



Lesson Objectives:

Club members and parents will:

- Learn dressing percentage for livestock animals.
- What factors play a part of the final dressing percentage.
- Experiment using fruit to determine dressing percentage.

Time: 20 minutes

Equipment and supplies:

- Fruit (apple, pear, orange, etc.)
- Plate
- Peeler, paring knife
- Scale for food
- Calculator
- Protractor
- Colored pencils

Preparations:

- Review Lesson.
- Be sensitive to the idea that some youth may not be comfortable talking about the processing of animals.
- Gather equipment and supplies.
- Print worksheets for participants.

Undressing the Mystery of Meat

Livestock animals are raised and harvested in many parts of the world to serve as a high-quality source of protein and nutrients in our daily diets. The three main species harvested for meat in the United States include beef, sheep, and swine. The process of getting them from live form to what you get in the grocery stores is done by a butcher. The butcher is responsible for getting all of the edible products from the animal to our plates.

Most animals are sold on a live weight basis so it is important for buyers to know the actual amount of animal they end up with is less when processed for meat. The dressing percentage of the animal is what is left after the skin and internal organs are removed. Factors like if the animal had horns, if a sheep had wool, or if an animal is extremely fat will affect dressing percentage. The average dressing percentage for livestock animals is usually around:

Pork—70%

Beef—60%

Sheep—50%

After dressing, more processing is done to make cuts like steaks, roasts, chops and ground meat so the total edible product is even less than the dressing percentage.

In this activity, youth will use fruit to work through the concept of dressing percentages as it relates to the food we eat.



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Directions:

- Divide the youth into groups of 3 to 5. If possible mix groups with a combination of younger and older participants.
- Provide each group with a type of peeler and/or paring knife. (Apples, oranges and pears work well. If using oranges, no knives are needed.)
- Have the youth begin by weighing and recording the weight of their fruit.
- Have the youth peel off the skin of the fruit and weigh just the skin on the scale.
- Have youth cut the fruit open and take out the core, seeds and anything inedible. Weigh all the contents they take out.
- Have youth finish by weighing the remaining edible fruit they have left.
- Have participants create a pie chart of the peel, inedible parts, and fruit they have left.
 - A. Record the values for each of the layers in the chart provided in the weight column.
 - B. Find the percentage of each portion of the fruit by dividing its weight by the weight of the whole fruit. (The answer should be a decimal like .45 which is equal to 45%.)
 - C. Find the angle of each pie section. Multiply the percentage for each section by 360. (Following with our example above, $45 \times 360 = 162$ degrees.) If you have done it correctly, all the numbers should add up to 360.
 - D. Draw a line to make the radius of the circle. To do this, start in the exact center off circle and draw a straight line to the outside of the circle.
 - E. Draw each section division. To do this, start in the exact center of the circle and draw a line at the angle you calculated in the earlier step. Each time you add a section, adjust the protractor so its against the new radius line you just drew. Color each segment a different color to match your key color.
- Have youth find the dressing percentage of their fruit. Dressing percentage in an animal is the amount of the live weight that will enter the cooler in the form of a carcass. Dressing percentage can be calculated as carcass weight divided by the live weight and multiplied by 100. Dressing percentage for the fruit is the weight of the edible fruit divided by the weight of the whole fruit multiplied by 100.

Youth can complete the extra worksheet to follow up on what they learned about dressing percentages.

An additional follow up could include having the youth explore how inedible parts like skin, fat, bone and other parts can be used for other products.

Worksheet 2 Answers

- Pig's dressing percentage—70%
- Steer's carcass weight—750 pounds
- Lamb's live weight—130 pounds
- You can make 600 Big Macs

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Sources & Additional Lesson info:

4-H Club GO TO Resources is being offered to 4-H clubs in Boone, DeKalb and Ogle Counties as a way to enrich and enhance 4-H experiences and programming at the club level. It is the goal of the Extension staff to assist 4-H leaders and officers in providing simple hands-on activities on a monthly basis that can broaden the 4-H club experience and as a result heighten positive youth development.

Resources: This lesson is from the University of Maryland Extension—*AGsploration—The Science of Maryland Agriculture*

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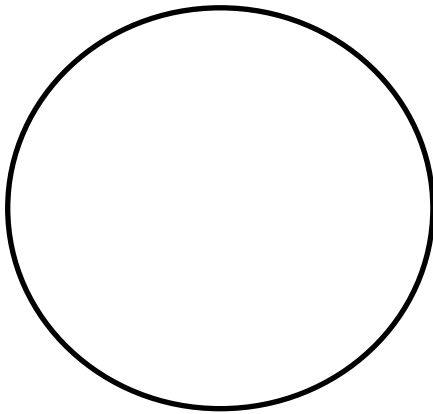
Undressing the Mystery of Meat—Worksheet 1



What percentage of your fruit will you have left after you take off the skin and the inedible inside parts?

Parts of Fruit	Weight	Percentage (# divided by whole fruit weight)	Pie Chart Angle/Degrees (Percentage x 360)
Whole Fruit			
Skin			
Inedible Parts (seeds, core, etc.)			
Edible Fruit			

Fruit Dissection Pie Chart



Pie Chart Color Key

- ☐ Skin
- ☐ Inedible
- ☐ Edible Fruit

1. Record the values for each of the layers in the chart provided in the weight column.
2. Find the total weight of the fruit and record.
3. Find the percentage for each portion of the fruit by dividing its weight by the weight of the whole fruit. (The answer should be a decimal like .45 which is 45%.)
4. Find the angle for each pie section. Multiply the percentage for each section by 360. (For example, $0.45 \times 360 = 162$ degrees.) If you have done it correctly, all of the numbers should add up to 360.
5. Draw a line to make the radius of the circle. To do this, start in the exact center of the circle and draw a straight line to the outside of the circle.
6. Draw each section division. To do this, lay the protractor against the radius and draw a line at the angle you calculated in the earlier step. Each time you add a section, adjust your protractor so it is against the new radius line you just drew.
7. Color each segment a different color to match your key color.



This lesson is from the University of Maryland Extension—AGsploration—The Science of Maryland Agriculture.

Undressing the Mystery of Meat - Worksheet 2



Dressing percentage is the amount of the live weight of the animal that will enter the cooler in the form of a carcass (the processed animal that has been skinned and had the internal organs removed). Find the dressing percentage of your fruit.

$$(\text{weight of edible fruit} \div \text{weight of the whole fruit}) \times 100 = \text{dressing percentage}$$

To find the dressing percentage of an animal :

$$(\text{carcass weight} \div \text{live weight}) \times 100 = \text{dressing percentage}$$

You sold a pig that weighed 250 pounds and his carcass weight is 175 pounds. What is his dressing percentage?

The dressing percentage of your steer is 60% and his live weight is 1250 pounds. What is his carcass weight?

Your market lamb's carcass weighed 65 pounds and has a dressing percentage of 50%. What was the lamb's live weight? (carcass weight $\div$ dressing percentage $\times$ 100 = live weight)

Once an animal is dressed, more processing takes place to get meat into the final form that consumers buy it in.

An average 1,200 pound steer has about 490 pound of trim beef. Of that about 150 pounds ends up as ground beef. If we were to make this ground beef into hamburgers, how many McDonald's Big Macs could we make? (Hint: a Big Mac is two 1/8 pound patties.)



This lesson is from the University of Maryland Extension—AGsploration—The Science of Maryland Agriculture.