

Translating Visual Information into Tactile Information

<http://www.slideshare.net/CentralAccess/translating-visual-information-into-tactile-information-59973754>

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Central Access

- Central Washington University
- Produces Alternative Media
 - Edited Word Documents
 - HTML
 - Audio Files
 - Braille
 - Tactile Graphics
- Student Based Workforce



Quick Notes

- We require a simplified process due to
 - Volume of material being produced at a time
 - Student technicians (turn around time of jobs, flux of work, training process)
- Evolution to improve product
 - Student employee as a consultant
 - Feedback from users

What are tactile graphics?

- Starting with an image, translating the information to be felt not seen

FIGURE 2.0.1 Tangent line L touches a circle at point P .

FIGURE 2.0.2 Tangent line L to a graph at point P .

FIGURE 2.0.3 Slopes of secant lines approximate the slope m_{tan} of L .

FIGURE 2.0.4 Secant lines swing into the tangent line L as $h \rightarrow 0$.

review $(x + h)^n$ for $n = 2$ and 3
 review adding symbolic fractions
 review rationalization of numerators and denominators

116 CHAPTER 2 FUNCTIONS

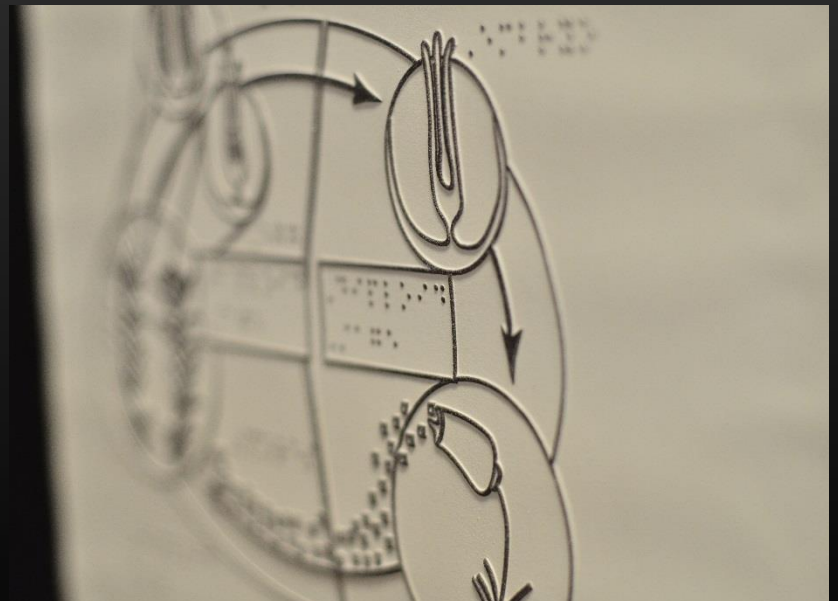


Braille labels: x , y , a , $a+h$, $f(a)$, $f(a+h)$, L , $P(a, f(a))$, $Q(a+h, f(a+h))$, m_{tan} , m_{sec} .

Equation (1):
$$m_{tan} = \lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{(a+h) - a} = \lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{h}$$

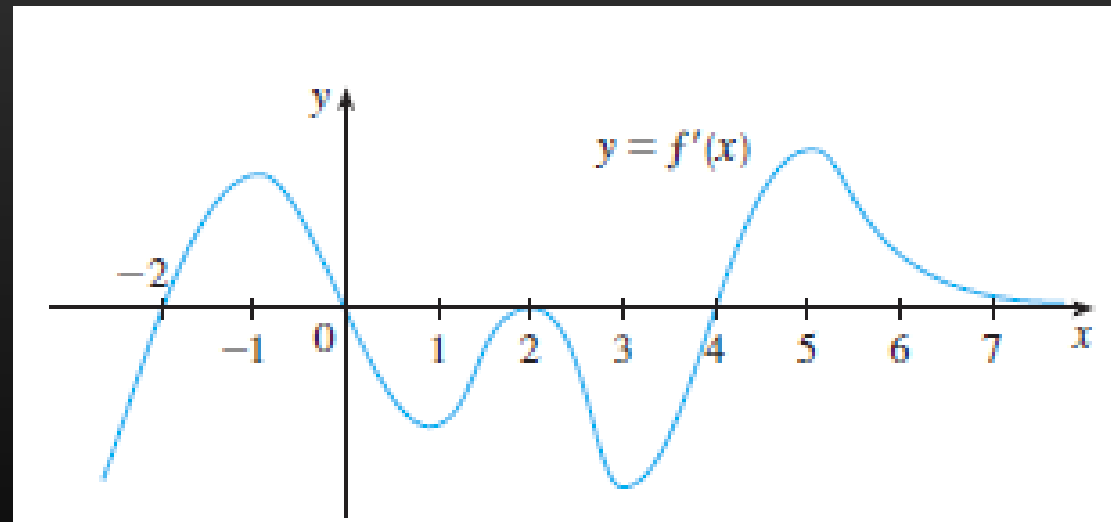
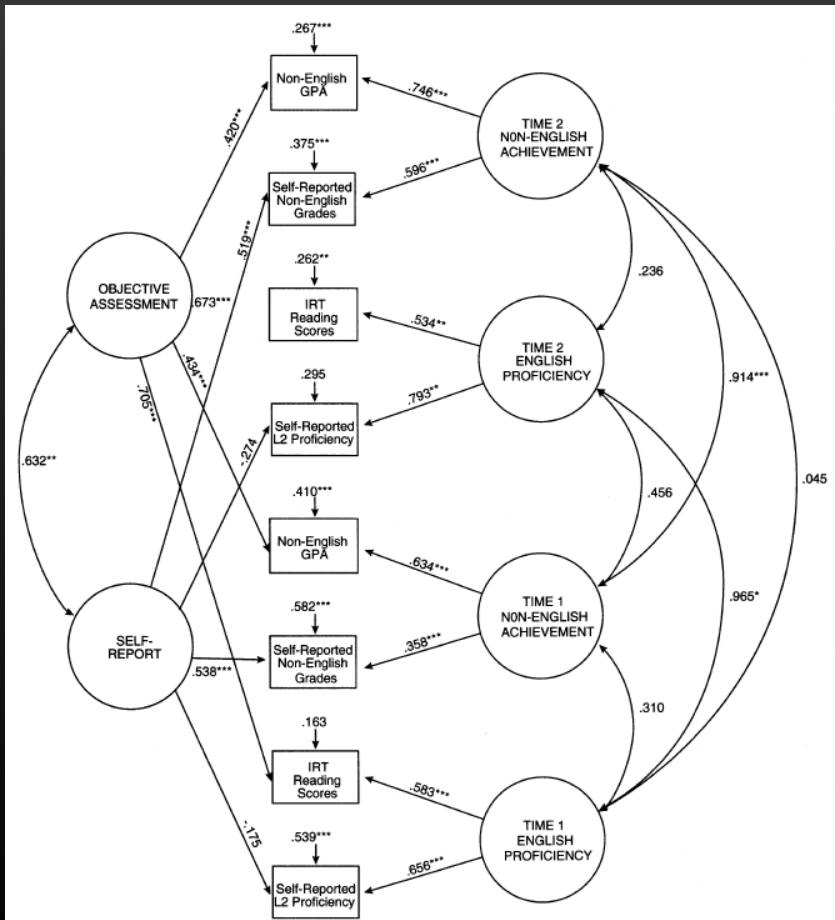
Equation (2):
$$m_{tan} = \lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{h}$$

Braille symbols: \dots



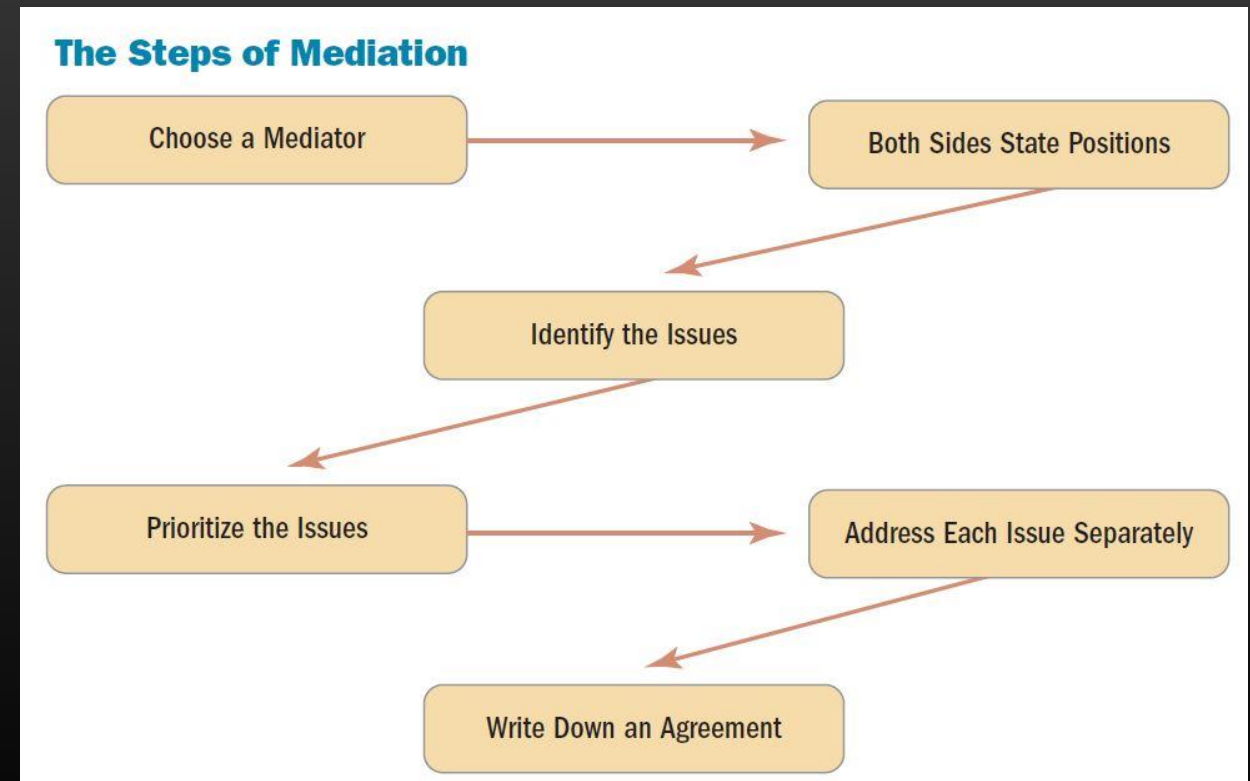
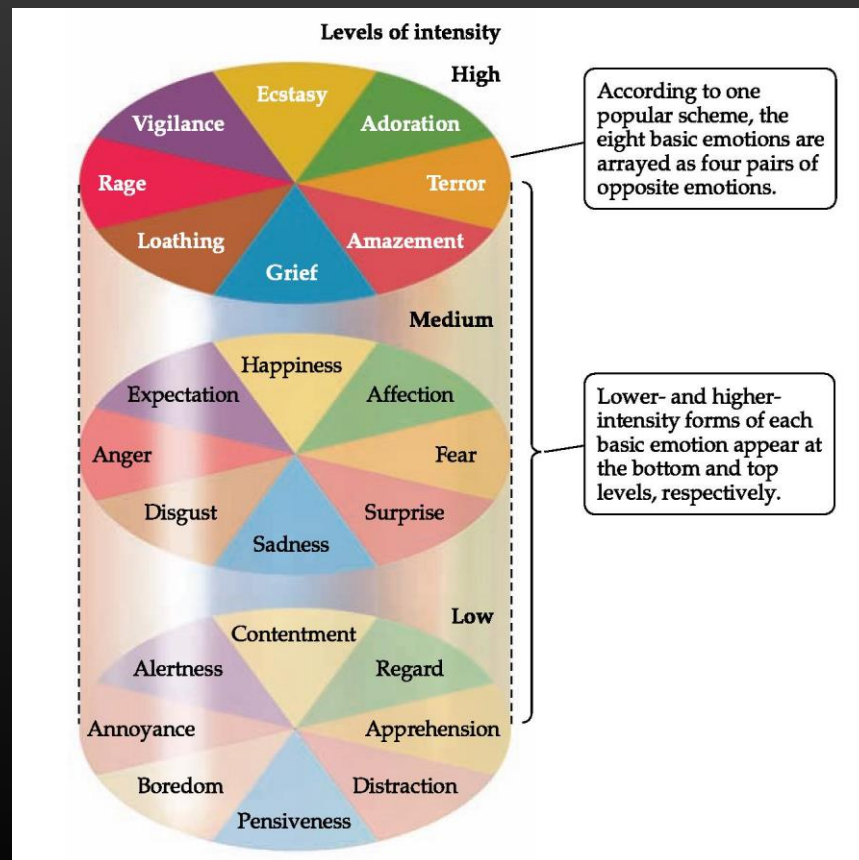
When are they helpful?

