Name: _____

Math 8/Science Checklist: Q4 W1-W2 April 9th- April 20th

Big Ideas:

Math:	Science:
o Pythagorean Theorem o Volume: cylinders, cones, and spheres o Transformations: Reflection, translation, rotation, dilations	• Resource Use • Population Factors • Symbiotic Relationships

Upcoming Dates:

Week 1	Week 2
☐ 4/12: Renewable and Nonrenewable Resources Lab ☐ 4/13: Math Test Corrections Due (___%)	☐ 4/18: GMO Debate (___%) **AND** Early Release Day ☐ 4/20: All W1-W2 work due **AND** Science Study guide due!

Shelfwork: Show All Work. Explore work is to be checked against the control and then marked complete. Complete individually unless noted with a "G"

Lesson	Explore	Expand	Extend
☐ **Resource Use (in class video)** ☐ #1 Lesson check in 4/9	☐ World Population Video with Analysis (___✓, M, 0) ☐ Pre-Lab: Handout #1 (Energy Resources) and #2 (US Energy Consumption) (G) (___✓, M, 0)	☐ Renewable and Nonrenewable Resources Lab (Wednesday 4/12)(____%)	☐ Calculating Your Carbon Footprint (____%) ☐ Choice Extension Proposal (____%)
Monday's work plan: (Add missing works from last checklist) Time Estimate:		Tuesday's work plan: Time Estimate:	
☐ **Pythagorean theorem** AND **unknown distance on a coordinate plane** ☐ #2 Lesson Check-In 4/10	☐ Discover the Pythagorean Theorem! with Montessori work (G) (___✓, M, 0) **AND** ☐ Pythagorean Theorem matching sort (G) (___✓, M, 0) **OR** ☐ Fly-With-Us: Flight destinations (G) (___✓, M, 0)	☐ Pythagorean Theorem Project (____%) **OR** ☐ Purple book pgs (103-104 **OR** 127-128) (____%)	☐ Purple book Apply pgs (105-106 **OR** 129-103) (____%) **OR** ☐ Wheel of Theodorus Project (____%) **OR** ☐ Create AND teach a green product card (use Extend rubric) (____%)
Tues/Wednesday's work plan: Time Estimate:		Wed/Thursday's work plan: Time Estimate:	
☐ **Volume of cylinders, cones, and spheres** ☐ #3 Lesson Check-in 4/11	☐ Volume of cylinders, cones, spheres sort (G) (___✓, M, 0) ☐ Volume of cylinders, cones, spheres practice (G) (___✓, M, 0)	☐ Purple book pg. 307-308 (____%) **OR** ☐ Word problems Cylinder, cones, spheres (____%)	☐ Create AND teach a green product card (use Extend rubric) (____%) **OR** ☐ Purple book Apply (pg 309-310) (____%)

Thurs/Friday's work plan: Time Estimate:		Fri/Monday's work plan: Time Estimate:	
☐ **Transformations: rotation, reflection, dilations** ☐ #4 Lesson Check-in 4/16	☐ Transformations Guess This Game (G) (___✓, M, 0) ☐ Transformation card sort (___✓, M, 0) **AND** ☐ Translation and reflection versatile (G) (___✓, M, 0) **OR** ☐ Rotations versatiles (G) (___✓, M, 0)	☐ Purple book pgs 79-80 (____%) **OR** ☐ Transformation worksheet (even or odd) (____%)	☐ Create AND teach a green product card (use Extend rubric (____%) **OR** ☐ Purple book Apply (pg 81-82) (____%)
Mon/Tuesday's work plan: Time Estimate:		Tues/Wednesday's work plan: Time Estimate:	
☐ **Population Factors** (Ecosystem balance) ☐ #5 Lesson Check-In 4/17	☐ Max the Bear Story and Card Sort (G) (___✓, M, 0) ☐ Yellow Perch in Lake Winnipeg Analysis (G) (___✓, M, 0)	☐ Create a product/piece of shelfwork that illustrates the difference between abiotic/biotic factors and density dependent and density independent factors-see rubric (____%)	☐ Calculating Your Carbon Footprint (____%) ☐ Choice Extension Proposal (____%)
Wed/Thursday's work plan: Time Estimate:		Thur/Friday's work plan: Time Estimate:	

☐ **Symbiotic Relationships** ☐ #6 Lesson Check-In 4/19	☐ Symbiotic Relationships Card Sort with Analysis-choose 3 of each type to record and explain how to tell the difference between each type of relationship. (___✓, M, 0)	☐ Create a product/piece of shelfwork that illustrates the difference the three main types of symbiotic relationships-see rubric (____%)	☐ Calculating Your Carbon Footprint (____%) ☐ Choice Extension Proposal (____%)
Thursday work plan: Time Estimate:		Friday's work plan: Time Estimate:	

Homework: (*All HW assignments are to be done independently and are due the next day unless noted*):

- ☐ Monday 4/9: **Pythagorean theorem** and **Unknown distance on coordinate plane** videos on EdPuzzle with guided notes
- ☐ Tuesday 4/10: **Volume part 1 cylinders, part 2 cones, and part 3 spheres** videos with guided notes on EdPuzzle
- ☐ Wednesday 4/11: Review and organize binder and complete missing work as needed
- ☐ Thursday 4/12: **Transformations part 1 rotation , part 2 reflection, part 3 dilation** videos on EdPuzzle with guided notes
- ☐ Friday 4/13: Review and organize binder and complete missing work as needed
- ☐ Monday 4/16: **Population factors (Ecosystem balance)** video with graphic organizer on EdPuzzle
- ☐ Tuesday 4/17: videos on EdPuzzle with guided notes.
- ☐ Wednesday 4/18: **Symbiotic relationships** video with graphic organizer on EdPuzzle
- ☐ Thursday 4/19: Review and organize binder Review Study Guide and EdPuzzle videos
- ☐ Friday 4/20: Review and organize binder Review Study Guide and EdPuzzle videos

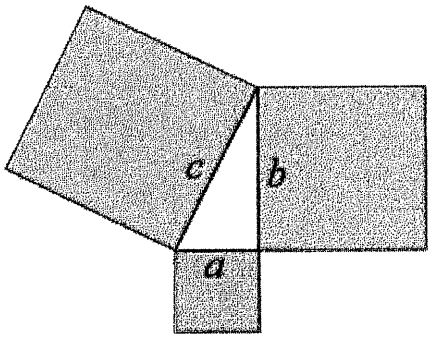
Lesson Requests:

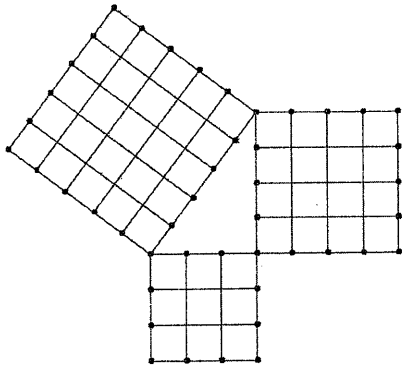
- ☐ _____
- ☐ _____

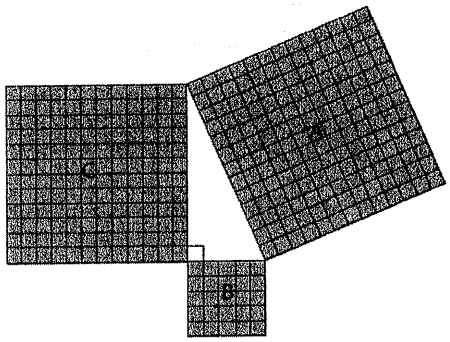
Notes and formulas:

Name _____ Pythagorean Theorem Notes

_____ states that the _____ of the _____ of the two squares on the _____ equals the area of the square on the _____. Only Right Triangles!







Determine if the side length will make a right triangle.

1. 2. 3.

Pause! You try!

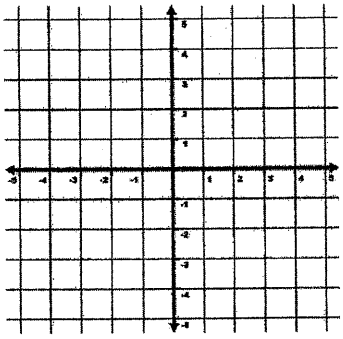
Determine if the side length will make a right triangle.

1. 2. 3.

Name_____ Unknown distances on a Coordinate Plane Notes

Find the missing length to the nearest tenth of a unit.

1.



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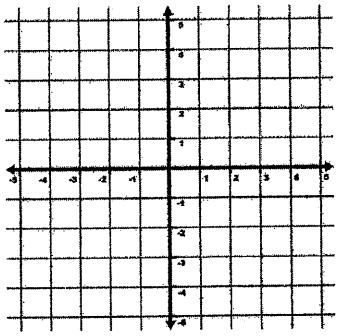

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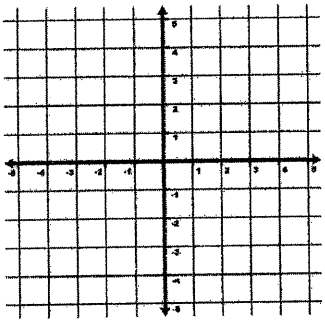
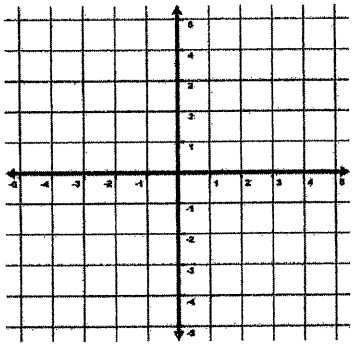
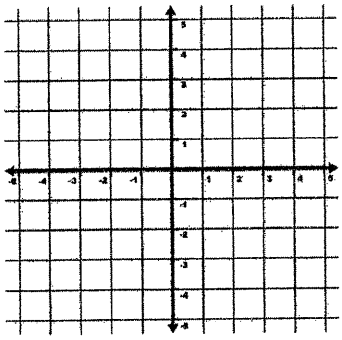


Pause! You Try!

1.



2.



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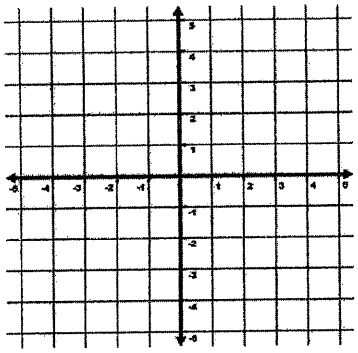


Volume of Cylinders Notes

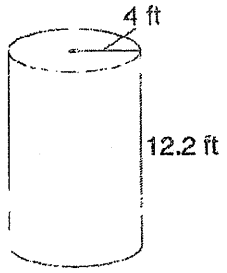
Name_____

'olume is measured in _____ units.

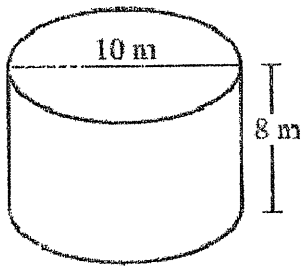
Volume Formula for any right prism	
Volume Formula for a Cylinder	

Find the volume of each cylinder. Use 3.14 for . Round to the nearest tenth, if necessary.

1.



2.



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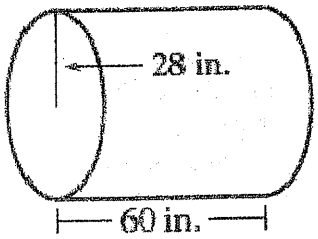
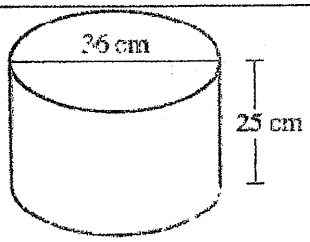
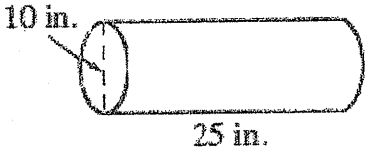


Pause the video and try the problems on the back on your own!
Then press play and check your answers with a color pen.

1.



2.



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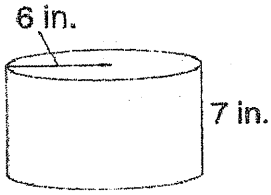
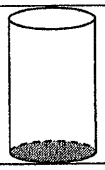
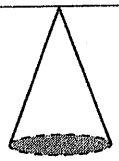


Volume of Cones Notes

Name_____

	Cylinder	Cone	Ratio of Volumes Cone : Cylinder
			
1	Length of Radius: 6 cm Height of Cylinder: 10 cm Volume: _____	Length of Radius: 6 cm Height of Cone: 10 cm Volume: 376.8 cm^3	
2	Length of Radius: 9 in Height of Cylinder: 15 in Volume: _____	Length of Radius: 9 in Height of Cone: 15 in Volume: 1271.7 in^3	
3	Length of Radius: 18 ft Height of Cylinder: 7 ft Volume: _____	Length of Radius: 18 ft Height of Cone: 7 ft Volume: 2373.84 ft^3	

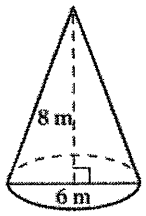
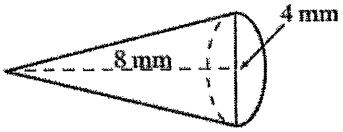
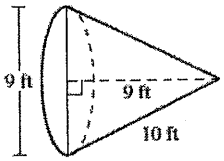
Looking at the ratios you wrote for the volume of the cone to the volume of the cylinder, what conclusions can you make?

