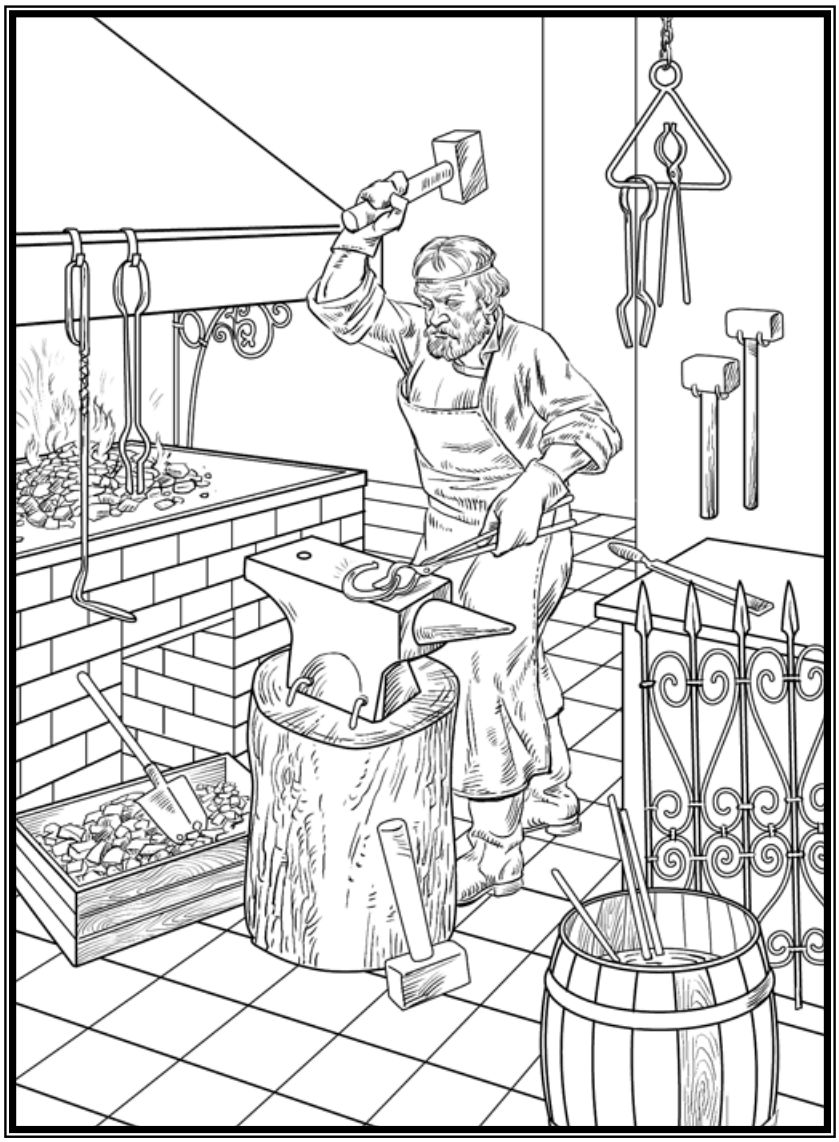
Manatee Village Historical Park
1404 Manatee Avenue East
Bradenton, Florida 34208
Manatee County Historical Commission
& Manatee County Clerk of the Circuit Court
Historical Resources Division

Manatee Village Historical Park

Blacksmith Activity Book



What is a Blacksmith?

A blacksmith works with **iron** and **steel**. They **forge** metal into tools like horseshoes, nails, hooks, and chains.

Into the 1900s, most villages had blacksmith shops. Walking down the street, you could smell smoke billowing from the chimney of the shop.

If you looked in, you could see a blacksmith in a leather apron reaching into the **forge** with **tongs**. They would pull out pieces of iron glowing hot and turn quickly to the **anvil**.

They would hammer the iron on the anvil, shaping it while it was hot and **malleable**. They would then dip the hot metal into cold water, cooling the iron quickly, making it hard again.

Interesting Facts

Did you know?

⇒ It took many years to become a blacksmith. You learned by serving as an apprentice to a master blacksmith. Then when you were old enough and had learned the skills, you could open your own shop.

⇒ Blacksmiths were very important people in the community. They built and repaired equipment used in cooking, farming, and hunting. They also made building materials for houses, furniture, and other items.

⇒ There were many different kinds of blacksmiths.

- ⇒ **Farriers** make tools related to horses like horseshoes.
- ⇒ **Armorers** make weapons and armor.
- ⇒ **Gunsmiths** make – you guessed it! – guns, which were used for defense and hunting, both of which were important in the Florida frontier.
- ⇒ **Locksmiths** are people who make or repair locks.

⇒ Most **necessities** once made by blacksmiths are now made in factories by machines. But blacksmiths still exist. They often do complicated repairs and custom work.

Vocabulary Words

Iron is a very hard metal.

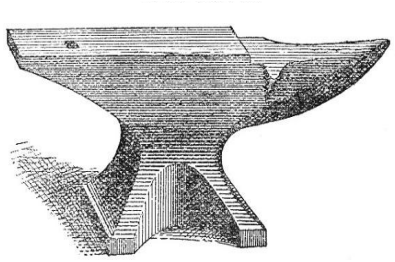
Steel is an **alloy** of iron and carbon. Steel is harder than iron and can be made into sharper edges. Steel is good for making knives.

An **alloy** is a mixture of metal and at least one other element.

To **forge** (verb) is to use hand tools to hammer, bend, cut and shape metal. The furnace or oven where the blacksmith works is also called a **forge** (noun).

Tongs were tools with long handles that could be used to reach into the fire to grab hot objects.

An **anvil** is a large block of metal, usually steel and iron, with a flat top. Blacksmiths would hammer hot metal on the anvil to shape the metal.



Malleable means soft and easy to shape without breaking or cracking.

Necessities: items used in everyday life, like nails.

Chemistry Corner

Did you know?

⇒ A blacksmith heats iron to a temperature of about 1650 degrees Fahrenheit.

To give you an idea of how hot that is, a regular kitchen oven reaches a maximum temperature of 450-475° F. That makes a blacksmith's forge almost four times as hot as your oven.

