Tactile and Advanced Computer Graphics Module 2

Interpreting for Tactile Graphic Design and Production
# Tactile and Advanced Computer Graphics Module 2

## Interpreting for Tactile Graphic Design and Production

### Summary

| Goal(s): Determine when a tactile graphic is required to supplement learning material, and how to create an accurate and meaningful tactile design within the foundations of context, audience, content, and materials. |
| SMART Objectives: Specific, Measurable, Achievable, Realistic, and Time-sensitive |
| By the end of this module, students should be able to: |
| GD2.1: Determine the need for a tactile graphic within context. |
| GD2.2: Comprehend basic principles behind tactile graphic design. |
| GD2.3: Plan the layout of a page with necessary components, and reduce common images to meaningful tactile graphics. |
| GD2.4: Identify the uses of quality control and methods by which to implement them. |

| Instructor(s): |
| Braille Instructor |
| Tactile Graphics Instructor |

| Delivery Method(s): |
| Lecture |
| Experiential Activities |
| Video Presentation |

| Length: |
| Length: 7.5 hours |
| Four Topics |

| Any Applicable Business and/or Soft Skills? |

| Corresponding LOC Lesson # |

**Take Away Message(s):** Careful tactile graphic design is critical to the learning process of a braille reader. Transcribers-in-training will explore the meanings of context and content as a way of interpreting print for tactile planning. Transcribers-in-training will learn to determine if a graphic is needed, edit for tactile production, and format the layout of a tactile graphic page. Transcribers-in-training will also learn the value of proofreading tactile graphics after creation.
Title of Module: *Interpreting for Tactile Graphic Design and Production*

The intent of this module is to provide a solid grounding in reviewing print images and planning tactile graphics. Even before a tactile graphic is created, a great deal of consideration must be applied to the design. Making good practice of organizing tactile graphics before production will ensure the creation of accurate, meaningful, and legible tactiles throughout the course of your career.

**Agenda – topics to be covered in the module and length of each item**

<table>
<thead>
<tr>
<th>Topic: Tactile Graphics</th>
<th>Time Allotted: 7.5 hours</th>
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<tr>
<td>A. Considerations for a Tactile Graphic</td>
<td>(1.5 hours)</td>
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<tr>
<td>B. Principles of Tactile Graphic Design</td>
<td>(2 hours)</td>
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<td>C. Basics in Practice</td>
<td>(2.5 hours)</td>
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<td>D. Proofreading Methods</td>
<td>(1.5 hours)</td>
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**Materials & Supplies – items needed in order to carry out the agenda and classroom activities**

1. Tactile samples
2. Pens, pencils, erasers, scissors
3. Braille paper (100#, 11.5 x 11)
4. Carbon paper
5. APH Tactile Graphics Kits (point equipment, line equipment, texture [pattern] plates, rubber pad, ruler, slate and stylus, braille eraser)
6. Strips and sheets of plastic, cardstock, cloth, Manila strips and plastic strips
7. Color code labels for layering
8. String in different varieties and grades (candlewicks, yarn, twill, kite string, etc.)
9. Elmer’s glue, glue pen, glue tray
10. Glitter puff paint
11. Grid tape
12. Thermoform samples
13. Thermoform paper (Brailon)
14. Thermoform machine
15. *BANA Guidelines and Standards for Tactile Graphics* readily available for each student
16. Handouts: Decision Tree (2.A.1), Special-Purpose Maps (2.A.2), Dolphin Moves (2.A.3), Food Pyramid (2.A.4), Texas (2.A.5) The Good Tactile Graphic, Creating the Good Tactile Graphic (2.B.1), Garden (2.C.1), Geometry Figure (2.C.2), Figure 13-2 (2.C.3), and Figure 7-9 (2.C.4), Proofing Tactile Graphics Checklist (2.D.1)
17. APH Videos: The Good Tactile Graphic (2.B.2), Creating the Good Tactile Graphic (2.B.3)

**NOTE:** Most of the collage items on the materials list can be found in your local arts and crafts, hardware, office supply, or even drug store.

