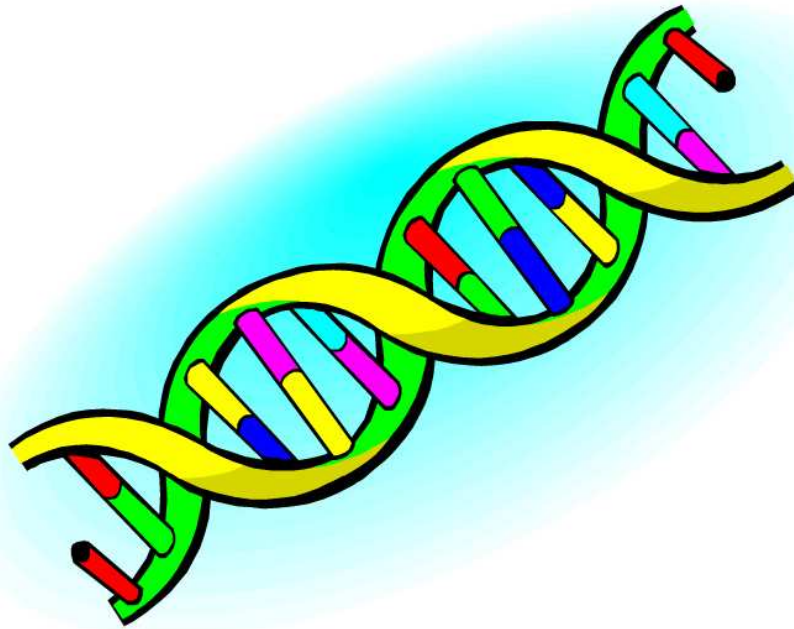


STEM CIP

Science/Technology/Engineering/Mathematics
Curriculum Integration Program



Chip Off the Old Block

Student Data and
Response Booklet

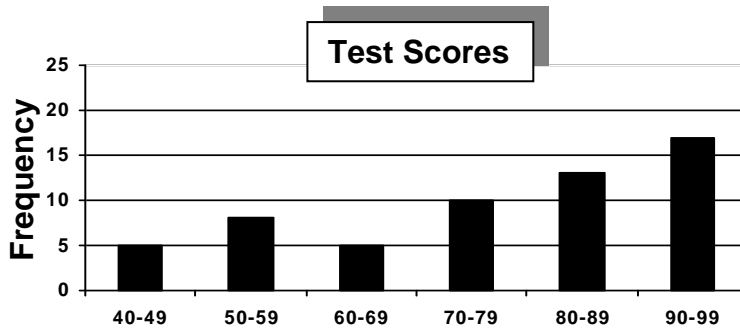
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Mathematics Readiness Assessment

Use the following graph to answer questions 1 – 3.



1. Which interval has the highest frequency?
 - A. 50-59
 - B. 70-79
 - C. 80-89
 - D. 90-99

2. What is the total number of test scores?
 - A. 6
 - B. 17
 - C. 57
 - D. 99

3. How many more students scored at least a 70 than scored less than 60?
 - A. 8
 - B. 18
 - C. 28
 - D. 38

Use the following table to answer questions 4 – 7.

Favorite Type of Book			
Type	Tally	Frequency	Relative Frequency
Fiction		A	B
Mystery			C
Romance			
Nonfiction			

4. What is the total number of votes?
 - A. 7
 - B. 25
 - C. 29
 - D. 30

Mathematics Readiness Assessment

5. What is the frequency (A) for fiction books?
- A. 3
 - B. 6
 - C. 10
 - D. 12
6. What is the relative frequency for fiction books (B) expressed as a fraction in lowest terms?
- A. $\frac{1}{4}$
 - B. $\frac{6}{15}$
 - C. $\frac{2}{5}$
 - D. $\frac{12}{30}$
7. What is the relative frequency for mystery books (C) expressed as a decimal?
- A. 0.10
 - B. 0.30
 - C. $0.\overline{33}$
 - D. $0.\overline{66}$

Use the following information to answer questions 8 – 10.