Volume of a Cylinder	Volume of a Cone

Using the formula, find the volume of the cones from above. Use 3.14 for π

1)	2)	3)

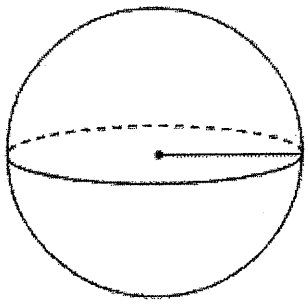
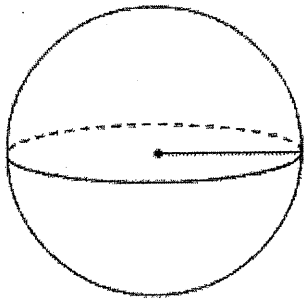
Pause the video and try the problems on your own! Round to the nearest tenth if necessary. Then press play and check your answers with a color pen.

1)	2)	3)
		

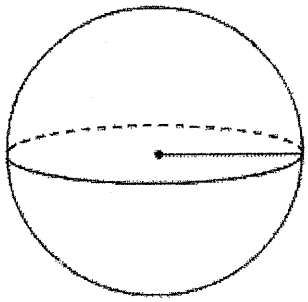
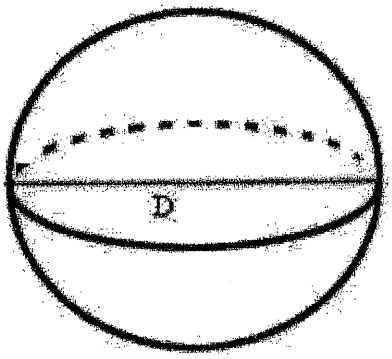
Volume of spheres notes

Name_____

$$v = \frac{4}{3}\pi r^3$$

1)	2)	3) Sphere with radius of 6cm
		

Pause! You Try!

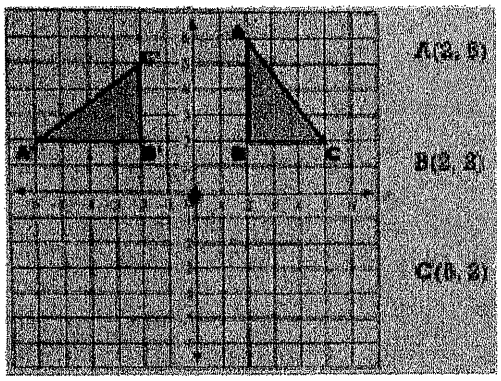
1)Radius 15mm	2)Diameter 38cm	3)Sphere with radius of 8cm
		

Rotations on the coordinate plane notes Name_____

_____: a transformation performed by _____ the figure around a _____ point (known as the center of rotation). Since the new image and the original image are _____, it is considered a _____ transformation.

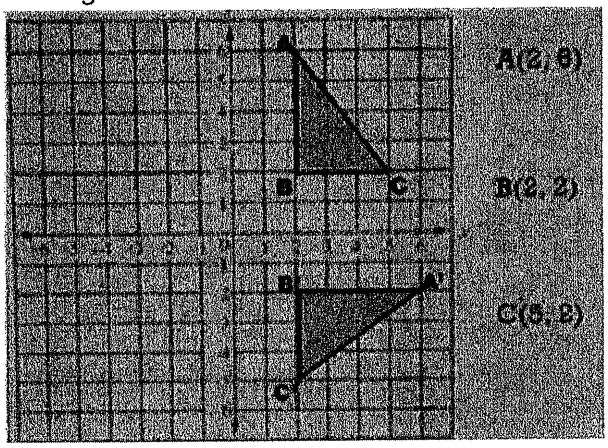
Examples:

1) How has the object been rotated around the origin?



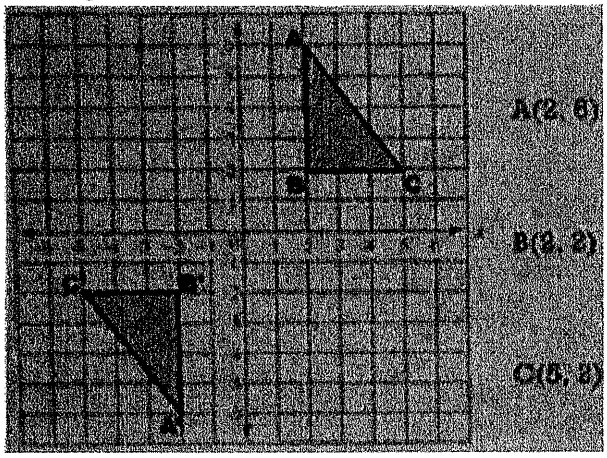
How do the new ordered pairs relate to the original ordered pairs?

2) How has the object been rotated around the origin?



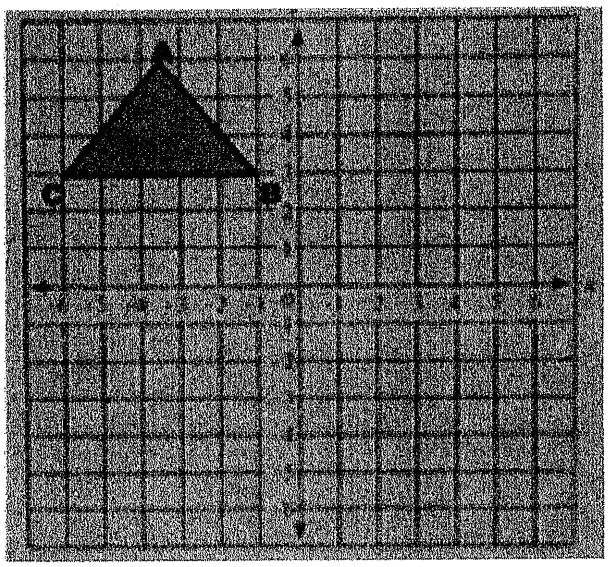
How do the new ordered pairs relate to the original ordered pairs?

3) How has the object been rotated around the origin?



How do the new ordered pairs relate to the original ordered pairs?

4) Rotate the object 90 degrees counterclockwise around the origin. What are the new coordinates?