**Classroom Preparation** – *steps to follow when setting up the learning environment*

1. Set up television and APH videos.
2. Set up workspace for hands-on training and individual exploration.
3. Set up thermoform machine for reproduction.
A. Considerations for a Tactile Graphic

Objective GD2.1: Determine the need for a tactile graphic within context.

**CONTENT PRESENTATION AND LEARNER PARTICIPATION**

Review Unit 1 of the *BANA Guidelines and Standards for Tactile Graphics* and the introduction to Section II of the *APH Tactile Graphics Kit Guidebook*, as these texts will sufficiently inform the instructor of the content of this module. Make copies of the handouts that follow the lesson for distribution.

The following are potential introductory remarks as well as relevant context that may be useful for the instructor:

As you read in Graphic Design Module 1, a graphic is an indispensable tool to a reader with a visual impairment. You also learned that tactile graphics are not simply embossed print images, and a tactile graphic will never provide as much information or be as easily discerned as something viewed with the eyes. A graphic must add value to the learning experience, and, because of this, each one should be thoughtfully and carefully designed to clearly convey all information needed by a braille reader.

At a glance, the first concern for creating a tactile graphic seems rather simple: is one necessary? However, a transcriber-in-training needs to make several crucial decisions before concluding whether or not a tactile graphic is required. To begin, a transcriber-in-training should examine the print graphic within context. *Context* is the material that precedes or follows the image in question. Unit 1 of the *BANA Guidelines and Standards for Tactile Graphics* outlines initial criteria for including a tactile graphic within context. Display the Guidelines and Standards Document on a screen for all students to see and review the criteria outlined in Unit 1:

**1.1** Tactile graphics, in combination with 3-dimensional models, need to be introduced early in the process of learning braille. The ability to read graphics will be required for the understanding of concepts such as diagrams, graphs, and maps, and to be able to participate in standardized testing.

**1.2** The transcription of a text is not considered complete until the required graphics have been included.

As was already discussed, tactile graphics are not just pictures. To a braille reader, tactiles are representations of the print material that are absolutely essential to the learning process.
1.3 No diagram should be routinely omitted if a viable method can be found to render it tactually comprehensible. On the other hand, diagrams that do not add additional, necessary information than what is stated in the surrounding text may be omitted. Sometimes the information in a caption is sufficient without including the graphic.

There are two critical points mentioned in criterion 1.3. First, if a tactile graphic can be created and will be understood by a braille reader, create one! However, if the graphic does not provide any valuable or additional information, anything that may benefit the reader in comprehending the material, the graphic may be omitted. For example, imagine that you are transcribing a reading passage about flowers that bloom in spring, and you see a photo of a rose before the beginning of the text. What questions would you ask about the photo?

Have students take a look at the Handout- Decision Tree (2.A.1) which uses questions to determine the need for a tactile graphic.

1.4 A decision must be made about which would be more clearly understood by the reader—a well-stated transcriber's note, a tactile graphic, a simplified tactile graphic with a transcriber's note, or a 3-dimensional model. Some complex diagrams will never provide meaningful tactile information.

Knowledge of multimodal learning is helpful when transcribing and designing tactile graphics. By definition, multimodal learning is the use several "modes" to accommodate different learning styles. Modes might include, for example, taking notes to memorize a process, a hands-on activity to mimic a process, or watching a video that demonstrates a process. For the purposes of criterion 1.4, multimodal learning can be considered the combination of tactile graphics and a transcriber's note. A transcriber’s note is a written explanation used to clarify any information that may not be obvious to a braille reader. The cooperation can be considered multimodal because a person will access information through both reading the written description and examining the tactile graphic.

If the graphic is overly involved or complicated, as criterion 1.4 explains, a written description may be more suitable than a tactile graphic simply because the information is more easily understood as text.

As explained in the APH Tactile Graphics Kit Guidebook, three-dimensionality is difficult to convey with tactile graphics. The concept can be explained to someone who is visually impaired or blind, but ultimately the perception of objects in front of other objects, sizes of objects in relation to one another, and horizon lines and “vanishing
points” (in which an object becomes smaller, or recedes, as distance increases) cannot be represented by a tactile graphic.

