

# Sweet!

## Samples of Possible Common Core and TN Academic Standards to Incorporate:

As you read the activities, keep in mind the specific skills your students need to practice and master in the different grade levels and use them to guide your approach in how you present the activities and what you have the students do. We encourage you to add additional SPIs and Academic Vocabulary in your plans that are outside the specific ones listed as there are *many* which apply and are not listed below.

### Kindergarten:

- K.RFS.3 Know and apply grade-level phonics and word analysis skills in decoding words.
- K.L.S Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
  - a. Capitalize the first word in a sentence and the pronoun I.

### 1<sup>st</sup> Grade:

- Compare and contrast the adventures and experiences of characters in stories, verbs (past, present, future)
- 1.RL.2. Retell stories, including key details, and demonstrate understanding of their central message or lesson.

### 2<sup>nd</sup> Grade:

- 2.RIT.1. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- 1.6.2 Identify and state the main ideas and supporting details of texts.

### 3<sup>rd</sup> Grade:

- SPI 1.1.16 Determine word meanings using prefixes, suffixes and/or context clues.
- SPI 0301.3.1 Identify the purpose for writing (i.e., to entertain, to inform, to respond to a picture, story, or art).

### 4<sup>th</sup> Grade:

- 401.5.6 Indicate the sequence of events in text.
- 1.5.1 Distinguish between fact/opinion and cause/effect.
- SPI 0406.4.8 Convert measurements within a single system that are common in daily life (e.g., hours and minutes, inches and feet, centimeters and meters, quarts and gallons, liters and milliliters).

### 5<sup>th</sup> Grade:

- SPI 0501.8.4 Identify and interpret the main incidents of a plot, their causes, how they influence future actions, and how they are resolved.
- SPI 0501.5.7 Indicate the correct sequence of events in text.
- SPI 0501.5.4 Determine the conflict in a text and recognize its solution.

- SPI 0501.8.1 Identify setting, characters, plot, and theme.

6<sup>th</sup> Grade:

- SPI 0601.1.20 Use knowledge of root words, affixes, syllabication, and/or spelling patterns as aids in determining meaning within context.
- GLE 0506.2.3 Develop fluency with division of whole numbers. Understand the relationship of divisor, dividend, and quotient in terms of multiplication and division.

7<sup>th</sup> Grade:

- 0701.1.1 Demonstrate control of Standard English through grammar usage, and mechanics (punctuation, capitalization, and spelling).
- 0701.1.2 Employ a variety of strategies and resources to determine the definition, pronunciation, and usage of words and phrases.
- 0706.2.5 Solve contextual problems that involve operations with integers.

8<sup>th</sup> Grade:

- 0801.1.2 Employ a variety of strategies and resources to determine the definition, pronunciation, and usage of words and phrases.
- 0801.5.2 Analyze text for fact-opinion, cause-effect, inferences, evidence, and conclusions.

HS:

- RL.9-10.4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).
- RL.9-10.6. Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.

## Samples of Possible Academic Vocabulary to Incorporate:

For the Academic Vocabulary we encourage you to use as many of these words as possible, not simply pick one or two. The more words we can introduce in a setting that makes sense to our students, the better. We encourage you to add additional SPIs and Academic Vocabulary in your plans that are outside the specific ones listed as there are many which apply and are not listed below.

Kindergarten:

- Pattern
- Tools
- Compare
- Contrast
- Human
- Basic needs (food, clothing, shelter)
- Wants
- Map
- Globe

1<sup>st</sup> Grade

- Sequence
- Predict
- Property
- History
- Past
- Present
- Future

2<sup>nd</sup> Grade

- Similarities/Differences
- Draft

#### 3<sup>rd</sup> Grade

- Tools
- Cause
- Effect

#### 4<sup>th</sup> Grade

- Prediction
- Compare

#### 5<sup>th</sup> Grade

- Theme
- Prompt

#### 6<sup>th</sup> Grade

- Cause and Effect
- Criteria

#### 7<sup>th</sup> Grade

- Impact
- Interaction with texts

#### 8<sup>th</sup> Grade

- Sequence
- Human Impact
- Vernacular
- Mood/tone

- Edit

- Punctuation
- Verb

- Contrast

- Visual Image
- Punctuation marks

- Similarity
- Design Constraint

- Property
- Function

# Sweet!

## Teller of Tales!

Tell the students they have received an invitation, , from The Amazing Tattershawl. Pass out the following invitation and read it as a class.

What image of Tattershawl does the invitation project? What kind of stories must she tell? Would they like to meet such an eccentric traveler and storyteller? What does she look like? Look at the language used and get students to identify any words they do not understand. Discuss the effect of the language used, what does it make you want?

Ask the children to decide what kind of storyteller they would be, think of an imaginary name and jot down some words to describe themselves. Ask them to write their own storytelling invitation. If time permits, they may want to sketch an portrait of themselves (or Tattershawl the Amazing) as the mysterious or wise or wild teller of tales.



***Invite the students to step into a magical world where houses can be eaten and all is not what it seems...***



LADLES AND JELLYSPOONS  
BOILS AND CURLS

---

The **AMAZING TATTERSHAWL**  
*warmly invites you to join her in a*  
**STORYTELLING EXTRAVAGANZA!**

*Be astonished, ahhh, be excited, oooohh,  
be scared, whooooo, be very scared!*

---

*Through the magic of her stories*  
*Tattershawl will take you to places*  
*beyond your **WILDEST DREAMS.***

---

*To find me follow the*  
*trail of crisp bags and sweet wrappers*  
*to the waste ground under spaghetti junction.*

*Don't be late!*

**TATTERSHAWL (The Amazing)**



# Hansel & Gretel: A Sweet & Sour Story!

If you end up lost in the woods...you may just find yourself.

Materials:

- Story Invitation
- Printouts for students
- Pencils
- A version or two of the story of Hansel & Gretel

The story of Hansel and Gretel is a well-known fairy tale. **Have students ever heard of it? Is it a happy story? Why do they have that opinion?** For a children's fairy tale, Hansel and Gretel deals with some pretty serious themes: **like what? Family, famine, infanticide, abandonment and cannibalism, and of course, candy!**

A young brother and sister are trapped in a house by a cannibalistic witch bent on eating these young children. **What might be the purpose for writing down or telling a story like Hansel & Gretel?** There has to be some reason, (i.e., Is it to entertain, to inform, to respond to a picture, story, or art?). What's interesting is that there are similar versions of this story all over the world, and they developed independently of each other.

The earliest version was written by Italian folklorist Giambattista Basile, whose "Nennillo and Nennella" was published posthumously in *The Tale of Tales, or Entertainment for Little Ones* (1634). In this story a selfish stepmother and her weak husband abandon his two children in order to conserve food. There is no evil witch however. Instead, a pirate's kidnapping of Nennella and a large fish that saves her are key elements to the story.



6

Other early versions involved French writers. Charles Perrault's *Le petit Poucet* (Little Thumb - 1697) involves seven brothers who stumble upon an ogre's house after being abandoned by their parents. A year later, Madame Marie-Catherine d'Aulnoy wrote *Finette Cendron*, a similar story of three princesses who are abandoned by their parents in the woods and find their way to a giant's house.

Some others are:

- *Baba Yaga* (Russia).
- *The Babes in the Woods* (Appalachian region of United States).
- *Johnnie and Grizzle*. This European tale is almost identical to Grimm.
- *Kadar and Cannibals* (southern India).
- *The Lost Children*. Another version from France.
- *Mollie Whuppie* (England). Involves the title character, her two sisters, and a giant. Molly is not a namby-pamby princess, she takes charge, beats the giant and saves the day so she and her sisters can live happily ever after.
- *The Rose Tree*. One of the children dies in this -- another English -- version.
- *The Oni and the Three Children* is from Japanese folklore.
- *The Story of the Bird That Made Milk* (Kaffir tribe of Africa).
- *The Two Children and the Witch* (Portugal).
- *Jan and Hanna* (Poland).
- *The Little Boy and the Wicked Stepmother* (Romania). Story is very similar to *The Rose Tree*.
- *Old Grule*. This Slavic folktale follows the Hansel and Gretel version except the children are not abandoned, but wander off on their own.



Image credit: <http://creaturebox.com/artwork/hansel-and-gretel/>  
Copyright 2006. All Rights Reserved.

- *Juan and Maria*. A tale from the Philippines, it has the witch as a good person.

The most well-known of these tales is, of course, the story of Hansel and Gretel as told by the German scholars Jakob and Wilhelm Grimm, first in 1812 and then in revised versions in 1819 and 1857. Many of the traditional themes in Hansel and Gretel aren't sweet to modern audiences and many modern authors change some details. Even the Grimm brothers revised "Hansel and Gretel" to make it more palatable. UPitt professor D. L. Ashliman's webpage on the story shows the significant difference between the first and final editions.

The 1812 version, based on an 1810 manuscript:

*The two children were still awake from hunger and heard everything that the mother had said to the father.*

The 1857 version:

*The two children had not been able to fall asleep because of their hunger, and they heard what the stepmother had said to the father.*

By turning the "mother" into a "stepmother" (a change that first appeared in the 1840 printing, Ashliman reports), the Grimms offered an acceptable explanation of that woman's wish to abandon the children: they were never her biological children to begin with.

**What do all these stories seem to have in common? Did these author's talk to each other? How did so many similar stories end up written all over the world?** This German version has all the most well-known features: the evil mother (and later step-mother), the bread crumbs left as a trail, the gingerbread house, the cannibalistic witch, and the oven where she meets her fate. **Ask the children to consider if they think there is always a traditional happy ending for Hansel and Gretel? Why might so many modern stories have happy endings when the traditional stories don't always end quite so happily?**

Read your favorite retelling of the story Hansel & Gretel and/or one of the versions above. Check online (there are many online story collections), your local library, or other resources and find the style that will best suit your class. *There are many editions of the most well-known German version, ex. Hansel and Gretel by Cynthia Rylant, or Rika Lesser & Paul O. Zelinsky, or James Marshall. There's even an amazing and adorable interactive Epic Tales Hansel & Gretel Iphone/iPad/ipod Touch app <http://www.epictales.com/index.php/titles.html> and a pop-up book version by Louise Rowe.*

Show students the cover(s) of the book(s). What do they think is going to happen? Write down their predictions on the board. Flip through the pages as a preview of the story, ask students questions about what evidence or "clues" from the story and non-verbal communication from the illustrations in the

story supports their story predictions. Have students pay particular attention to how frequently the theme of eating appears in the story. (ex. The children are driven out of the house because the stepmother claims there isn't enough food. Hansel & Gretel leave a trail of breadcrumbs, but it's eaten by the birds. The witch's house made out of gingerbread and the children taste a piece. The witch wants to eat the children, but decides to feed them first to fatten them up...)

After you read:

- Have students compare and contrast the stories on their approaches to similar themes and topics. What similar themes run through each of the stories? (Hunger, bravery, selfishness?)
- Have them compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more variations of Hansel & Gretel that you read. How are they similar and how are they different?
- Discuss & compare and contrast the characters, settings, or events in each story or drama, drawing on specific details in the text.
- Do they think the ending of the stories were happy? Why or why not? What makes a "happy ending" happy? Is it happy for every character, or just some of them?

**Option:** With older students, after you have read one version of the story out loud. Divide the class into groups of three or pairs, or each student can work on their own if it is a small group. Choose several texts or versions of the story and assign one to each group/pair.

The group is now responsible for the presentation of that text. They can, if they wish, merely read the text to the class or summarize the story while showing the pictures.

**Variation:** bring a group of students to the board so they're facing the class. Then choose a narrator (try to grab a student you know can read well) and however many character parts. Then, simply get them to use it more as a drama activity. Have students read the book as a team with each character reading his/her own lines, or acting out what the narrator dictates. This really can bring the text to life as they'll naturally start to get physically involved in the story. Any subtleties in the text suddenly become more obvious to struggling students and ...well ...it's fun for everyone.

Whatever method you use, ask students to compare between the texts and keep track of their answers.





## **A Sweet or Sour Story?**



What is the title of the story being read?

What are the names of the main characters?

Where is the story taking place (the setting)?

Does this sound like another story you've read? Which one?

Who do you think is the villain? Is there more than one?

How would you defeat the villain?

Who do you think is the hero? Would you want to be him/her? Why or why not?

How do you think it's going to end? Were you right?

Would you have done what Hansel & Gretel did? How might you have done things differently?

# Things Aren't Always as They Seem

## Materials:

- A version or two of the story of Hansel & Gretel
- Miniature Candy bars or candies (optional)
- List of candy names
- scrap paper/posterboard
- pencils
- markers
- Tape

But what if what's well known isn't what's right? What if things are not always as they seem? What if we rethink the traditional construction of the witch as an evil character? This shift means telling the story from the witch's perspective, such as, "I'm sure you're all familiar with the story of Hansel and Gretel, those two greedy little thieves/little lost lambs, but before you run away screaming, I want you to hear my side of the story; what actually happened. So here's the truth."

Discuss and help students distinguish between fact/opinion and cause/effect.

- What was the cause of the children being lost in the woods?
- Is the witch really evil, or is that an opinion? How do we know, either way?

Ask children to write the story of Hansel and Gretel, but from different points of view. Here are a few suggestions:

- As the witch
- As the step-mother
- As the Father
- As their dentist
- As Hansel recounting to his father after his safe return



Image Credit: Cat Ferris, Artist for Hire. Copyright 2012. All Rights Reserved. Go to her blog for more amazing art at <http://www.cattifer.com/blogal-og/>. She is available for commissions, comics work, illustrations, and storyboards. Contact her @: [cattifer\(at\)gmail\(dot\)com](mailto:cattifer(at)gmail(dot)com).

- As Gretel telling her friends in the school playground

Discuss types of candies. What candies can students name? What would a house be like made of candy? Divide students into small groups or pairs. This can be a whole class activity with younger grades.