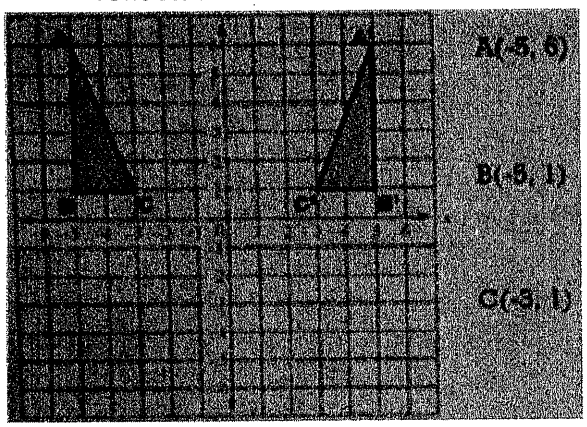


Reflections on the coordinate plane Name_____

_____: a _____ of an object over a line (known as the line of reflection). Since the new image and the original image are congruent, it is considered a rigid transformation.

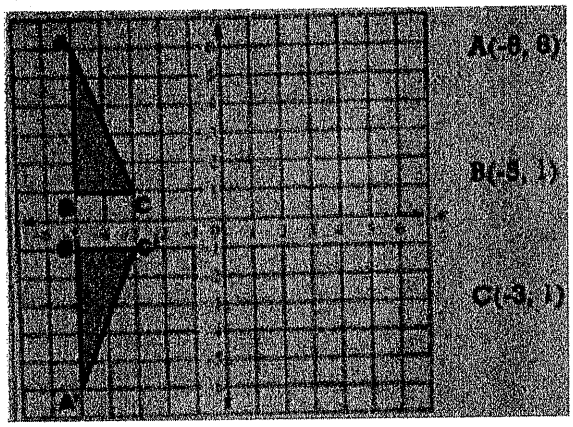
Examples:

1) Over which axis has the object been reflected?



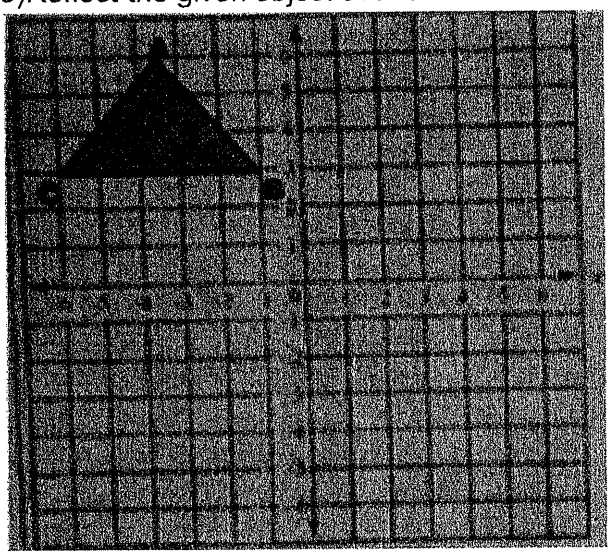
How do the new ordered pairs relate to the original ordered pairs?

2) Over which axis has the object been reflected?



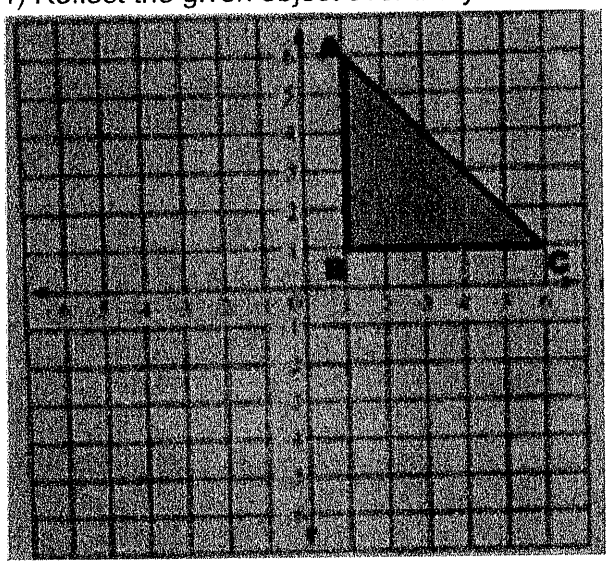
How do the new ordered pairs relate to the original ordered pairs?

3)Reflect the given object over the x-axis



How do the new ordered pairs relate to the original ordered pairs?

4) Reflect the given object over the y-axis

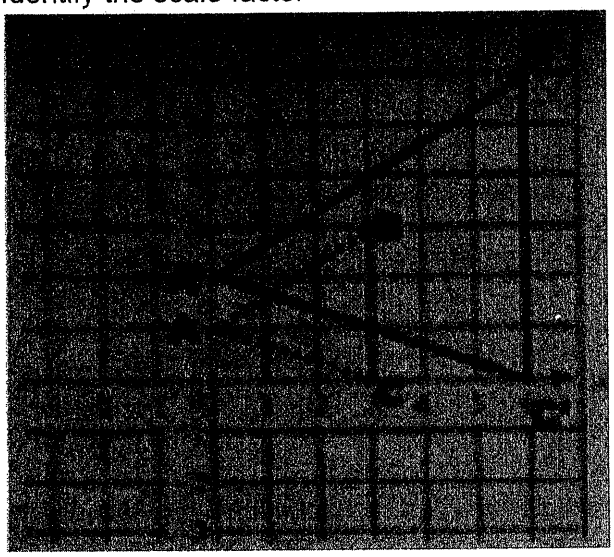


How do the new ordered pairs relate to the original ordered pairs?

Dilations on the coordinate plane notes Name_____

_____: a transformation that move each point along a ray which starts from a fixed center, and multiplies distances from this center as a common factor. Since the new image is _____ to the original (not congruent), it is called a non-rigid transformation.

Identify the scale factor



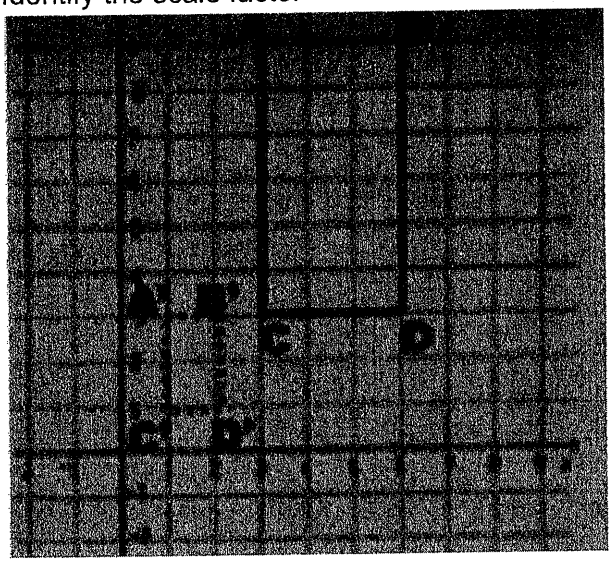
What are the original ordered pairs?