Three-dimensional geometric shapes can be tactile graphics (for guidance on 3-D diagrams, see Graphic Design Module 4), but depending upon the level and tactile skills of the reader, a model or manipulative may be more appropriate.

1.5 A Teacher’s Guide or other course material may provide additional information on the purpose of the graphic and could be a factor in determining what can be eliminated from the graphic or if the graphic needs to be included at all.

1.6 If there are questions asked about an image that cannot be described without giving away the answer, a tactile graphic should be included.

Again, for criteria 1.5 and 1.6, the Guidelines reference context to determine the need for a tactile graphic.

1.7 Graphs should be presented as a tactile graphic rather than presenting the data as a list. Tactile representations provide a clearer comparison of information, as in a pie chart or a plotted line graph, rather than comparing only numbers.

What was explained for criteria 1.4 can also be said of criteria 1.7. Determining the needs of your audience, braille readers, is highly important when representing information. A transcriber or tactilist must decide, early in the stages of creating a graphic, how information will be best understood.

As you have learned in this section, many considerations must be made even before a tactilist puts pencil to paper. Decisions you make in the beginning will have a direct effect on the readability of a tactile graphic. Your goal should be to design with clarity and efficiency in mind.

ASSESSMENT

Review the following terms:

context: the material that precedes and/or follows an image.

multimodal learning: the use of several “modes” to accommodate different learning styles.
transcriber’s note: a written explanation used to clarify any information that may not be obvious to a braille reader.

Distribute handouts **Special-Purpose Maps (2.A.2)**, **Dolphin Moves (2.A.3)**, **Food Pyramid (2.A.4)**, **Texas (2.A.5)** to each transcriber-in-training and instruct to review the images individually. After a few minutes, review together as a group. Discuss if a tactile graphic is needed for each handout, and the information a blind person might gain from each. If a tactile graphic may not be appropriate, discuss alternatives. Be sure to address all photos, diagrams, and charts on each page.

There are many ways these can be transcribed; the ideas that follow should be used to generate discussion.

**Special-Purpose Maps (2.A.2):** The preceding paragraphs explain the objectives of special-purpose maps, so the graphic may not be absolutely necessary. However, because the image provides the print reader with a more comprehensive idea of the purpose of the map, it is beneficial to the braille reader to see a tactile graphic.

If the reader was expected to fully understand or make observations about the material contained in the map of Southwest Asia, a tactile graphic would be required.

**Dolphin Moves (2.A.3):** The photograph on the left does not provide any additional information to the print reader; it can be omitted. The diagram on the top right should be included, as it shows the body parts (specifically the caudal peduncle) mentioned in the text, and clarifies the text further. The graphic can be simplified, labeled something like “Side View of a Dolphin”, and lead lines can point to the parts, as shown in the print diagram. It may be useful to label other parts, like the eye, to provide a point of reference for the reader. The same rules can be applied to the photo at the bottom of the page. The image should be simplified into a head-on perspective line drawing with appropriate lead lines.

**Food Pyramid (2.A.4):** Although it is possible to list the items, it is easier to determine hierarchy (and more fun!) with a tactile graphic pyramid. Instead of drawing or listing each of the items within each food group, a skeleton pyramid can be drawn, with labels for each food group inside the appropriate section (“Fats, Oils, Sweets”,

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[Image]
“Dairy”, “Meats, Proteins” etc.). Then, on a separate sheet, the pyramid can be explained, and headers with each food group, serving size, and applicable foods can be listed.

**Texas (2.A.5):** Immediately, the pictures on right side, of the Bluebonnet and Mockingbird, can be omitted. They are purely decorative and do not provide additional information to the reader. The print image of Texas, however, contains some relevant icons, including oil drill towers, a star for the capital Austin, the Alamo building, etc. In this case, it might be sensible to contact the teacher/client to determine what information is needed. The context does not give enough information for a transcriber to decide what is or is not important.

### B. Principles of Tactile Graphic Design (2 hours)

**Objective GD.2.2:** Comprehend basic principles behind tactile graphic design.

#### PREINSTRUCTIONAL ACTIVITIES

Transcribers-in-training should make the handouts from the last lesson readily available. Reviewing the print images may be helpful as the class learns basic principles of tactile graphic design.