A bag of marbles contains 15 red, 6 clear, 11 black, 16 blue and 4 yellow marbles. If you reach in the bag and draw one marble at random, what is the probability that you will draw one the following? Express each as a ratio in lowest terms.

8. What is the probability of drawing a blue marble?
- A. $\frac{1}{6}$
 - B. $\frac{3}{13}$
 - C. $\frac{4}{13}$
 - D. $\frac{8}{25}$

Mathematics Readiness Assessment

9. What is the probability of drawing a red or black marble?

A. $\frac{15}{52}$

B. $\frac{6}{13}$

C. $\frac{1}{2}$

D. $\frac{7}{13}$

10. What is the probability of NOT drawing a red marble?

A. 0

B. $\frac{15}{52}$

C. $\frac{37}{52}$

D. $\frac{3}{4}$

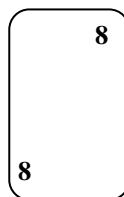
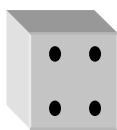
11. A six-sided die numbered 1 – 6 is rolled and a card is drawn from a regular deck of 52 cards. What is the probability of rolling a four and drawing a card with an 8 on it?

A. $\frac{1}{312}$

B. $\frac{1}{78}$

C. $\frac{29}{156}$

D. $\frac{19}{78}$



Mathematics Readiness Assessment

A pair of dice are rolled with the numbers 1 – 6 on each die. Use this information to answer questions 12 – 14.