New?

Length of BC

Length of B'C'

Identify the scale factor



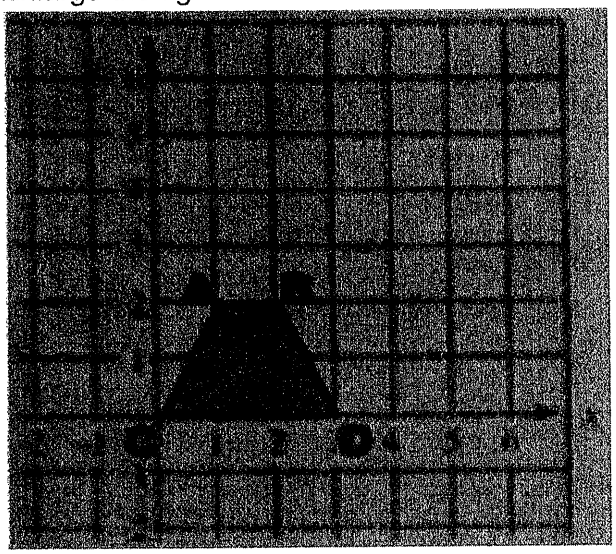
What are the original ordered pairs?

New?

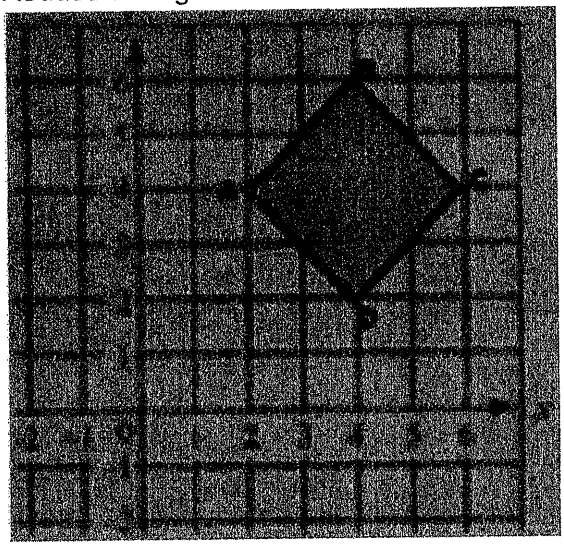
Length of CD

Length of C'D'

Enlarge the figure with a scale factor of 2.



Reduce the figure with a scale factor of ½



What are the original ordered pairs? New? Length of CD Length of C'D'	What are the original ordered pairs? New? Length of BD Length of B'D'

Ecosystem Balance

1. An Ecosystem is:

2. Ecosystems are organized by: _____--> _____--> _____--> _____ --> _____

Limiting Factors

Density Dependent

1.

2.

Density Independent

1.

2.

Abiotic

1.

2.

Biotic

1.

2.

Symbiotic Relationships:

Mutualism

Drawing:

Examples:

Commensalism

Drawing:

Examples:

Parasitism

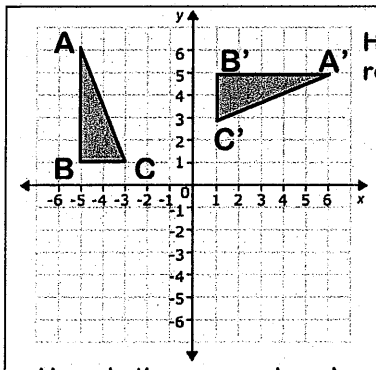
Drawing:

Examples:

Pause the video and try these on your own! **Name**_____
Then press play and check your answers with a color pen.

Rotation Work

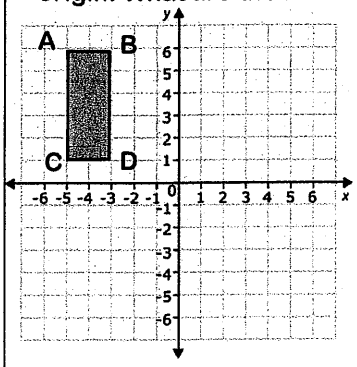
Round all coordinate points to the closest whole number.



How has the object been rotated around the origin?

How do the new ordered pairs relate to the original ordered pairs?

Rotate the object 90˚ counterclockwise around the origin. What are the new coordinates?



A_____ B_____

A'_____ B'_____

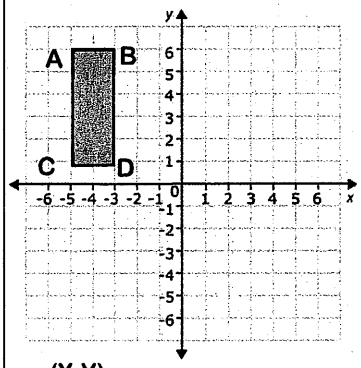
C_____ D_____

C'_____ D'_____

(X,Y)

(___',___')

Rotate the object 180˚ counterclockwise around the origin. What are the new coordinates?



A_____ B_____

A'_____ B'_____

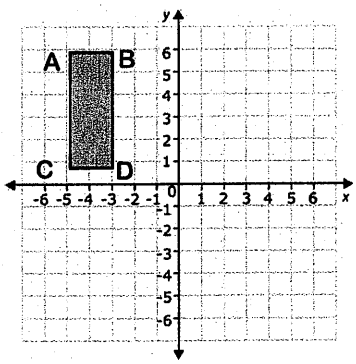
C_____ D_____

C'_____ D'_____

(X,Y)

(___',___')

Rotate the object 90˚ clockwise around the origin. What are the new coordinates?



A_____ B_____

A'_____ B'_____

C_____ D_____

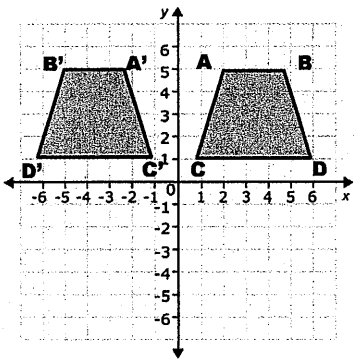
C'_____ D'_____

(X,Y)

(___',___')

Reflections Work

1) Over which axis has the object been reflected? How do the new ordered pairs relate to the original ordered pairs?