Task:

1. Write in response to literature and write an Upside Down Story, turning all the events in the real story into the witch's (or another character's) perspective, and giving her version of events.
2. Include candy & sweets (ex. gum is considered a sweet) names as terms in the story, as the witch's house was constructed of sweets! The player or team with the most candy names used accurately within the story wins.

**Note: If you want to offer or have a couple types of candy available to your group, the candy/wrapper can only be glued or taped onto the story, or the small amount handed out kept by the group, after it has been determined to be used correctly in the story. DO NOT offer every kind of candy listed. 2-5 types of candy at the most is an appropriate amount, and try to get ones that students may not have tried before and only give students a minimal or taste test amount.**

Sample Sweets Names: **(What other kinds or alternates can students name and add to the list?)**

- |                   |                 |                     |                   |
|-------------------|-----------------|---------------------|-------------------|
| • 100,000 Grand   | • Goo Goo       | • Milky Way         | • Snickers        |
| • 3 Musketeers    | • Good & Plenty | • Millionaire       | • Sour Patch Kids |
| • after eight     | • Heath         | • Mounds            | • Sprees          |
| • Air Head        | • Hot Tamales   | • Mr. Goodbar       | • Starbursts      |
| • Atomic Fireball | • Ice Breaker   | • Nerds             | • Stride          |
| • Baby Ruth       | • Hugs          | • Now & Later       | • Sugar Babies    |
| • Bit-O-Honey     | • Ice Cubes     | • Nutrageous        | • Sugar Daddy     |
| • Bottlecaps      | • Jawbreaker    | • O'Henry!          | • Swedish Fish    |
| • Butterfinger    | • Kisses        | • PayDay            | • Sweetarts       |
| • Candy Buttons   | • Kit Kat       | • Peep              | • Symphony        |
| • Candy Laces     | • Knusperflakes | • Pieces            | • take 5          |
| • Caramellow      | • Krackel       | • Pixy Stiks        | • Treasures       |
| • Carefree        | • Jelly Belly   | • Pop Rocks         | • Tootsie Pop     |
| • Chunky          | • Jolly Rancher | • Pull N Peel       | • tootsie roll    |
| • Circus Peanuts  | • Joy           | • Razzles           | • Twix            |
| • Crunch          | • Lady Godiva   | • Red Hot           | • Trident         |
| • Curly Wurly     | • Lemon Heads   | • Red Vines         | • UNO             |
| • Dragon's Beard  | • Life Saver    | • Reisin            | • WarHeads        |
| • Dots            | • Look          | • Ring-pop          | • Whatchamacallit |
| • Dove            | • Mars          | • Rocky Road        | • White Rabbit    |
| • Dum Dums        | • Marathon      | • Root Beer Barrels | • Whoppers        |
| • Fast Break      | • Merrimints    | • Skittles          | • York            |
| • Fifth Avenue    | • Mike & Ike    | • SKOR              | • ZERO            |
| • Goober          | • Milk Duds     | • Smarties          |                   |

# Are we there yet?

Objectives:

- Draw a map as a response to literature
- Add cartography details such as waterways, roads, mountains and water inlets.
- Study the use of cartography to enhance works of fiction

Materials:

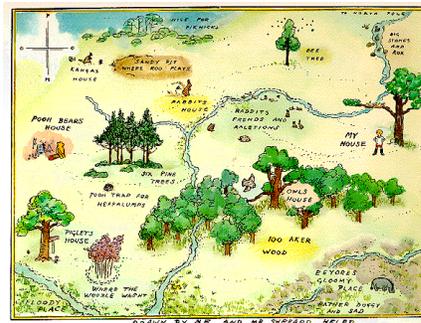
- Sample Map Images
- Art materials (colored pencils, waterproof pens, watercolors, crayons, etc)
- Paper
- Pencils

The science and art of mapmaking is called cartography. From cave paintings and ancient European maps to new maps of the 21st century, people have created and used maps to help define, explain, and navigate their way across the planet and beyond. No matter what content is shown by maps, they can transport us places far away or help us explore the areas near our homes.

Maps can help children understand and explore both their everyday environment and faraway places, even ones that only exist in the mind of their creator. Stories do a great job of getting your imagination to wander, they depict great mythical lands that pour out life, or small lands full of danger, and bring imaginable lands to existence, but it's maps that actually make them real locations. A good map makes kids feel as if they can actually venture to that land one day. Some excellent examples of imagination and maps are often shown in literature, in books like *The Phantom Tollbooth*, or *Winnie the Pooh*

**Discuss with students the purposes of maps in books.** Possible answers: Maps help readers remember people, events, and locations, etc.

Show students sample maps, like the one of the 100 acre wood in *Winnie the Pooh* or other literature.



Once students have seen and discussed multiple examples of imaginary maps in books from the library or from online [a large image gallery of fantasy maps is available at <http://www.woodge.com/books/fmaps.html>] work together to create a sample on the board.

Students must illustrate the path taken to get to the witch's candy cottage, and then show the path the children take out of the forest. Have the students draw the map as if they are looking down on the forest. Teach students the importance of a map key and the compass.

Questions you might ask as you draw: Discuss the journey that Hansel and Gretel took to get to the witch's house.

- Where did Hansel and Gretel's journey begin?
- Where did they go to next?
- How far do you think they travelled? Why do you think that?
- What direction do you think they travelled? Why do you think that?
- List the events of the story in sequence.
- What kinds of trails did Hansel & Gretel leave? (ex. breadcrumbs) How should we mark those?
- Where does the witch live? Do you think she's far away or close to Hansel & Gretel's house?
- What kind of dwellings do the people live in?
- Are there any mystical creatures that live in the woods?
- Is this a fictional or factual (real) land? Could it be based off of somewhere real?

Now that you have created sample map(s) on the board and discussed different techniques they are ready to be divided into small groups or to work as individuals for the following project.

Option: Use manila paper to give the map an older look. Each one may look different and unique to the student.

Instruct students that they want to create a map of the forest they became lost in. Encourage creativity.

Objects/obstacles that may be met along the way could be included on the map. E.g. trees, a bridge, rocks, a gate, etc. (These could either be directly drawn onto the map or a legend could be drawn



and color coded.)What were the sequence of events in either their version of the story, or the original? What will be the purpose of their map? Are they the witch trying to keep people away? Or help people find her? Are they Hansel & Gretel trying to find their way home? (Which could be the witch’s cottage or their father’s home, all depending on the twists your version takes!) What style are they going to use?

As the students work, encourage them to use the language of direction, e.g. up, down, left and right to describe the maps they are drawing.

- *Where do you start in your map?*
- *In which direction do I travel next?*
- *How far will I travel in that direction?*
- *If I couldn’t see your map what directions would you give me next?*

Ask students to describe their maps to a buddy using this language.

**Option:** Combine watercolor paints and colored pencils for this activity. A general rule can be: small areas=colored pencils, big areas=watercolor paints.

Encourage students to paint either water or land first. If they paint the land first, use the drying time to color in any small details in the water, houses, etc.

Then, when land paint is dry, paint the water. The trick is to not let wet paint and wet paint come together or they will bleed into each other and edges won’t be sharp, unless they want them to bleed!

Encourage students to use more than one color for the water. Try mixing blues with greens or even purples to achieve an interesting color. The same is true for painting the land.

Green and brown are not the only colors! Encourage each child to think up their special color palette.

## The Price Is Right!

*FOR SALE! Sweet, Rustic, Serene, & Scrumptious Cottage! Located next to a charming brook with scenic views and in a very exclusive neighborhood. One bedroom, one bath, with loft. New working oven and pet cages included!*

Effective real estate ads begin with a compelling headline and pull the audience in by making them understand how they benefit from what’s being promoted. But do students know what it’s really worth? This exercise makes them think mathematically and gives them a much better sense of what things really cost.

Have students decide on a budget. How much do they want to spend? Read a classified ad description of a house for sale from your local papers. Then ask students to guess the price of



the house. Record guesses that are too high on one side of the T-chart and guesses that are too low on the other. Eventually, they will guess the real price by looking at other guesses and adjusting accordingly. The student that guesses correctly “buys” the house.

*Quickly discuss each ad after you read it, what words did the students like? What caught their attention and made them want/not want that house? List the words and phrases they noted up on the board.*

Now, ask children to write a description of the witch’s gingerbread cottage from the story as if it is up for sale. How are they going to get someone to buy it? What are the good things about it? Discuss appropriate advertising style, audience and language. What price are they going to put on their cottage? Have students incorporate the words and phrases they noted and liked from the real estate ads.

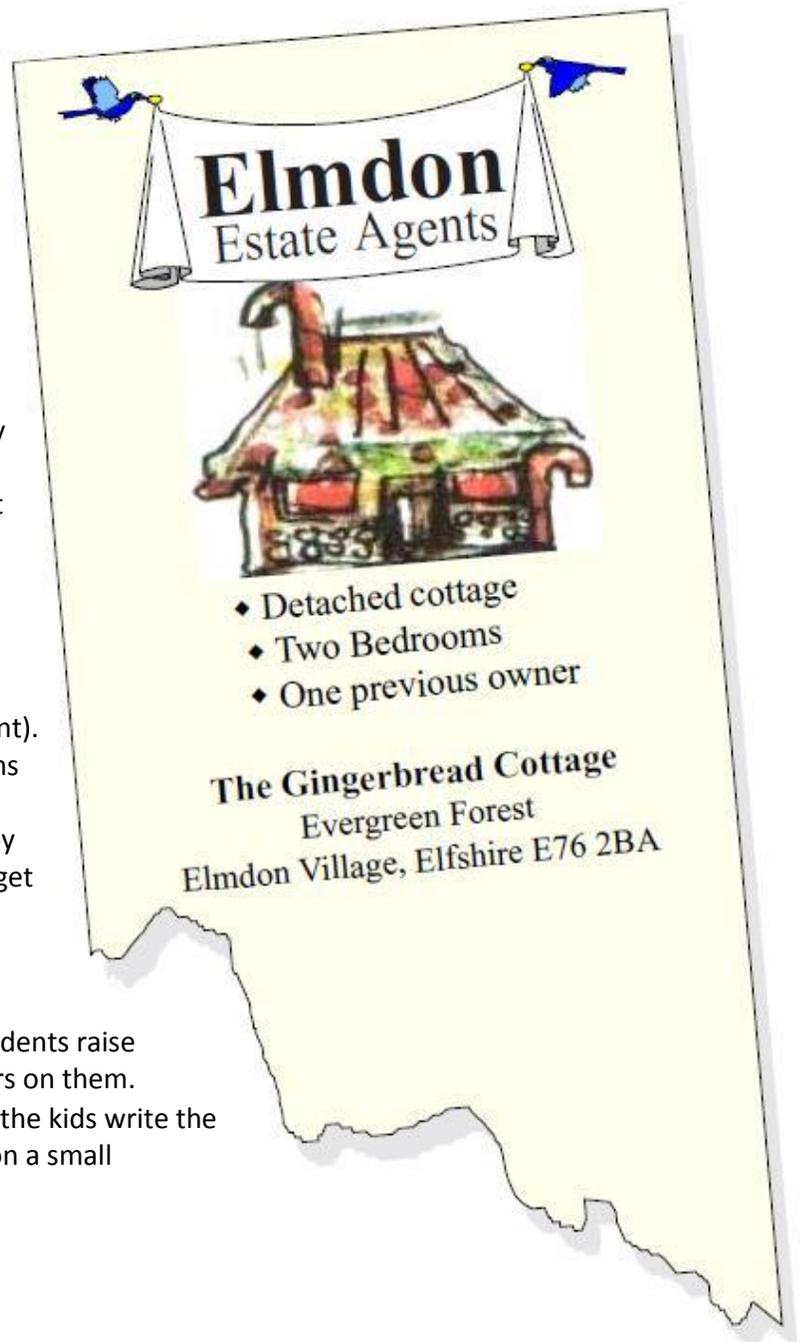
Once students have turned in their ads, divide the classroom into several small teams, pairs, or have students play as individuals, and give each team play money for their budget, ex. \$350,000, per team or another designated amount, you may want a higher budget.

Announce the start of the auction, enthusiastically read the descriptions, and take bids from the students throughout. (They should have a better idea of realistic retail prices after the previous sale activity). Highest bidder wins. *Keep track of the winning bid amounts.*

Students have to keep track of how much money they have, so that they don’t overbid (but they always do---what with the excitement). The auction continues until we run out of items to sell. The team that “ties up” the most real estate by bidding correctly and staying within their budget wins!

### Options:

- Run it just like a real auction. Have students raise paddles they have made, with numbers on them.
- A silent auction- read the description, the kids write the amount they would be willing to pay on a small



whiteboard or sheet of paper. The house goes to the highest bidder. If 2 or more bids are alike, let those kids battle it out for the item.

- DON'T give them all the same budget. Have students draw their budget out of a paper bag of random amounts, ex. \$250,000, \$1,000,000, \$89,000, They may realize they all don't have the same amount of money, and that gets them a little irritated when they find out that maybe they don't have quite as much money as anyone else. But that's intentional, to build that in and to get them to realize well, in real life we don't all have the same amount of money and you just have to deal with it. But many times eventually at some point they'll start to pool their money so that they can get what they want.
- Increase the money supply to the class and conduct the second round of the auction, which is followed by your class discussion and debrief. How were the two rounds similar? How were they different?

## Crumbs

We are about to embark on a journey to escape the woods. Much like the ill-fated siblings, students must follow a trail of crumbs (in the form of written clues) to progress through the forest. Some clues may be tricky ones left by the witch and some may be helpful crumbs of knowledge left by the birds.

### Gather supplies

Younger children will probably be happy with fewer clues to work out than older children, but the number they choose really depends on the child and how many clues they are willing to write. Too many clues can make the game tedious, but too few won't be challenging enough. There are samples on the next page.

### Hints, Tips, & Variations:

- On a piece of paper write out your clues one after the other, cut them apart and fold them. Then on the outside write where you are going to hide it - much less confusing this way! )
- Color code clues so teams only find their own clues (print out the clue sheet on different colors of paper for each team). Time the hunt and see which team gets done first.
- Have students write grammatically correct clues for the other team to follow. Students enjoy watching the other team try and follow their clues. Just caution them to keep quiet and not give the location away!

