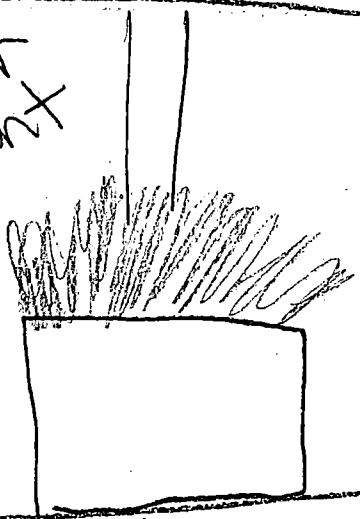


6



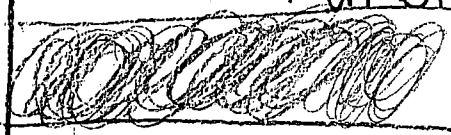
3

power plant



7

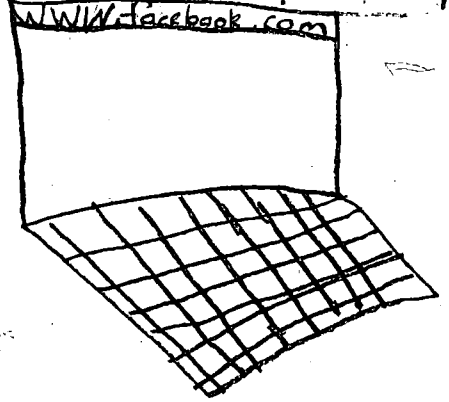
turbine



4

8.

My Laptop



Music

Center

Changing Rocks

(adapt to the tune of "Are You Sleeping?")

Igneous rocks, igneous rocks
Form when magma
Cools and hardens.
When magma cools quickly
Basalt and pumice are made.
Changing rocks, changing rocks.

Sedimentary, sedimentary
Rocks formed in layers,
Limestone and shale.
Broken pieces of matter
Are squeezed and pressed together.
Changing rocks, changing rocks.

Metamorphic, metamorphic
Rocks that were
Another kind before.
Changed by heat or pressure
Limestone becomes marble.
Changing rocks, changing rocks.

WORKIN' IN A COAL MINE

CHORUS:
Workin' in a coal mine
Goin' down, down, down.
Workin' in a coal mine
Whoop, I'd like to sit down.

REPEAT CHORUS:

5 o'clock in the mornin'
I'm already up and gone.
Lord I'm so tired
How long can this go on?

REPEAT CHORUS TWICE:

Course I make a little money,
Haulin' coal by the ton.
But when Saturday rolls around
I'm too tired to have any fun.

REPEAT CHORUS TWICE:

(Music plays and you say the next to lines.)

Lord, I'm so tired.

How long can this go on?

REPEAT SONG AGAIN:

SIXTEEN TONS

Some people say a man is made out of mud.
A poor man's made out of muscle and blood.
Muscle and bood, skin and bones,
A mind that's weak and back that's strong.

CHORUS:
You load 16 tons and what do you get,
Another day older and deeper in debt.
St. Peter don't you call me cause I can't go.
I owe my soul to the company store.

I was born one morning and the sun didn't shine.
I picked up the shovel and I walked to the mine.
I loaded 16 tons of number 9 coal.
The straw boss said "get out of that hole."

REPEAT CHORUS

I was born one morning it was drizzling rain
Fightin' and trouble are my middle name,
I was raised in the cane-break by an old mama lion.
Ain't no high tone woman make me walk the line

REPEAT CHORUS

If you see me comin' better step aside
Alot of men didn't and alot of men died,
One fist of iron, the other of steel,
If the right one don't get you then the left one will.

