Name _____ Date _____ Hour _____

ACTIVITY 10.1

UNIT WORD SEARCH

bacteria
butter
butterfat
cheese
colostrum
enzymes
fermentation
homogenization
hormone
lactose
mastitis
parlor
processing
selective breeding
silage
veal
yogurt

B Q V N P H U E M M C H Y P T N X Y Z Y K E
Q U S O E A C W A K O K B W O E O D A S O V
B M T I S C E S P S L J A I A G F Q A Z X Z
U X T T O I T N E P O Q T W U L K F R R V Q
T K T A E I L M O I S A P R O C E S S I N G
T G L Z T R Y A H M T U T Y G F L G E A A A
E Q U I K Z F U G N R A I R E T C A B P C B
R J S N N K I A E E U O H A V Q E U E C W X
H F D E M P J M T G M A H Z G I S C K V M N
Z M G G J Z R X W C I R P Y A D O V T J B M
V H E O R E Y E W M U Y E I K B T W A D M A
T R Z M F Q U G M Q P M C D I Y C V R L K H
G O C O N X P G P G E B W R H O A W G E F F
O L F H A W M N I S A U U M F W L X M P E C
E S E E H C Y M S F U P A R L O R S Z L Z O

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ACTIVITY 10.2

Introduction to Dairy Breeds

Student Materials
Dairy Magazines
Glue
Markers
Pencil
Poster Board (half sheet)

Choose a dairy breed to research at www.ansi.okstate.edu/breeds/cattle. Use the space below to take notes about the dairy breed you have chosen.

Prepare a poster about the breed you chose. Include pictures of the breed from magazines or the Internet as well as interesting facts. Present your poster to the class.

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ACTIVITY 10.3

Dairy Products Poster

Student Materials
Pen or pencil
Colored pencils or markers
Poster board
Glue
Resources on dairy products

Directions
Choose examples of dairy products for your poster. You may use illustrations from magazines, the Internet, or draw your own.

Create a poster on dairy products following the guidelines listed below.

- Include at least five dairy products
- Include graphics and/or photos
- Describe nutrition facts about each dairy product
- Include a list of the resources used

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ACTIVITY 10.4 DETERMINING FAT CONTENT IN MILK BREEDS

Student Materials
3 unknown milk samples
3 shallow bowls
Food coloring

Fat content varies in different types of milk. This experiment will demonstrate that the amount of fat in the milk can be determined without tasting the milk. During this activity you will follow the scientific method.

I. State the Problem or Question

What do you want to learn or find out? _____

_____

II. Hypothesis

What is your prediction for what will happen? _____

_____

III. Experiment

1. Pour a ¼ cup of each unknown milk sample in a bowl. Label the samples A, B and C.
2. Let the milk settle in each bowl. The milk should be perfectly still.
3. Add one drop of food coloring to each bowl and watch how it spreads.

IV. Observations

Sample	Observations
A	
B	
C	

V. Interpret the Data

Does the data support or defend your hypothesis? _____

_____

VI. Draw Conclusions

Justify the data collected with concluding statements about what has been learned. Discuss any problems or concerns. Use other studies to support the conclusion. Give alternative ideas for testing your hypothesis.

_____

_____

_____

Name _____ Date _____ Hour _____

ACTIVITY 10.5

The Science of Homemade Ice Cream

Student Materials
Pencil
2 small containers
2 large containers
Rock salt
Thermometer
Stopwatch

Homemade ice cream makers use rock salt. The experiment below will help you to understand the importance of rock salt in making homemade ice cream. During this activity you will follow the scientific method.

I. State the Problem or Question
What do you want to learn or find out? _____

_____

II. Hypothesis
What is your prediction for what will happen? _____

_____

III. Experiment
1. Fill the two small containers with water. Place the small containers inside the two large containers.
2. Label each of the large containers with an A and a B. Fill the large containers with ice. Be careful not to get ice in the small containers.
3. In container A, add salt with the ice. Do not add salt to container B.
4. Place a thermometer in each small container. Record the temperature every 30 seconds for 5 minutes.

IV. Observations

Time	Temperature of Container A	Temperature of Container B
30 seconds		
1 minute		
1 minute 30 seconds		
2 minutes		
2 minutes 30 seconds		
3 minutes		
3 minutes 30 seconds		
4 minutes		
4 minutes 30 seconds		
5 minutes		

V. Interpret the Data

Does the data support or defend your hypothesis? _____

_____

VI. Draw Conclusions

Justify the data collected with concluding statements about what has been learned. Discuss any problems or concerns. Use other studies to support the conclusion. Give alternative ideas for testing your hypothesis.