⇒ Iron glows when hot. Iron glows red when heated to 900° F. As the temperature rises, it then glows white.

⇒ Blacksmiths kept their work areas dark so that they could tell the temperature of the iron by how much it glowed.

⇒ A smith is someone who works with metal.

Blacksmiths get their name from **iron**, which is black.

Blacksmiths were just one kind of metal worker.

Whitesmiths worked with **lead**, a soft metal.

Redsmiths worked with pewter, an alloy of **tin** and **copper**.

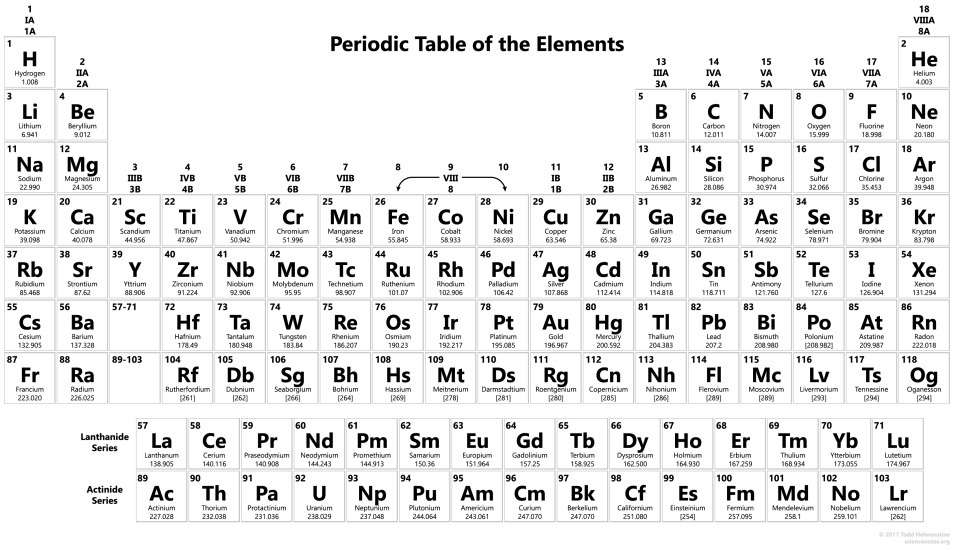
What is the periodic table of elements?

Atoms make up everything in the universe, including our bodies. Think of them like building blocks or Legos. They are so small that we can't see them with our eyes. Scientists can see atoms with special, very strong microscopes.

Atoms combine to form elements. Elements are made up of only one type of atom.

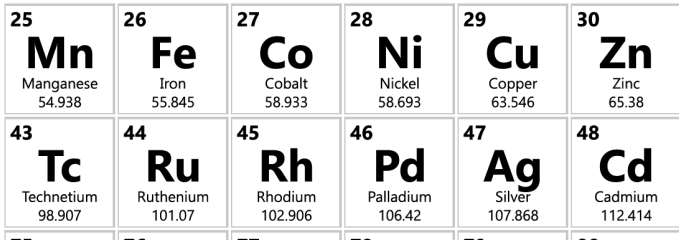
If you think of atoms like Legos, the element iron would be made up of all green Legos while oxygen would made from all yellow Legos.

Scientists symbolize element's names with letters. Just like LOL means laugh out loud, for scientists O means oxygen.



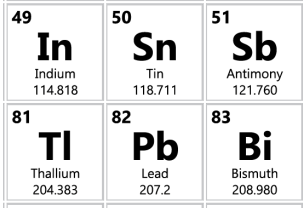
Iron is one of the most common elements on earth. Iron can be found in the earth's core. Iron also exists in rocks and minerals called iron ores. People can take iron from iron ores to make the iron metal that blacksmiths use.

What is the symbol (letters) for iron?