12. What is the probability that the sum will be 12? Simplify your answer.

A. 0

B. $\frac{1}{36}$

C. $\frac{1}{18}$

D. $\frac{1}{12}$

13. What is the probability that the sum will be 7?

A. 0

B. $\frac{5}{36}$

C. $\frac{1}{6}$

D. $\frac{7}{36}$

14. What is the probability the sum will be greater than 8?

A. 0

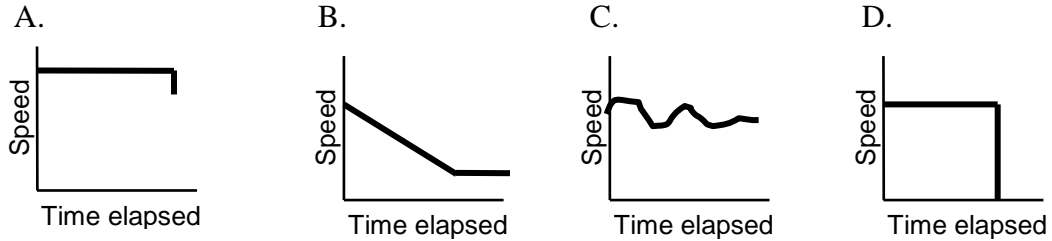
B. $\frac{2}{9}$

C. $\frac{5}{18}$

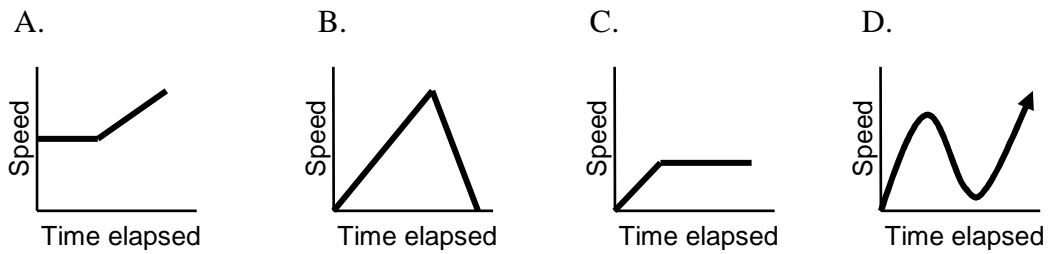
D. $\frac{11}{36}$

Mathematics Readiness Assessment

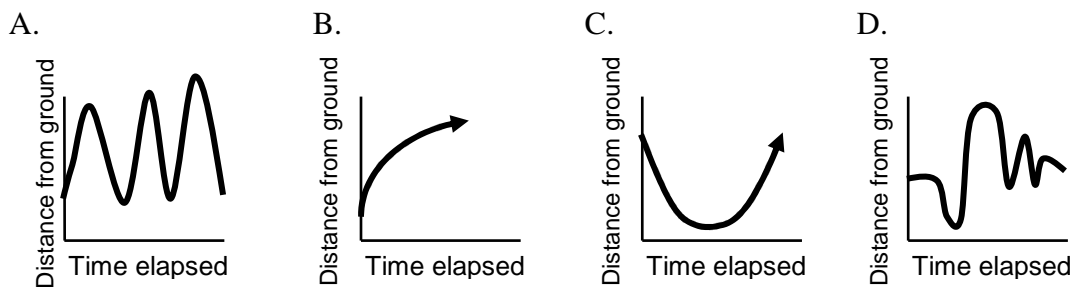
15. A bus stops to let off some passengers. Which graph represents this situation?



16. A student climbs the steps to their second floor class at a steady pace and then ran down the hall to class. Which graph represents this situation?



17. A child swings on a swing. Which graph represents this situation?



Mathematics Readiness Assessment

18. What is the next number in this sequence?

- A. 9
- B. 11
- C. 13
- D. 40

1, 1, 2, 3, 5, 8, _____

19. What is the next number in this sequence?

- A. 25
- B. 27
- C. 48
- D. 96

3, 6, 12, 24, _____

20. What is the next number in this sequence?

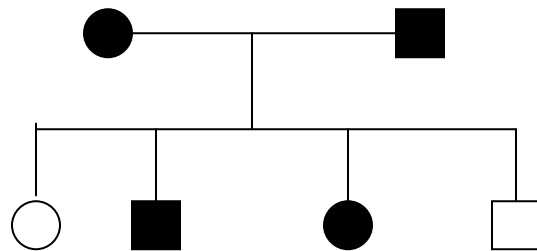
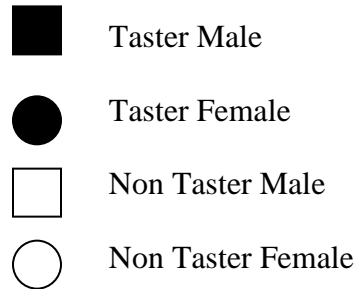
- A. $\frac{9}{6}$
- B. $\frac{11}{8}$
- C. $\frac{13}{8}$
- D. $\frac{15}{7}$

$\frac{1}{1}$, $\frac{2}{1}$, $\frac{3}{2}$, $\frac{5}{3}$, $\frac{8}{5}$, _____

“What Do You already Know” Survey

Directions: Use information below and the Pedigree Chart to answer questions 1 - 3.

Some people have the ability to taste a chemical called PTC. This is a dominant trait. To these people, PTC tastes extremely bitter. We will call these people “tasters.” Other people cannot taste PTC at all. This is a recessive trait. We call these people “nontasters.” Use the pedigree chart below to answer questions 1 – 3.



1. What is the genotype of the mother?
 - A. Tt
 - B. tt
 - C. TT
 - D. Cannot determine

2. What is the genotype of the father?
 - A. Tt
 - B. tt
 - C. TT
 - D. Cannot determine

3. What is the genotype of the nontaster daughter?
 - A. Tt
 - B. tt
 - C. TT
 - D. Cannot determine

“What Do You already Know” Survey (continued)

Directions: Examine the Punnett Square below for Freckles in Human Beings. Then, answer question 4.