_____

_____

_____

Name _____ Date _____ Hour _____

ACTIVITY 10.6

Ice Cream in a Bag

Student Materials

1/4 c sugar
1/2 t vanilla
1 c 2 percent milk
1 c (1/2 pt) whipping cream
ice
3/4 c water
3/4 c rock salt
4 plastic spoons
1 gal zip-lock freezer bag
1 qt zip-lock freezer bag
Measuring spoons
Wooden spoon
Measuring cup
Duct tape
4 8-oz sundae cups
Cloth towels or hot/cold mitts

Procedure

1. Divide into groups of four students and get materials.
2. Pour milk, whipping cream, sugar and vanilla into a 1-qt zip-lock freezer bag, and seal tightly with duct tape.
3. Place the quart zip-lock bag with the ice cream ingredients inside a 1-gallon zip-lock bag.
4. Pack ice around the small bag.
5. Add the rock salt and water.
6. Seal the larger bag with duct tape.
7. Have students shake or toss the bags between them while protecting their hands with cloth towels or hot/cold mitts.
8. Continue until ice cream is frozen.
9. Open the outer bag, and discard the ice and salt.
10. Rinse the bag containing the ice cream.
11. Divide the ice cream into sundae cups with the wooden spoon. Enjoy!

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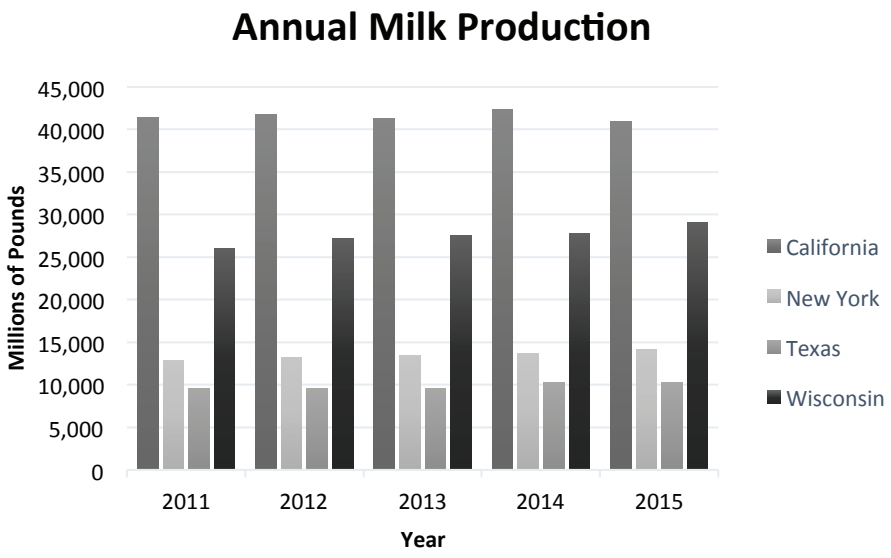
ACTIVITY 10.7 MILK BY THE NUMBERS

Student Materials
Pencil

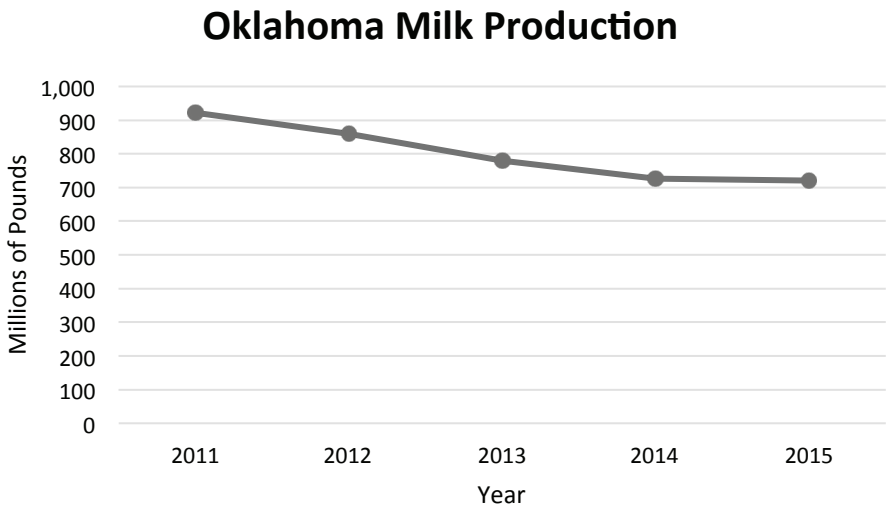
Graphs are used to visually show data. They can be used to compare data or show trends. Some of the more widely used are bar graphs, line graphs or pie charts. Bar graphs are often used to show comparisons among groups while line graphs show a change over time. Pie charts are used to break a whole amount into parts or percentages.

Using the data in the graphs below, answer the questions that follow.



