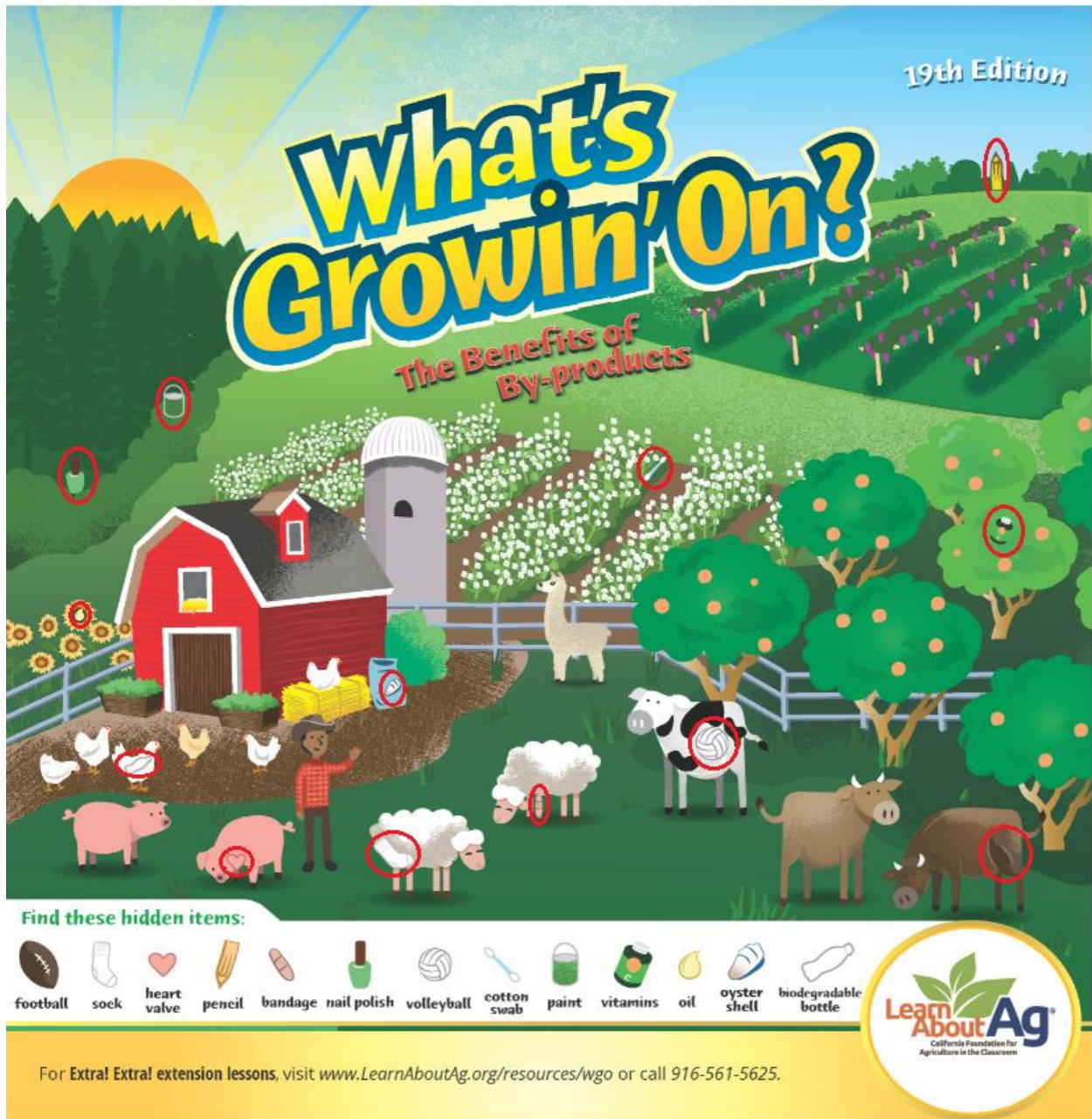


Cover

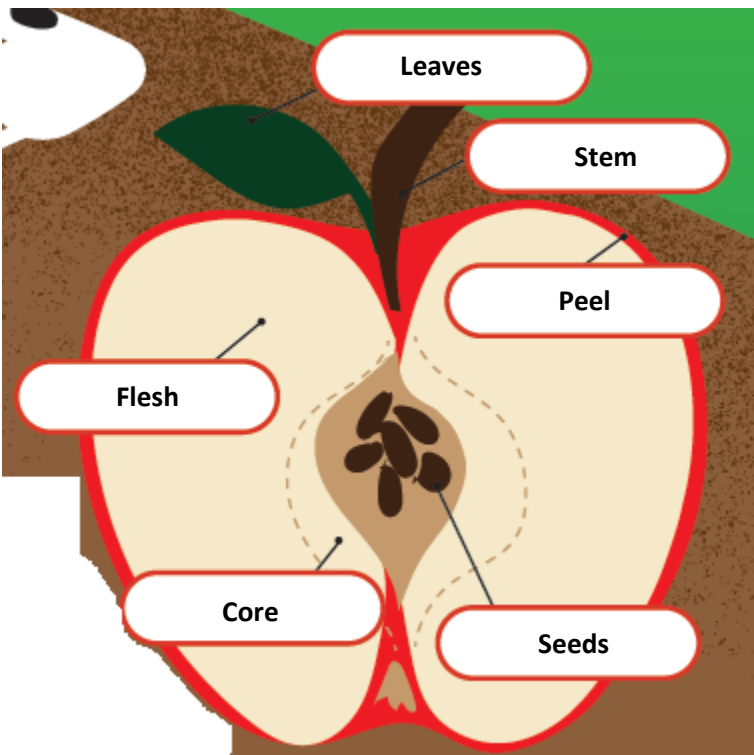


Page 3

What's the Use?

Commodities	By-Products	Use for Final Product
Tomato	Peels and Seeds	Animal Feed
Apple	Pomace and Seeds	Animal Feed
Avocado	Skins and Seeds	Fabric Dye
Onions	Onion Skins	Electricity & Compost
Carrots	Pomace	Animal Feed

What's Inside an Apple



Page 4

Almond Anatomy



Page 5

Timber!








For example: Clothing, tires, and even football helmets!

Lipstick, detergents, imitation vanilla flavoring, ping-pong balls, shampoo, shaving cream, aspirin, LCD screens, corkboards, cola, and ice cream.

Match Me!

Match Me!

To make the following items, rice and wheat by-products are used. Using the sources included on this page, research and write next to each picture whether you think it is a by-product of rice or wheat. Have an adult check your answers online to see if you're correct!
Standard: CC ELA: RI.5.7

 pellets	<hr style="border: 0; border-top: 1px solid black;"/> Rice	 animal bedding	<hr style="border: 0; border-top: 1px solid black;"/> Rice