#### CONTENT PRESENTATION AND LEARNER PARTICIPATION

Review the material of the *APH Tactile Graphics Kit Guidebook* following “A Common Myth” in Section II. Prepare to show the *APH videos: The Good Tactile Graphic (2.B.2)* and *Creating the Good Tactile Graphic (2.B.3)*. Hand out a copy of *The Good Tactile Graphic, Creating the Good Tactile Graphic (2.B.1)* to transcribers-in-training prior to viewing.

Review the following concepts with transcribers-in-training:

*Principles of Tactile Graphic Design*

After you’ve made the decision to include a tactile graphic, the planning process begins. There are a few additional elements to consider as you design.

*Know Your Audience*

Identifying the braille reader you serve is extremely important, in terms of the transcription as well as creating a tactile graphic. As discussed in the *APH Tactile Graphics Kit Guidebook*, the sense of touch is not equivalent to the sense of sight when it comes to interpreting an image. Exploration of fingers across a page allows only for
the intake of information in small pieces, rather than a whole. A design that is pleasing to the eye is not always discernible to a braille reader. Only after some work will a braille reader be able to completely comprehend a graphic.

Another consideration is the age and skill level of your braille reader. In your studies, you have learned that braille can be transcribed as contracted or uncontracted, depending on the need. The same care should be taken when creating a tactile graphic. Is the reader a student? Have they worked with tactile graphics in the past? If so, what did the graphics look like? Unit 11 of *BANA Guidelines and Standards for Tactile Graphics* is dedicated entirely to the design of graphics for early readers. Children who are just learning are the most challenged when it comes to deciphering the details of tactile graphics.

*Editing for Tactile Graphics*

Here is a word you’ll hear over and over: simplify, simplify, simplify! A good tactile graphic is not just an accurate reproduction of the print. The image is altered to make sense to a braille reader, and here the key to alteration is simplification. However, be cautious: you don’t want oversimplify. Keep context in mind. If you know what is needed, you can determine which information to include. Never change the content or intended meaning. Eliminate only confusing details and anything you have definitively determined unnecessary.

Do you recall the drawing techniques used to create an embossed image? In Module 1, you learned to use points, lines, and textures in different ways. *APH Tactile Graphics Kit Guidebook* explains *contrast* at length. In tactile graphics, contrast is the placement of two very distinctly different and recognizable features within the same diagram. If you have not already done so, compare the points, lines, and textures in your kit. You should feel significant differences among them. Imagine again that you’re looking at a map of Florida. Immediately you can identify the difference between the land and water. You can see the lines at state borders. There is a large dot on the capital, Tallahassee, and smaller dots for cities like Orlando and Tampa. Now, it’s not difficult to imagine that you must make all these pieces tactile! You’ll just need to plan.

As explained in *Design Principles for Tactile Graphics*, the most important information should be drawn with the strongest textures. Strength demands attention, and allows the braille reader to prioritize. Vary heights of lines and spans of textures. Experiment, but also be cautious and avoid clutter. Anything that looks cluttered will be difficult to decipher with fingers. As a general guideline, do not use more than five of each point, line, or texture. Eventually, the pieces become difficult to distinguish from one another. Blank space between areas, around labels, and within textures can heighten contrast.
Create a key if the information is too close for substantial *lead lines*. A lead line is an indicator or pointer line that directs the reader to a braille label.

Often a print image should be enlarged, but only enough to clearly convey the information. Too much white space can leave a braille reader searching for items on a page. For more complex diagrams, information can be separated into layers, such as multiple pages or facing pages. A transcriber’s note should be included to inform the reader of any change to the image. Techniques for enlarging certain diagrams and creating multiple page tactile graphics are explained in Module 4.

As discussed earlier, consider a transcriber’s note to further inform the reader. Sometimes written description, with or without a tactile graphic, is more beneficial than a tactile graphic alone.

**Formatting Basics**

Now that you have some idea of the principles behind tactile graphic design, you can begin to set up your page. Units 3 and 5 of *BANA Guidelines and Standards for Tactile Graphics* explain page formatting for tactile graphics in great detail. Here are the basics to get working!