Parents Genotypes Ff (freckled) x Ff (freckled)

	F	f
F	1	2
f	3	4

4. In humans, having freckles (F) is dominant to not having freckles (f). The child represented in Box “1” in the above Punnett Square would
- A. be homozygous for freckles.
 - B. have an extra freckles chromosome.
 - C. be heterozygous for freckles.
 - D. not have freckles.
5. Which statement describes how two organisms may show the same trait, yet have different genotypes for that phenotype?
- A. Both are heterozygous for the dominant trait
 - B. Both are homozygous for the dominant trait.
 - C. One is homozygous dominant and the other heterozygous.
 - D. One is homozygous dominant and the other homozygous recessive.
6. In a certain species of wasp, the gene for long mandibles (M) is dominant over the gene for short mandibles (m). Mandibles are jaws. If a biologist wants to produce wasps with long mandibles only, which wasps should be crossed?
- A. heterozygous long-mandibled wasps with heterozygous long-mandibled wasps
 - B. homozygous short-mandibled wasps with homozygous short-mandibled wasps
 - C. heterozygous long-mandibled wasps with homozygous short-mandibled wasps
 - D. homozygous long-mandibled wasps with heterozygous long-mandibled wasps

Continued on next page

“What Do You already Know” Survey (continued)

7. In certain rats, black fur is dominant over white fur. If two rats, both heterozygous for fur color, are mated, their offspring would be expected to have
- A. three different genotypes and three different colors.
 - B. four different genotypes and two different colors.
 - C. two different genotypes and three different colors.
 - D. three different genotypes and two different colors.
8. A student wants to examine chromosomes from animal cells. Which of these would be the **best** tool for the student to use?
- A. litmus paper
 - B. thermometer
 - C. dissecting microscope
 - D. compound microscope
9. In the DNA sequence, GAA TTC GCA, what do the G and A represent in the DNA sequence?
- A. sugars
 - B. amino acids
 - C. phosphates
 - D. nitrogen bases
10. Which of these represents the number of chromosomes in cells before and after the process of meiosis?
- A. $n \rightarrow n$
 - B. $n \rightarrow 2n$
 - C. $2n \rightarrow n$
 - D. $2n \rightarrow 2n$

Continued on next page

“What Do You already Know” Survey (continued)

Directions: Use the table to answer question 11.

A group of students wanted to determine how the ability to taste PTC, a nontoxic chemical, is passed from one generation to the next. The students decided to test families in their community for this ability. The students gave each family member a paper strip coated with a small amount of PTC. Those who experienced the bitter taste of PTC when they touched the paper strips to their tongues were called "tasters"; those who could not taste the PTC were called "nontasters." The results of the experiment are shown in the table below.

Ability to Taste PTC in Children of Three Groups of Parents		
Parent Group	Children of Each Parent Group	
	Percent Tasters	Percent Nontasters
Both parents tasters	85	15
One parent taster, one parent nontaster	62	38
Both parents nontasters	0	100

- 11. Which of these explains how two taster parents could produce a nontaster child?**
- A. Both parents are heterozygous and produce a homozygous recessive child.
 - B. Both parents are homozygous recessive and produce a homozygous dominant child.
 - C. Both parents are heterozygous and produce a heterozygous child.
 - D. Both parents are homozygous dominant and produce a homozygous recessive child.
- 12. In humans, the allele for dimples (D) is dominant. The allele for not having dimples (d) is recessive. A woman (DD) and a man (Dd) have four children. Which of these is the predicted ratio of the children with dimples to the children without dimples?**
- A. 1: 0
 - B. 1: 1
 - C. 1: 3
 - D. 3: 1

Activity 3: Are You My Phenotype?

- 3a.** Design a table and record your observations. In addition to your data, include a place on the data table to compile your data with the rest of the class. Use the “Data Organization Table” performance list rubric on page 85 to make certain you are including all the important elements to create a data table.

- 3b.** Write a lab report that answers the experimental question based on your data. Use the “Lab Report” performance list rubric on page 79 of this booklet as a guide to include all important aspects of a good report.

Activity 3: Are You My Phenotype?

- 3c. Refer to the data you collected on page 25 of this booklet and determine the probability of green plants to albino plants? Record your probability and the class probability below.

Your Probability	
Class Probability	

How do you explain these results?

- 3d. Follow in Mendel's footsteps and use the data below to calculate the probability for each characteristic. Round your probabilities to their simplest form. Record your results in the right column in the following chart.