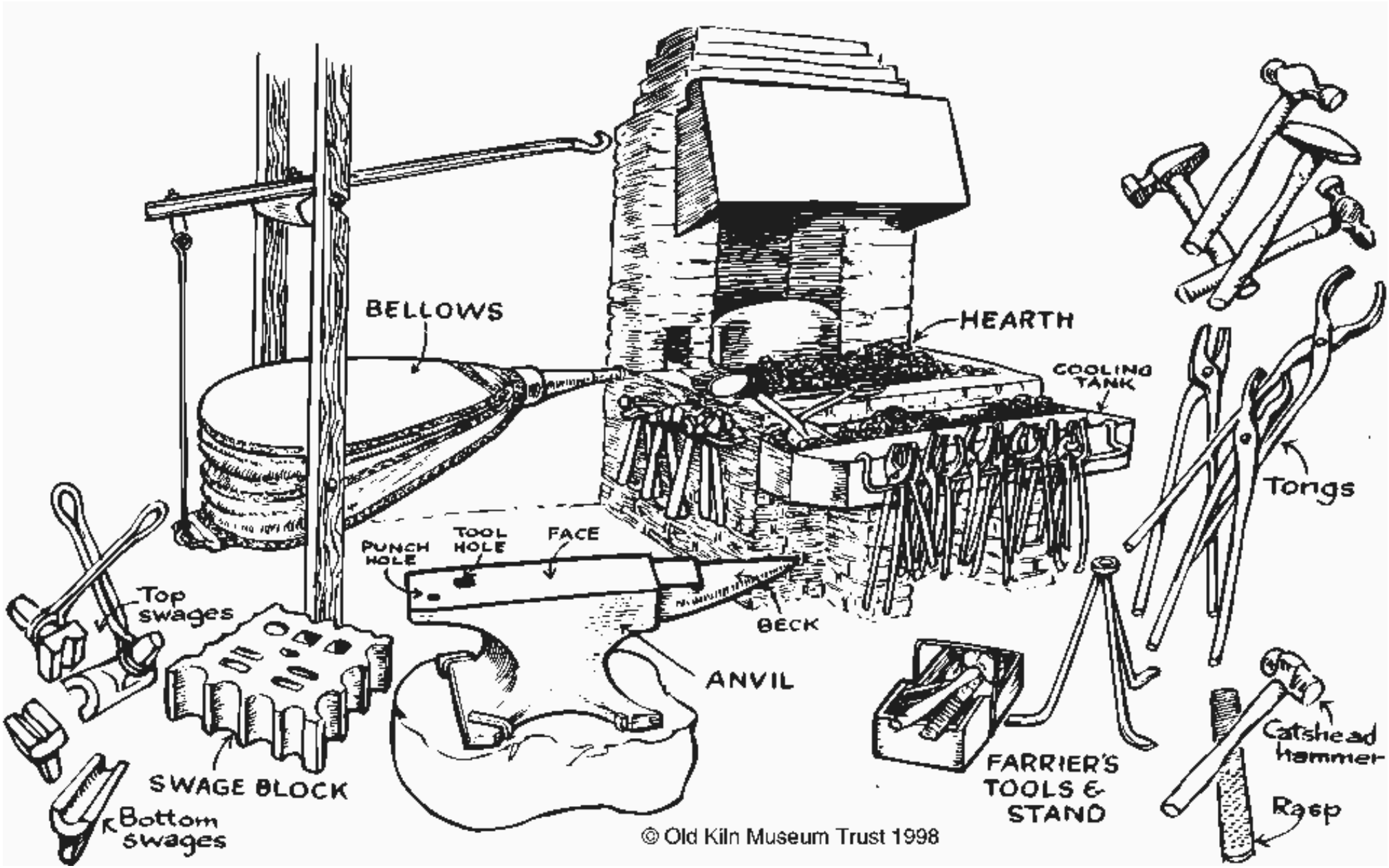


Copper?

How about tin?



Lead?


BELLOWS
HEARTH
COOLING TANK
Tongs
PUNCH HOLE
TOOL HOLE
FACE
BECK
ANVIL
Top swages
SWAGE BLOCK
Bottom swages
FARRIER'S TOOLS & STAND
Catshead hammer
Rasp
© Old Kiln Museum Trust 1998

Blacksmith Math Activities

In 1912, blacksmiths made about $0.35 per hour. They worked about 54 hours a week.*

How many years ago was 1912? _____

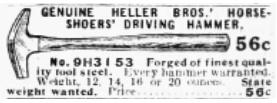
How much money did blacksmiths make in a week? _____

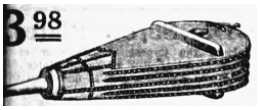
**Source: Bulletin of the United States Bureau of Labor Statistics, 1907-1912*

You are a farrier blacksmith. The year is 1912 and you have **$7.50** to spend in supplies for your shop.

Here are your necessities (things you must buy):

Hoof Parers	$1.12
Farrier's driving hammer	$0.56
Farrier's tongs	$0.30
Blacksmith's Hooped Bellows	$3.98





Vocabulary words

Necessities: items for every day use

Farrier: a blacksmith who works with horses

Bellows: blows air into a fire to make the fire bigger

Acme: the best or perfect

After buying these, how much money do you have leftover? _____

With your leftover money, you can buy more items you want. Which do you buy?

Easy Hoof Trimmer	$1.20
Farrier's knife	$0.32
Horseshoe buffer	$0.20
Blacksmith's Hand Hammer	$0.57
Blacksmith Tongs	$0.27

$7.50. Show your work here:

The Sears Roebuck Catalog

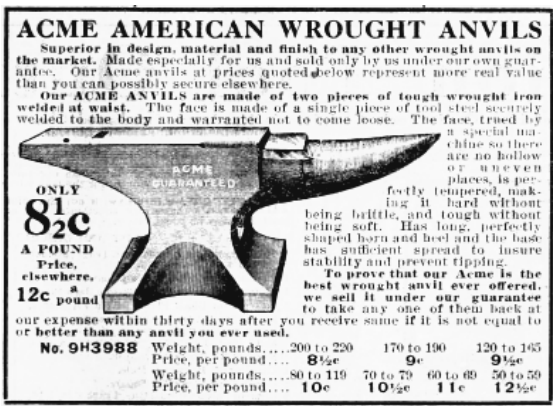
The Sears Roebuck Catalog was made by Sears, Roebuck, and Company. Sears is a large department store that was founded in 1893 and still exists today.

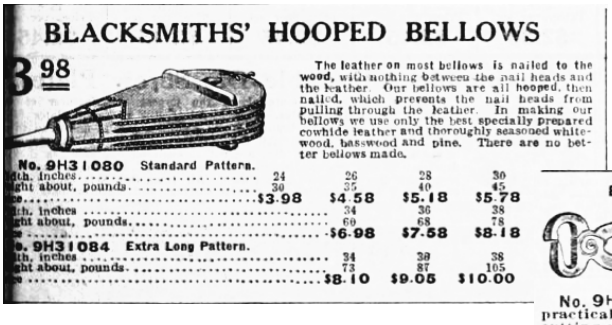
Before the internet and Amazon.com existed, people ordered household items through the mail. They would flip through their catalog book and send in money with a card listing what they wanted to buy. Sears would then ship them the goods.

Sears sold everything from clothes to jewelry, furniture, appliances, and even houses.

The 1912 Sears Roebuck Catalog

Below are images from the 1912 Sears Roebuck Catalog showing what blacksmiths could purchase.