Option: Have a Hansel & Gretel "Find Your Way Home" Trail Mix at the end for students. Provide small brown paper sacks for the kids to fill with trail mix ingredients (ex. popcorn, nuts, dried fruits, small pretzels, coated chocolate candies, etc.) . A fun addition might be yogurt covered raisins to represent the white pebbles or candy or chocolate rocks Hansel and Gretel dropped on their trail to help them find their way home. Have students practice measuring portions and choosing the appropriate measuring device.



## Sample Crumb Clues

1. Don't be afraid, don't be sour, if you \_\_\_\_\_ you'll have the next clue in your power!
2. Ha, ha dearie! Don't look so sad, being my dinner won't be so bad. Now, you'd best stay far from this spot, \_\_\_\_\_. Oh my oven is looking so nice and hot!
3. Shhh, be quick and quiet go to \_\_\_\_\_ and we'll put the witch on a diet!
4. You tried to run, but I am fast, and now I'll get my supper at last! If you were to get to \_\_\_\_\_ I'd be so blue, but really I'm not afraid of that next clue!
5. Deep in the forest there lies a path, run quick to \_\_\_\_\_. Oh do find the crumb and you'll finally be out from under her thumb!
6. You've climbed the tree and peered ahead, there seems to be a trail of bread, but then you see the birds a peckin' so if I were you, I'd keep checkin'! Especially \_\_\_\_\_.
7. It's damp and dark and kind of scary, and of the witch you must be wary, but I think I spot a light ahead and if you go \_\_\_\_\_ surely, you'll find that bread!
8. You're so hungry you could eat it, but the next clue, you really need it...so instead of scarfing this crumb you found, follow me \_\_\_\_\_ and be homeward bound!
9. Escape me! You must think you are clever! Let you go \_\_\_\_\_? Ha! Never, oh, never!
10. Finally here, and look what you've found! A tasty snack of \_\_\_\_\_ to enjoy safe and sound...but wait, where'd it go, oh no, oh no! The witch took it back to her home that you found! She's had enough candy, she's had enough sweets, but you can catch her \_\_\_\_\_ & still have time to eat, but ONLY if you move your feet!

# Scrumdilyuptious!

You may want to find some fun books related to candy to help you access prior knowledge about the lesson topic, ex. *Sweet Dream Pie* by Audrey Wood or *Little Pea* by Amy Krouse Rosenthal, or even your favorite chapter of *Charlie and the Chocolate Factory* by Roald Dahl. As you read the chosen book or chapter with your class, "think out loud," stopping at appropriate points to articulate your thinking as a model for students, make connections with personal experiences, and other books you might have read with the class. It is important during modeling to continually come back to the text and not allow personal experiences to divert the group from understanding the story.

After reading, ask students to share their own experiences, favorites, and ideas about candy & the story answering the five W + H questions (i.e., Who, What, When, Where, How, Why) to demonstrate understanding of key details in a text.

Like Charlie Bucket, the main character in the fabled candy tale, *Willy Wonka and the Chocolate Factory*, who doesn't love, or once has loved, "scrumdilyuptious" candy?

By definition candy is a rich sweet confection made with sugar or other sweeteners and often flavored or combined with fruits or nuts.

The history of candy dates back to ancient peoples who must have snacked on sweet honey straight from bee hives. The first candy confections were fruits and nuts rolled in honey. The manufacturing of sugar began during the middle ages and at that time sugar was so expensive that only the rich could afford candy made from sugar. Cacao, from which chocolate is made, was re-discovered in 1519 by Spanish explorers in Mexico.

The price of manufacturing sugar was much lower by the seventeenth century when hard candy became popular. By the mid-1800s, there were over four hundred factories in the United States producing candy.



Character Design & Image Credit: Dacosta! @Chocolate Soop® Copyright 2012. All Rights Reserved! <http://vector.tutsplus.com/articles/case-study/the-making-of-a-chocolate-bar-character//>

# A Spoonful of Sugar Helps the...

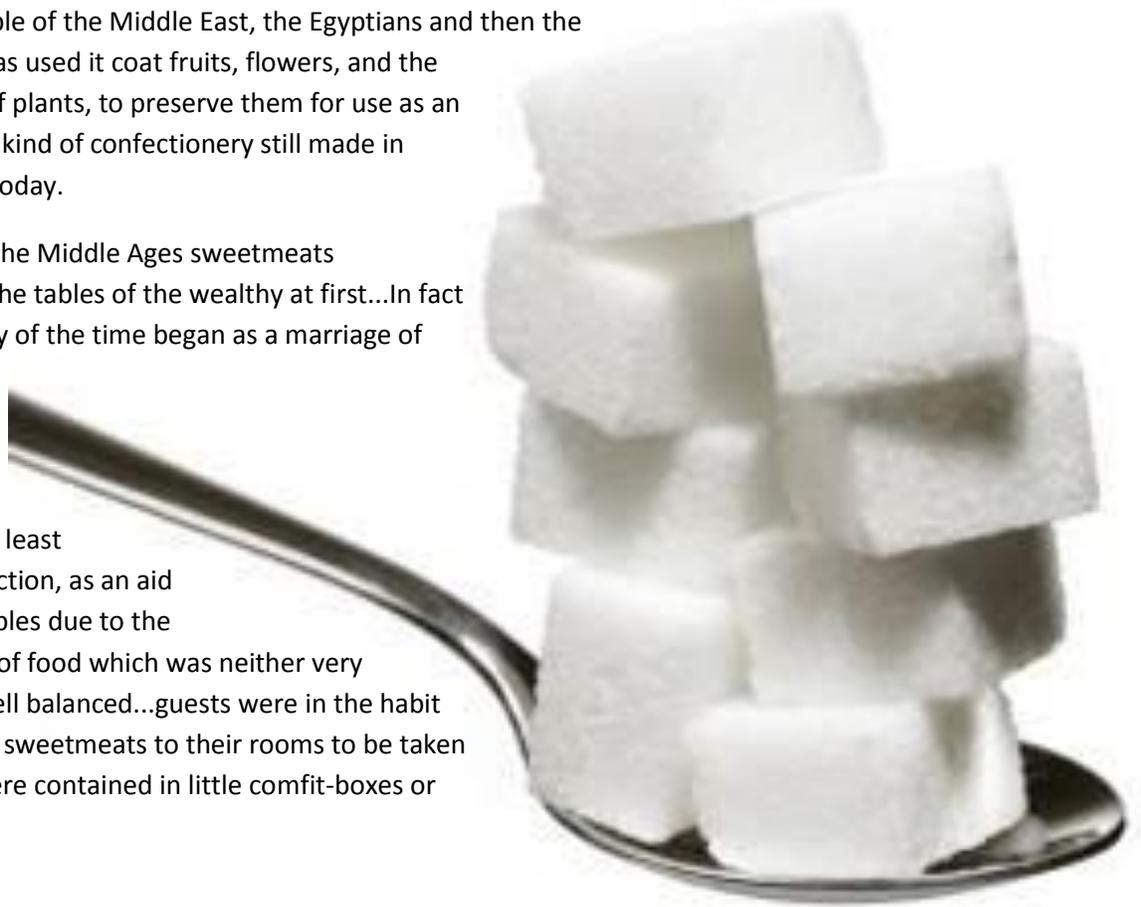
While Americans tend to think of candy in terms of supermarket and convenience stores displays (while each of us quaffs an estimated 100 pounds of sugar per year), this sweet culinary family offers a much broader and complicated lineage. Food historians propose the first sweets were consumed as a sort of medical treatment for digestive troubles. Today's cough drops and peppermint sticks descend from this tradition.

The first candies were medicinal! An apothecary in the 18th century would prescribe you sugar candy for things like chest ailments or digestion problems. Back then, the "spoonful of sugar" idea was literal—if you had some sort of unpleasant medicine to take, usually a concoction of herbs that might not taste very good, the apothecary would suspend it in sugar.

As time and technology progressed, so did the art of confectionery. The English word "candy" derives from Arabic "qandi," meaning something made with sugar. Indeed, the first candies were sugar coated nuts, seeds and fruits. Jujubes, marshmallows are a prime examples of ancient medicine becoming modern candy.

"All of the peoples of antiquity made sweetmeats of honey before they had sugar: the Chinese, the Indians, the people of the Middle East, the Egyptians and then the Greeks and Romas used it coat fruits, flowers, and the seeds or stems of plants, to preserve them for use as an ingredient in the kind of confectionery still made in those countries today.

At the height of the Middle Ages sweetmeats reappeared, on the tables of the wealthy at first...In fact the confectionery of the time began as a marriage of spices and sugar, and was intended to have a therapeutic or at least preventative function, as an aid to digestive troubles due to the excessive intake of food which was neither very fresh nor very well balanced...guests were in the habit of carrying these sweetmeats to their rooms to be taken at night. They were contained in little comfit-boxes or



drageoirs...."

By the Middle Ages physicians had learned how to mask the bad taste of their medicines with sweetness, a practice still widespread. Boiled "sugar plums were known in the seventeenth-century England and soon were to appear in the American colonies where maple-syrup candy was popular in the North and benne-seed [sesame seed] confections were just as tempting in the South. In New Amersterdam one could enjoy "marchpane," or "marzipan," which is very old decorative candy made from almonds ground into a sweet paste. While the British called such confections, "sweetmeats," Americans came to call "candy," from the Arabic qandi, "made of sugar," although one finds "candy" in English as early as the fifteenth century...Caramels were known in the early eighteenth century and lollipops by the 1780s

It wasn't until the 19th century that the apothecary (medicine makers/pharmacy) and confectionery started becoming separate professions. Candy of the sort that you might recognize today really took off emerged after the Civil War, after the price of sugar had fallen.

## **Chocomania Begins!**

"Hard candies" made from lemon or peppermint flavors were popular in the early nineteenth century...A

significant moment in candy history occurred at the 1851 Great Exhibition in London, where "French-style" candies with rich cream centers were first displayed...But it was the discovery of milk chocolate in Switzerland in 1875 that made the American candy bar such a phenomenon of the late nineteenth century. Did you know? Goo Goo clusters are the oldest composite bar in America (1912!)

Chocolate. There are few foods that people feel as passionate about -- a passion that goes beyond a love for the "sweetness" of most candies or desserts: after all, few people crave caramel, whipped cream, or bubble gum. Chocolate is, well, different. For the true chocoholic, just thinking about chocolate can evoke a pleasurable response.



The cacao tree (*Theobroma cacao*) is a native of Central and South America. When Columbus came to the new world cocoa beans were the local currency. In fact, in some parts of Central America, cacao beans were used as currency as recently as the last century.

The spread of the cacao tree started during the age of Colonialism, as did the spread of cacao beans, and of chocolate itself.

Christopher Columbus was the first European to come in contact with cacao. On August 15, 1502, on his fourth and last voyage to the Americas, Columbus and his crew encountered a large dugout canoe near an island off the coast of what is now Honduras. **(Find it on a map)** The canoe was the largest native vessel the Spaniards had seen and was filled with local goods for trade -- including cacao beans. Columbus had his crew seize the vessel and its goods, and kidnapped its skipper to keep him as his guide.

## Mm & mmm...brain food!

According to an article in the LA Times: "Craving chocolate? Activity in certain brain area might be why." "Scientists have discovered a brain area that helps control your desire to eat sweet, hyper-palatable foods like chocolate."

Researchers at the University of Michigan discovered that when you chemically poke a rat in a particular brain spot, the rat eats twice as many M&Ms as rats that are just minding their business and eating M&Ms as Nature intended.

This research has obvious implications for humans, at least those with brains similar to rats. When we just can't control those cravings anymore we blame it on our brains! Or, we can turn to our nearest brain surgeon to carve out this chocolate-craving region. Wouldn't you rather just eat another m&m?

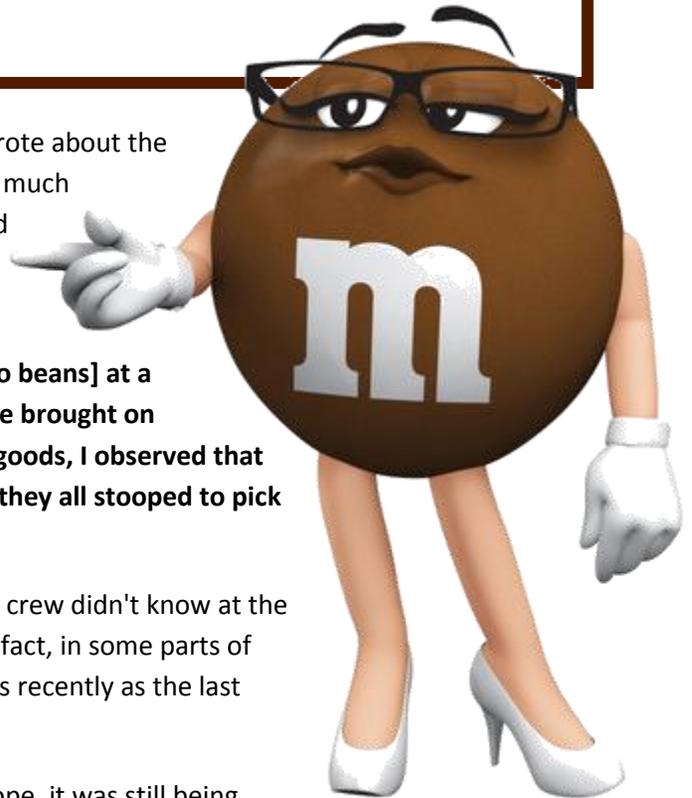


Later, Columbus' son Ferdinand wrote about the encounter. He was struck by how much value the Native Americans placed on cacao beans, saying:

**"They seemed to hold these almonds [referring to the cacao beans] at a great price; for when they were brought on board ship together with their goods, I observed that when any of these almonds fell, they all stooped to pick up, as if an eye had fallen."**

What Ferdinand and the other members of Columbus' crew didn't know at the time was that cocoa beans were the local currency. In fact, in some parts of Central America, cacao beans were used as currency as recently as the last century.