Mendel's Data on Garden Peas					
Characteristic	Dominant Trait	No.	Recessive Trait	No.	Probability
Flower color	Purple	705	White	224	
Seed color	Yellow	6,002	Green	2,001	
Seed shape	Round	5,474	Wrinkled	1,850	
Pod color	Green	428	Yellow	152	
Pod shape	Smooth	882	Bumpy	299	
Flower position	Along stem	651	At tip	207	
Plant Height	Tall	787	Short	277	

Activity 3: Are You My Phenotype?

3e.



Row 1 (14 kernels)

Row 2 (13 kernels)

Row 3 (14 kernels)

Count the number of purple to yellow seeds for all three rows, then determine and record the probability.

Probability of purple to yellow seeds _____

Count the number of smooth to shrunken seeds for all three rows, then determine and record the probability.

Probability of smooth to shrunken seeds _____

3f. Using the probabilities you just calculated, determine which are dominant and which are recessive genes in the genetic corn.

Trait	Phenotype	Dominant or Recessive
Color	Purple	
	Yellow	
Kernel Texture	Smooth	
	Shrunken	

Activity 3: Are You My Phenotype?

- 3g. Refer to the Human Trait Inventory on page 7 of this booklet. Complete the chart below by using your results for the all students' phenotypes, and determine which phenotype comes from a dominant gene and which comes from a recessive gene.

Human Trait Inventory		
Trait	Phenotype All Students	Dominant or Recessive
Tongue	Tongue Roller	
	Non-Tongue Roller	
Earlobes	Attached	
	Unattached	
Smile	Dimples	
	No Dimples	
Hairline	Widow's Peak	
	Straight Hairline	
Interlaced Fingers	Left Thumb on top	
	Right Thumb on top	
Thumb	Straight thumb	
	Hitchhiker thumb	
Little Finger	Bent	
	Straight	
Second toe	Longer than big toe	
	Shorter than big toe	
Freckles	Has freckles	
	No freckles	
Eye Shape	Almond (oval)	
	Round	
Chin	Has cleft	
	No cleft	

Activity 3: Check Your Understanding

Directions: Read the description of an investigation conducted by your class on genetic corn. Then answer questions 1 - 5.

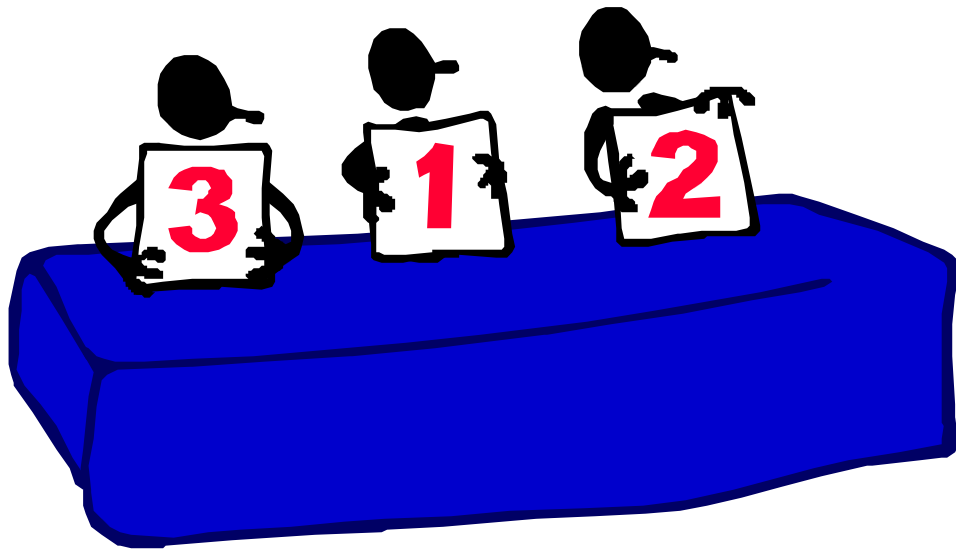
Your class conducted an investigation in which you used a sample size of 800 genetic corn seeds. When these 800 seeds germinated, 612 turned out to be green in color and 188 were albino.