- When image descriptions become convoluted



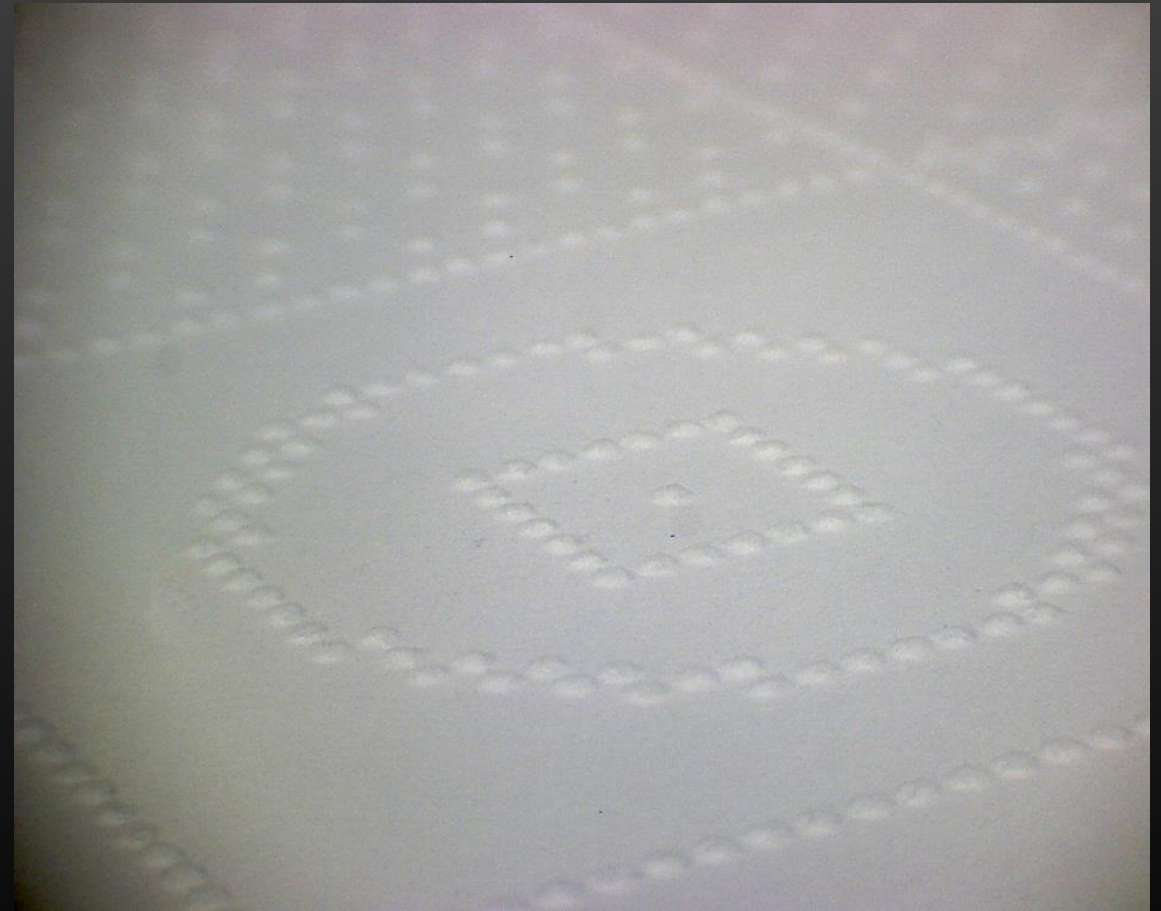
When are they not helpful?

- When images can be described with text alone



Methods of Production

- Vacuum-form copy from collage/tooling or embossed plus collage
- Embossed
- Microcapsule



Microcapsule:

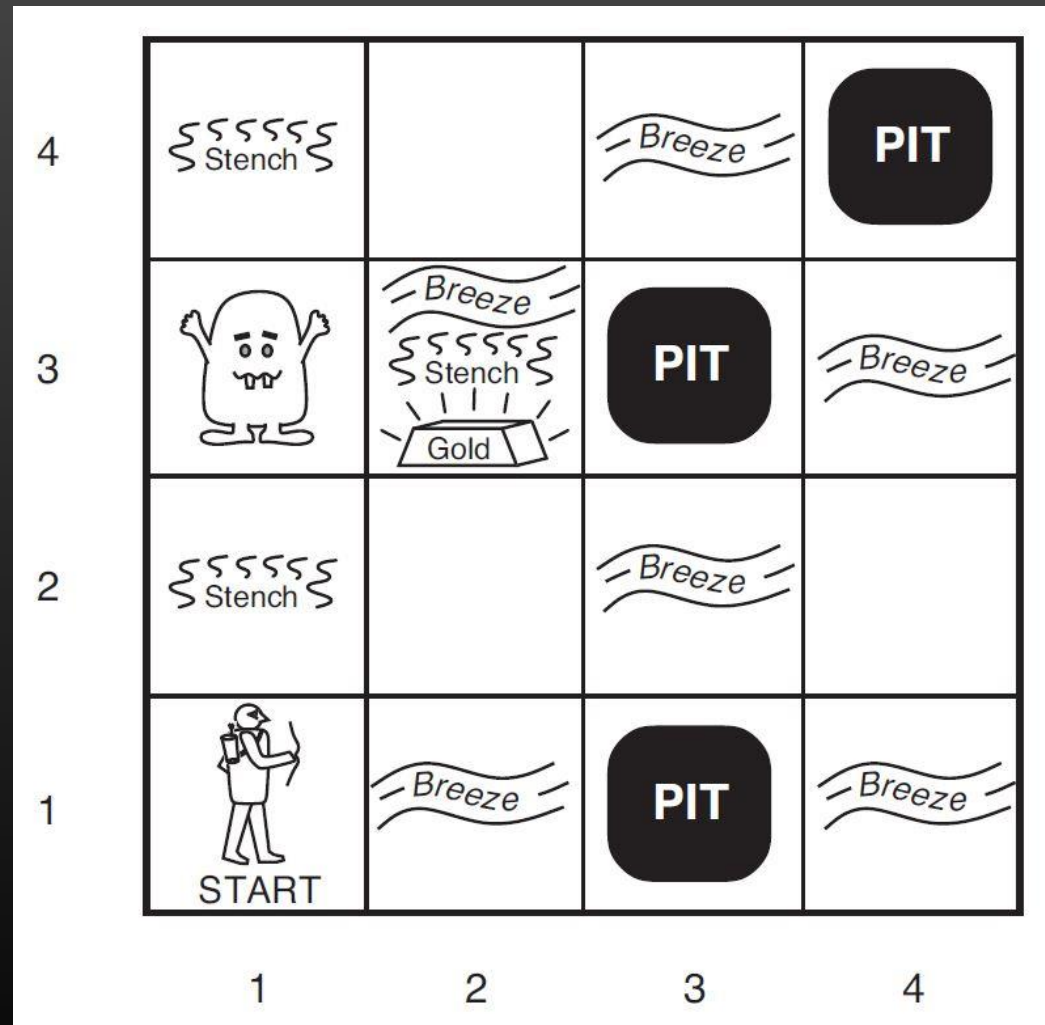
Reactive paper that causes ink to swell under heat



Basics

- Awareness of level/type of content
- Identify relevant information
- Strip down visual elements

What should be included, and what should be omitted?

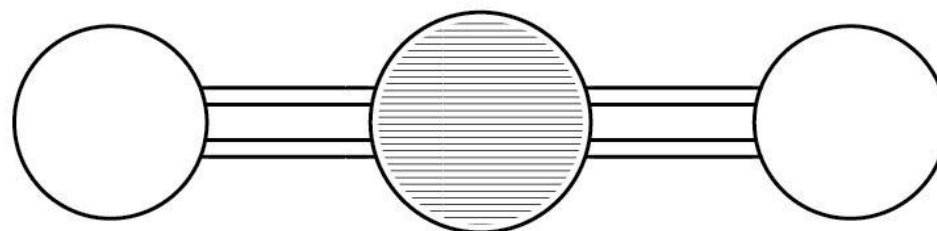


⠠	⠠⠠		⠠⠠⠠⠠	⠠⠠⠠
⠠⠠	⠠⠠⠠⠠⠠⠠	⠠⠠⠠⠠⠠⠠⠠	⠠⠠⠠	⠠⠠⠠⠠⠠
⠠⠠	⠠⠠		⠠⠠⠠⠠	
⠠	⠠⠠⠠⠠	⠠⠠⠠⠠⠠	⠠⠠⠠	⠠⠠⠠⠠⠠⠠
⠠	⠠⠠	⠠⠠	⠠⠠	

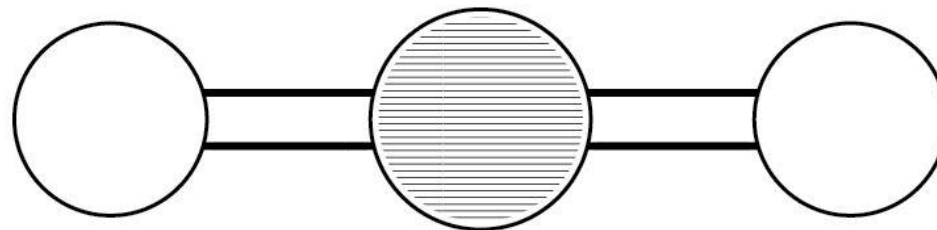
Image from textbook:

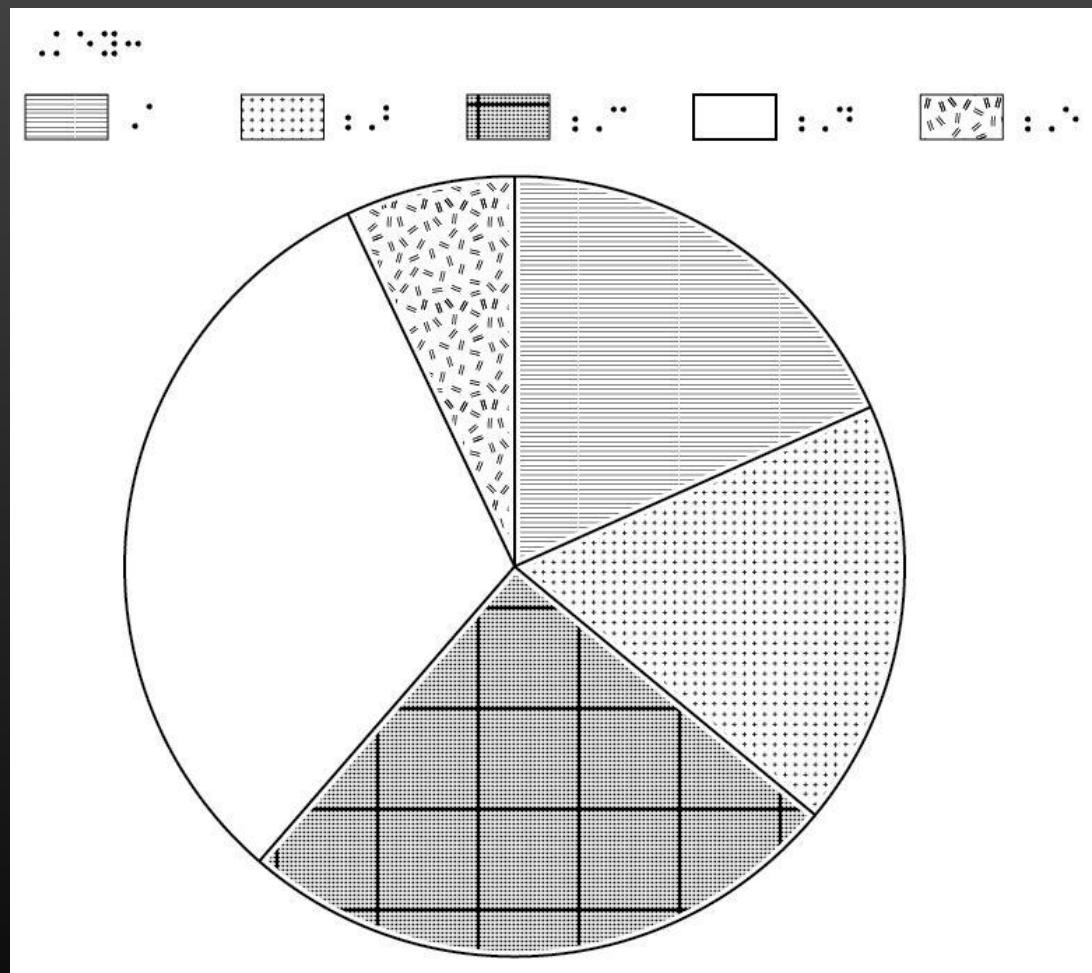
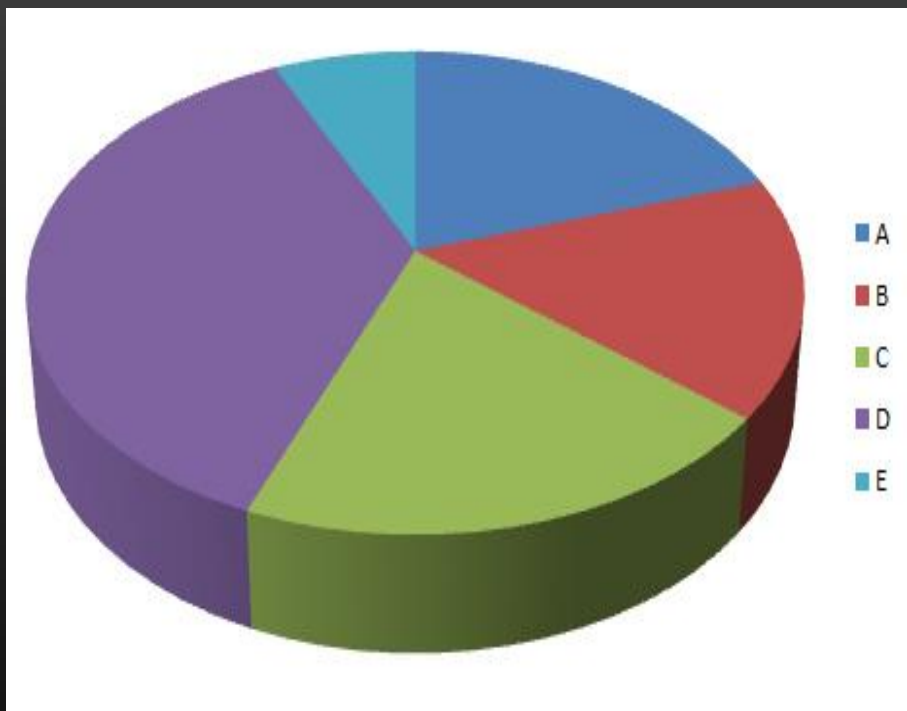


Graphic before QC:



Improved graphic:



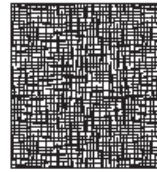


Technical Details

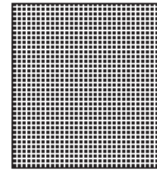
A “language” of common elements
for graphics

Textures

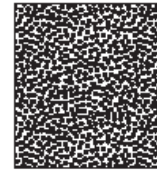
- Comparable to “colors”
- Used to differentiate objects
 - Just because the graphic uses different colors doesn't mean that textures are needed



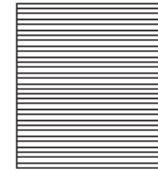
1



2



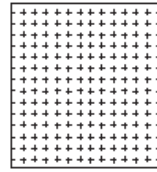
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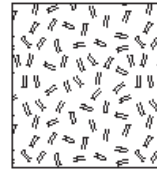
4



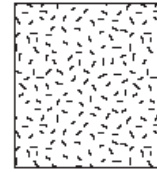
5



6



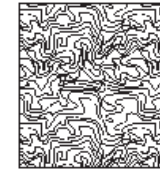
7



8



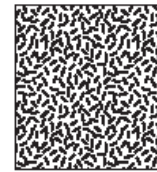
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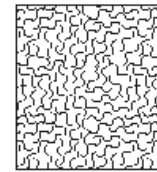
10