 cosmetics	<hr style="border: 0; border-top: 1px solid black;"/> Rice	 building materials	<hr style="border: 0; border-top: 1px solid black;"/> Wheat
 straw bales	<hr style="border: 0; border-top: 1px solid black;"/> Rice & Wheat	 poultry feed	<hr style="border: 0; border-top: 1px solid black;"/> Rice & Wheat
		 ethanol	<hr style="border: 0; border-top: 1px solid black;"/> Wheat

Serving Up the Right Size! (Answer for 30 students)

This recipe is for two pizza crusts. What if you wanted to make pizza crust for your entire class? Determine the numbers of crusts needed and rewrite the recipe below.

servings: **30** packages of dry yeast: **15** warm water: **15 cups**

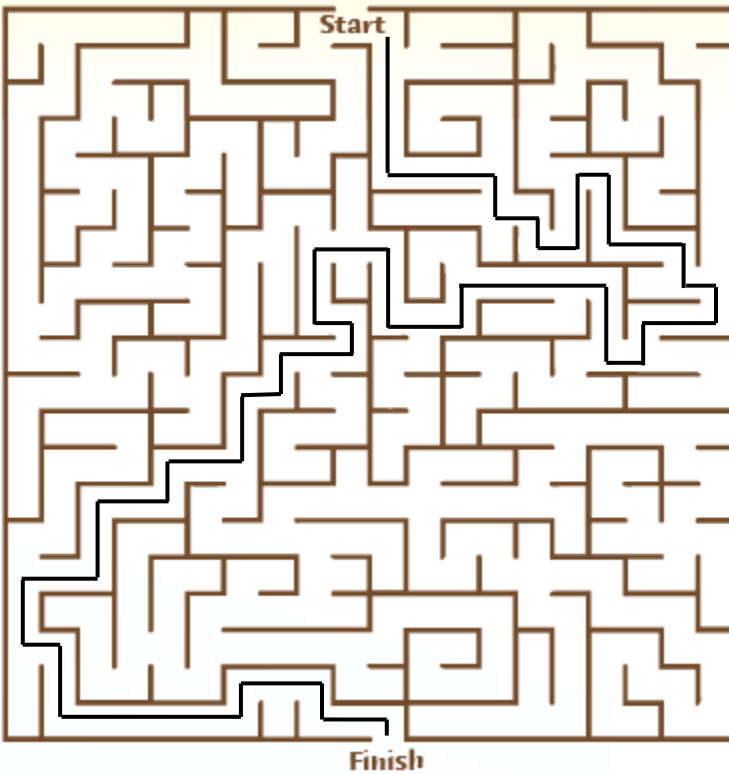
 sugar: **15 teaspoons or 5 tablespoons** salt: **15 teaspoons or 5 tablespoons** canola oil: **1 ¼ cups & 2 tablespoons**

 whole wheat flour: **18 ¾ cups** all-purpose flour: **18 ¾ cups** cornmeal: **Approximately 1 cup**

Standards: CC Math: 3.MD.A.2, 5.NF.B.6



Find the way through the "maize"!