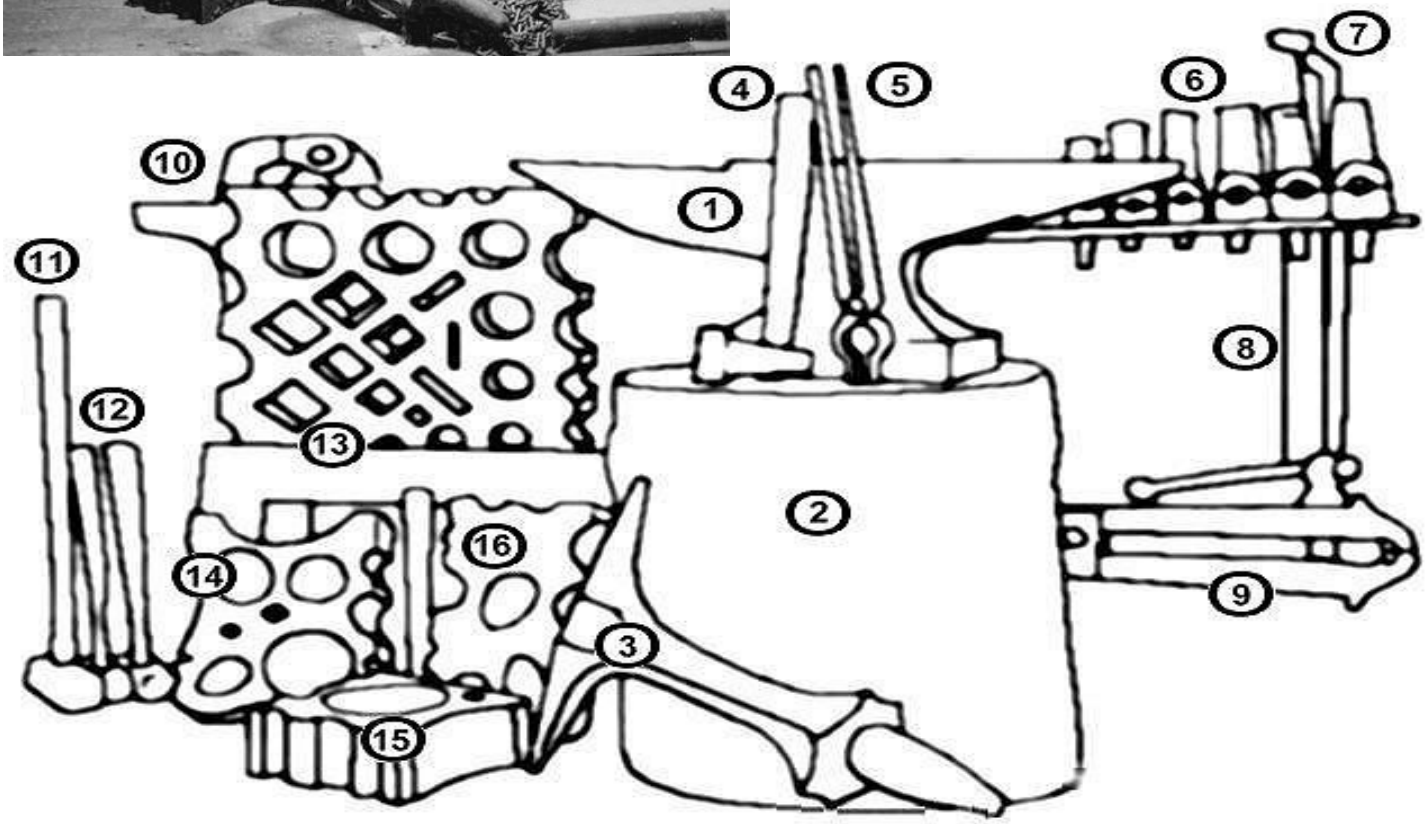


Blacksmiths made about $0.35 per hour. How many hours would a blacksmith have to work to be able to buy the acme outfit of blacksmith tools ($28.20)?

Round to the nearest tenth

_____ hours

Blacksmith Tool Collection Photo with Key



1) 200 Pound Hay-Budden anvil
2) Pine stump
3) 16th Century 40 Pound Stake Anvil
4) Handled Fuller
5) Bolt Tongs
6) Set of top and bottom round swages
7) Handles of Large Shears
8) Tool Rack
9) 30 Pound Blacksmiths Leg Vice
10) Greenfield Caulking Vise
11) 10 Pound Sledge Hammer
12) (2) 4 Pound Blacksmiths Hammers
13) 16" Square Industrial Swage Block and Stand
14) - 16) Blacksmith's Swage