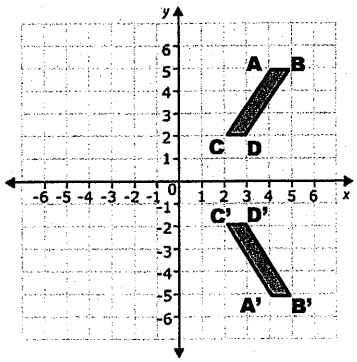
A_____ B_____

A'_____ B'_____

C_____ D_____

C'_____ D'_____

2) Over which axis has the object been reflected? How do the new ordered pairs relate to the original ordered pairs?



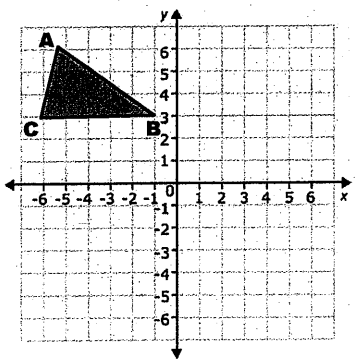
A_____ B_____

A'_____ B'_____

C_____ D_____

C'_____ D'_____

3) Reflect the given object over the x-axis. How do the new ordered pairs relate to the original ordered pairs?



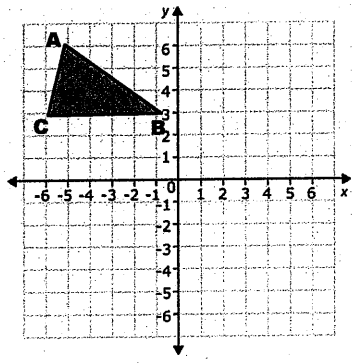
A_____ B_____

A'_____ B'_____

C_____ D_____

C'_____ D'_____

4) Reflect the given object over the y-axis. How do the new ordered pairs relate to the original ordered pairs?



A_____ B_____

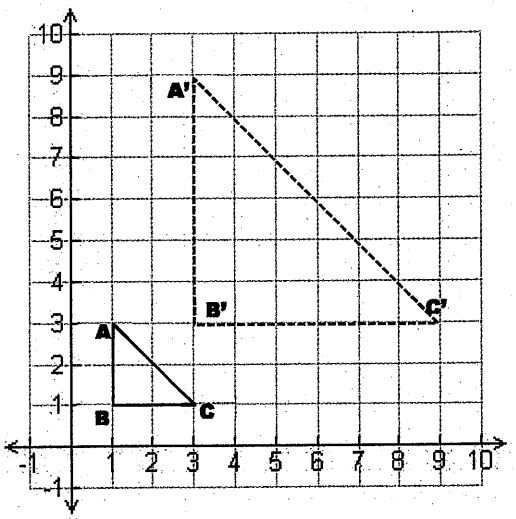
A'_____ B'_____

C_____ D_____

C'_____ D'_____

Dilations Work

1) Identify the scale factor.



What are the original ordered pairs?

A (____, ____), B (____, ____), C (____, ____)

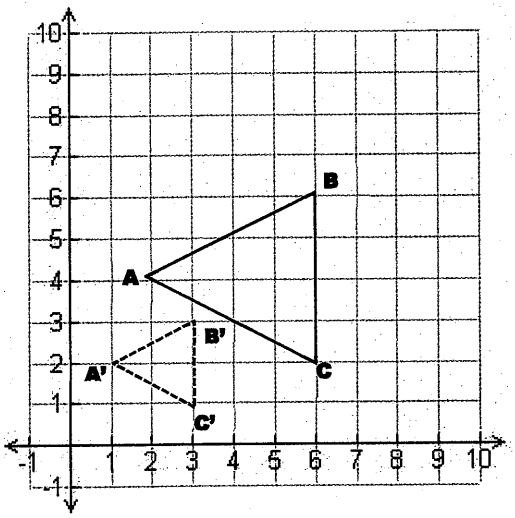
What are the new ordered pairs?

A' (____, ____),B' (____, ____), C' (____, ____)

What is the length of BC?

What is the length of B'C'?

2) Identify the scale factor.



What are the original ordered pairs?

A (____, ____), B (____, ____), C (____, ____)

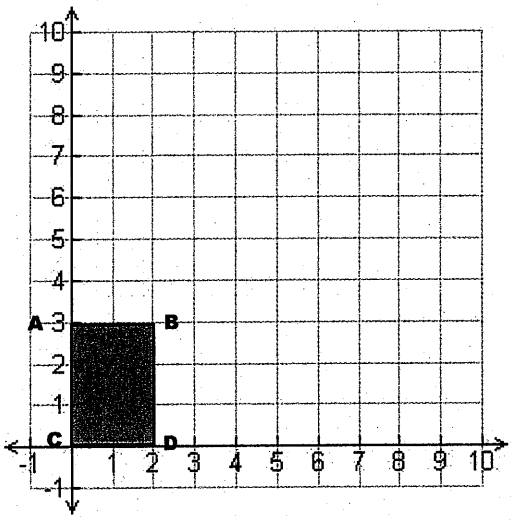
What are the new ordered pairs?

A' (____, ____),B' (____, ____), C' (____, ____)

What is the length of BC?

What is the length of B'C'?

3) Enlarge the figure with a scale factor of 3.



What are the original ordered pairs?

A (____, ____), B (____, ____), C (____, ____), D (____, ____)

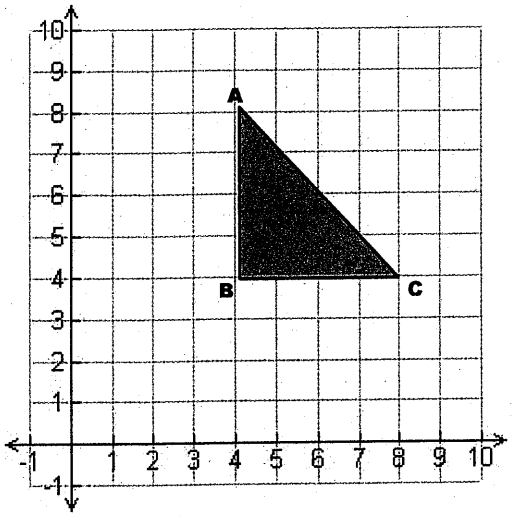
What are the new ordered pairs?

A' (____, ____),B' (____, ____), C' (____, ____), D' (____, ____)

What is the length of CD?

What is the length of C'D'?

4) Reduce the figure with a scale factor of ¼.



What are the original ordered pairs?

A (____, ____), B (____, ____), C (____, ____)

What are the new ordered pairs?