Generally, tactile graphics are 40 braille cells wide and 25 lines long. A tactile graphic page is 11 by 11 ½ inches (28 by 29 centimeters).

Page numbers should be assigned to every braille page. Page numbering can be single-sided or interpoint, on one side of the page or on both sides, dependent upon the agency or braille reader for whom you transcribe. Braille page numbers are situated in the bottom right corner of the page, and should be placed so they fall consistently with the braille page numbers of the rest of the volume. Essentially, the last digit of your page number should land in what would be cell 40, on line 25.

A tactile graphic should be inserted into the braille text where it falls, with a blank line before and after the physical drawing. Often, especially if you are working with complex diagrams, you will have multiple pieces of information to incorporate into just one diagram. The sequence for tactile graphic elements is as follows:

- heading
- caption
- transcriber's note
- key
- graphic
- source
Within a tactile graphic, components (specifically points and lines) must be spaced at least 1/8 inch apart to be distinguished from each other. If space allows, and depending on the proficiency of the braille reader, ¼ inch space may be more appropriate. For discrimination between two or more different-shaped symbols, the minimum diameter of the points must be at least ¼ inch. Primary lines must be ½ inch, and areas of texture should be ¼ inch square. As was mentioned previously, allowances and further guidelines on spacing is provided Units 3 and 5 of BANA Guidelines and Standards for Tactile Graphics.

**ASSESSMENT**

Review the images used in the last lesson with transcribers-in-training. Facilitate a discussion about the images based on the principles just learned.

The videos will reinforce and supplement the material covered by this lesson. Lead a question and answer session following the viewing.

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**C. Basics in Practice**

**Objective GD2.3:** Plan the layout of a page with necessary components, and reduce common images to meaningful tactile graphics.

**PREINSTRUCTIONAL ACTIVITIES**

Transcribers-in-training should prepare work areas for the design and creation of several tactile graphics.

**ASSESSMENT**

This lesson should be comprised solely of self-directed tactile graphic design and creation. Using the principles in this module, transcribers-in-training should be able to format a page, plan and create graphics with the skills they have attained thus far. Have transcribers-in-training design tactile graphics for handouts: Garden (2.C.1), Geometry Figure (2.C.2), Figure 13-2 (2.C.3), and Figure 7-9 (2.C.4).

Remind transcribers-in-training to review the element sequence for graphics, and to include a heading where appropriate. There are several images that will take more time; omit from queue if so inclined.

After the graphics have been completed, ask transcribers-in-training to produce a thermoformed copy of each.
D. Proofreading Methods (1.5 hours)

Objective GD2.4: Identify the uses of quality control and methods by which to implement them.

● PREINSTRUCTIONAL ACTIVITIES

Transcribers-in-training should have the thermoformed reproductions of graphics from the last activity readily available. The tactile graphics created will be used as part of this lesson.

● CONTENT PRESENTATION AND LEARNER PARTICIPATION

The following are potential introductory remarks as well as relevant context that may be useful for the instructor.

Proofreading Methods

Perhaps the most important element of creating a tactile graphic occurs after one has been made: proofreading. There are several reasons to proofread, only one of which is accuracy. Unit 10 of BANA Guidelines and Standards for Tactile Graphics suggests that the best way to proofread is by engaging the graphics in two proofreading sessions. Proofreading should start with the tactilist who created the master tactile graphic. The creator should confirm that all material drawn reflects the print, modified if necessary, and additional information, including transcriber's notes and keys, are present and relevant to context.

A second “touch” proofreading should be completed by a certified braille proofreader on a thermoformed copy of the graphic. A certified proofreader will not only verify accuracy and readability, but also confirm correct spelling, proper use of contractions, and braille code format. Labels, points, lines, and textures, alphabetic and numeric keys must be proofread, as well. As discussed earlier, textures that seem different to the eye may be indiscernible to a braille reader, which is why “touch” proofreading is so valuable. Reading the thermoformed copy will also confirm that all graphic elements were retained during the thermoforming process and that all components are clearly found in the molded Brailon graphic.