11

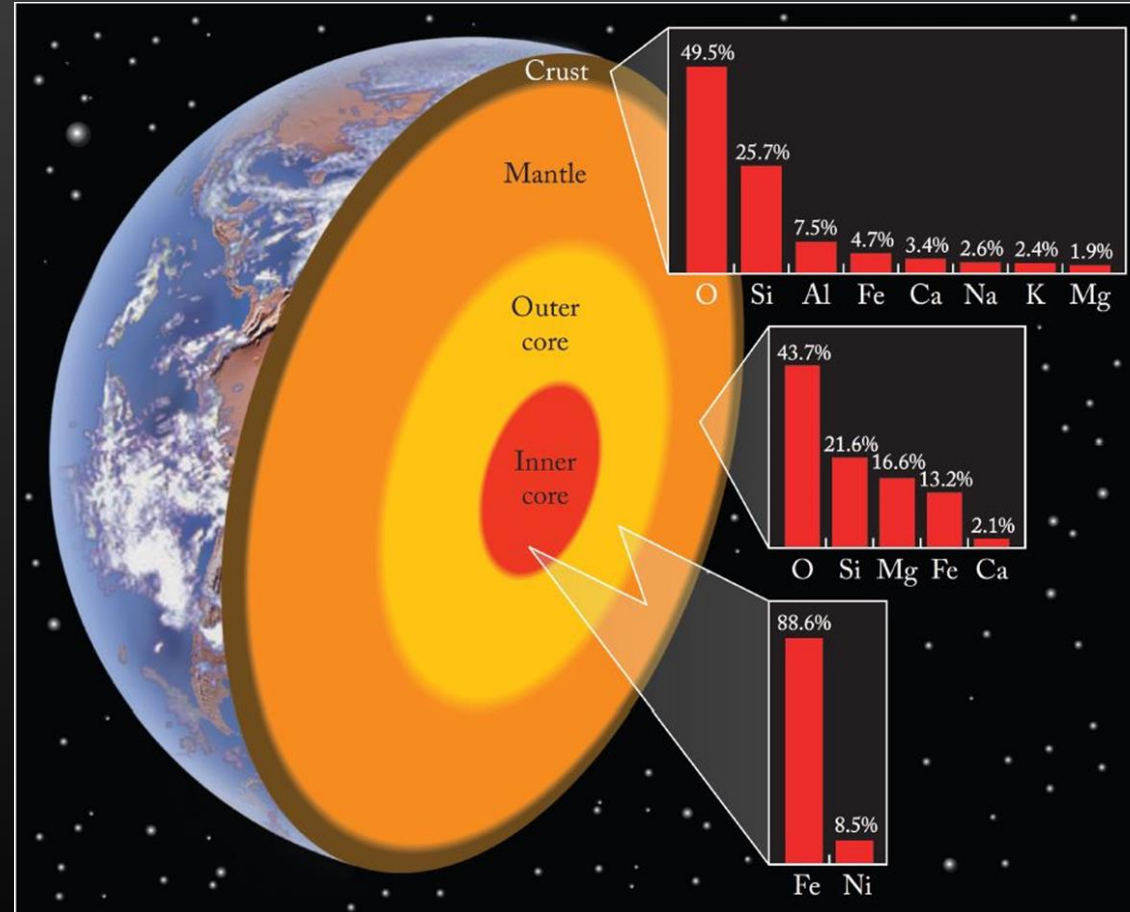


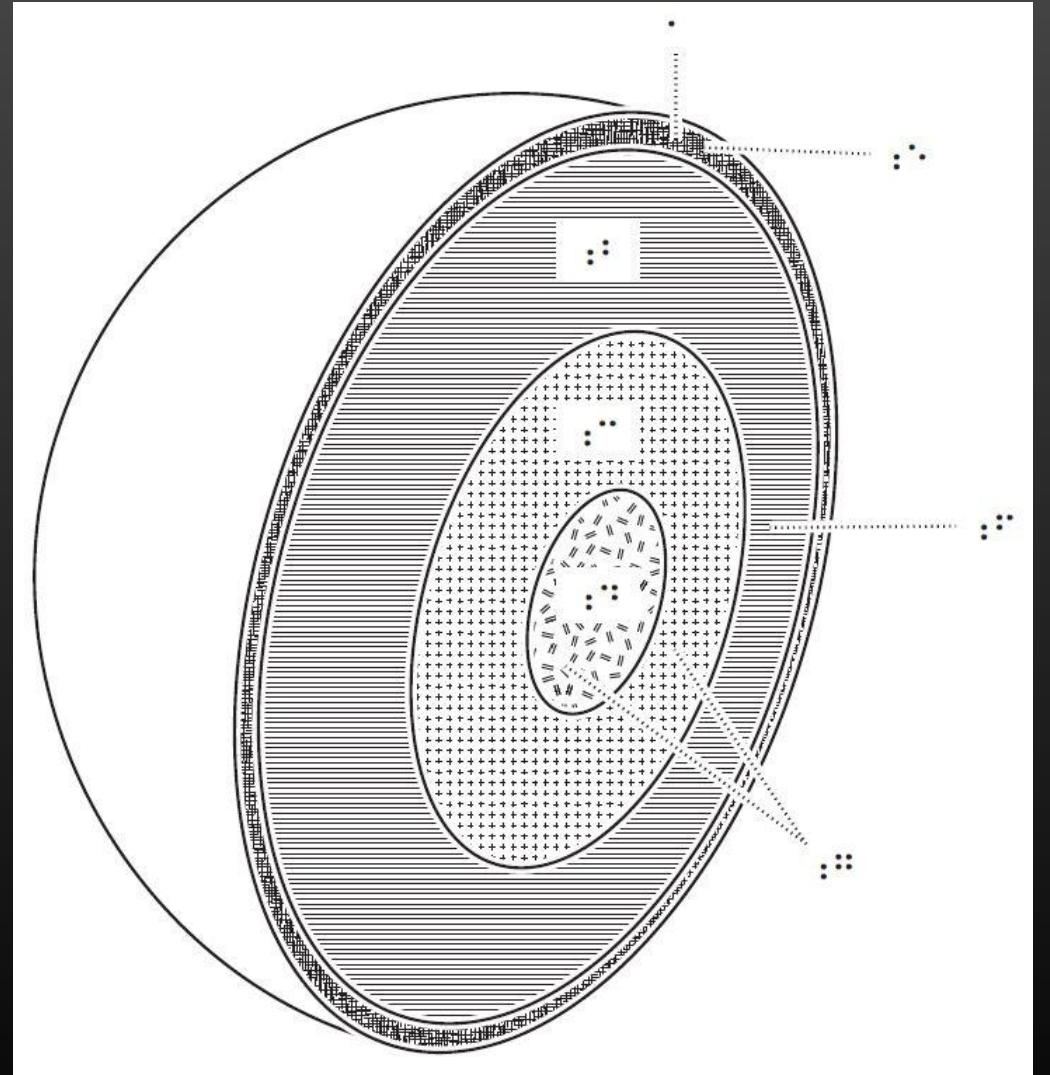
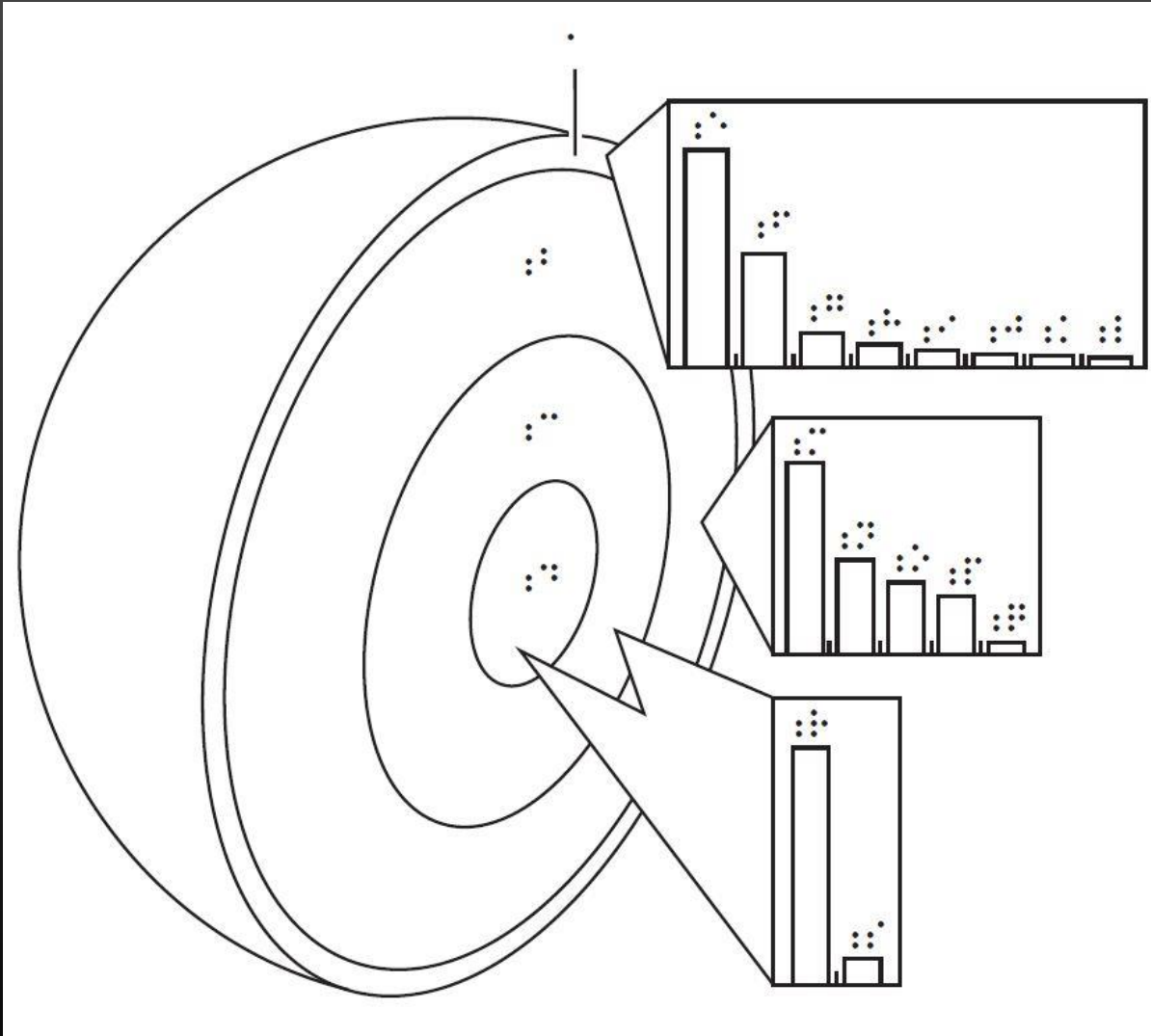
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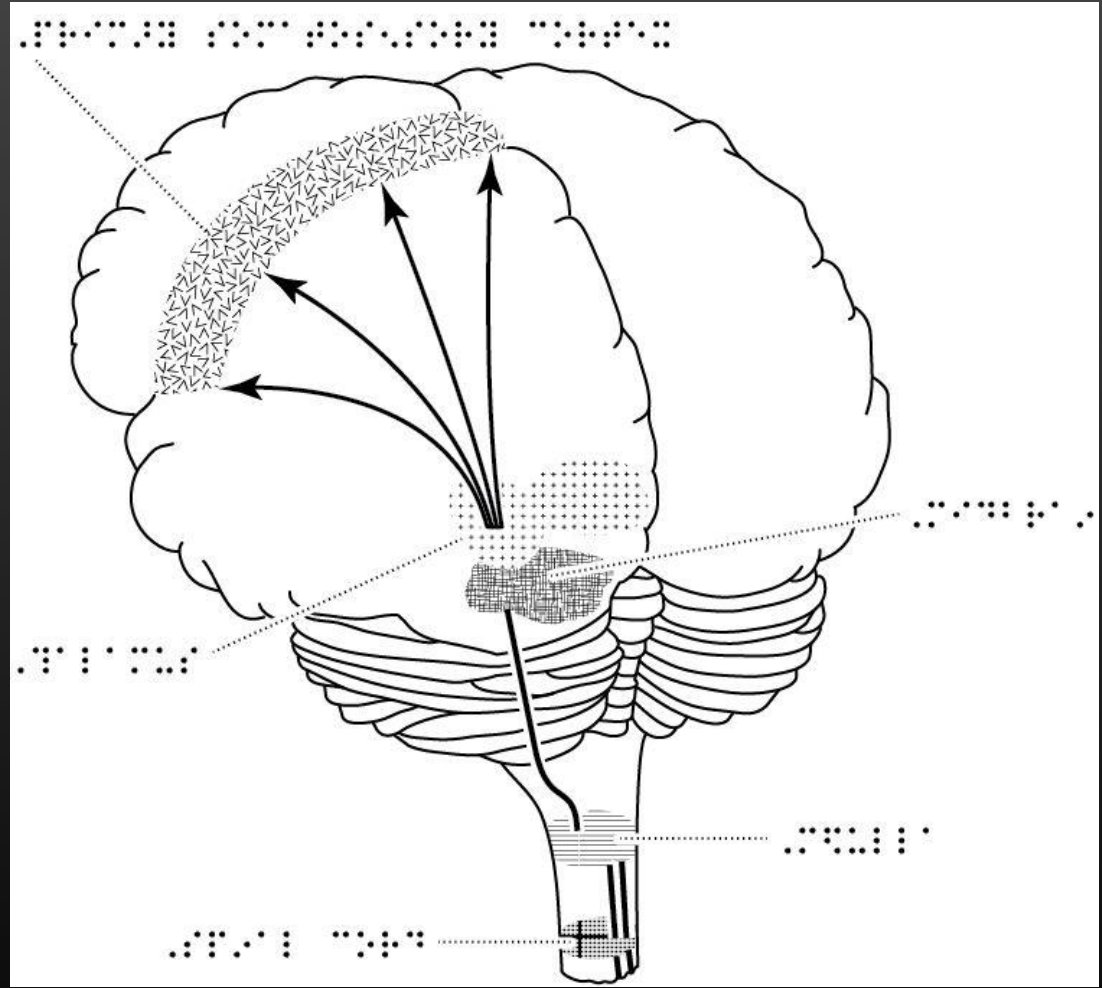
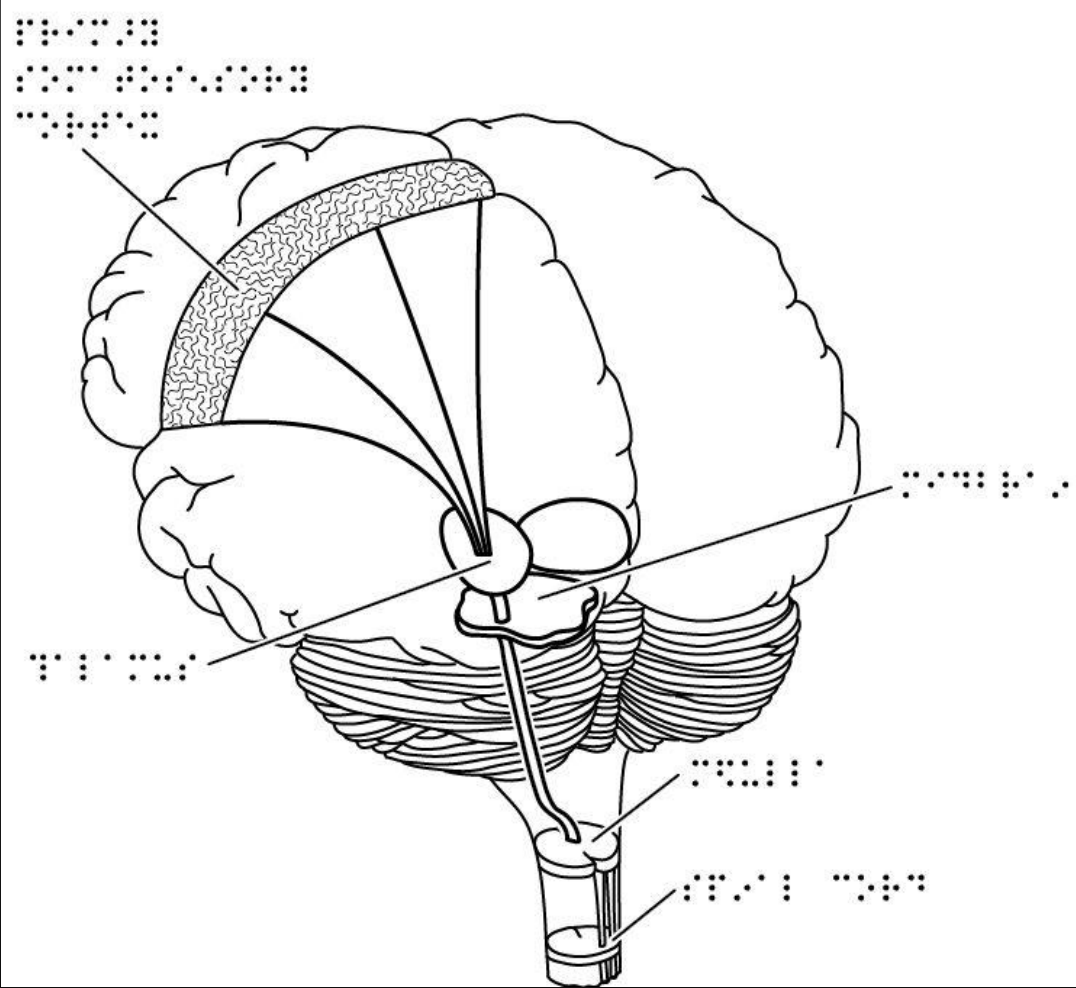


13

Textures are helpful to distinguish different parts of a graphic







Standardized Tools

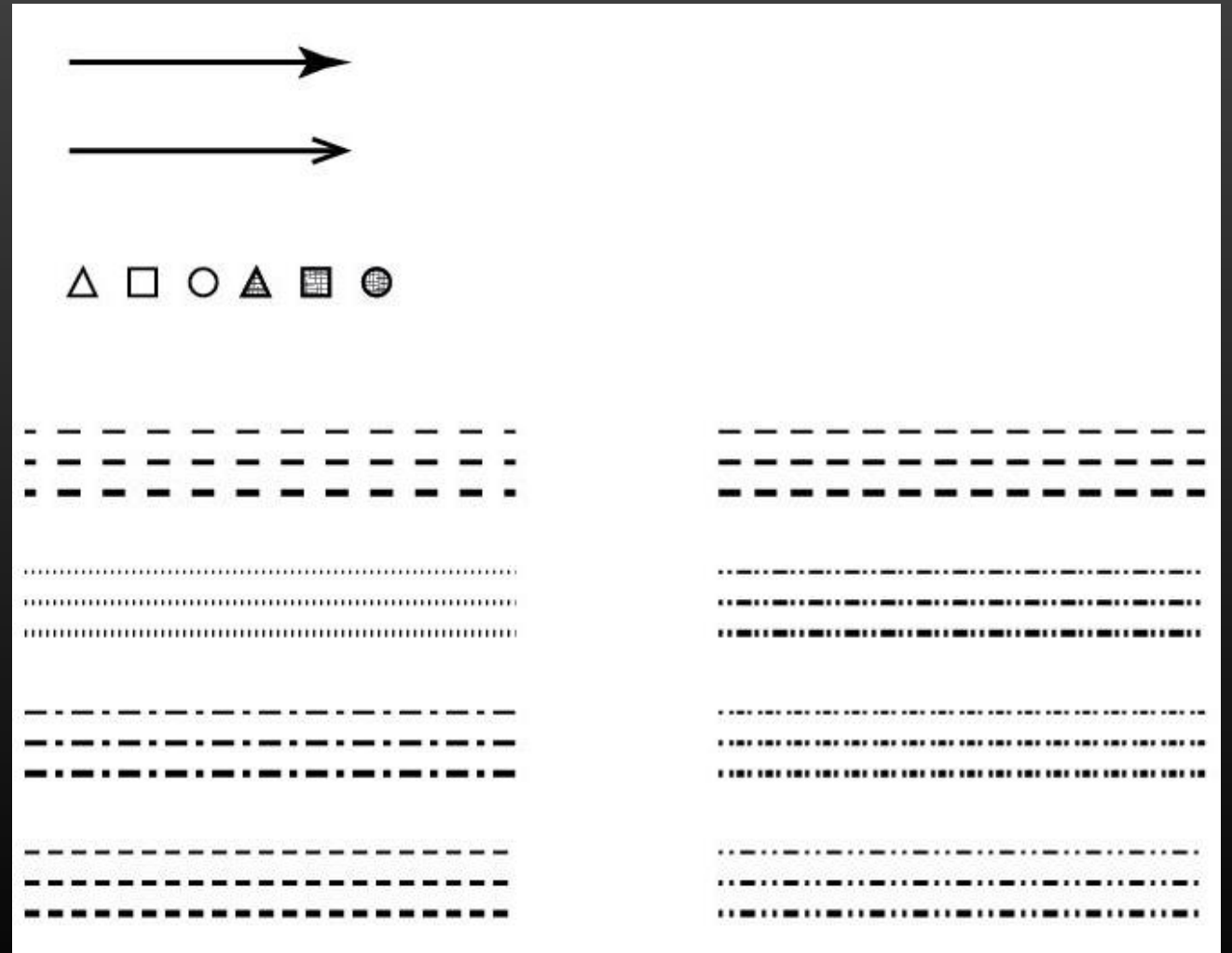
- Template
 - Common braille letters/numbers
 - Dots
 - Label line