1. In what year was California milk production the highest? _____
2. Which state has the highest annual milk production? _____
3. Describe the trend in New York milk production. _____

   _____
4. Which state has the lowest annual milk production? _____



5. Describe the trend in Oklahoma milk production. _____

_____

6. In what year was Oklahoma milk production at the lowest? _____
7. In what year did Oklahoma have the highest milk production? _____
8. How much milk was produced in 2014 in Oklahoma? _____

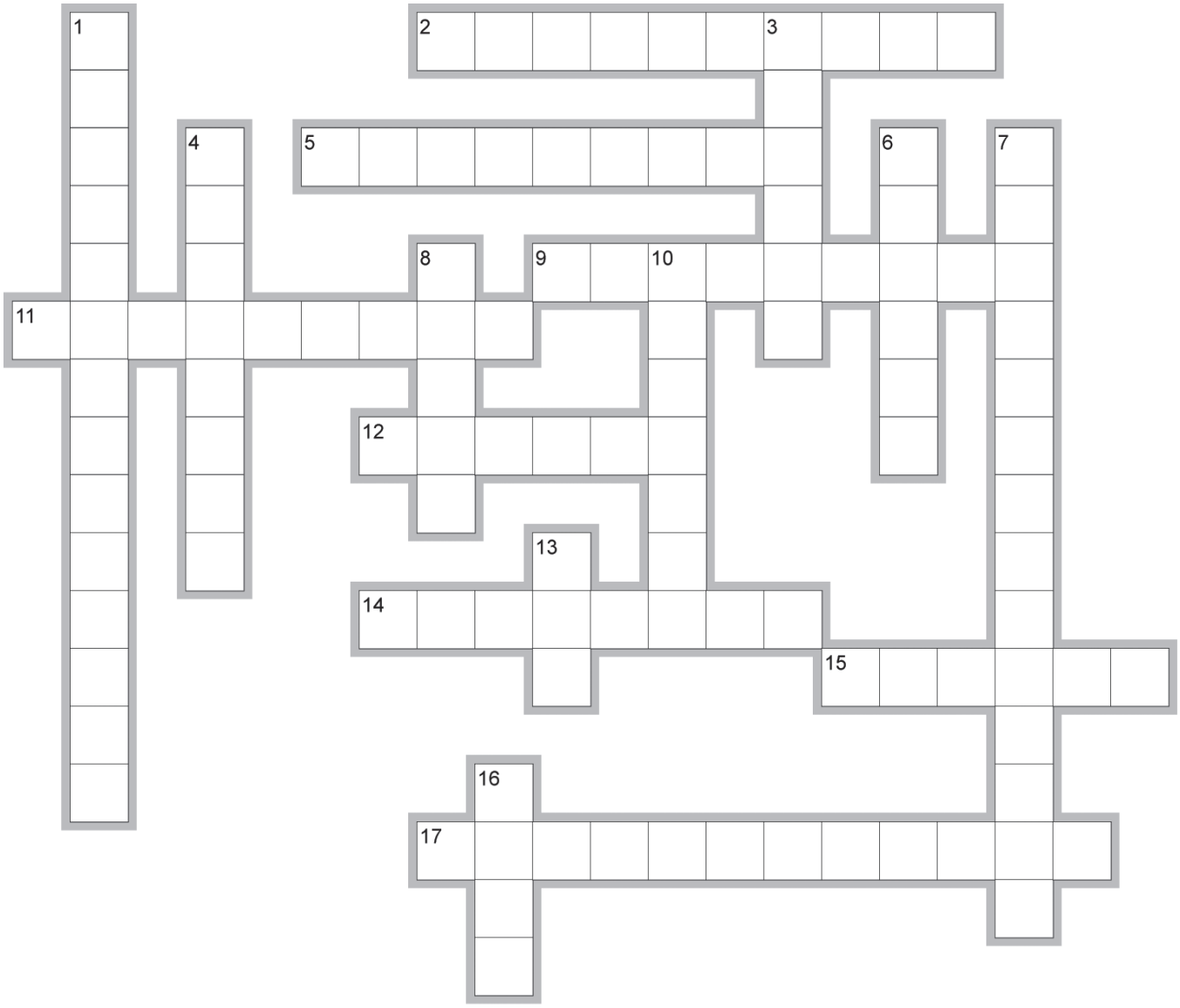
Make a graph using the following data. Determine which type of graph would be best to represent the data. Color and label your graph.

Total Dairy Cow Population in the U.S.	4 million
Holstein	2 million
Jersey	1 million
Guernsey	0.5 million
Other	0.5 million

Name _____ Date _____ Hour _____

ACTIVITY 10.8

UNIT REVIEW CROSSWORD



EclipseCrossword.com

Across

2. Cows are usually bred through _____ insemination.
5. Artificial insemination is a method of _____ breeding.
9. first milk not consumed by humans
11. fatty portion of the milk
12. enzyme added to speed up the cheese making process
14. most widely used dairy breed
15. feed made from chopped green corn
17. A bacteria culture is added to milk to begin the _____ process to make cheese.

Down

1. process that involves heating the milk to kill bacteria
3. Americans consume 26.8 pounds each year
4. disease that makes milk unusable
6. area where cows are milked
7. process that breaks fat globules into small particles
8. cows consume 35 gallons each day
10. sugar in milk
13. naturally occurring hormone
16. meat of young calves