A' (____, ____),B' (____, ____), C' (____, ____)

What is the length of BC?

What is the length of B'C'?

Over 7 Billion People!!

Population Connection's World Population Video:

1. What do the dots on the map represent?

2. How does the appearance of dots on the map change as the movie progresses?

3. At about what year does the rapid change in the amount of dots first occur?

4. What developments on Earth are most likely responsible for the increase in population at that time?

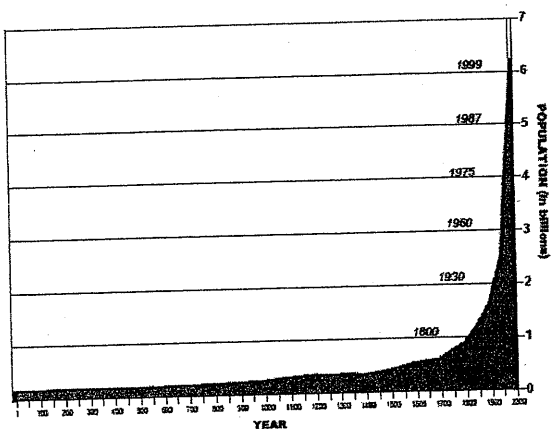
5. How do you feel as the video concludes with population projections into the future?

6. What is the main idea of the video?

7. When does a population grow in size (are birth or death rates usually the more important factor)? Give reasons for your answer.

8. What other questions do you have after seeing the video?

World Population Graph:



1. The line in the graph is called a "j" curve, why do you think that is?

2. What do you think the shape of the graph tells us about population growth?

3. What would a straight line indicate about population growth?

4. When did human population "round the bend" of the J-curve?

5. What technological advances were probably most responsible for this growth occurring?

Compare and contrast the Video and Graph. All show the very same data!

1. In your opinion, which has the greatest impact: video or line graph?

2. How does each show the same data?

3. What are the three most important things one can learn from the data on population growth through time?

4. Explore: Brainstorm a list of possible effects associated with increasing world population.

7 Billion People!

For most of human history, our population grew slowly. The Industrial Revolution and brought advances agriculture, sanitation, and medicine lowered our death rate as people lived longer, and these advances started the population explosion. Human population growth since the Industrial Revolution has been exponential and rapidly increasing.

Technologies related to food production, sanitation, and disease prevention have dramatically increased life expectancy and changed the way people live and work in the last 150 years. Such changes have resulted in rapid increases in human population, consumption of natural resources, and environmental degradation.

In 1800, our population reached 1 billion. In 1930 we reached 2 billion; it took 130 years to add that second billion. Earth's population reached 4 billion in 1960, doubling in only 44 years. At current annual growth rate of 1.4% the earth's population of over 6 billion is expected to double again in 50 years.

Population is highly concentrated with two-thirds of earth's population living in only ten countries. Population growth in richest countries has stabilized. Most rapid rates of increase are in Africa and other third world countries of Asia and South America.

What will be the effect of population growth? How will the number of people affect environment, economy, and society? Consider the following:

Waste Disposal:

More people = increasing amounts of solid and toxic waste and pollutants

Food Supplies:

More people = less fertile land available for food production. Malnutrition from lack of food is a problem in third- world countries.

Resource Availability:

Many of the earth's resources such as minerals and fossil fuels are limited. Even trees are being used faster than they can be replaced.

Name:_____

Symbiotic Relationships Product Rubric

Directions: You will choose a product to create that includes all criteria listed below:

Type of Product (poster, etc):_____

Suggestions (Areas that Need Work)	Criteria (Standards for this work)	Compliments (Areas that Exceed Criteria)
	Criteria #1: Definitions and Examples ☐ Provides a definition of each type of symbiotic relationship (mutualism, commensalism, and parasitism) (6) ☐ Provides 3 examples of each (18) Student:_____/(24) Teacher:_____/(24)	
	Criteria #2: At Williams Montessori! ☐ Create three examples representing each type of relationship of something found on campus! (6) Student:_____/(6) Teacher:_____/(6)	
	Criteria #3: Organization and Neatness ☐ Product is neat/easy to understand (2) ☐ Product is visually appealing, not rushed and neat. (2) Student:_____/(4) Teacher:_____/(4)	

Student Total: _____/34 Teacher Total:_____/34

Reflection:

1. Justify the grade you gave yourself-discuss specifics from the rubric.

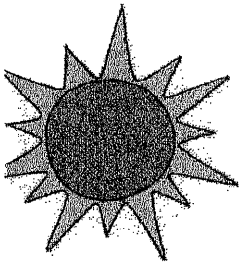
2. Discuss one thing you loved about this work, and one you would improve.

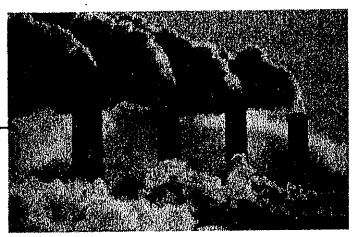
Handout #1- Energy Resources

Label the energy resources below as renewable or nonrenewable:

1. Water: _____

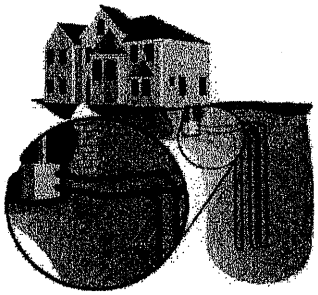
2. Wind: _____

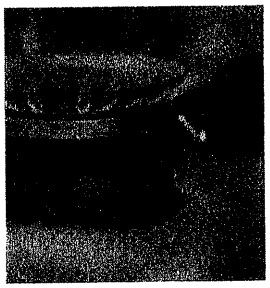




3. Fossil Fuels: _____

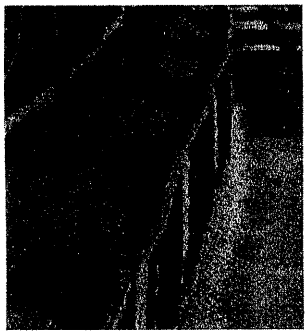
4. Solar: _____

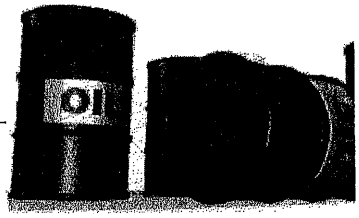




5. Natural Gas: _____

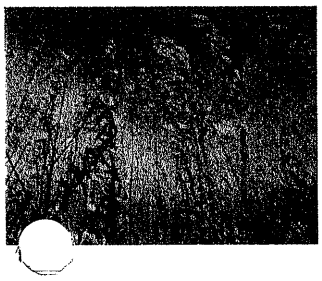
6. Geothermal: _____

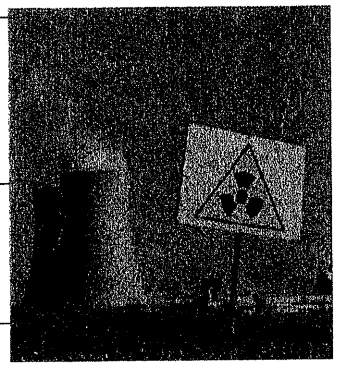




7. Petroleum: _____

8. Coal: _____

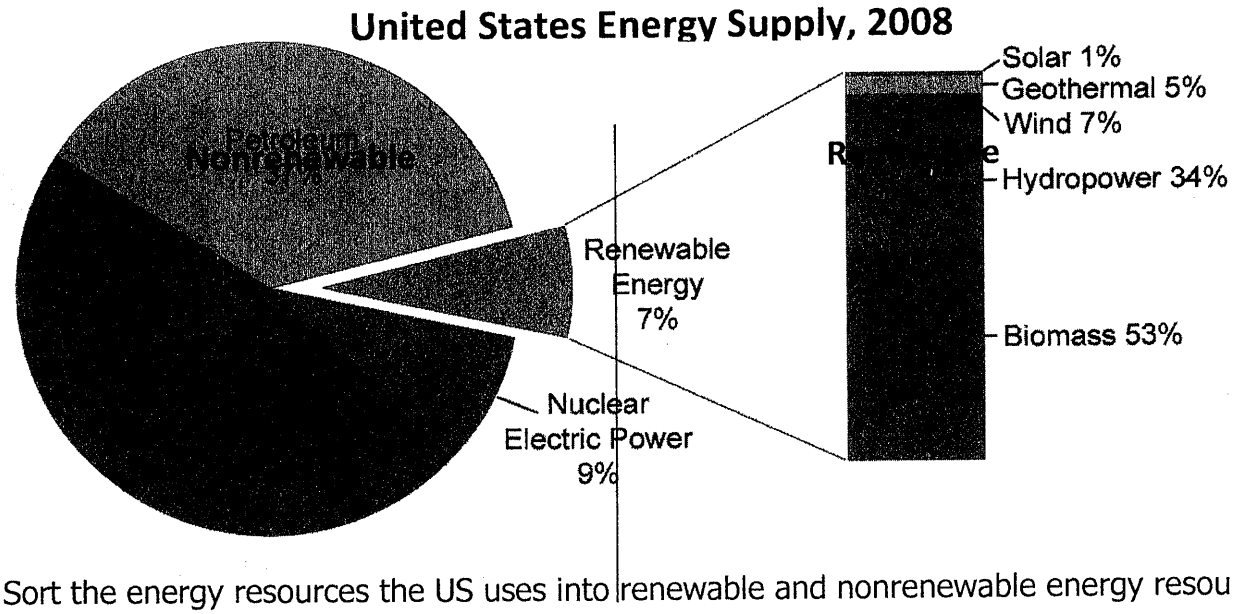




9. Nuclear Power: _____

10. Biomass from plants: _____

Handout #2- United States Energy Consumption



1. Sort the energy resources the US uses into renewable and nonrenewable energy resources:

•	•
•	•
•	•
•	•
	•

2. What percentage of the US energy supply comes from nonrenewable resources? Renewable?

Show your work:

Nonrenewable Resources: _____ %

Renewable Resources: _____ %

3. What resource does the US use for most of its energy?

4. What energy source did the US use the least in 2008?

5. How do you feel about this data? Was any of it surprising to you?

Data Chart #3 – Population and Consumption Rapidly Increasing (Remove 10 MORE beans each year)

	Hypothesis (Years to deplete)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
Remove 10 MORE beans each year		Remove **10** beans	Remove **20** beans	Remove **30** beans	Remove **40** beans	Remove **50** beans	Remove **60** beans	Remove **70** beans	Remove **80** beans	Remove **90** beans	Remove **100** beans		
# beans remaining in container													
% Nonrenew % Renew													

Total years to deplete nonrenewable resources: _____

Data Chart #4 – Your rule: _____

	Hypothesis (Years to deplete)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
		Remove beans	Remove beans	Remove beans	Remove beans	Remove beans	Remove beans	Remove beans	Remove beans	Remove beans	Remove beans	Remove beans	Remove beans
# beans remaining in container													
% Nonrenew % Renew													

Total years to deplete nonrenewable resources: _____

Data Charts

Data Chart #1 –No Change in Population or Consumption (Remove 10 beans each year)

	Hypothesis (Years to deplete)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
Remove 10 beans each year		Remove **10** beans	Remove **10** beans	Remove **10** beans	Remove **10** beans	Remove **10** beans	Remove **10** beans	Remove **10** beans	Remove **10** beans	Remove **10** beans	Remove **10** beans	Remove **10** beans	Remove **10** beans
# beans remaining in container													
% Nonrenew % Renew													

Total years to deplete nonrenewable resources: _____

Data Chart #2 – Population & Consumption Increasing (Remove 5 MORE beans each year)

	Hypothesis (Years to deplete)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
Remove 5 MORE beans each year		Remove **10** beans	Remove **15** beans	Remove **20** beans	Remove **25** beans	Remove **30** beans	Remove **35** beans	Remove **40** beans	Remove **45** beans	Remove **50** beans	Remove **55** beans	Remove **60** beans	Remove **65** beans
# beans remaining in container													
% Nonrenew % Renew													

Total years to deplete nonrenewable resources: _____

Name:_____

Population Factors Product Rubric

Directions: You will choose a product to create that includes all criteria listed below:

Type of Product (poster, etc):_____

Suggestions (Areas that Need Work)	Criteria (Standards for this work)	Compliments (Areas that Exceed Criteria)
	Criteria #1: Abiotic/Biotic Factors ☐ Explains what each is (6) ☐ Provides 3 examples of each (12) Student:_____/(18) Teacher:_____/(18)	
	Criteria #2: Density Dependent/Independent ☐ Explains the difference between density dependent and density independent factors (6) ☐ Provides 3 examples of each (12) Student:_____/(18) Teacher:_____/(18)	
	Criteria #3: Organization and Neatness ☐ Product is neat/easy to understand (2) ☐ Product is visually appealing, not rushed and neat. (2) Student:_____/(4) Teacher:_____/(4)	

Student Total: _____/40 Teacher Total:_____/40

Reflection:

1. Justify the grade you gave yourself-discuss specifics from the rubric.

2. Discuss one thing you loved about this work, and one you would improve.