Unit 10 provides a checklist of suggestions for checking/proofing tactile graphics. Hand out Proofing Tactile Graphics Checklist (2.D.1) to students to follow along. Here are a few key points to keep in mind as a transcriber-in-training:
• Accuracy, readability, and comprehension are your ultimate goals.
• Maintain consistency with transcribed code if working within a volume. Symbols, points, lines, and textures that are the same across diagrams should be consistent, as well.
• Placement and orientation of points, lines, and textures should match the corresponding print locations.
• Each tactile element should be discernible by touch and contrast with others. No two tactile components should feel too similar.
• Confirm the accuracy of lead lines and labels.
• Be sure that transcriber’s notes are appropriate within context and for your braille reader.
• Avoid clutter!

## ASSESSMENT

Ask each transcriber-in-training to proofread his/her tactile graphic, using the methods described in this lesson. After 15 or 20 minutes, each transcriber-in-training should pair with a peer. In the absence of a braille reader, ask transcribers-in-training to take turns closing eyes and investigating the thermoformed graphic with the fingers. The transcribers-in-training should identify points, lines, and textures, and provide feedback to the other about possible problems and improvements needed. Later, the instructor should ask the group to come together, and each original image should be discussed individually. The *BANA Guidelines and Standards for Tactile Graphics* contains additional information about rendering some of these images as tactile graphics.
Tactile and Advanced Computer Graphics Module 2

Interpreting for Tactile Graphic Design and Production Handouts
Decision Tree (2.A.1)

Start

Is the information a repeat of facts in the text?

Yes

No

Would the information be more meaningful in text form?

Yes

No

Does the graphic require the reader to use visual discrimination or visual perception?

Yes

No

Is the actual object unavailable, too small, too large, or too dangerous to examine by touch and perceive details?

Yes

No

Does the reader need the information from a map, figure, or graph to participate in discussions, answer questions, complete a task?

Yes

No

Produce Graphic

Do Not Produce Graphic

Do Not Produce Graphic

Adapted with permission of the American Foundation for the Blind from Ilke Presley & Lucia Hasty. *Techniques for Creating and Instructing with Tactile Graphics*. Copyright © 2005. New York: American Foundation for the Blind. All rights reserved.

**Decision Tree** was reprinted directly from the **BANA Guidelines and Standards for Tactile Graphics**, November 2011.
Special-Purpose Maps (2.A.2)

Special-Purpose Maps

Maps that emphasize a single idea or a particular kind of information about an area are called special-purpose maps. There are many kinds of special-purpose maps, each designed to serve a different need. You can learn more about several types of special-purpose maps in the SkillBuilder features in this textbook: relief maps (page 126), climate maps (page 172), population density maps (page 232), vegetation maps (page 432), elevation profiles (page 580), economic activity maps (page 680), and cartograms (page 754).

Some special-purpose maps—such as economic activity maps and natural resource maps—show the distribution of particular activities, resources, or products in a given area. Colors and symbols represent the location or distribution of activities and resources.

An Economic Activity Map

The special-purpose map above shows the distribution of land use and natural resources in Southwest Asia. Geographers use maps like this one to study the distribution of natural resources. Governments and industry leaders use land use maps and natural resource maps to monitor the economic activities of countries and regions.

Special-Purpose Maps was reprinted directly from the BANA Guidelines and Standards for Tactile Graphics, November 2011.
The body of a dolphin is **streamlined** for movement in the water. **Streamlined** means that the body is designed to glide gracefully and quickly through the water, and there are no body parts that resist the movement of fluid.

Imagine placing your hand in a moving stream. When your palm faces the water current, you can feel the force of water pushing against your hand. However, if you turn your hand so that the outside edge faces the current (the side where your pinky finger lives), your hand will cut through water like knife because there is much less resistance.