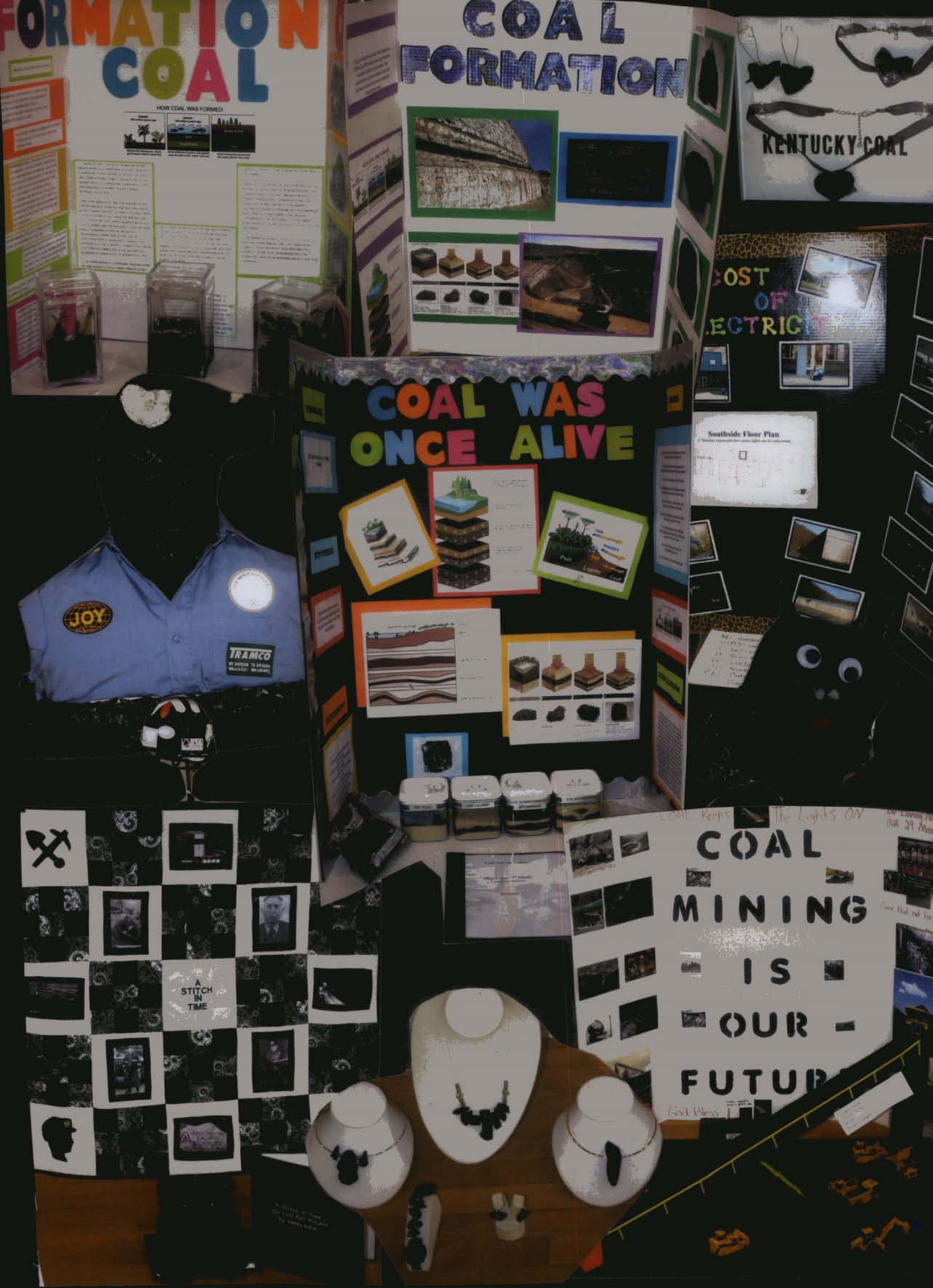
REPEAT CHORUS


Gym Procedure


CHAMPIONS


COAL AND
LECTRICITY
Cost of Lighting Southside
CAT
COOKIE
MINING
Cookie Mining Worksheet
Calculating Net Profit/Loss
Student Name:
Teacher Name:
Grade:
Project Category:


DOES IT REACT
QUESTION
HYPOTHESIS
RESEARCH
COAL FORMATION
FROM THE MINES TO THE LINES
NSPORTIN
COAL X·Y·Z 7·3·21
COAL X·Y·Z 7·3·21


FORMATION COAL
HOW COAL WAS FORMED
COAL FORMATION
KENTUCKY COAL
COST OF ELECTRICITY
COAL WAS ONCE ALIVE
Southside Floor Plan
JOY
TRAMCO
A STITCH IN TIME
COAL MINING IS OUR FUTUR