The image shows a screenshot of a Braille editor interface. At the top, there are icons for a slash, a curly brace, and a set of six Braille dots. Below these icons are six small Braille symbols: a triangle, a square, a circle, a triangle, a square, and a circle. The main area is a large white rectangle with a cyan border, representing a template. To the left and right of this rectangle are columns of Braille characters. The left column contains numbers 0 through 16, each followed by its corresponding Braille representation. The right column contains letters A through Q, each followed by its corresponding Braille representation. The letters R, S, T, U, V, W, X, Y, and Z are not shown in the right column.

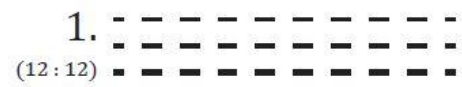
0	17	A	R	i
1	18	B	S	j
2	19	C	T	k
3	20	D	U	l
4	25	E	V	m
5	30	F	W	n
6	35	G	X	o
7	40	H	Y	p
8	45	I	Z	q
9	50	J	a	r
10	60	K	b	s
11	60	L	c	t
12	70	M	d	u
13	75	N	e	v
14	80	O	f	w
15	90	P	g	x
16	100	Q	h	y

Standardized Tools

- 2-4 line point
- Commonly used dashed lines
- Specific arrows



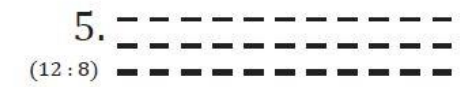
	1	2	3	4	5	6	7	8
1		✓	✓	✓	✗	✓	✓	✓
2			✓	✓	✓	✓	✓	✓
3				✗	✓	✓	✓	✓
4					✗	✗	✓	✓
5						✓	✓	✓
6							✗	✗
7								✗
8								

1. 
 (12:12)

2. 
 (1:3)

3. 
 (12:5:4:5)

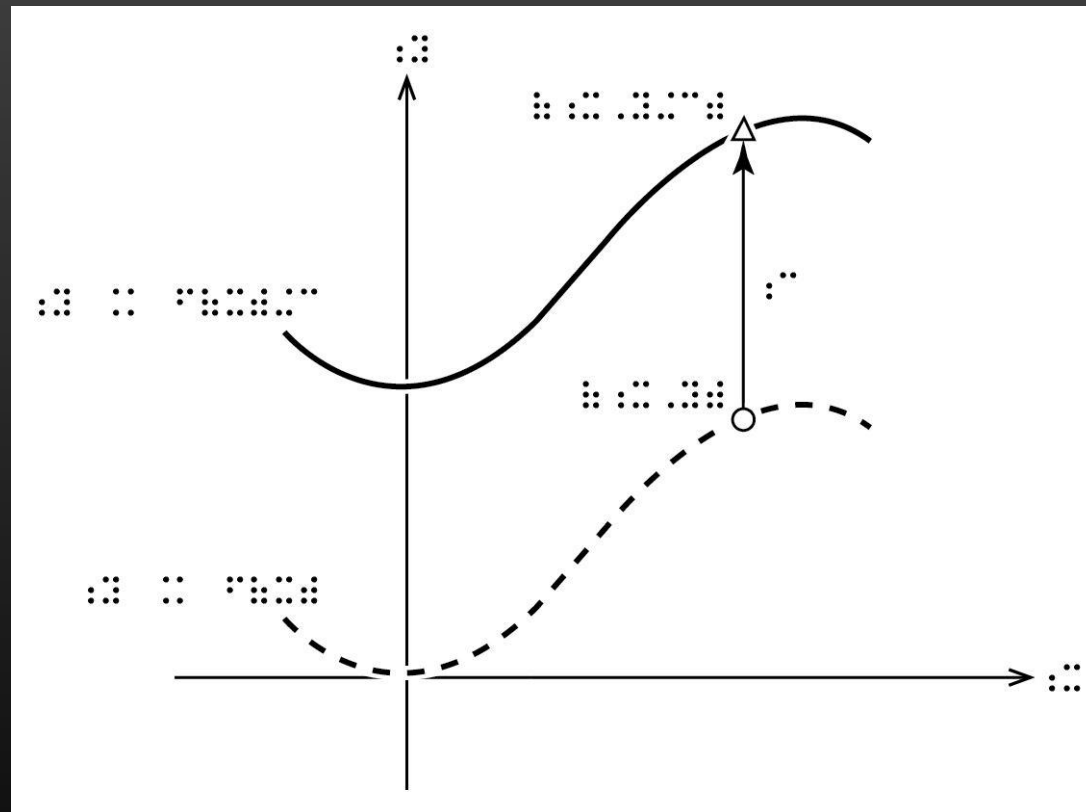
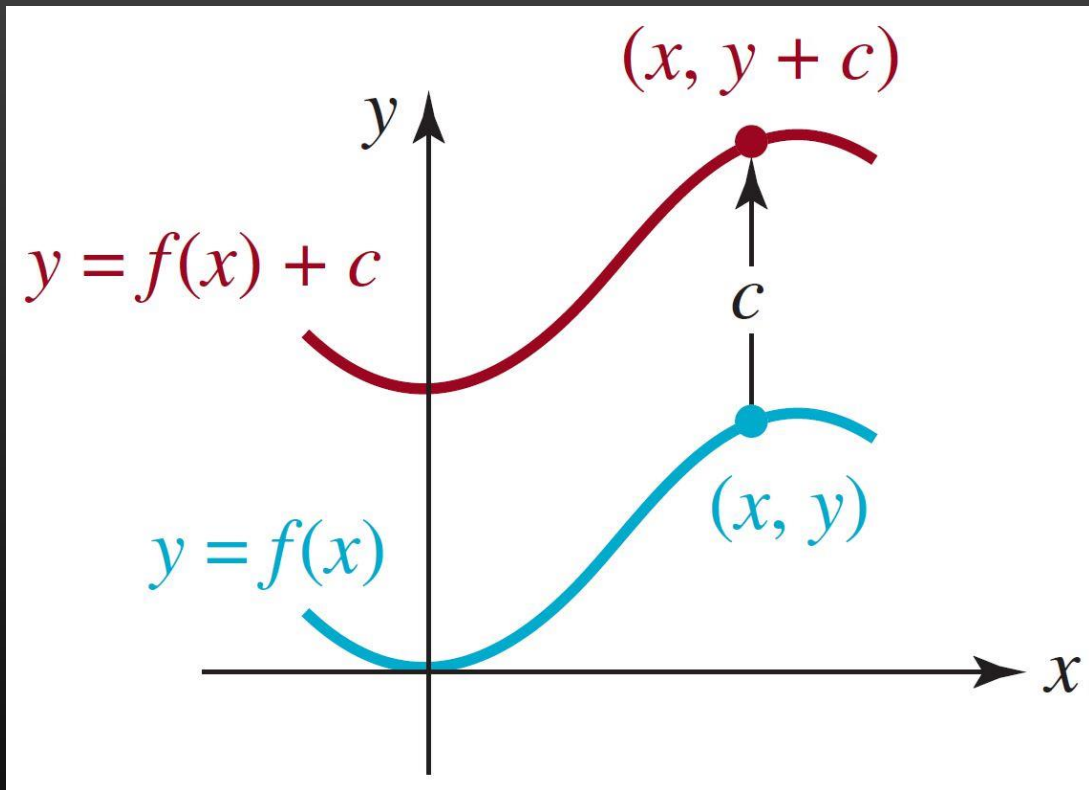
4. 
 (8:5)

5. 
 (12:8)

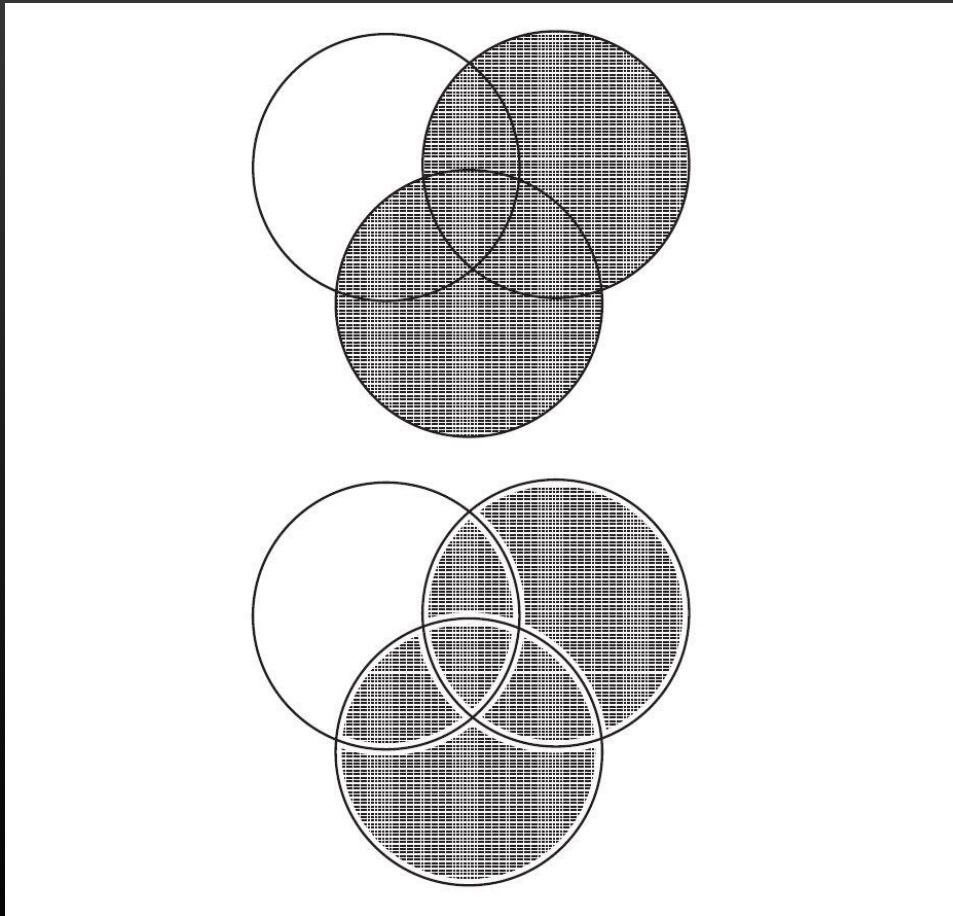
6. 
 (2:3:2:3:8:2)

7. 
 (2:4:2)

8. 
 (2:4:2:4:8:4)



