



Introduction to The Arts

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I.1 How do art and science meet?

It may not seem immediately obvious how the arts are connected to science, but the arts and science do have many things in common. For example, the first step of good science is the same as the first step in good art, music or literature—"observation." An artist, whether a musician, painter, poet, or novelist, must first make observations about the world around him. He must *observe* an object carefully in order to paint it. He must *observe* an emotion or series of emotions within himself and in those around him in order to capture the aspect of the emotion he is trying to describe. For example, an artist may wish to paint about the feeling of love, and so he may observe what love means to him in order to capture some aspect of love that others may recognize in themselves. The same is true about scientists. A scientist makes careful observations about the world him and how it works before he can begin to answer questions he may have.

I.2 What is "good" art science?

The arts try to capture a wide array of subjects such as how a rainbow looks or how a rainbow invokes feelings of love, gladness, sorrow or loss. A skilled novelist is able to express how you might experience a rainbow after a storm, and a skilled painter will be able to paint how a rainbow looks in the sky when the storm has passed. Good art, music and literature attempts to express how we experience the world around us. A skilled artisan will be able to express with

his art how a rainbow looks after a storm or how the same rainbow makes lovers feel as they walk along the beach.

Good science has a similar goal. Good science attempts to explain how we experience the world around us. For example, good science will try to give the best explanation for what a rainbow is, what it is made of and how the light and raindrops make it look the way it does.



Good art and good science try to help people connect to how we all experience the world around us. A skilled artisan can capture some aspect of how people experience the world around them and *express* this by using the tools of art. A skilled scientist can capture some aspect of how people experience the world around them and *explain* this by using the tools of science.

- *Good art expresses how we experience the world around us.*
- *Good science explains how we experience the world around us.*

I.3 Good art and science is timeless

Good art, music, and literature all have a particular *form* and are governed by *rules* much in the same way that good science has a form and follows rules. For example, music is very mathematical in form and follows rules of organization when going from single notes, to melody to musical scores. Art, such as painting and sculpture, may not have a mathematical foundation, but follow guidelines for space, line, form, balance and proportion. Literature requires the careful selection and organization of letters and words so that the author can effectively communicate his or her ideas.

Scholars and individuals may differ on the definition of “good” art, or “good” music or “good” literature and many may argue that what one person finds “good” another person might find “bad,” and so “good” is only a matter of opinion. To some extent this is true. Your parents may not like to listen the songs of your favorite music group and you might find it horribly boring to listen to some of their old time favorites. But beyond personal tastes, “good” art, music or literature survives the “test of time” because the experience the art seeks to express is universal and connects to all people.



Good science also survives the “test of time” much in the same way that good music, art and literature survive. A scientific theory and a set of experiments that best explains the world around us is “good” science. Why? Well, we know that science cannot answer every question and cannot even uncover everything about every topic. We never fully understand everything through science, but good science is science that gives the best explanation for how things really “are.” Scientific theories that don’t approximate how things really work simply do not survive and get replaced by theories that more closely match how nature really works. Scientific experiments that do not uncover real facts about something get replaced by better experiments that uncover facts that more closely relate to the real world.

I.4 What you will learn

In this workbook you will learn how science and art overlap and how they are used to understand the world we live in. You will also learn the elements of the various arts and how artisans combine these elements to express their experience of life. You will also see how science uncovers the elements of nature and how scientists try to explain how we experience life.

I.5 Discussion questions:

1. Think about an object such as an apple. Without telling the name of the object, describe the ways you might use to explain the object to your mom or dad [e.g. make a drawing, describe a color, taste, etc.].



The Arts

Elements

1.1 The Elements of The Arts

1.2 The Elements of The Visual Arts

1.3 The Elements of Music

1.4 The Elements of Language

1.5 Summary

1.6 Discussion Questions and Activities

1.1 The Elements of The Arts

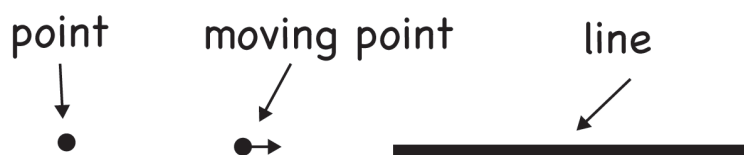
As you know, an element is the basic part of something in its simplest form. Just like in chemistry, the elements of art are the individual parts that fit together to make up the whole. The elements of art are the basic parts used by the artist when they create a piece of art, whether it is a painting, a song, or a novel. Each of the arts have different elements that combine to make a painting, novel, or song.



1.2 The Elements of The Visual Arts

Art is a visual language and the elements of art are like the alphabet of art. The elements of art are the things that the artist works with to create a picture, or sculpture, or a building. An artist uses the elements in the same way a writer uses letters or words, or a musician uses notes.