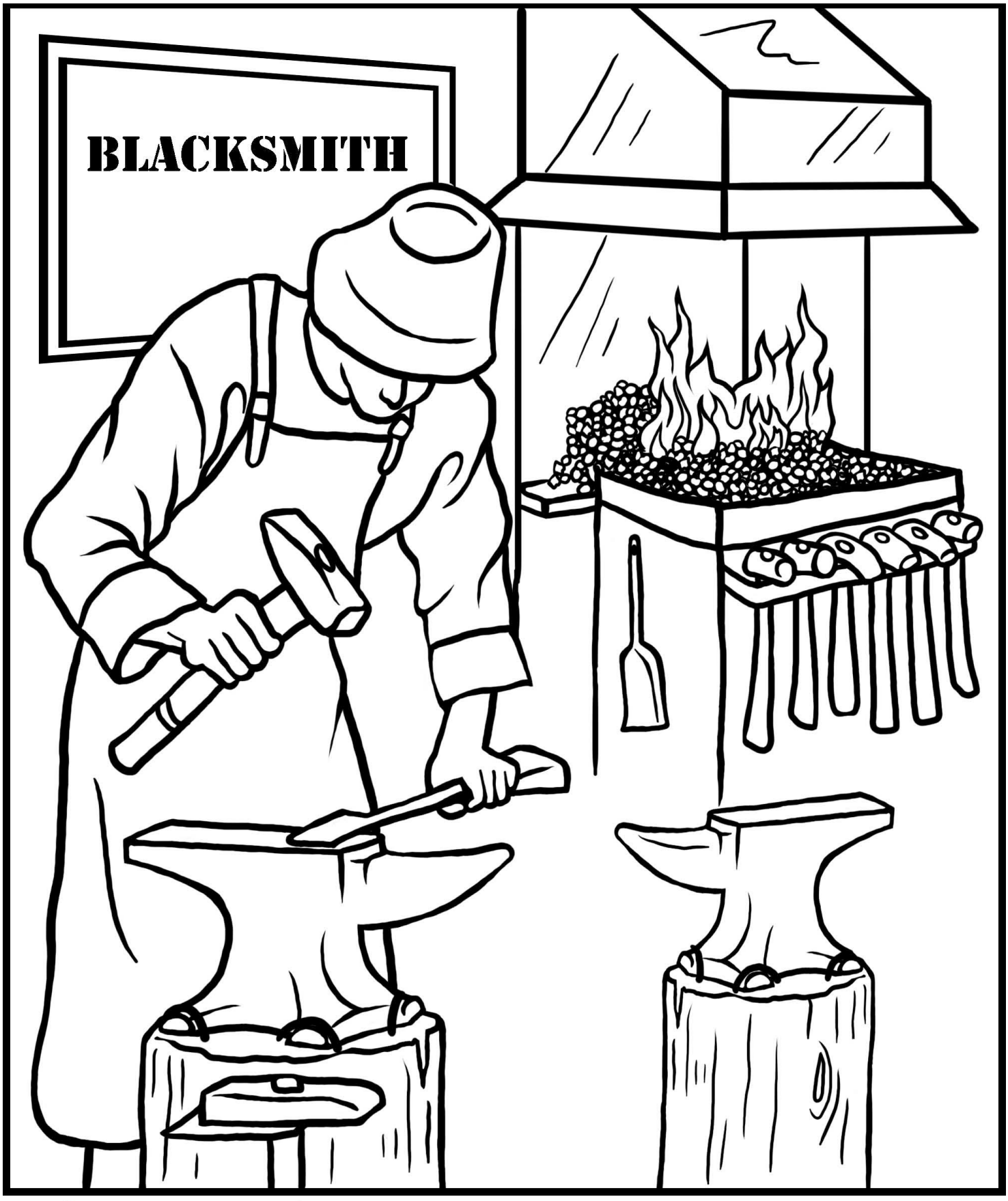
Vocabulary Words

Anvil: large block of metal with a flat top. Blacksmiths hammer hot metal on the anvil to shape the metal.

Swage: a large block of metal with holes of different sizes in it. Blacksmiths used them to hold a hot bar of iron for more shaping.

Shears: while shears can be another word for scissors, blacksmith shears are a large tool. They are used for cutting, but stand almost waist height so blacksmiths could use their full body weight to cut the metal.

Vice or vise: a type of clamp; it holds very hot iron for blacksmiths.



Blacksmith Geometry

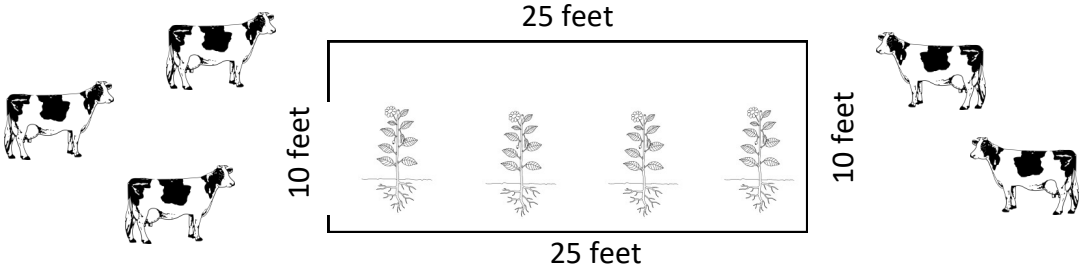
You are a farmer. You have a new garden. You want to calculate how many crops you can fit into your garden area.

Here is your garden area below.

Calculate the Area: How many square feet is your garden? _____ square feet

You can plant one crop per one square foot. How many crops can you plant?

_____ crops



The cows are eating your crops! You need to buy barbed wire from the local blacksmith to protect your garden from herds of cattle.

Do you need to find the **area** or the **perimeter** of your garden? _____

Why? _____

Calculate the Perimeter: How many feet of barbed wire do you need to buy?

_____ feet

You also need **490** nails to build the fence around your garden. The blacksmith sells boxes of nails that have 12 rows with 48 nails in each row.

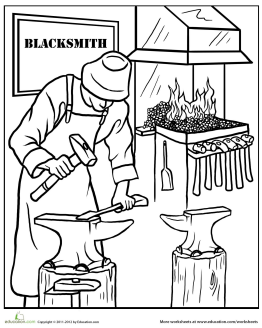
How many nails are in a box? _____

Will this be enough nails? Yes / No

You have 490 nails. If you divide the number of nails evenly for each foot of fencing, how many nails do you use per foot?

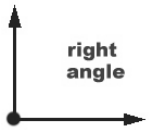
_____ feet

Blacksmith Geometry

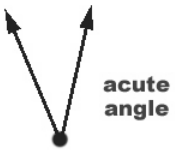


In the picture to the left:

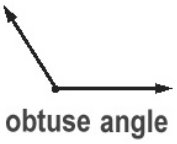
Color the right angles red

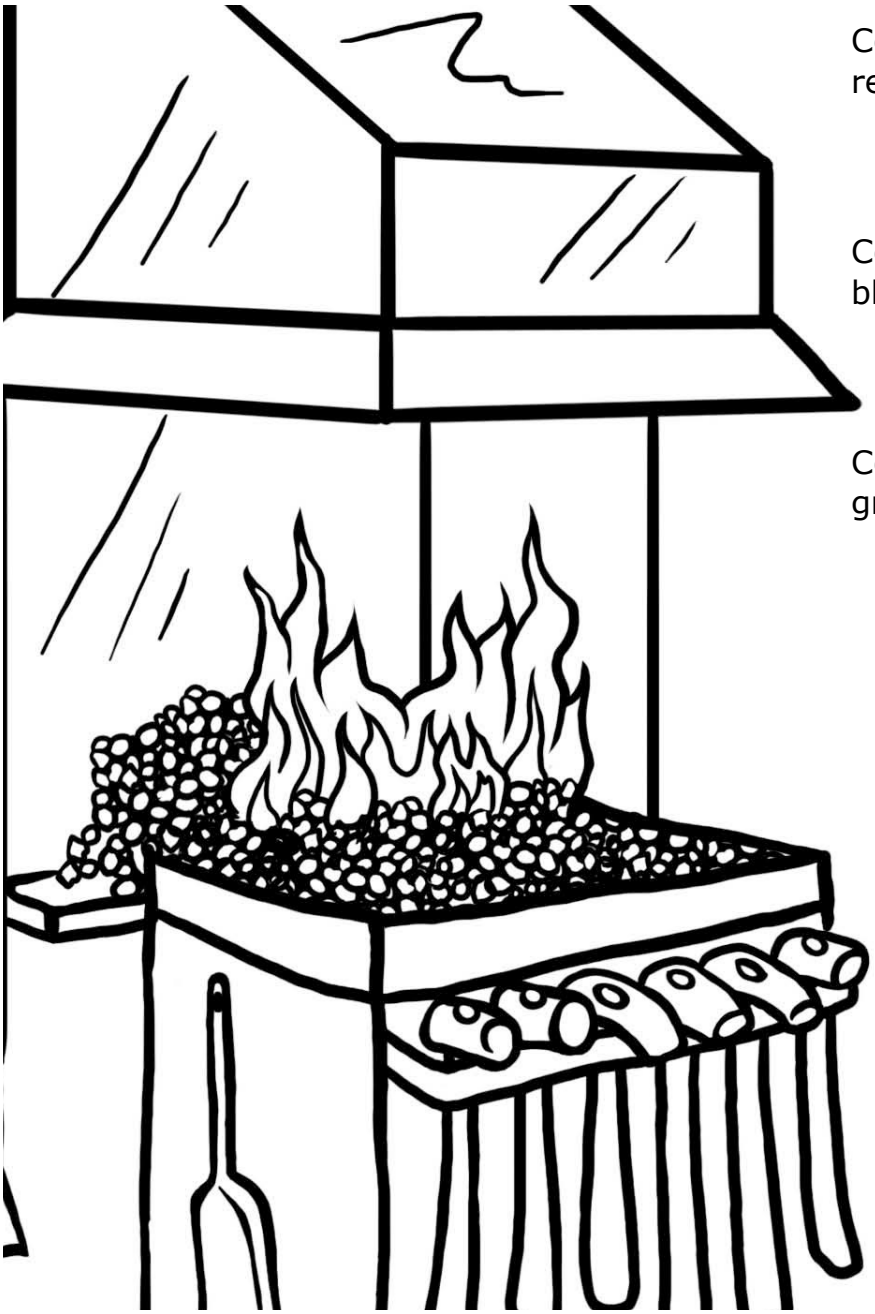


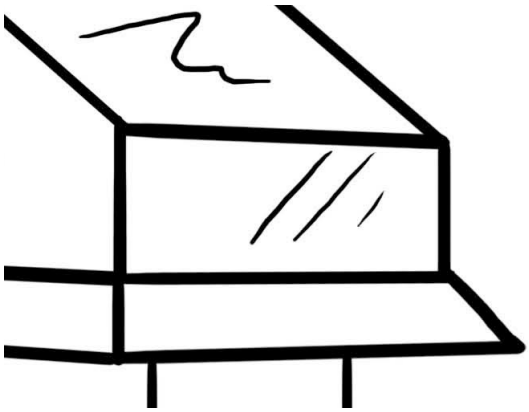
Color the acute angles blue



Color obtuse angles green



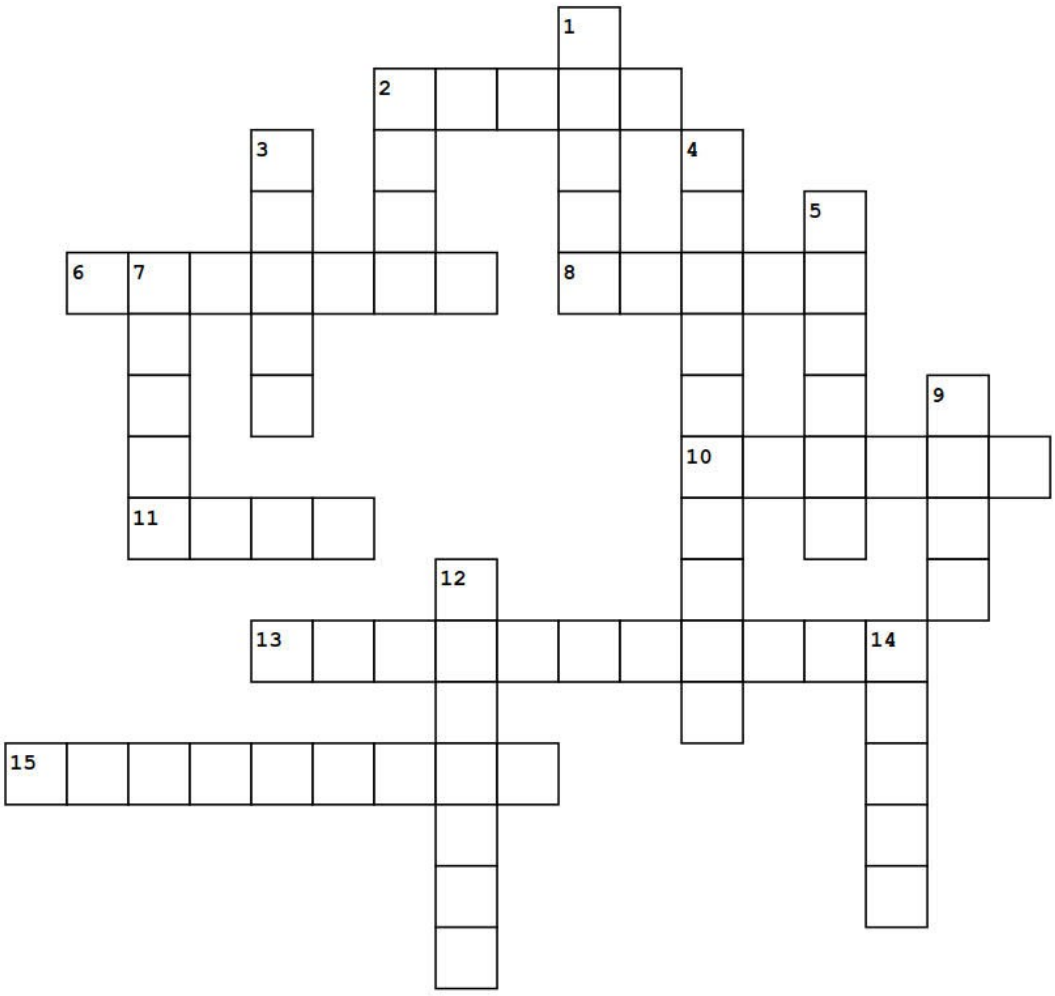




In the image above, use a protractor to measure each of the angles.