When the Spanish first brought chocolate back to Europe, it was still being



served as a beverage, but soon went through an important evolution: the chili pepper was replaced by sugar. The new, sweetened, chocolate beverage was a luxury few could afford, but by the 17th century the drink was common among European nobility. In England, which was somewhat more egalitarian than the rest of Europe, chocolate was more widely available. Those who could afford it could enjoy chocolate drinks in the new coffee and chocolate houses of London.

These days chocolate has become more central and more popular than ever, and it has to do with the idea we have that it is the most luxurious, decadent flavor ever. If you go back to the early 1900s, chocolate was not as universal, but now there's a sense that somehow chocolate is better, more adult, than sugar candy. And now the National Confectioners Association survey of kid's preferences finds the most favored trick-or-treating candy is chocolate.

It seems that you can find anything coated in chocolate! **What have the students seen that is coated in chocolate? Ex. ants, berries, pretzels, potato chips...** Anything like Charlie in "Charlie's Chocolate Choices"?

### Chocolate Choices

Chocolate, chocolate, for chocolate's sake,  
Give me chocolate so I can make  
Chocolate liver, chocolate peas,  
Chocolate biscuits, if you please.  
Chocolate squash with chocolate chicken,  
Makes a meal that's finger lickin'.  
Chocolate donuts, chocolate bars,  
Chocolate cakes and chocolate stars.  
I want these all for my desserts  
I'll eat until my stomach hurts.  
Alas, there is not near enough  
For me to make all this tasty stuff.  
I know that I must choose;  
I'll make just one, and have the blues.

# Sweet Math O'mine

Students must navigate through an enchanted forest filled with dangerous villains and perplexing basic math problems. Okay, not really, but there will be a few perplexing math problems and a lot of fun to make your heart skip a beat!

## Hopping Hundred

Hopping Hundred is a fun game for two people. It's simple to play and it gives players a chance to practice multiplication and division.

Materials:

Each player will need:

- A copy of Hopping Hundred Game Board, tape the two pages together
- 100 small objects (such as dried beans, pennies, paper clips, or pieces of paper to use as tokens)

Note: This game can be simplified by using only the numbers 1-50 (the top half of the game board). You may want to start with this simpler version of the game, letting players move up to the version of 100 numbers when they are ready. Hopping hundred can also be played independently by groups of two. It is a great activity for those who finish other assignments early.

Before your group plays Hopping Hundred, make sure everyone understands what multiples and factors are. A *multiple* is what results when you multiply a number by other numbers. Some multiples of the number 3, for instance, are 6 (which is  $3 \times 2$ ), 15 (which is  $3 \times 5$ ), and 33 (which is  $3 \times 11$ ).

Factors are numbers you can multiply together to get the number you're after. Some factors of the number 90, for example, are 2, 3, and 5, because  $2 \times 3 \times 3 \times 5 = 90$ . Other factors of 90 are 6, 9, 10, 15, 18, 30, and 45. All of these numbers divide evenly into 90, leaving no remainder.



Summarize the rules of the game aloud or have players follow the instructions written on the board.

## How to Play:

1. Player 1 chooses any even number and puts a token on that number.
2. Player 2 chooses any number (even or odd) that is a *multiple* or a *factor* of player 1's number and puts a token on that number. For example, suppose that Player 1 chooses 10. Player 2 could choose 20, 30, or 40. These numbers are all *multiples* of 10, because you can multiply 10 by some other number to make them. Or Player 2 could choose 1, 2, or 5. These numbers are all *factors* of 10, because they divide evenly into 10. (*Divide evenly* means that the result is a whole number and there is no remainder.)
3. Players take turns choosing numbers to cover from those remaining. On each turn, a player can choose any uncovered number, even or odd, as long as it is either a multiple or a factor of the previous number chosen.
4. The first person who cannot cover a number loses the game.

This game requires players to think ahead. Playing smart means thinking not only about the number you are going to choose but also about the number your opponent might choose—or will be forced to choose—when it's his or her turn. A player wins by picking a number that has no multiples or factors left on the table. Did anyone figure out a consistent technique for winning? There is one!

**Challenge:** Have students work together to make the game last as long as possible before they get stuck on a large prime number!



1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50

<b>51</b>	<b>52</b>	<b>53</b>	<b>54</b>	<b>55</b>
<b>56</b>	<b>57</b>	<b>58</b>	<b>59</b>	<b>60</b>
<b>61</b>	<b>62</b>	<b>63</b>	<b>64</b>	<b>65</b>
<b>66</b>	<b>67</b>	<b>68</b>	<b>69</b>	<b>70</b>
<b>71</b>	<b>72</b>	<b>73</b>	<b>74</b>	<b>75</b>
<b>76</b>	<b>77</b>	<b>78</b>	<b>79</b>	<b>80</b>
<b>81</b>	<b>82</b>	<b>83</b>	<b>84</b>	<b>85</b>
<b>86</b>	<b>87</b>	<b>88</b>	<b>89</b>	<b>90</b>
<b>91</b>	<b>92</b>	<b>93</b>	<b>94</b>	<b>95</b>
<b>96</b>	<b>97</b>	<b>98</b>	<b>99</b>	<b>100</b>

# Rings a Bell!

Arrange students into two or more teams. Two teams might be the most manageable arrangement; but the more teams you have for this game, the more practice students get. You must have a bell or noisemaker for each team. (If you want to make this a really special event, give each student a party blower to use!)

You might appoint a scorekeeper to record points as they are awarded. You also might appoint a flash-card handler, especially if students have played before and you have modeled the role of the flash-card handler.

Have each team line up facing you. At the head of each line, position a desk with a bell on top of it. To start the game, have the one member of each team step to the desk. Students' hands should be ready to ring the bell. Show them the next

math-fact flash card in the stack. As soon as a student knows the answer, he or she rings the bell. The first student to ring the bell gets to call out the answer. If the student who rings the bell calls out the correct solution without delay, he or she earns a point for his or her team. If the bell-ringer delays a response or calls out the wrong answer, the opposing team earns the point. After that round, the first two students run to the back of their respective team's line and the next two players step forward and prepare to answer a question.

The game moves quickly. The more quickly it moves, the more chances for math-fact practice each student gets. At the end of the game, the team with the most points wins.



# Speed 'em UP! Ship 'em OUT!

For a fun introduction to this section have students watch the classic I Love Lucy Chocolate Factory Clip:

<https://www.youtube.com/watch?v=D6LUG-siJVs> or at <http://www.tv.com/shows/i-love-lucy/job-switching-15119> [has commercials, full episode, start after 12:58 or later] [*Ricky wants Lucy to try working for a week, so she and Ethel get jobs at a candy factory, where they are totally inept-especially at wrapping chocolates-due to a speeding conveyor belt that has them stuffing chocolates in their mouths, blouses, and hats.*]



The new industrial machines of the late 19th and early 20th centuries made it possible to produce candy in a whole new way. Actually, the first candy-making machine was invented by a pharmacist, Oliver Chase, in 1847, to crank out medicated candy lozenges. In 1847 in a small drug store in Boston, Oliver R. Chase turned the crank on his latest invention, a device that would press and cut candy lozenges. As the machine-cut sweets emerged from the press, the modern world of candy was born, and the beginning of the American candy industry.

The lozenge cutter probably wasn't much to look at, just a small

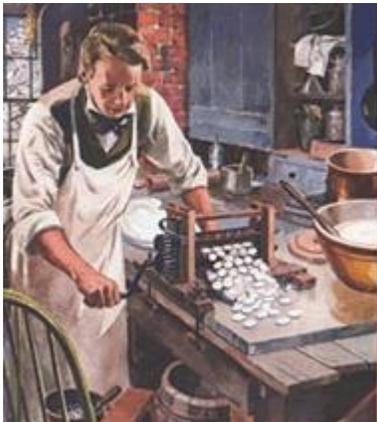


table-top, hand operated machine, similar to a large pasta maker. Chase could not have known as he watched the first batch of opaque disks emerge from the machine that he was changing candy forever. The lozenge cutter was the first candy-making machine. Out of that little device arose the American candy industry, and the commercial manufacture of

candies on larger and larger scales. Oliver Chase wasn't really in the candy business. He was a pharmacist. But in the nineteenth century, if you wanted something candy-ish, the pharmacy was the place to go. Pharmacists had for centuries been using sugar to "make the medicine go down." Sugar disguised the often bitter or unpleasant tastes of medicinal herbs and compounds. Sugar paste in particular was a valuable for apothecaries working with only basic tools because the drug could be mixed in to the paste and the lozenges cut to regular size. The advantage to

## FYI

Another Chase brother, Daniel, invented a lozenge printing press in 1866, which allowed him to create "Conversation Candies." These candies were instantly popular at birthdays, weddings, and other occasions and are still popular today on Valentine's Day. Can you think of what we call them today? NECCO is the number one maker in the United States of the famous Valentine conversation hearts with romantic words and messages stamped on them. About 8 billion a year are produced!



these medicinal lozenges was that they would deliver a reasonably accurate dose, and that the medicine would be released slowly as the lozenge dissolved.

And for many maladies, sugar itself was viewed as a beneficial drug. Chase's first "lozenges" were sold to soothe the throat or to settle the stomach. The line between "drug" and "candy" was, in those days, pretty fuzzy.

If you're wondering what that 1847 lozenge might have tasted like, it's easy to find out. Just run down to the store and buy a roll of NECCO Wafers. **(Allow your students to try them).** These chalky candies seem peculiar today, but in the late nineteenth century many similar candies were made and sold, and they were very very popular.

Once Chase could automate the cutting of the pasty dough, his production took off, and within a few years he had a flourishing candy business, Chase and Company, the first in a group of companies that would come together as the New England Confectionery Company, or NECCO.

By 1890, one candy-making manual explained that machinery had transformed the making of lozenges:



"Twenty years ago, lozenges were mixed and cut by journeymen confectioners...within the last few years, machinery has been introduced which mixes, rolls, stamps and cuts, all the

manual labor that is required is simply a superintendent. Turning out many hundredweights a day." [112 pounds, = 1 hundredweight. How many ounces in a Necco Wafer Roll? How many rolls might many hundredweights add up to per day?]

These little candies have been a part of our history ever since, becoming the oldest continually-produced candy in America. Union soldiers carried NECCO wafers with them during the Civil War and NECCO gained attention in the 1930s when Admiral Byrd took 2 ½ tons of NECCO wafers with him on a South Pole exploration, almost a pound a week for each of his men during their two-year stay in the Antarctic.. The following decade, during the Second World War the U.S. Government requisitioned a major portion of the production of the wafers and ordered NECCO to produce its wafers for troops overseas because they don't melt and are "practically indestructible," making NECCO wafers ideal to ship overseas to the troops. Upon returning home, many former soldiers became faithful customers who continued to buy the wafers.

NECCO has grown from its small origins in Oliver Chase's invention to incorporate many other candy companies throughout its 150+ year history. One thing that has remained the same for NECCO in Cambridge is the process of creating the famed NECCO wafers. The ingredients, sugar, gelatin, and flavoring, are the same as they were in 1847 and much of the machinery used to mix, roll, and press the wafers is pre-World War II technology. Workers still judge by hand the right number of wafers for the perfect roll, and NECCO has no desire to mechanize this process.

If you can find them have students try a taste of a roll of NECCO Wafers, it's like a taste time travel back to 1847. Necco candies come in eight assorted flavors: orange, lemon, lime, clove, chocolate, cinnamon, licorice and wintergreen, each with the name NECCO printed on the surface. For the chocolate Necco fan, rolls consisting entirely of chocolate flavored Necco's are also available.

The science geek may be interested to know that, like wintergreen Lifesavers, wintergreen Necco's (the white ones) also have the ability to emit sparks when chewed or snapped in half in the dark. **Test it out!**



# Dipped, Dusted, & Rolled...

## Crafting Handmade Chocolates

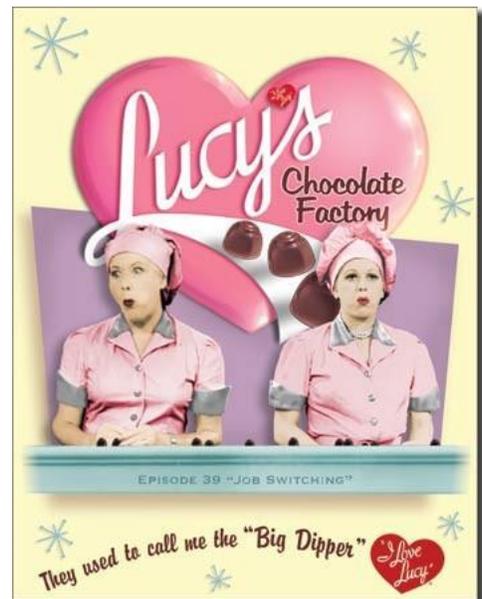


For a fun and funny illustration of what NOT to do in this section, introduce it by having students watch the beginning of the classic I Love Lucy Chocolate Factory episode at <http://www.tv.com/shows/i-love-lucy/job-switching-15119>. Always preview videos to determine if they are appropriate for your students/class.

For free complete step by step videos related to each phase of the following process & to learn about the lovely Gayle Harte and her truffles go to this site

<http://www.craftsy.com/class/Dipped-Dusted-and-Rolled-Handmade-Chocolates/54> All rights, images, and credits are reserved to her. Note: It is HIGHLY recommended the steps of this project be practiced before attempted in class.

**As always, when dealing with foods, be sure to be vigilant and aware concerning any food allergies your students may have. Nut allergies are incredibly common.**



### 5 Steps:

- Make Ganache
- Temper Chocolate
- Dip
- Decorate
- Box

Cocoa content, you know, everyone wants to know just how dark dark chocolate is, well it refers to the cocoa butter and the cocoa. The percentage, ex 72%, refers to those, the rest of it is made up of sugar.