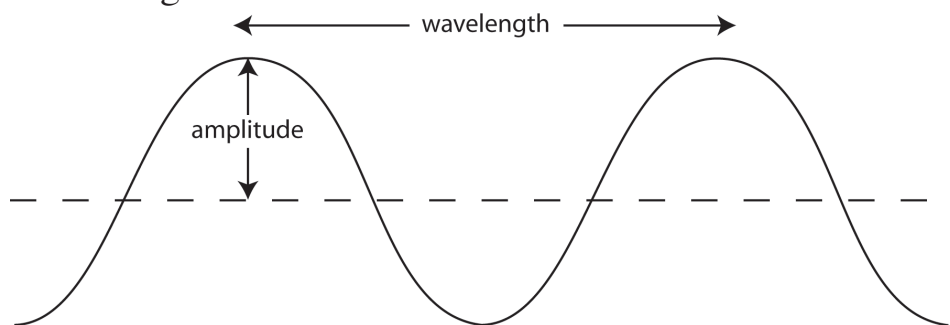
The most basic element of art is the point. In the visual arts everything you create begins with a point. A point is the mark that starts a line and a line is a mark that is created by a point that moves across a surface. A line has length, width, direction, curvature, and color. The length, width, direction, curvature and color of a line can vary. A line can be two-dimensional like a pencil line on paper, or it can be three-dimensional, like a wire sculpture.



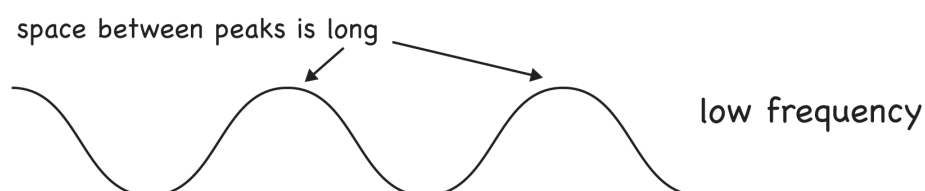
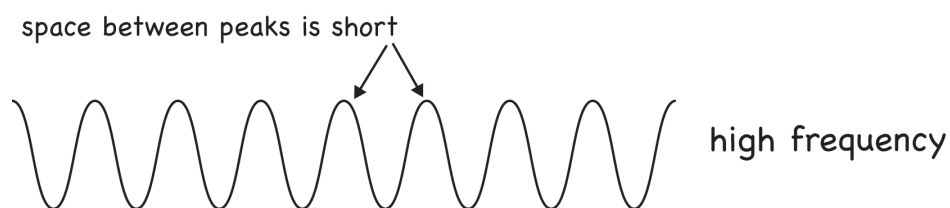
There are lots of different kinds of line. For example there are curved lines, straight lines, diagonal lines, horizontal lines, vertical lines, geometric lines: there are dotted lines, wavy lines and parallel lines. There are thick lines, thin lines and many more different kinds of line. Everything in Nature creates some kind of line. Look at a tree. The line it creates is vertical. Look at the sea from the shore. The line it creates is horizontal.

1.3 The Elements of Music

The basic element of music is the note. Notes are sounds with a certain pitch, or frequency and duration. Sound moves through space in the form of a wave and sounds vary as the properties of the wave varies. Frequency describes the length between the peaks of a wave, or the wavelength.

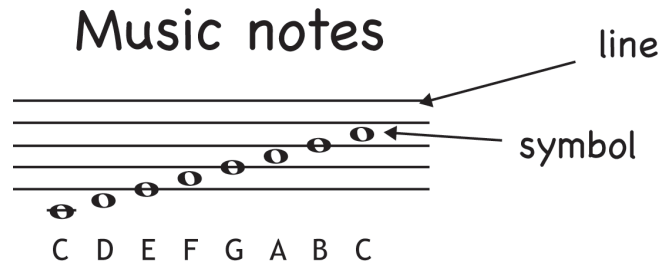


Some sounds and some notes are *high* with a short frequency (the space between adjacent peaks is small) and some sounds and some notes are *low*, with a long frequency (the space between adjacent peaks is large).