Did you know that dolphins have a layer of blubber, just like whales? Blubber makes the skin of a dolphin smooth so that water slips over the surface. The **caudal peduncle** is the narrow part of a dolphin’s body, where the upper body meets the base of the tail, or flukes. The flukes are designed for water propulsion. When a dolphin wants to move, the caudal peduncle **undulates**, or moves up and down, and the water above and below the flukes is pushed away. A streamlined body lets water glide around the dolphin, and it moves forward!
Food Pyramid (2.A.4)

- **Fats, Oils, Sweets** Use Sparingly
- **Meats, Proteins** 2-3 Servings
- **Fruits** 2-4 Servings
- **Vegetables** 3-5 Servings
- **Dairy** 2-3 Servings
- **Breads, Grains** 6-11 Servings

From high to low:

- **Breads, Grains**
- **Vegetables**
- **Dairy**
- **Fats, Oils, Sweets**
- **Meats, Proteins**
The Great State of Texas (2.A.5)

Constitution: 28th State
Statehood: December 29, 1845
Capital: Austin
Population: Approximately 25,675,000
Border States: New Mexico, Oklahoma, Arkansas, Louisiana
Nickname: The Lone Star State
State Motto: “Friendship”
State Flower: Bluebonnet
State Bird: Mockingbird
State Tree: Pecan
The Good Tactile Graphic, Creating the Good Tactile Graphic (2.B.1)

1. Gather critical information:
   - Know your audience
   - Know your means—methods available to developing a good tactile (Tiger, Scanning, Collage, Transcriber’s note—a description in braille may often be more effective than a collage)
   - Understand your content—what critical information must be included
   - Prioritize the importance of the tactile elements to be included in the collage (what is least important verses what is most prominent)

2. Plan your adaptation
   - Determine the size
   - Decide what materials to use
   - Avoid clutter and simplify
   - Visual information that is irrelevant to the meaning to the or purpose should be omitted
   - Convey the message intended by the author

3. Produce your tactile graphic
   - Hands-on: now you are ready to put your tactile together
   - Make sure the depths correlate to the importance of the information to be conveyed
   - Tactile should be done in two-dimensions
   - Accuracy is crucial

4. Test the tactile graphic
   - It is imperative that the reader be able to actually “read” all the information given
   - Learn to test your work with your eyes closed
   - Tactile should be read with ease

5. Educate your touch
   - Think sense of touch versus sight
   - Be sure to close your eyes as you examine your work
   - Train yourself through touch to test the levels and materials
   - Is the tactile easy to read? If not—try again
   - Get another transcriber in training to “look” at your work through their sense of touch

6. Never compromise tactile quality with visual attractiveness
   - Remember children need to build up skills with simple figures
   - You want to keep things simple according to the age of the student

Handout created by Roberts and Dodson, Mountain View Braille Facility, 2011.
**Geometry (2.C.1)**

**Braille Page:** 17

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**Garden**

18 FT

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*Garden* reprinted directly from the *BANA Guidelines and Standards for Tactile Graphics*, November 2011.
5. In this trapezoid, determine the measure of \( \angle W \) to the nearest tenth of a degree.

6. a) Determine the perimeter of \( \triangle ABC \) to the nearest tenth of an inch.

b) Determine the area of \( \triangle ABC \) to the nearest square inch.

*Geometry figure* directly from the *BANA Guidelines and Standards for Tactile Graphics*, November 2011.
These three elements—state, civil society and business—influence our lives on national and international levels. The relationships among these elements need to be balanced so that one does not overpower the others. Civil society describes the collective actions of people based on shared interests. When people take collective action, they often choose to form organizations such as community groups, NGOs, trade unions, faith-based organizations, or advocacy groups.

Figure 13-2 was reprinted directly from the BANA Guidelines and Standards for Tactile Graphics, November 2011.
Braille Page: 43

Figure 7-9 (2.C.4)

Figure 7-9 was reprinted directly from the BANA Guidelines and Standards for Tactile Graphics, November 2011.

2.C.4
Proofing Tactile Graphics Checklist

- Accuracy, readability, and comprehension are your ultimate goals.
- Maintain consistency with transcribed code if working within a volume. Symbols, points, lines, and textures that are the same across diagrams should be consistent, as well.
- Placement and orientation of points, lines, and textures should match the corresponding print locations.
- Each tactile element should be discernible by touch and contrast with others. No two tactile components should feel too similar.
- Confirm the accuracy of lead lines and labels.
- Be sure that transcriber’s notes are appropriate within context and for your braille reader.
- Avoid clutter!