## Chocolate Needs:

- Chocolate liquor or cocoa mass: Chocolate liquor isn't actually any kind of liquor or alcohol, it's the solid mass of cocoa.
- Cocoa butter (fat from cocoa bean that's taken out and put back in during processing)
- Soy Lecithin: an emulsifier, which means it keeps the cocoa mass and cocoa butter together so it doesn't separate.
- Vanilla:
- Sugar (because unsweetened chocolate does not taste good!)

Milk chocolate also has...milk!

There shouldn't be any other ingredients or fats in true chocolate. If it has palm oil in it that shouldn't be labeled chocolate, it's a compound coating.

## Truffle Ingredients

Supply List: Gayle Harte's Chocolate Truffles

To make approximately 2 lbs. or 60 truffles

**Ingredients:** Tip: In any recipe you make, the final results are only as good as the ingredients. Use the best decent chocolate, heavy cream, unsalted butter and flavors that **will fit within your budget.**

- 2 lbs. semisweet or milk chocolate. Chocolate chips are okay.
- 1 cup heavy whipping cream (do NOT substitute half and half)
- 2 oz. **unsalted** butter
- ¼ to ½ cup raspberry jam or raspberry butter (Try to find the best ingredients that will fit into the budget. Ex. If making raspberry truffles, try to find a decent raspberry preserve with less sugar for a stronger flavor, ex. sweetened only with juice.)
- Cocoa to sprinkle on truffles
- About 4 oz. chopped nuts to roll truffles in (if using)

## From Bean to Bar

Just south of San Francisco is the Scharffen Berger chocolate factory. It's the first American factory started in the last 60 years that makes chocolate directly from the beans. It uses all European equipment -- most of it vintage, from before World War II. Steven Taormina is kind enough to take us on a video tour and explain the chocolate-making process.  
[http://www.exploratorium.edu/exploring/exploring\\_chocolate/choc\\_5.html](http://www.exploratorium.edu/exploring/exploring_chocolate/choc_5.html) (Requires the free software [RealVideo.](#))

Option: some people like to sprinkle a tiny dash of sea salt on at the very last for a taste contrast and a little sparkle and crunch.

### Equipment:

- Double boiler or Microwave (Note: instead of an official double boiler you can use a bowl that fits tightly over a pan of boiling water)
- Chocolate thermometer that goes as low as 80 degrees Fahrenheit
- Wire whisk, spatula, scraper
- Parchment paper (wax paper)
- Something to chop chocolate with (knife, chocolate chopper or hammer and clean plastic bag)
- Dipping fork (regular fork)
- Paper towel
- Sheet pan
- Bowl to mix ingredients for center
- Small bowl deep bowl for dipping truffle
- Spoon or small ice cream scoop
- Small container to store extra chocolate



## **Truffle Hunting: Chocolate Truffle Recipe by Gayle Harte**

*To make approximately 2 lbs. or 60 truffles.*

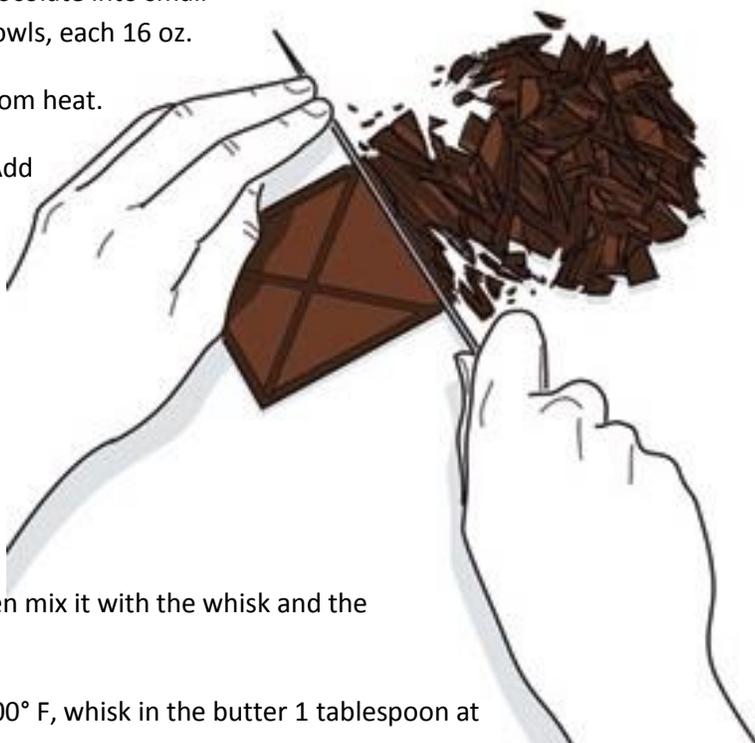
1. Have all your ingredients ready and measured out. Butter at room temperature.
2. Make your truffle centers before tempering the chocolate to dip them in.

3. Chop all of your bittersweet or semisweet chocolate into small pieces about  $\frac{1}{4}$ " to  $\frac{1}{2}$ " in size. Divide into two bowls, each 16 oz.

4. Heat 1 cup of cream to boiling and remove from heat.

5. To make ganache with an added flavor: ex. Add  $\frac{1}{4}$  cup raspberry jam or 1 tablespoon of instant coffee to cream. Stir and then remove from heat and let cool to 120° F.

6. Use your thermometer to check the temperature. When cream has cooled to 120° F, pour it over 1 lb. (16 oz.) chocolate. If cream is too hot, the cocoa butter will separate and you will have an oily mess. If cream is too cool, it will not melt the chocolate. Let it sit for a minute or two, and then mix it with the whisk and the chocolate will melt.



7. When the chocolate mixture has cooled to 100° F, whisk in the butter 1 tablespoon at a time.

8. If you are hand-rolling centers, keep them in the same dish and cover. Refrigerate the mixture. If you are planning to cut in squares and dip with a dipping fork, then pour into a shallow pan lined with parchment paper so the chocolate is about  $\frac{1}{4}$ " to  $\frac{3}{8}$ " thick.

9. The chocolate should set up in about an hour. If you are in a big hurry, you can put it in the freezer.

## Getting the centers ready for hand dipping

When the ganache is firm, use a small melon ball scoop, small ice cream scoop or a teaspoon and scoop out a small ball shape of ganache. Repeat until all the ganache is scooped. Do NOT make balls too big – about 1 inch in diameter maximum.

1. Take a scoop of ganache and roll it into a round ball. If the ganache gets too soft, put it back into the refrigerator.
2. After all the ganache is rolled into balls, put it back in the refrigerator while you temper the chocolate.

## Cutting the ganache into squares for dipping with fork

1. When the ganache is firm, turn the pan over on a cutting board and peel off the parchment paper.
2. With a ruler, measure and mark 1-inch increments in the ganache.

3. Carefully cut the slab of ganache into 1" squares and refrigerate until ready to dip.

## Temper! Temper!

Nut clusters, chocolate-dipped candies, and chocolate-dipped strawberries are just some of the delicious goodies that have a thin, rich layer of chocolate wrapped around them. But how do pastry and candy chefs make these delectable treats? Tempering chocolate can seem like a big mystery, but all you need is a bowl or a pan and a thermometer to get it right every time. For the most accurate results an instant-read thermometer can be very helpful.

Real chocolate is made with cocoa butter, as opposed to compound chocolate, which is made with less expensive fat, such as palm kernel oil or coconut oil. These fats have a higher melting point than cocoa butter, which melts at body temperature. Hard fats are more stable than cocoa butter; thus, compound chocolate does not have to be tempered. Eating real chocolate that melts on your hands and in your mouth is a very satisfying experience. Working with real chocolate is sometimes a little difficult, but definitely worth it.

Tempering is a process in which the cocoa butter in chocolate is hardened into a specific crystalline pattern. When the cocoa butter molecules are in this pattern and they become more uniform in size, the chocolate is shiny and breaks with a sharp snap. Tempering chocolate is an art and a science. It is a science because the tempering is temperature dependent. If the temperature of the melted chocolate is too high, the chocolate will burn. If the temperature of the melted chocolate is too low, it might never harden properly.

When you buy chocolate, it is already "in temper." This means that all of the fat crystals are aligned to give the chocolate perfect snap and shine. When you melt chocolate to change its shape or use it in a recipe, you are taking it out of temper.

The heat causes the fat molecules get all jumpy and if they aren't realigned correctly, you get what's called "bloom," where fat migrates or moves to the surface of the chocolate and gives it a grayish streaked look, like in the picture. Bloomed chocolate still tastes great, it just loses its visual and textural appeal. But even bloomed chocolate can be brought back into temper! You just have to get those molecules back in line.



What is each kind of chocolate

made of?

- Dark chocolate contains cocoa butter, sugar and chocolate liquor. Chocolate liquor is the chocolate part of the cocoa bean that is left after the cocoa butter is pressed out of the cocoa bean.
- Milk chocolate contains cocoa butter, sugar, chocolate liquor and some type of milk product.
- White chocolate contains cocoa butter, sugar and milk products. For years in the United States, it was actually illegal to call white chocolate “chocolate” because it had no actual chocolate in it. It had to be referred to as “white coating.”



## Things to Remember When Tempering Chocolate

It is best to melt chocolate over indirect heat (in a double boiler) or at small intervals in a microwave.

Chocolate is *very* sensitive to changes in temperature, which is why it is important to have a good thermometer. Dark chocolate tends to be the easiest to work with.

The two things that can ruin your chocolate when tempering:

- Overheating it, which will ruin the taste and texture of the chocolate. This can happen in a microwave.
- Letting water or steam from the double boiler get into the chocolate, which will cause it to seize up and turn into a hard lumpy mess.

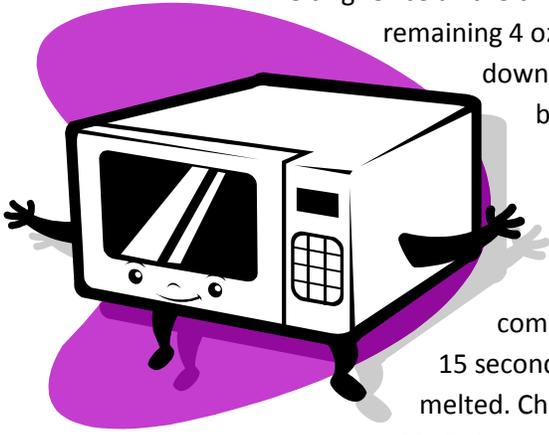
### **Important Note:**

Make sure your ingredients, tools, and work environment are completely dry during the entire process! Even a small amount of water will turn your smooth liquid chocolate into a sticky, lumpy mess. Also be sure that your kitchen is not too hot. The room's temperature should be 70 degrees or lower. Now you're ready to begin.

## Temperature Agitation Time

**1.** Chop the remaining 1 lb. of chocolate into small uniform pieces so that it will melt evenly. You can use a chocolate chopper or a large chef's knife, or simply use chocolate chips.

**If using a double boiler:** Put 12 oz. of chocolate into the top of a double boiler, over simmering but not boiling water. Make sure the top to the double boiler is tight so steam does not escape into the chocolate. Steam or water will cause the chocolate to seize up. Constantly stir the chocolate while it is melting. Once all the chocolate is melted, remove top of double boiler and add the remaining 4 oz. of chocolate. Keep stirring while the hard chocolate brings down the temperature. When the temperature goes down to between 86° to 88° F, it is ready for dipping.



**If using a microwave,** put 14 oz. chocolate in a small glass or microwavable bowl and set microwave on power 10 for 30 seconds. Stir and repeat if chocolate is not completely melted. When chocolate is just about melted, go to 15 seconds. Stir the chocolate to help the melting. Repeat until melted. Check the temperature. It should not be above 105° F or below 100° F. Add the reserved 2 oz of chopped chocolate and stir until it is all melted. While cooling, stir frequently. Motion equals good crystallization, aka, tempering.

1. Check the temperature. If the temperature is below 86° F and the chocolate has not melted, put back in microwave for 10 seconds. It is important to stir the chocolate to distribute the cocoa butter evenly.
2. The last step is the most important: It's bringing the chocolate up to the perfect temperature, where it's chock-full of those great beta crystals, which happens *really* fast! This occurs in most dark chocolates between 88° and 91° F (31°-32°C.) (Milk chocolate tempers at 86°-88°F, 30°-31°C.) Don't let it get above 91° F (32°C) or you'll have to begin the process all over again.
3. Remove what's left of the chunk of 'seed' chocolate, and your chocolate is dip-worthy: you can dip all the chocolates you want and all will be perfectly tempered.
4. If it drops below the temperatures, rewarm it gently to bring it back up. So long as you don't burn the chocolate or accidentally add water to it and it seizes, you can re-melt chocolate **AS MANY TIMES AS YOU WANT.**

Tip: When it should be tempered you can test it by putting a spoon in and laying the spoon face down. If the chocolate on the back of the spoon hardens w/in 10 minutes and looks shiny, it's tempered. If



not, then you can start over by bringing it back up to 120F and going back through those steps. It's a chemical reaction you're making w/in the chocolate to form the right crystals.

## Feeling Dippy?

### Dipping the Chocolates: BY HAND OR WITH FORK?

Dipping with a fork is much neater if you are the type that doesn't like getting your hands dirty, but hand-dipping, which is really done with one very clean finger, is much faster and produces a better looking product, with greater control. Chocolate feels great on your hands because it melts at body temperature so it is neither too hot or too cold. Some people don't like to get their hands dirty and that is understandable so you can always use a dipping fork .

### Steps to Hand Dipping

- Use a small deep bowl, about 6 to 7 inches in diameter and 3 inches deep.
- With your index finger, push the round ball straight down in the chocolate until it is totally covered.
- This is the tricky part – Try to get your index finger under the ball and come straight up, keeping the ball balanced on your fingertip or in the first crease of your finger (below). If it falls off, try it again, keeping it evenly covered with chocolate. Don't hit the side of the bowl or the chocolate will scrape off and not be evenly coated.

Once you have it balanced on your finger, tap your finger gently on the side of the bowl and shake off excess chocolate.