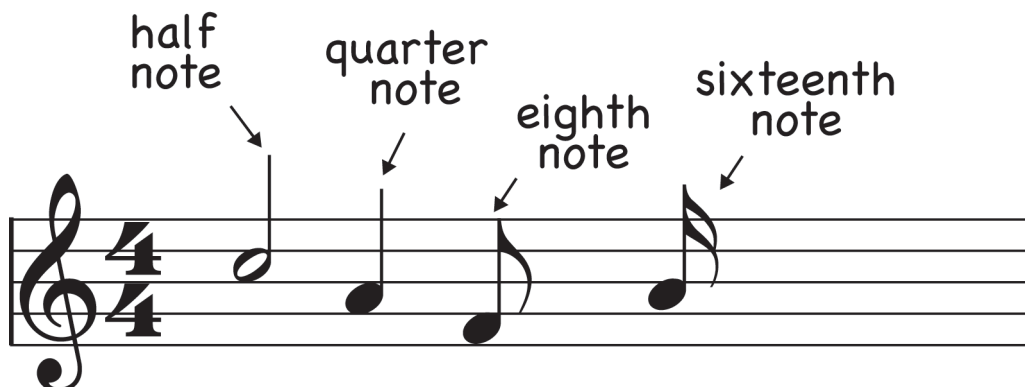


The notes have different letters that each represent a different pitch or frequency. The letters that are used to denote notes are: A, B, C, D, E, F, and G.

The notes (A,B,C,D,E,F, and G) can be illustrated by drawing symbols and placing those symbols on top of or in-between lines. The placement of the symbol on the lines denotes which note is to be played.



In addition to different pitch, notes also have different duration, i.e. how long the note sounds. There are whole notes, that are a flattened hollow oval that sound for four beats; half notes, a flattened hollow oval with a stem that sound for two beats; quarter notes, a flattened filled oval with a stem that sound for one beat, eighth notes; a flattened filled oval with a stem and a flag that each sound for a half a beat; and sixteenth notes, a flattened filled oval with a stem and two flags that each sound for a quarter of a beat.



1.4 The Elements of Language

The basic element of written language is the letter or symbol. Written languages use letters or symbols to represent the spoken sounds of spoken language.

There are many different languages and different symbols or letters for the different languages. Modern English uses the Latin alphabet that contains both vowels and consonants to represent the different sounds of spoken English. The modern Latin alphabet consists of 26 letters :
A through Z.

Latin Alphabet

Aa Bb Cc Dd Ee
Ff Gg Hh Ii Jj Kk
Ll Mm Nn Oo Pp
Qq Rr Ss Tt Uu Vv
Ww Xx Yy Zz

English — apple
Spanish — manzana
French — pomme
German — apfel
Finnish — omena

There are many other languages that use the Latin alphabet. These include all of the romance languages such as French, Spanish, and Italian and also the Germanic languages, such as German, Swedish, Danish or Finnish.

Russian Alphabet (a Cyrillic alphabet)

А Б В Г Д Е Ж
 З И Й К Л М Н
 О П Р С Т У Ф
 Х Ц Ч Ш Щ Ъ Ы
 Ь Э Ю Я

Other languages such as Russian use a different set of letters or symbols to represent the sounds of the spoken language. The Russian alphabet belongs to a family of alphabets called the **Cyrillic alphabet**. Slavic languages such as Serbian, Macadonian and Ukrainian use a Cyrillic alphabet.

Still, other languages use logograms which are symbols that represent words or other parts of language. *Logo* is Greek and means "word" and *gram* is Greek and means "drawing" so a logogram is a "word drawing." Chinese and ancient Egyptian are examples of languages that use logograms.

Logograms

鑽 鋏 鑿 儻 僂 璉
 鼈 鏹 鼉 嚟 齶 霁
 嘸 睪 噤 璠 璫 琿
 嶸 囍 肱 嚳 慄 嬪

1.5 Summary

Just like in chemistry, there are elements for language, music, and art. And just like atoms are the basic unit that make all living and non-living things, the elements of the arts are the basic units that combine to make paintings, songs, and novels. Just like in chemistry, knowing the basic units of the arts helps the artist know how to use the elements to create new art. The artist uses his mind and the knowledge of the elements of his craft to create new art much in the same way a chemist uses his mind and his knowledge of chemistry to create new chemistry!

1.6 Discussion Questions and Activities

1. What is the basic element of language? _____

2. What is the basic element of a song? _____

3. What is the basic element of the visual arts? _____

4. Are the basic elements that make a song or a story or a painting enough to make the song, story or painting? _____

5. What else is needed to make a story, a song, or a painting?

Activities

Random Words

Cut out the letters on the last page of this chapter and place them in a sock. Have a friend pull out the letters one at a time. Record the letters below in the order that your friend pulls them out of the sock.

_____	_____	_____	_____	_____
_____	_____	_____	_____	
_____	_____	_____	_____	
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	
_____	_____	_____	_____	
_____	_____	_____	_____	_____

A

B

D

F

I

R

S

C

E

A

P

N

M

O

L

S

E

U

I

T

K

G

H

J

R

Y

D

A

E

I

B

M

O

P

Z

A