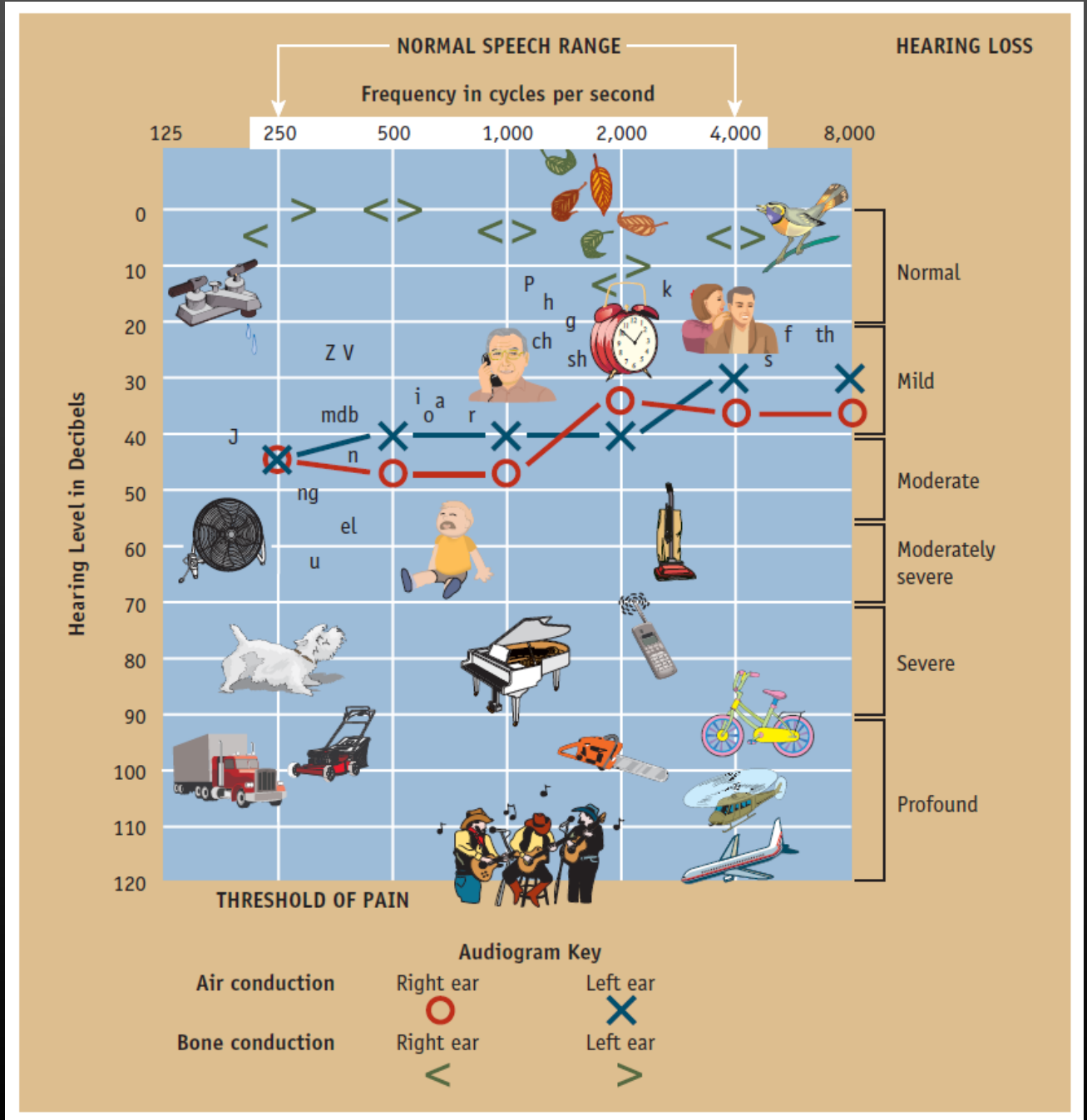
White Backing Lines!



Hugely important
so swelled ink will
not bleed together

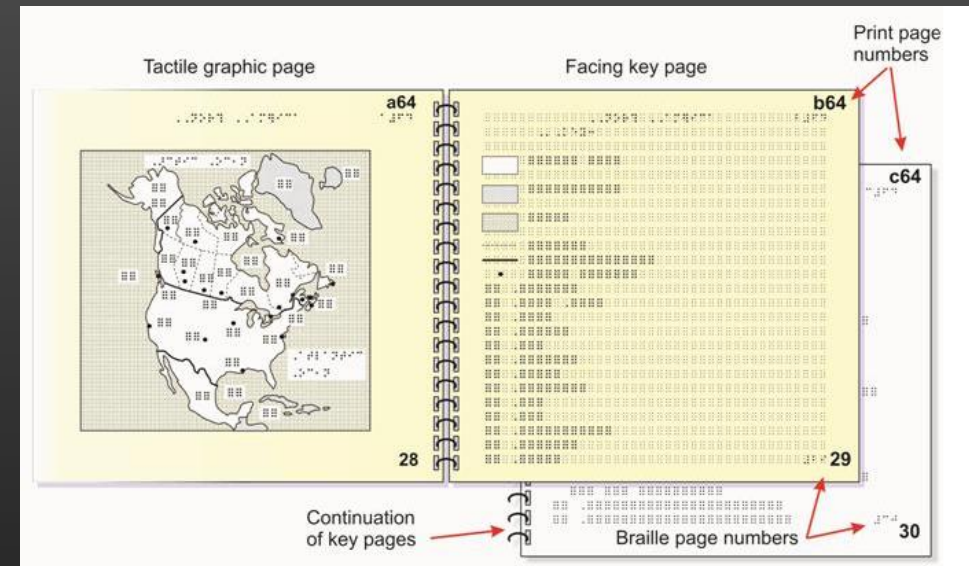
Combining descriptions with tactiles

Transcribers notes are useful in graphics to explain orientation

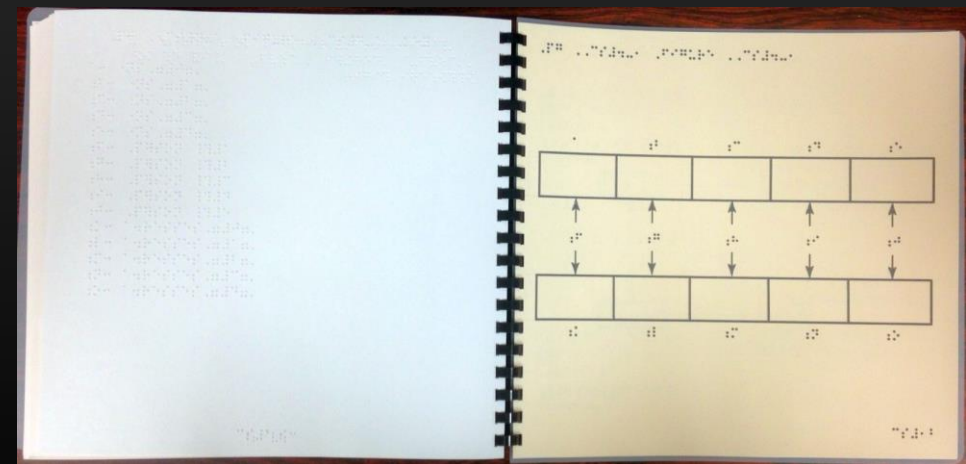


Using Keys

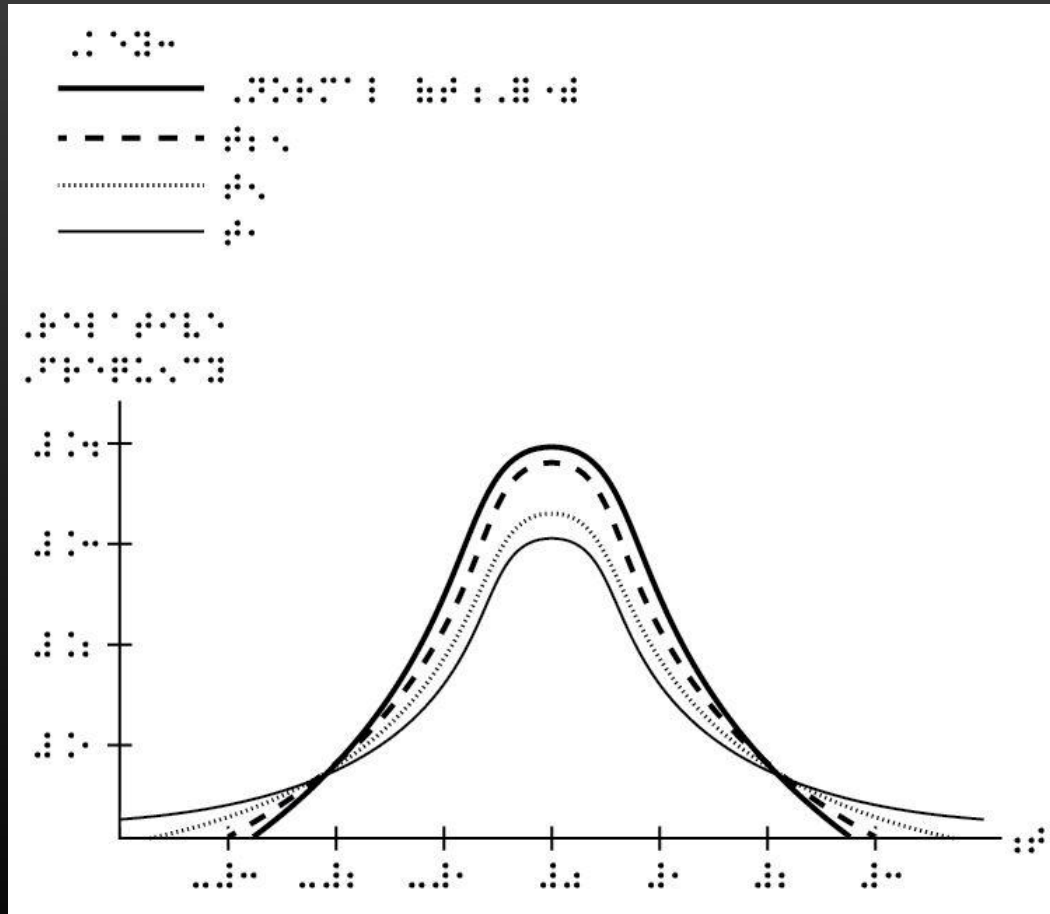
- Braille takes up a lot of space, it's often necessary to include a text key with the graphic
- We are still in the process of adapting the BANA standard for key and graphic orientation