On and Off the Hoof/Foot

On and Off the Hoof/Foot

Directions: Livestock animals that are raised for meat consumption also contribute to the production of a plethora of products. Shampoo can come from cattle, tennis racquet strings from sheep, bone china from pigs, candles from goats, and pillow stuffing from poultry, and so many more by-products after the meat is harvested! Calculate the percentage of meat to the percentage of by-products that each livestock animal provides based on the information provided. Round to a whole number. Standard: CC. Math: 6.RP.A.3.C

<p>BEEF CATTLE: Average weight is 1,000 pounds. Meat provided is 430 pounds.</p> <p><u>43</u> % Meat provided <u>57</u> % By-products provided</p>	<p>SHEEP: Average weight is 135 pounds. Meat provided is 62 pounds.</p> <p><u>46</u> % Meat provided <u>54</u> % By-products provided</p>
<p>SWINE: Average weight is 282 pounds. Lean meat provided is 116 pounds.</p> <p><u>41</u> % Meat provided <u>59</u> % By-products provided</p>	<p>GOATS: Average weight is 65 pounds. Meat provided is 35 pounds.</p> <p><u>54</u> % Meat provided <u>46</u> % By-products provided</p>
<p>TURKEYS: Average weight is 33 pounds. Meat provided is 26 pounds.</p> <p><u>79</u> % Meat provided <u>21</u> % By-products provided</p>	<p>CHICKENS: Average weight is 6 pounds. Meat provided is 4 pounds.</p> <p><u>67</u> % Meat provided <u>33</u> % By-products provided</p>

Dairy Division

Dairy Division

- If an average cow produces 22,916 pounds of milk in one year, how much is she producing daily?
62.78 pounds per day
- Considering these averages, how many cows will it take to produce 100,000 pounds?
4.36 cows
- If a gallon of milk weighs 8.6 pounds; how much does a quart weigh? Hint: There are 4 quarts in 1 gallon!
2.15 pounds in 1 quart
- A milk tanker can transport 12,000 gallons in one trip; how many pounds of milk are in 1 tank?
103,200 pounds of milk

Standards: CC Math: 4.O.A.A.2, 4 MD.A.1, 6 NS.B.2, 5 MD.A.1

Famous Fibers

Activity **Directions:** Using the information provided below, place the historical fiber events in the correct sequential order starting with the earliest event as number one and the most recent event as eight. **Standards: CC ELA: RF.3-5; RI.3.3**

- 5 Eli Whitney invented the cotton gin in 1793 that mechanically separated the seed from the lint fibers.
- 1 Between 3000 and 1000 B.C. the Persians, Greeks, and Romans were documented distributing wool throughout Europe.
- 4 By 1665, about 100,000 sheep had been smuggled into North America to start the wool industry, despite England's efforts to stop it.
- 3 The oldest cotton fibers and leftover fragments from processing were discovered in Mexico, dating back to around 5000 B.C.
- 2 Flax fiber clothing was found in burial chambers in the Fertile Crescent dating back to about 3000 B.C.
- 6 In the late 18th century, the flax processing industry was developed to keep up with demand for fiber.
- 8 In 1925, the Federal Trade Commission named rayon as an official man-made fiber.
- 7 In the 1885, Count Hilaire de Chardonnet patented the first successful cellulose product called rayon, or imitation silk.

Classroom Check

Classroom Check!

Using the word search, identify 11 different items highlighted in the newspaper that come from the agriculture industry.











Word Bank:
 Wool Sweater
 Football
 Pet Food
 Crayons
 Chair
 Applesauce
 Bandage
 Bread
 Rice Hulls
 Whey
 Aquatic Plants

Soybean Did You Know?

3,417 boxes of crayons.

What by-products come from California's Top Commodities?

Top 10 Commodities for 2019

- 1. Dairy 
- 2. Almonds 
- 3. Grapes 
- 4. Cattle 
- 5. Strawberries 
- 6. Pistachios 
- 7. Lettuce 
- 8. Walnuts 
- 9. Floriculture 
- 10. Tomatoes 

What by-products come from California's Top Commodities?
 California's agriculture industry produces more than 400 different commodities, making it a \$50 billion dollar industry! Approximately one-third of the country's vegetables and two-thirds of the country's fruits and nuts are produced right here in California. Match each of California's top ten commodities to its related by-product. Draw a line from the commodity to the by-product.

10 By-products made from Commodities

- Whey Protein Powder
- Mulch (shells)
- Antioxidant Extracts
- Pomace
- Cattle Feed (Hulls)
- Compost
- Sandpaper (shells)
- Food Seasonings (skins)
- Leather (Hide)
- Compost