Write the measurements in the angle or list them below:

Manatee Village Blacksmith Crossword Puzzle



Across

2. a mixture of metal and at least one other element
6. a blacksmith who works with horses
8. a metal block with holes in it used to shape iron bars
10. another word for scissors
11. a soft metal used by whitesmiths
13. items used in every day life
15. soft and easy to shape without breaking or cracking

Down

1. tools with long handles used to reach into the fire and grab hot metal
2. the best or perfect
3. the furnace or oven a blacksmith uses
4. a metal worker who shapes iron or steel
5. an alloy of tin and copper that redsmiths use
7. a large block of metal with a flat top used for hammering hot metal
9. a hard black metal
12. a tool that blows air into a fire
14. an alloy of iron and carbon

Manatee Village Blacksmith Word Search

T T O G E Z C F E A F S P X E

O S I R U O P G V O P S Y L R

N K I E P N A N R V N R B I I

G F R P H W S G B E C A O W W

S O E E S N E M C A E Y I N K

O R K N M C E E I L R V T J G

N O R I P M S R L T X Y H M F

R E V L I S A A H W H O T X M

Q A N V I L M H T A A L I F Z

U N J T H F O L P W F L M A R

R A I O F U T L I P R A S R G

Q E H T I M S K C A L B K R Y

S R E D S M I T H A N F C I U

T I N P X K D G D A N N O E H

F E E S V B O U L C G P L R O

ALLOY
ANVIL
APRON
BAR
BLACKSMITH
COPPER
FAHRENHEIT
FARRIER
FIRE
FORGE
GUNSMITH
HAMMER
IRON
LOCKSMITH
MALLEABLE
NAIL
NECESSITIES
REDSMITH
SILVER
SWAGE
TIN
TONGS
WIRE
ACME

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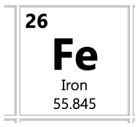
Answer Key

No. 127. Wrought Iron Washers. The various sizes are large enough to easily slip over the size bolt given.

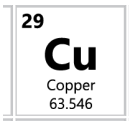
For bolt, inches,	¼	5-16	⅜	½
Per doz.,	$0.02	.02	.03	.05
Per lb.	.08	.07	.06	.05
No. in lb.	139	119	119	20

Chemistry Corner Answer Key

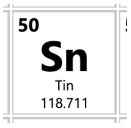
Iron: Fe



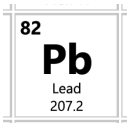
Copper: Cu



Tin: Sn



Lead: Pb



Math Activities Answer Key

In 1912, blacksmiths made about $0.35 per hour. They worked about 54 hours a week.

How many years ago was 1912?

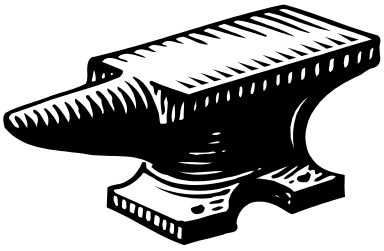
2020-1912 = 108 years

How much money did blacksmiths make in a week?

54 x 0.35 = $18.90

How many hours would a blacksmith have to work to be able to buy the acme outfit of blacksmith tools ($28.20)?

28.20 / 0.35 = 80.6 hours



$7.50 to use	
Hoof Parers	$1.12
Farrier's driving hammer	$0.56
Farrier's tongs	$0.30
Blacksmith's Hooped Bellows	$3.98
Necessities total:	**$5.96**

Total left to use: $1.54

This is an example, answers may vary:

Easy Hoof Trimmer	$1.20
Farrier's knife	$0.32
Total	**$1.52**

Total spent: $7.48

Blacksmith Geometry

How many square feet is in your garden? 25 x 10 = **250** square feet

You can plant one crop per square foot. How many crops can you plant?

250 / 1 = 250 crops

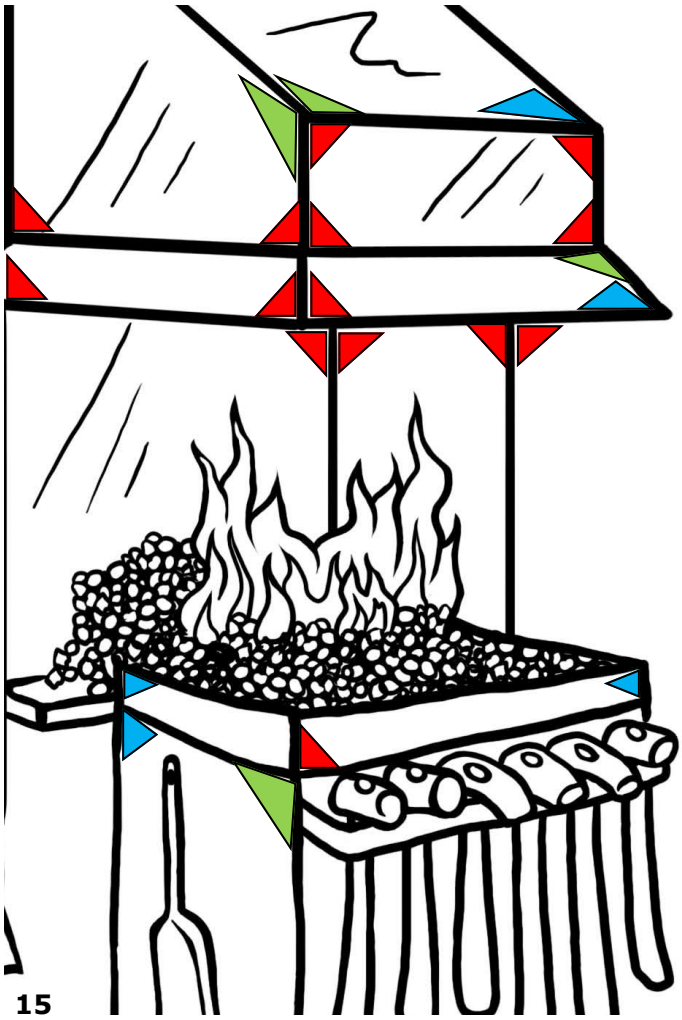
Do you need to find the area or the perimeter of your garden? **Perimeter**

Why? **The perimeter is the distance around a shape; area covers the entire surface of the shape. Perimeter helps us calculate the barbed wire fencing we need.**

How many feet of barbed wire do you need to buy? **10 + 10 + 25 + 25 = 70 feet.**

The box contains **576 nails (12 x 48 = 576),** so **Yes**, you will have enough.