Go low to the parchment paper and turn your finger over, dropping the ball onto the paper. Slightly tap the ball with your finger to get the excess chocolate off your finger, and make a swirl on top of the ball (below), which is now a hand-dipped truffle!



## Dipping Truffles In Chocolate Or Rolling Ganache In Cocoa ?

### Which & Why?

Dipping the ganache centers in chocolate produces a truffle with a shelf life of two weeks when kept unrefrigerated and kept in a cool place. Refrigerated truffles have a shelf life of two months when stored properly.

Truffles that are made with ganache centers and rolled in cocoa powder – thus omitting the dipping – are very perishable and last only a few days. This is more of a European type truffle. If you were going to make truffles ahead for a party, or as gifts or favors, you would want to dip them.



# Lookin' Good! Decorating Truffles!

Decorating instructions tips and tricks video here: <http://www.craftsy.com/lecture/Finishing/602.html#>



**Truffles & Nuts/Mini Chocolate Chips/Sprinkles:** If you want to make a small truffle with nuts or dipped in miniature chocolate chips or any other textured coating, you have to dip it in the tempered chocolate and put it directly in the nuts or chocolate chips using a dipping fork. A dipping fork can come in several shapes (see illustration), one is as a small loop of stiff wire with a handle.

Drop your truffle in the chocolate, cover it and then gently lift it with your dipping fork (or your finger works perfectly well), letting excess drain off or gently shake it off.



Not too much! You need some for the nuts to stick to.

Then gently put it in the chopped nuts and cover your truffle with the nuts. Simply push the nuts over the top of your truffle and roll it in the nuts. Lift them out, roll them in your hands a little to make sure the nuts are sticking and put them on wax paper. And then keep going! Once your chocolate is in temper you just keep making truffles. You may be able to do several at once, but you don't want the chocolate to set up before you can get them coated.

Tips:

- If you (or your students) haven't really mastered dipping, these coatings can cover a lot of mistakes and it's a great way to get practice!
- When making nut covered truffles, make your centers a bit smaller, as the nuts take up a lot of space.
- You can use any kind of nut, simply chop them into small pieces.

## Truffles & Cocoa Powder

These can have larger centers than your nut truffles.

There are several options:

- You can sprinkle your round dipped chocolate truffles with cocoa powder, simply using your fingers grab a pinch and dust your freshly coated truffle. As you and your students get faster at dipping then you can dip several (ex. 4) and then dust them before the chocolate sets.
- For a more European style truffle, take a square center and roll it in the cocoa powder. But these have to be eaten right away (within 2 days), they are much more perishable than the dipped kind.

## Laced Truffles:

Video: Watch how to do this technique starting at 5:12 in this video.

<http://www.craftsy.com/lecture/Finishing/602.html#>

For a pretty contrast, if you used dark chocolate to dip then temper some milk chocolate[ or white?] for your “lacing.”



Dip the very tips of your fingers in the chocolate and move your hand over the chocolate, letting it fall and drip onto the chocolates. You can move one direction only or criss-cross in two directions. Depends on preference and if you're trying to cover something up. The key to this technique is simply, don't be afraid! Swing your hand gently and the chocolate will fall off, allowing you to decorate a lot of truffles, really fast!

## Things to Remember About Decorating:

If boxing them remember to take into account how much size your decorations add to your truffles, ex. chocolate coating will add about 1/8 of an inch all the way around, the nuts, depending on how fine you chop them, will add about 1/4 inch.

If packing up chocolates to give as gifts it is HIGHLY recommended you dip them, don't just dip them in cocoa powder as they are very perishable and won't keep well.

## Truffle Shelf Life:

Undipped w/ cocoa powder:

- Highly perishable, only 1-2 days

Dipped:

- With the dipped style the tempered chocolate seals them and makes them airtight, giving them a longer shelf life, about 7-10 days if you keep them in a cool area.
- Refrigerated, they have at least a 2 month shelf life.

## Wrap it Up! I'll take it!

Food historians confirm confectionery packaging through time is a complicated issue. Not only is packaging period-dependent (technologically possible options), but venue (penny-candy street vendors vs shops catering to wealthy clients), occasion (Valentines gift, everyday candy bar) and product (chocolate bars are packaged quite differently from gumdrops) factor in as well.

Containers are essential; they help maintain low humidity, hold sweets together, and protect them during transport. Before the nineteenth century, options were limited. Fruit in syrup was mostly stored in earthenware gallipots, and small sugar confections and pastes in oblong or round boxes made of thin sheets of matchwood... 'Jar glasses' (small, cylindrical glass containers) were in use by the seventeenth century but they are rarely mentioned. They were expensive, limited to wealthy households or enterprises. Glass jars probably did not become common until the late eighteenth century when, though used as storage containers, their emphasis had switched to a means of display.



Tall straight-sided and later ones with lids were used for candy. Glass was used more and more to show off the bright colors and clarity of newly fashionable, transparent acid and fruit drops to brilliant advantage in the 1830s and '40s...Another important innovation, from the 1850s onwards, was the airtight tin--especially for toffee. Functional yet decorative, these became coveted in their own right. Commemorative versions were produced for national events, or the patterns designed so that a set of tins with themed pictures was available.

Wrappers, although treated as so much waste paper, account for much of the color perceived in confectionery by the modern observer. This is a phenomenon of the last hundred years. Before, a scrap of paper wrapped round a sugar stick or twisted into a cone (the origin of the triangular paper bag) was the most one could expect when buying sweets in the street. These wrappers were themselves waste paper. Henry Mayhew recorded how one street-seller of sweet stuff bought paper from stationers or secondhand book shops, and 'a pile of these a foot or more deep, lay on the shelf under his counter. They are used to wrap rock &c. sold.' Smarter confectioners used paper wrappers with cut or fringed ends twisted around sweets.

In the 1900s, the packaging of candy changed dramatically. Old-time candy was packaged in bulk, and measured out at the point of sale, for example, chocolates and candies were packed as unwrapped bars in wooden boxes with paper labels, displayed on the shop counter. You can see the problems with this system, though: **such as? Ex.** it was slow, you needed a clerk to serve each customer, it might be unhygienic, and it didn't encourage any kind of brand loyalty.

Glassine was one of the new materials that made it possible for candy makers to package their goods individually. Glassine is a kind of paper. It is thin, translucent, moisture and grease resistant. It is in wide use today, you've seen glassine envelopes for stamp collecting, or maybe bought a sack of hot roasted peanuts, a cookie, or fresh popcorn in a glassine bag.

Candy makers or shops could put their name on the package, thus enhancing brand identity. And glassine allowed for a cloudy glimpse of the tempting candy inside. Individual paper wrappers developed soon afterwards. Transparent wrapping is a product of our own age. Cellophane was introduced in the 1920s and plastics followed later.

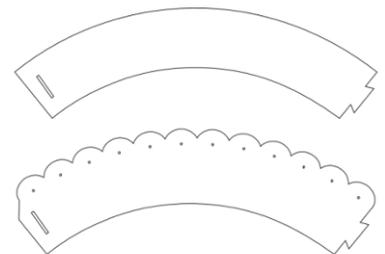
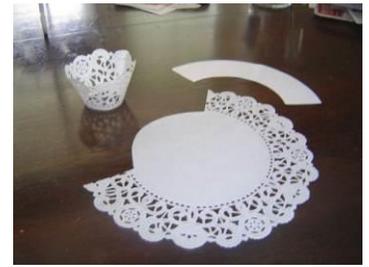
Gold printing and metal foils repeated this luxury message which gold leaf had given to sweets in earlier centuries. Designs used the latest images, and graphics publicized the desirability of chocolate or candy. Even more status was attached to special boxes, decorated with pictures, lined with tissue and paper lace. As the package, not the contents, occupied more and more of the foreground, so advertising has shifted almost entirely from the taste of confectionery towards style by association, allowing companies to use less quality ingredients.

## Pretty Pretty Packaging



One fun tool to use, is a candy cup, or mini cupcake liner to hold your truffles. This allows people who have great self-control to only take a bite and have somewhere to put it. And helps keep things sanitary.

Tip: Rather than simply using mini-cupcake liners, you can also have students create their own unique truffle wrappers using paper doilies, scrapbook paper, etc. A simple way to make a template is by tracing the correct size of cupcake liner. There are also great printable cupcake wrapper templates available for this, such as at,



<http://imagesbyheatherm.wordpress.com/2010/10/06/printable-cupcake-wrapper-templates/>.

## Make Artful Candy Boxes

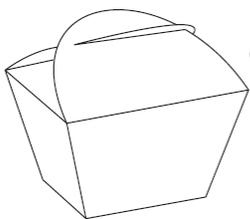
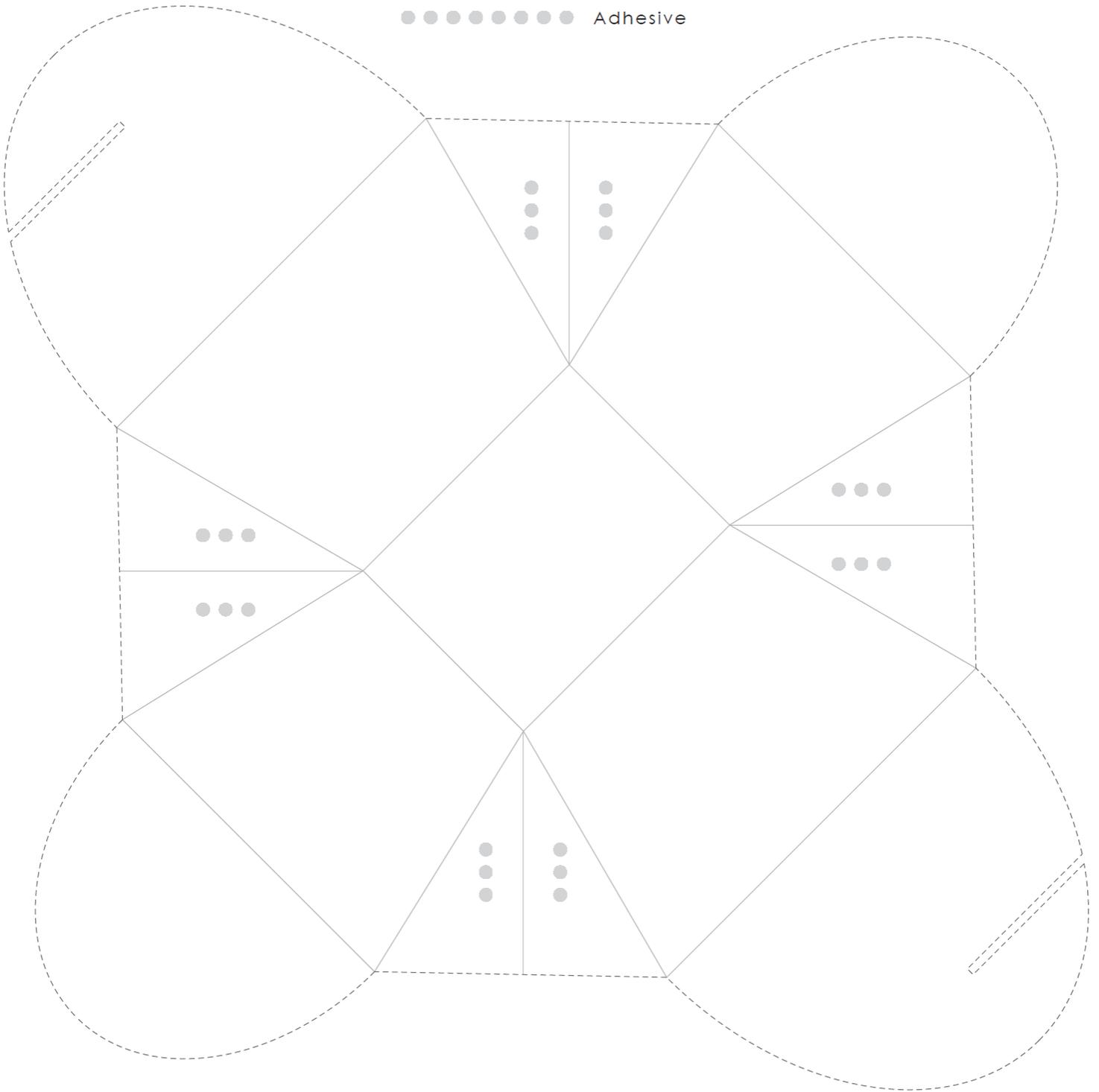
For inventive small box designs students can use and modify the following templates or create their own. These templates are designed to print on a standard "letter" size paper. You can increase or decrease the size of the template when you print it, but the settings depend on the computer and printer capacity.

Materials:

- Cardstock/Scrapbooking Paper
- Scissors
- Template Printouts
- Tape/Glue
- Additional decorative materials, optional.