Source: <http://www.brailleauthority.org/tg/web-manual/index.html>, unit 5



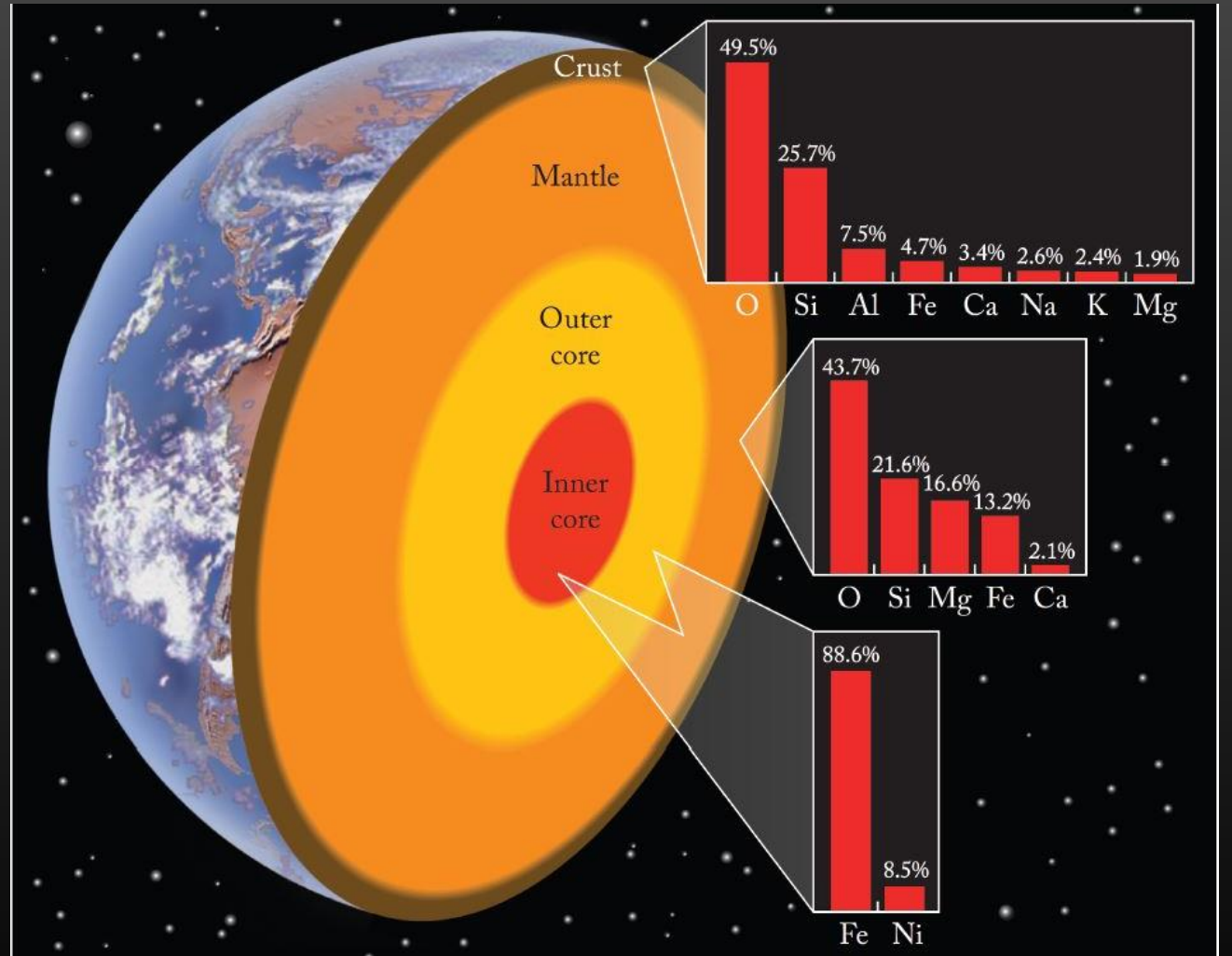
In-Graphic Keys



- Always located at the top of the graphic, under the title
- Labeled “Key:”

Representing information as a table

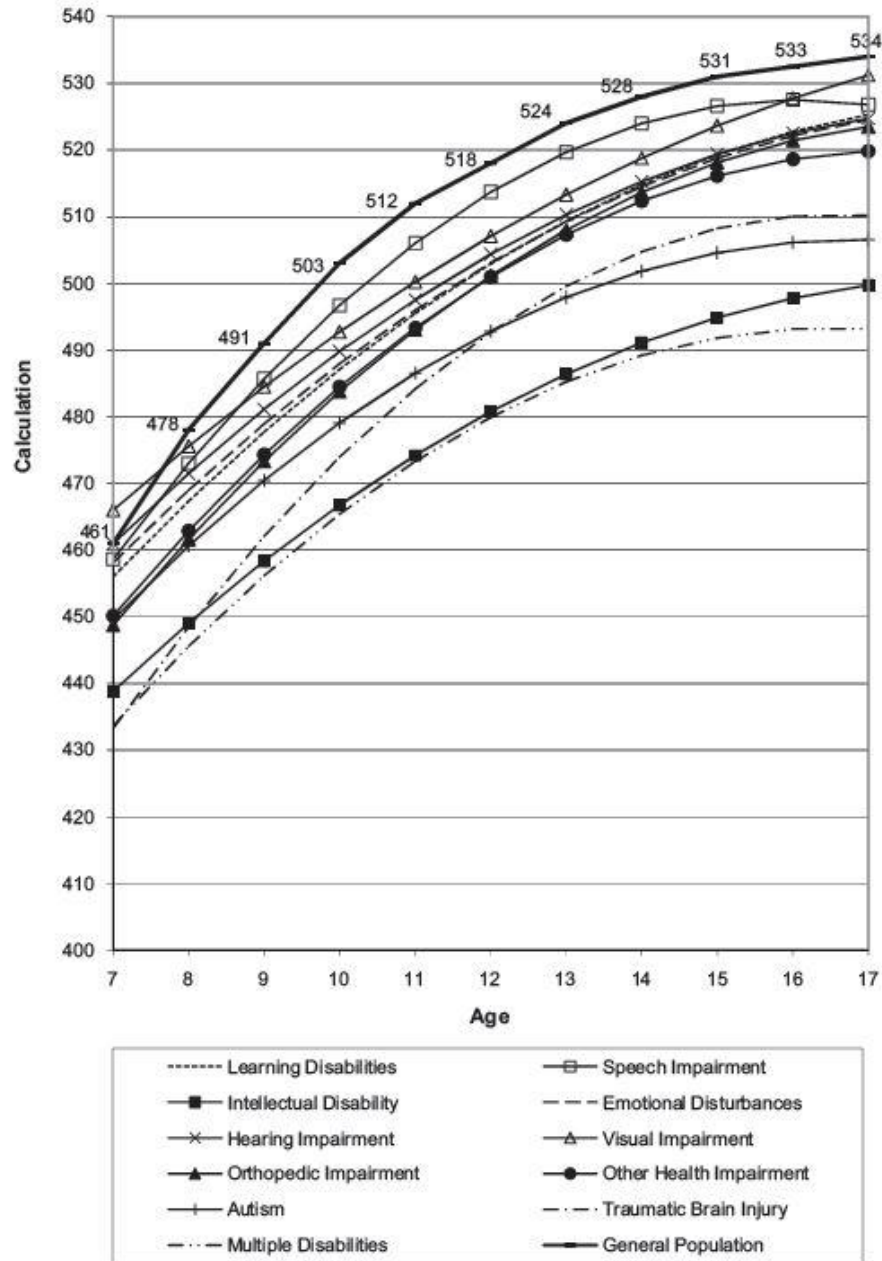
- These graph values can be transcribed into tables, and included on a key



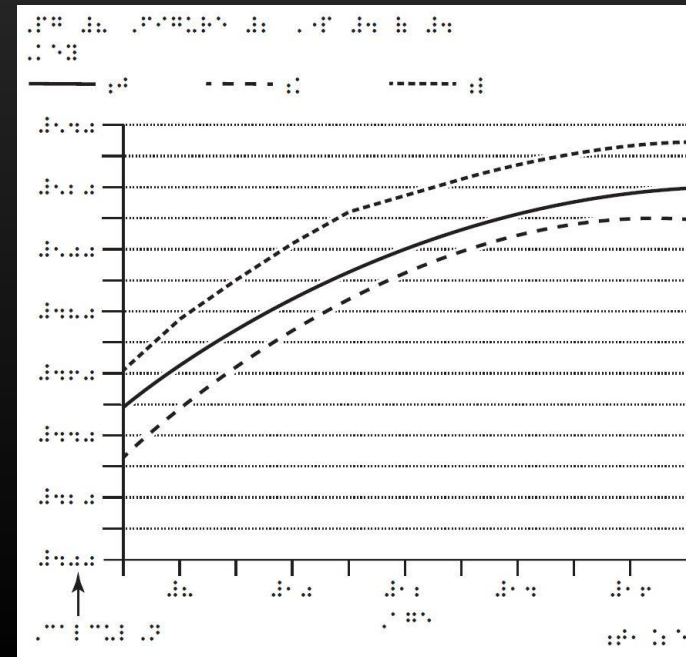
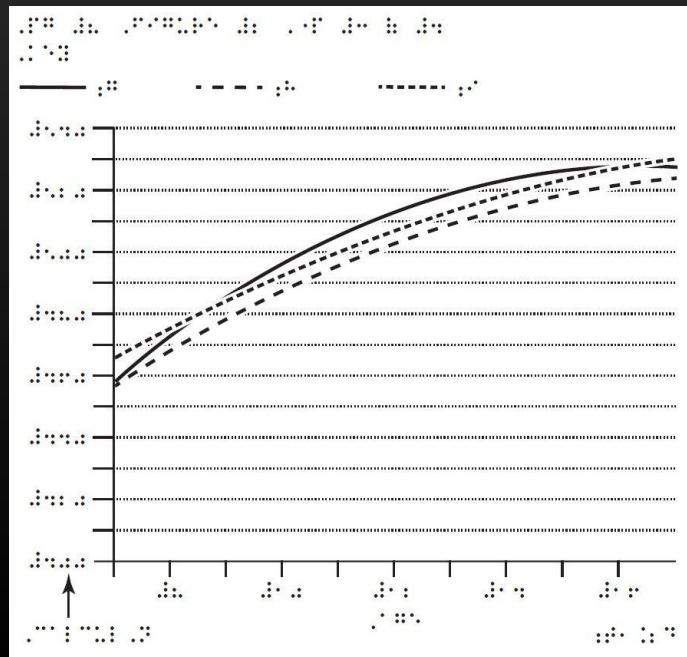
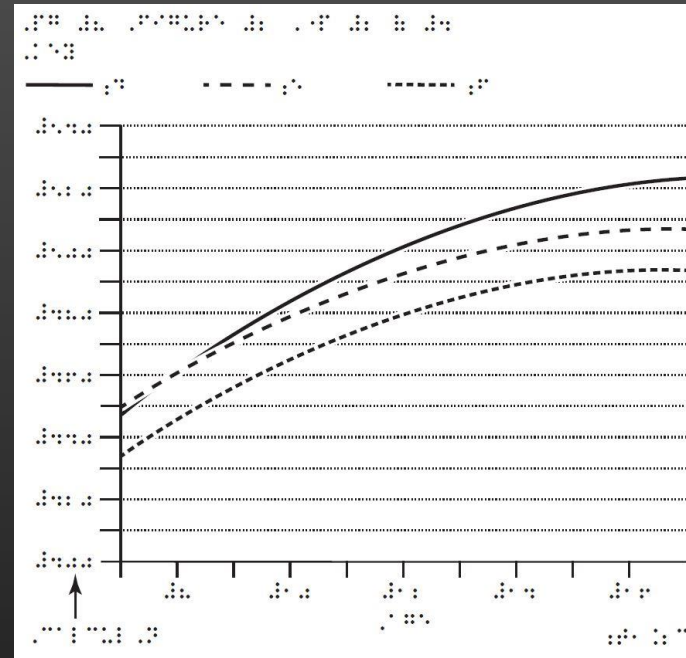
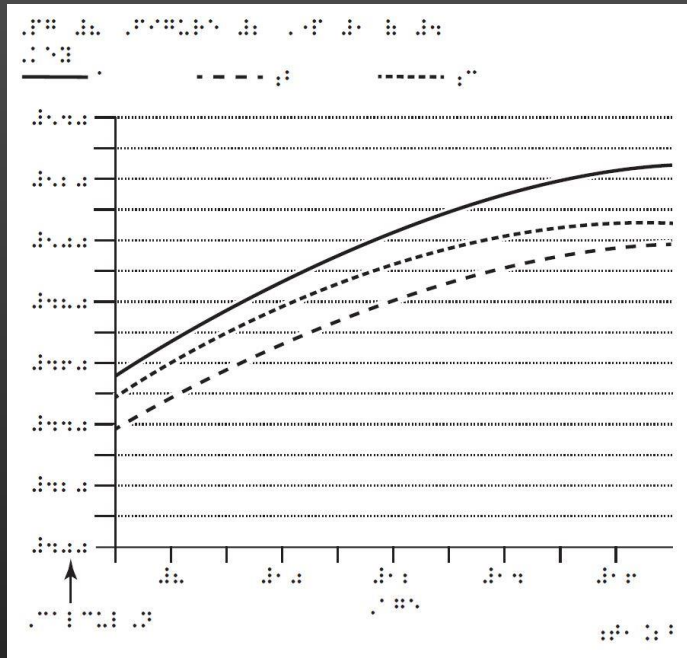
Splitting graphics into multiple parts

Tactile senses are different than sight, an eighth of an inch is as small as fingers can distinguish.