If you have 490 nails, how many nails do you use per foot of your fence? **Your fence is 70 feet: 490 / 70 = 7**, so you will use **7 nails per foot**.

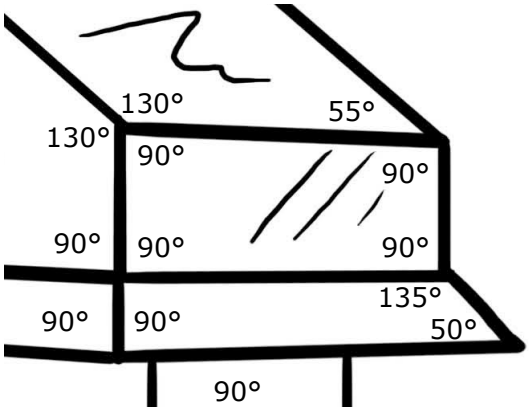


In the picture to the left:

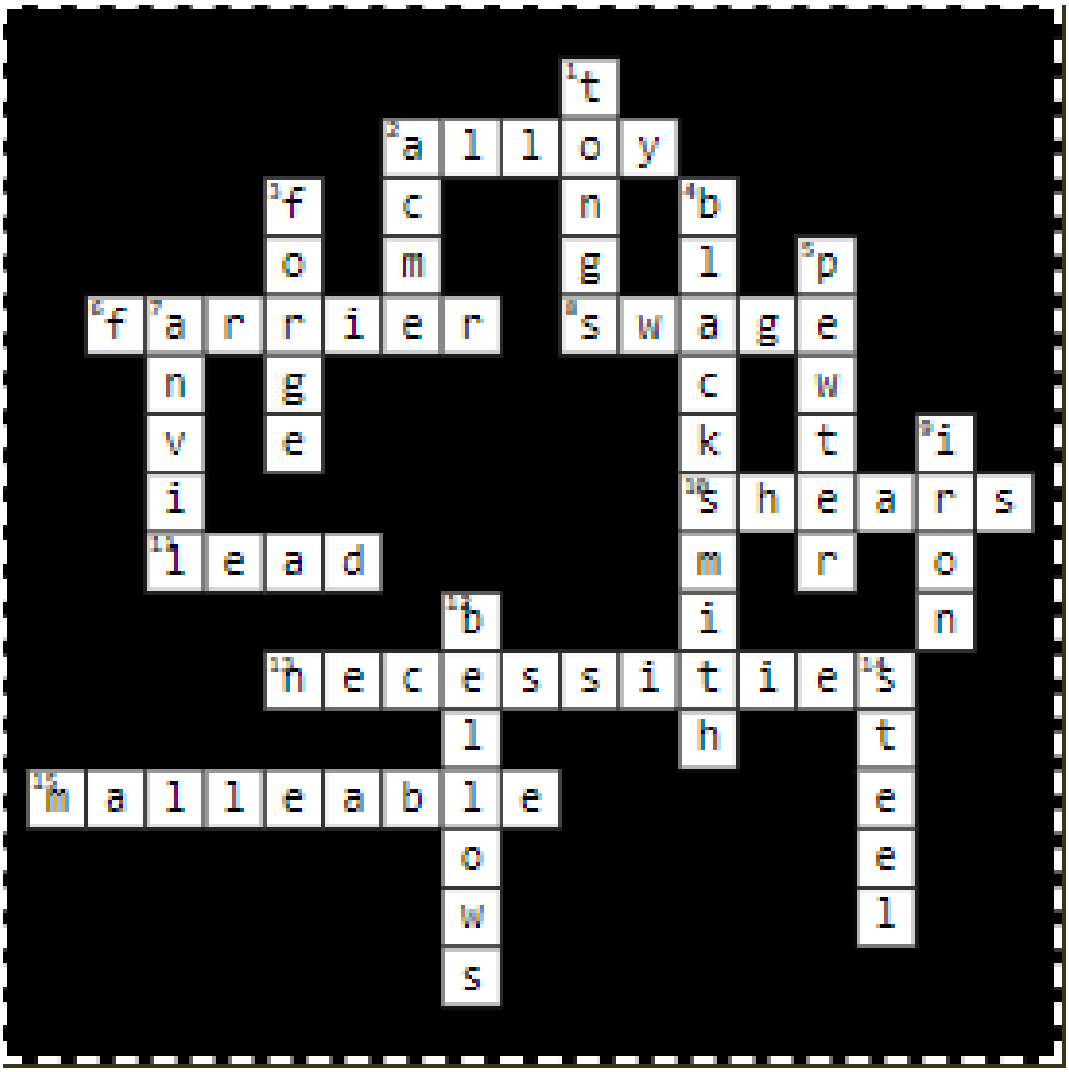
Color the right angles red

Color the acute angles blue

Color the obtuse angles green



Crossword Puzzle Answer Key



There is no answer key for the word search

Vocabulary Word Pronunciations

Malleable: ma·lee·uh·bl

Necessities: nuh·seh·suh·teez

Farrier: feh·ree·ur

Swage: sw-age

Anvil: an-vul

Forge: forj

Acme: ak-me

Fahrenheit: feh·ruhn·hait

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Blacksmith Activity Book

Created by Manatee Village staff with resources from:

- ⇒ Sciencenotes.org: periodic table of elements
- ⇒ Old Kiln Museum Trust: coloring sheet
- ⇒ Archive.org and Winterthur Library: 1912 Sears Catalog, no. 124
- ⇒ Federal Reserve Bank of St. Louis: Union Scale of Wages and Hours of Labor, 1907 to 1912 : Bulletin of the United States Bureau of Labor Statistics, No. 131
- ⇒ Jock Dempsey: coloring sheet
- ⇒ Education.com: coloring sheet
- ⇒ Crossword Labs: crossword puzzle
- ⇒ Discovery Education: word search

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