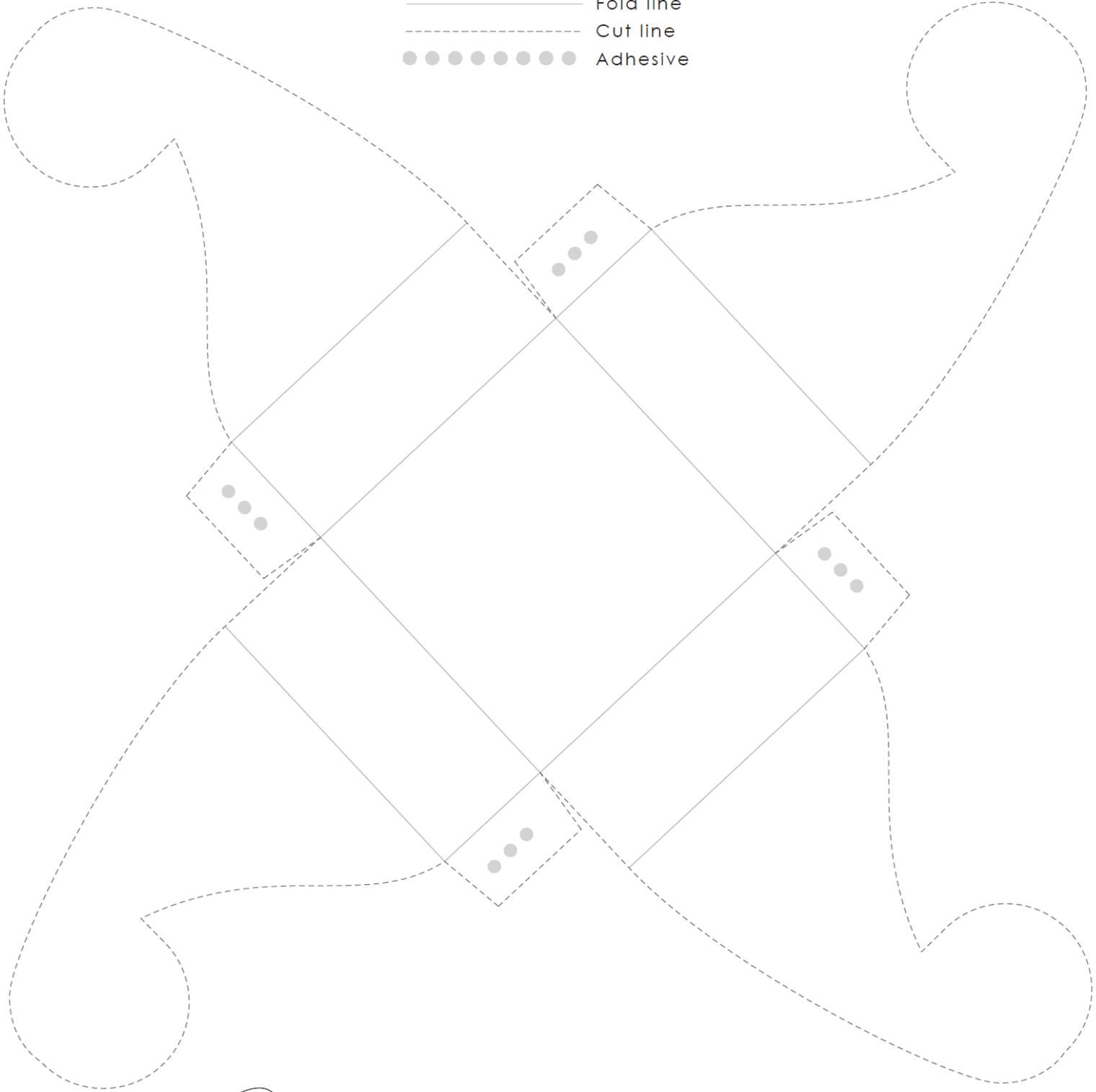
- Fold line
- - - Cut line
- ● ● ● ● ● ● ● Adhesive



## Tips

- Print the template above
- Create any size box by changing the size of your print-out
- Follow the key to cut, fold and adhere the box together

— Fold line  
- - - Cut line  
● ● ● ● ● ● ● ● Adhesive

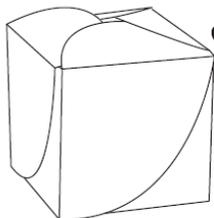
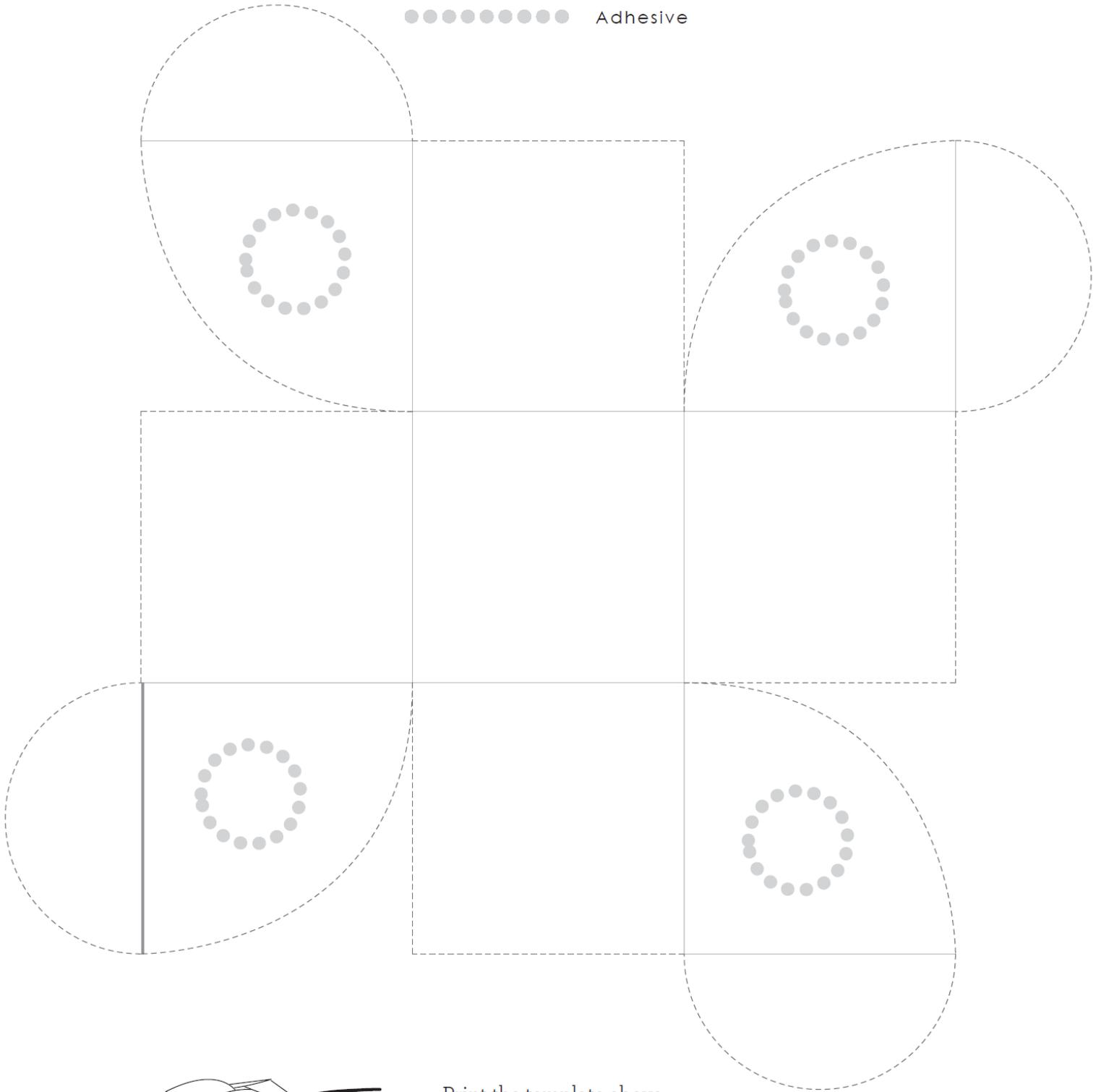


### Tips

- Print the template above
- Create any size box by changing the size of your print-out
- Follow the key to cut, fold and adhere the box together

# COLORBÖK®

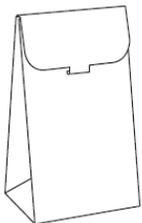
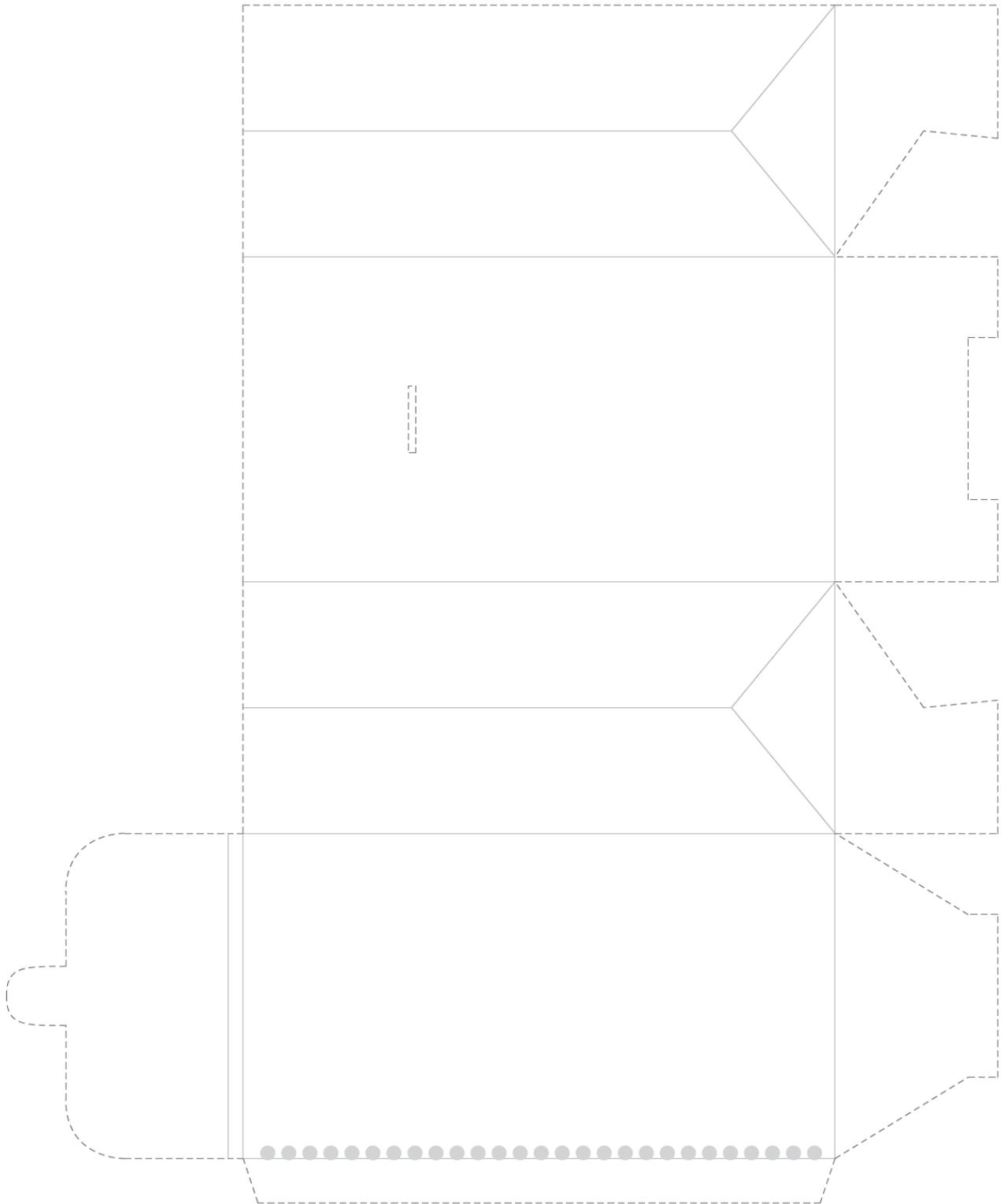
- Fold line
- - - - - Cut line
- Adhesive



## Tips

- Print the template above
- Create any size box by changing the size of your print-out
- Follow the key to cut, fold and adhere the box together

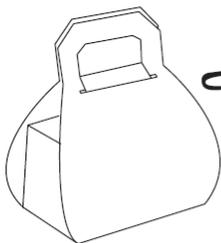
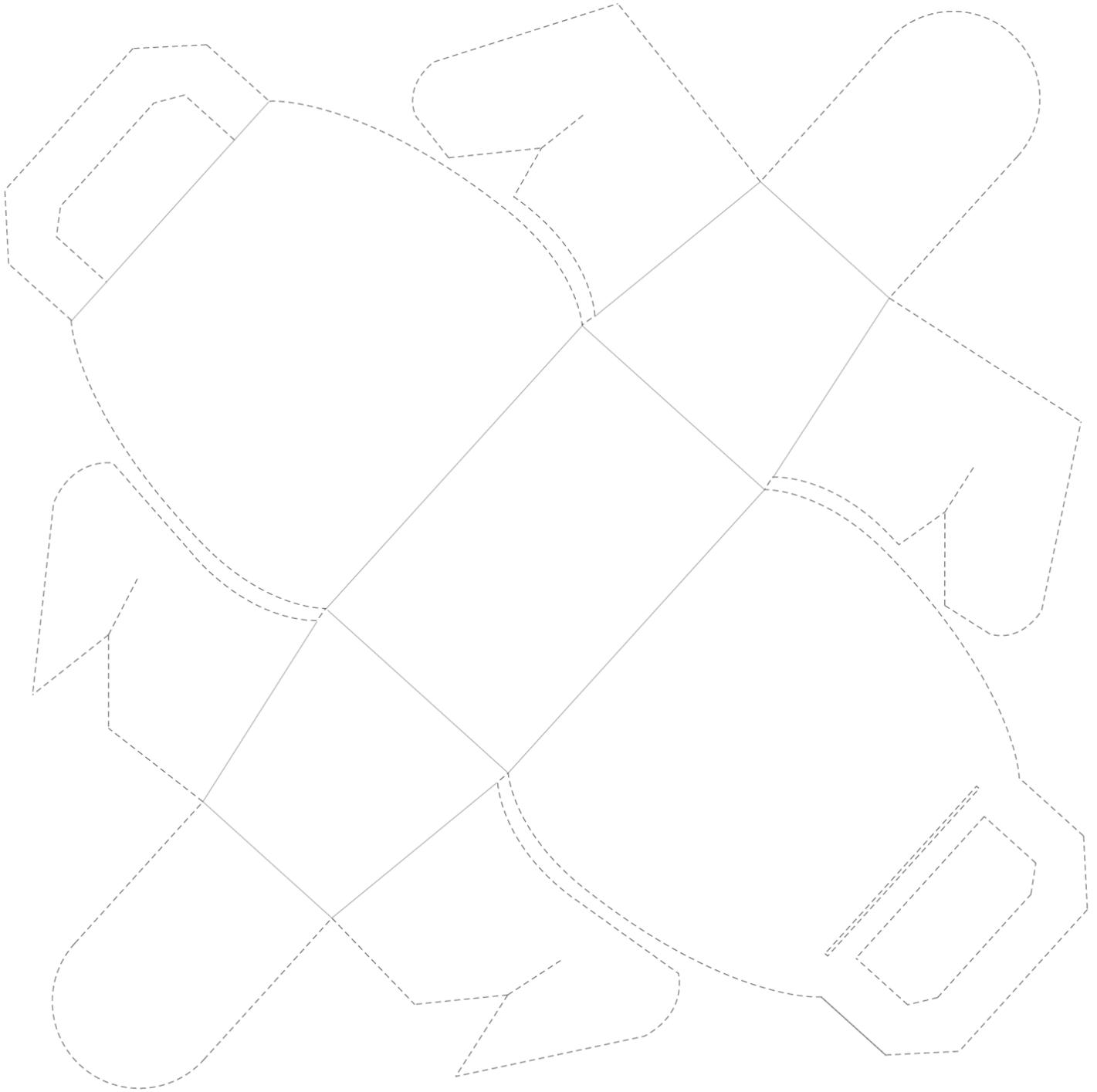
- Fold line
- - - Cut line
- Adhesive