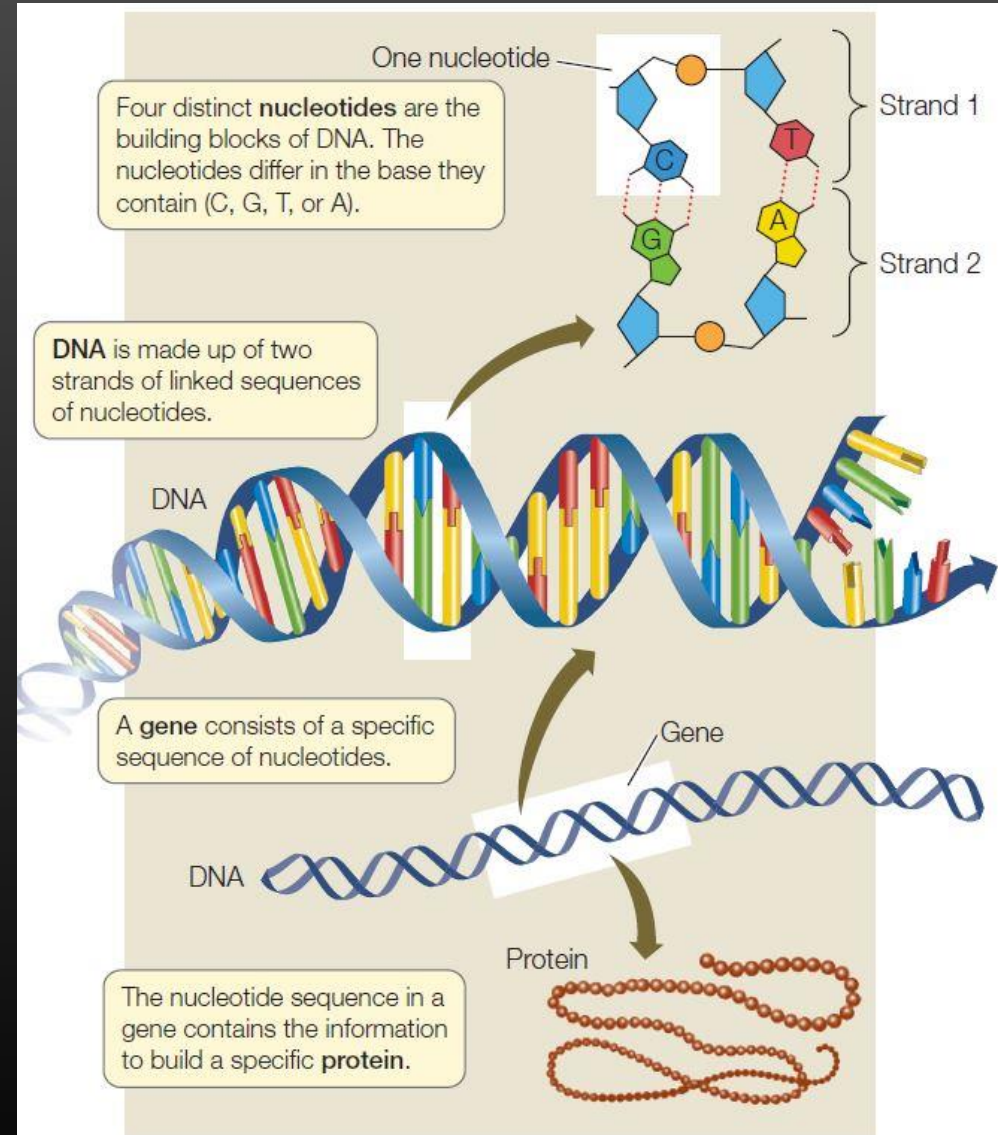
Sometimes you can't fit all the necessary information onto one swell sheet.



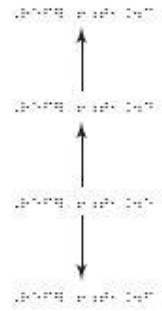
Where do you even start?



It's helpful have the first graphic of a series outline the overall layout of the graphic, and include corresponding page number references



UNTERSCHEIDEN SIE DIE BEIDEN VERFAHREN!



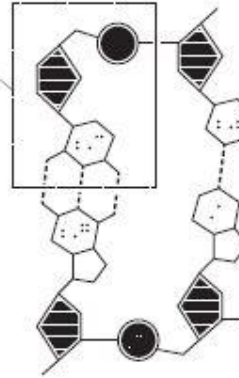
1869-1871

1

UNTERSCHEIDEN SIE DIE BEIDEN VERFAHREN!

UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN! UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN!

UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN!



1953-1954

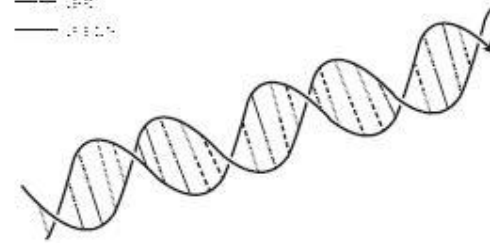
2

UNTERSCHEIDEN SIE DIE BEIDEN VERFAHREN!

UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN! UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN!

UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN!

- UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN!
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- UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN!

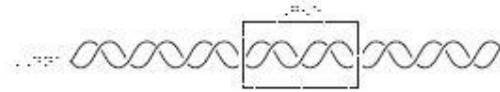


1953-1954

3

UNTERSCHEIDEN SIE DIE BEIDEN VERFAHREN!

UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN! UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN!

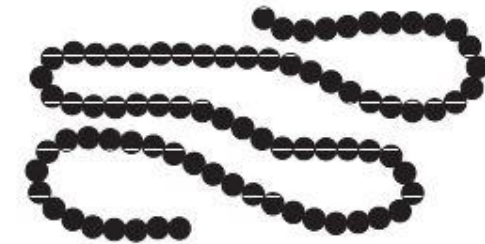


1869-1871

4

UNTERSCHEIDEN SIE DIE BEIDEN VERFAHREN!

UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN! UNTERSCHIEDEN SIE DIE BEIDEN VERFAHREN!

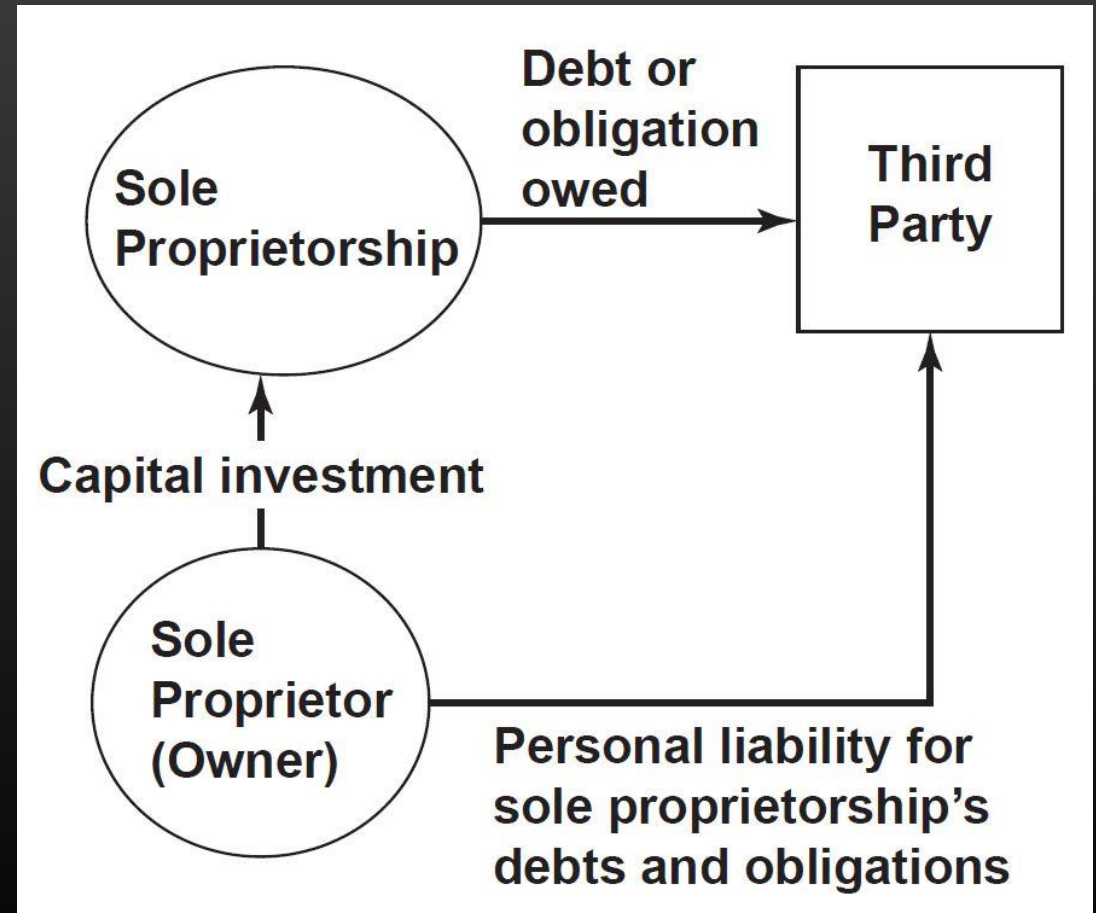


1869-1871

5

Alternative option for low vision

- Variety of font options
- Does not need to know braille

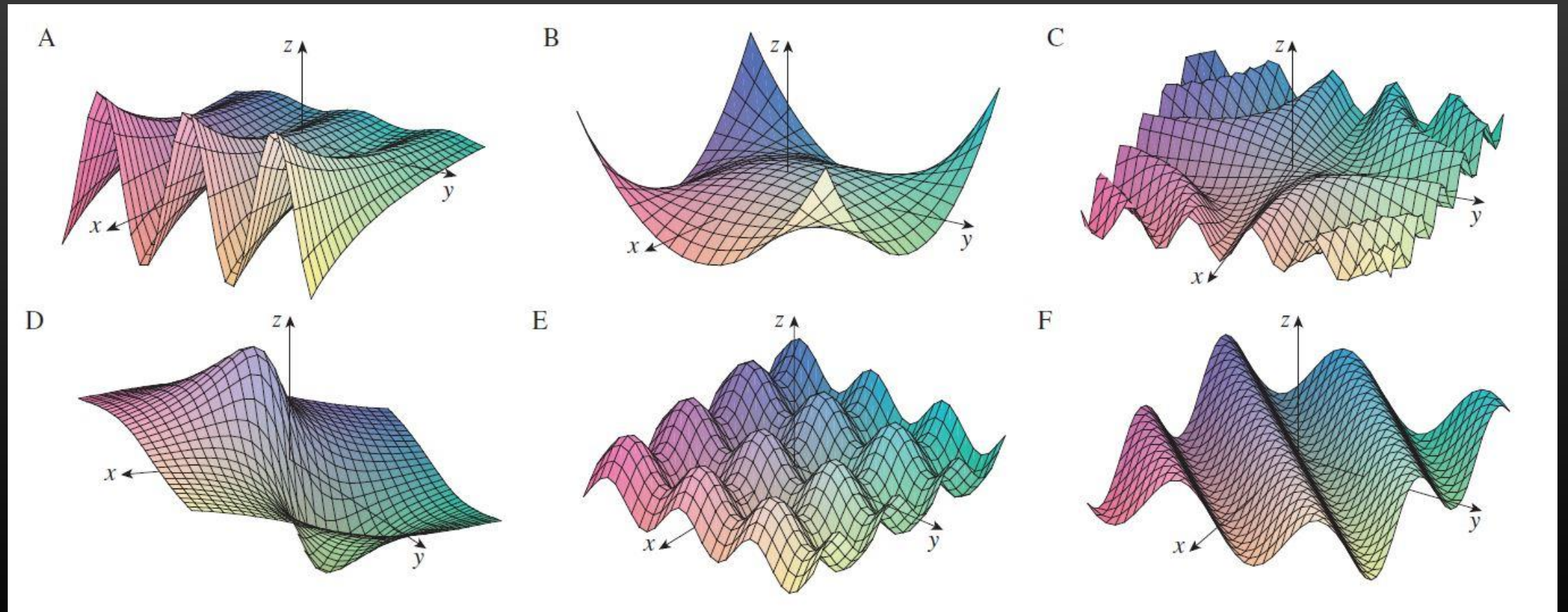


Summary

- Tactile graphics are a method for translating visual information into tactile information.
- Start by identifying relevant information and simplifying visual elements.
- Convey information using consistent elements such as textures and specific line weights and dashes.
- Consider using keys or multiple parts if there is too much information to fit on one swell sheet.
- Large print is an option for low vision.

Limitations of 2.5d tactiles when dealing with 3d images

- New 3d printing technology is an exciting option



Sample tactile graphics are
available in the front with
our contact information

CentralAccess@CWU.edu