### Tips

- Print the template above
- Create any size box by changing the size of your print-out
- Follow the key to cut, fold and adhere the box together

————— Fold line  
- - - - - Cut line

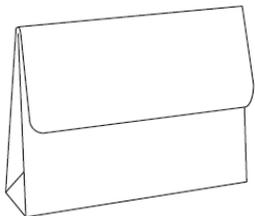
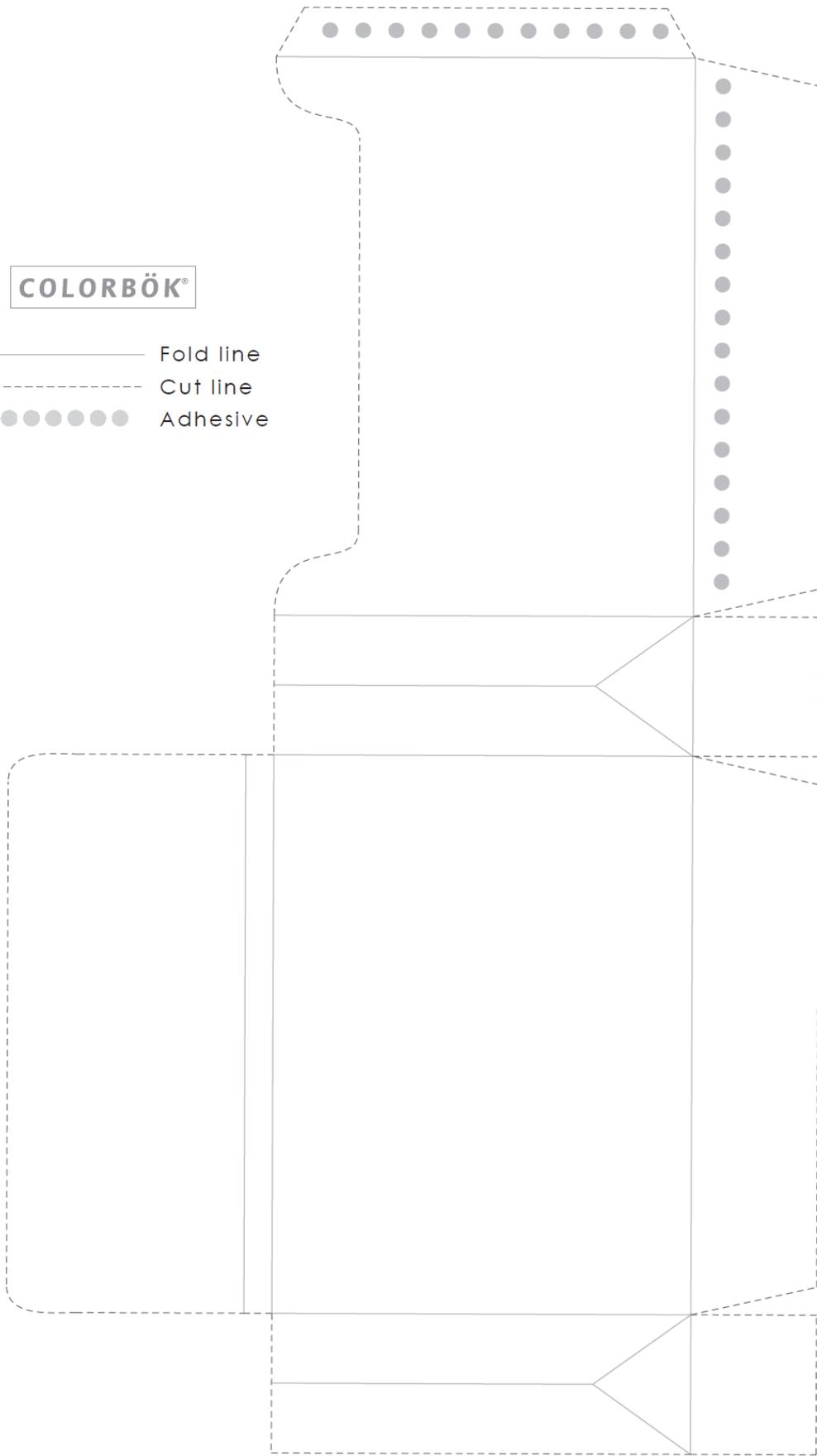


## Tips

- Print the template above
- Create any size box by changing the size of your print-out
- Follow the key to cut, fold and adhere the box together

COLORBÖK®

- Fold line
- - - Cut line
- Adhesive



Tips

- Print the template above
- Create any size box by changing the size of your print-out
- Follow the key to cut, fold and adhere the box together

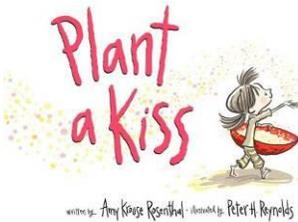


## Tag, it's Yours!

To personalize their gift, have students make tiny tags! Ex. These fun manila swing tags recycled from manila folders from <http://www.eatdrinkchic.com/post.cfm/diy-la-dolce-vita-party-candy-cup-with-carry-handle> . They're so simple to make! Cut out your shape with a pair of scissors, attach a mini white dot sticker (available at most office supply areas) and punch in the center with small round craft punch. Students can use their tag to write a little message (ex. valentine note) to their recipient.

## Plant a Kiss & Watch it Grow!

Children must wonder why adults say some of the curious things that they do—for instance, the phrase planting a kiss. What might happen if you really did?



Read the book, *Plant a Kiss*, or another similar story about spreading kindness and love, sharing and caring, with your students. Before reading, ask students what might happen if you planted a kiss. How would you do it? What

would it need to grow? After reading, have a discussion about kindness, generosity, and how every person has the potential to affect big change.

Unexpected gifts have a magic all their own. Plant a Kiss Day is in April on the 29th, but this is one day that can be celebrated any time.

Your student's mission is to go out in the world and spread a little color, connection, caring, art and magic by "planting kisses" in their own creative ways. One of the ways we're going to do is with a pen, paper, & paint. **But what might be some other ways to "plant a kiss?" List the student's ideas on the board.** Planting a kiss can be simple, free (smile at someone), expensive, silly, serious or anything you want it to be. Spreading

Planted a kiss?



love and joy, kindness & caring, is easy! For even the simplest acts of kindness and magic can change the world.

Introduce the art medium of pen and ink and watercolor to students. It is very similar to, if not the same one used by Peter H. Reynolds in *Plant a Kiss*.



## Materials:

What you'll need:

- watercolor paper (construction paper or printer paper does not work well for this project, heavyweight cheap watercolor paper works great. It's fine to use the cheapest you can find.)
- Black waterproof markers/pens
- Liquid watercolors or Pan or cake watercolors
- Medium size all-purpose brushes
- Water containers
- Option: table salt
- Option: stickers (heart shaped and/or others)
- Option: Glitter & Glue to add a bit of sparkle
- Option: Kisses Candy

Creative thinking is the fuel for getting things going. Dreaming about the project is a huge part of the process. The actual 'doing' requires following through on the dream, but the dream is the rough sketch. For most artists, many projects require several rounds of rough sketches before the final version is complete. Friends often will weigh in with ideas and opinions that help evolve a piece. Encourage students to ponder and conjure the vision, and talk about their ideas (perhaps they want to do a series of pictures, a card with an image of them planting the kiss on the outside and a surprise inside, a single image of the kiss in bloom, or some other idea), but eventually nudge them to "prove their groove."

Once they have a vision in mind of what their project may look like, encourage your students to draw the basic shapes in pencil but to leave the small details for the marker. Many children will try to draw the entire picture with pencil and may take a very long time. In order to have children finish in a reasonable time, suggest this strategy:

Big shapes in pencil

Small details in marker

Have students keep in mind, that the closer you are to the bottom of the page, the larger the object should appear. The closer you are to the top of the paper; the smaller the object should appear.

Using watercolor paints, have students add in splashes of color. They may want to color their whole image, painting the background first. Or they may want to use color like in our story, where it highlights certain aspects. Students can use many different shades to paint their image, not just green for fields and blue for sky. Think about the daylight hours: is the sun setting? They could paint their clouds purple and pink.

### Option: A Heart to Resist Technique

This is an incredibly simple resist technique, with beautiful results.

Before students set out to create their watercolor paintings, have them place heart stickers on their watercolor paper. (You can use any shape of sticker, of course, but these go great with *Planting a Kiss*.) As students work let them know it's perfectly fine to wash paint right over the tops of their heart stickers as they paint and let colors bleed into each other, ex, perhaps hearts rising into the sky?



Let the pages dry **completely**. Then, have students peel away the heart stickers (which come off easily) to reveal a white heart in the midst of golden, blue, or rainbow hued paint.

Another Option: Have students tear the large sheet of watercolor paper into smaller sections against a metal edged ruler. This, opposed to cutting watercolor paper, makes beautiful naturally rustic edges.

## Plant One, On Me!

Have students package up a “kiss” (ex. 2 individually wrapped truffles, box(es), tag, & art) and pick a person to plant it on. Include a note on the little tag attached instruct the recipient to keep a kiss for themselves and share the other with someone else, ex. “One for you, and one to share!”, or “Keep one kiss and pass one along. Let's spread the Kindness in honor of Plant a Kiss Day!” For even the tiniest (and tastiest) acts of kindness can change the world. Plant a seed...and let it grow!



# Resources & Sources

We've barely touched the surface on the history of candy, but hopefully this lesson will serve as a sweet introduction to a fascinating topic, leading students and instructors in the future to explore the history behind the labels and delve deep into the story of sweet! The following are only a few of the wonderful resources used and available for further research.

- <http://www.foodtimeline.org/foodcandy.html>
- <http://www.livescience.com/4949-sugar-changed-world.html>
- <http://suite101.com/article/the-history-of-hansel-and-gretel-ales-a105073>
- <http://theplayhouse.org.uk/hanselandgretel/category/general-info/introduction-general-info/>
- <http://www.scavenger-hunt-fun.com/scavenger-hunt-clues.html>
- <http://www.scholastic.com/teachers/article/math-games-15-minutes-or-less>
- <http://www.scholastic.com/teachers/article/classroom-activities-quick-fillers>
- [http://www.exploratorium.edu/exploring/exploring\\_chocolate/](http://www.exploratorium.edu/exploring/exploring_chocolate/)
- <http://www.tv.com/shows/i-love-lucy/job-switching-15119>
- <http://onejanuaryday.com/2012/05/01/mission-accomplished/>
- <http://www.craftsy.com/class/Dipped-Dusted-and-Rolled-Handmade-Chocolates/54>
- <http://www.marieclaireidees.com/,24-boites-cadeau-pour-composer-un-calendrier-de-l-avent,2610232,2140.asp>

## Additional Resources:

- A fascinating look into how sugar changed the world & its part in the trade triangle: <http://www.livescience.com/4949-sugar-changed-world.html>
- From Bean to Bar: Take a video tour of the Scharffen Berger chocolate factory. Just south of San Francisco is the Scharffen Berger chocolate factory. It's the first American factory started in the last 60 years that makes chocolate directly from the beans. It uses all European equipment -- most of it vintage, from before World War II. Steven Taormina was kind enough to take us on a tour and explain the chocolate-making process. [http://www.exploratorium.edu/exploring/exploring\\_chocolate/choc\\_5.html](http://www.exploratorium.edu/exploring/exploring_chocolate/choc_5.html) (Requires the free software [RealVideo](#).)
- The San Francisco Exploratorium, a science museum, dedicates part of their website to the Science of Cooking. The Science of Candy includes photographs of sugar crystals and discusses the chemistry of sugar during candy-making at <http://www.exploratorium.edu/cooking/candy/sugar.html>.
- Try Engineering has an entire lesson plan dedicated to growing sugar crystals at <http://www.trynano.org/pdf/sugarnano.pdf>
- To locate information about manufactured candies, check commercial websites such as Nestles (Kit Kat and Butterfinger) at <http://www.nestle.com/Brands/ChocolateConfectionery/ChocolateConfectioneryListing.htm> or Wikipedia (fairly reliable information on the candy), and the product panels for calorie and nutrition information at the grocery store.

- For current guidelines on calories, sugar, fat, sodium and other dietary concerns, check the U.S. Department of Health and Human Services site at <http://www.health.gov/dietaryguidelines/> or the U.S. Department of Agriculture's [www.nutrition.gov](http://www.nutrition.gov) website.
- Dr. Robert S. Horn, has created a Sugars4Kids website with a well-illustrated explanation of how humans metabolize sugars (and why we can't get nutrition from grass) at [http://www.medbio.info/Horn/Sugars4Kids/how\\_are\\_sugars\\_digested.htm](http://www.medbio.info/Horn/Sugars4Kids/how_are_sugars_digested.htm).