- 1. What is the probability of green to albino seeds?**
 - A. 612:188
 - B. 188:612
 - C. 4:1
 - D. 3:1
- 2. What is the probability when rounded off?**
 - A. 612:188
 - B. 188:612
 - C. 4:1
 - D. 3:1
- 3. Based upon your class data, the gene for albinism is probably**
 - A. a dominant gene.
 - B. a recessive gene.
 - C. neither a dominant nor recessive gene.
 - D. both a dominant and recessive gene.
- 4. In the above investigation, the color green is known as the**
 - A. genotype.
 - B. variable.
 - C. pedigree.
 - D. phenotype.
- 5. Why did you use a large number such 800 seeds for the above investigation?**

Larger sample sizes:

 - A. increase the accuracy of the results.
 - B. decreases the accuracy of the results.
 - C. allow the dominant gene to be expressed.
 - D. allow the recessive gene to be expressed.
- 6. Based upon the work of Gregor Mendel, which one of the following statements is False?**
 - A. Genes can be recessive.
 - B. Genes can be dominant.
 - C. Chromosomes occur in pairs.
 - D. Genes come from the mother only.

Scoring Rubrics



Cooperative Learning (Lantz, 2004)

Name _____ Date _____ Course/Class _____

Task/Assignment _____

Performance Criteria	Assessment			
	Points	Self	Teacher	Other(s)
1. My group completed all that was expected.				
2. I accomplished my assigned task within the group.				
3. My actions and behavior made significant contributions to the total group effort.				
4. I listened to and respected others and their ideas.				
5. I got others involved by asking questions, challenging, and/or requesting information.				
6. Working in the group helped me learn more than if I had worked alone.				

<input type="checkbox"/> Comments	<input type="checkbox"/> Goals	<input type="checkbox"/> Actions
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Lab Report

Name _____ Date _____ Course/Class _____

Task/Assignment _____

Performance Criteria	Assessment			
	Points	Self	Teacher	Other(s)
Introduction to Report				
1. The title states clearly both the independent dependent variables and the results of the experiment.				
2. The title of the report is written in a clear declarative statement.				
3. A concise abstract (not more than 250 words) of the lab is provided.				
Question/Problem				
4. The question/problem that the lab was designed to answer is clearly stated.				
5. Relevant literature and prior observations are cited.				
6. The hypothesis is stated in the "If – and - then" format. It predicts the influence of the independent variable on the dependent variable.				
Procedures for Experiment				
7. The procedures for controlling and measuring the dependent variable are well defined and clear.				
8. A detailed, logical, step-by-step set of procedures that were used for conducting the lab is listed.				
9. Safety concerns are listed among the procedures.				

Lab Report (continued)

Performance Criteria	Assessment			
	Points	Self	Teacher	Other(s)
Data Organization and Display				
10. Refer to “Data Organization Table” Assessment/Evaluation Tool.				
11. Refer to “Graphing Scientific Data” Assessment/Evaluation Tool.				
Data Analysis				
12. Refer to “Data Interpretation” Assessment/Evaluation Tool.				
Conclusions				
13. A response to both the question and hypothesis is clearly and completely provided and is consistent with the data.				
14. Interpretations, as well as limitations, of the data are included.				
15. Unresolved questions and problems are listed.				
16. Questions for further study are developed.				
Language Usage				
17. Language is used correctly and purposefully.				
18. All words are spelled correctly.				
19. The report is neat, legible, and presentable.				

O Comments	O Goals	O Actions
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Scientific Drawing (Lantz, 2004)

Name _____ Date _____ Course/Class _____

Task/Assignment _____

Performance Criteria	Assessment			
	Points	Self	Teacher	Other(s)
1. The drawing(s) is striking in how realistically the object(s) has been drawn.				
2. The drawing includes only those features that were actually observed and not inferred.				
3. As many details as possible are included: size (with metric measurements), colors, textures, shapes, and relationships to surroundings.				
4. The principles of artistic composition are well employed in this drawing.				
5. Multiple perspectives are drawn to provide the viewer with a complete picture of the structures under study.				
6. A descriptive and accurate title is provided for the drawing(s).				
7. All the parts of the scientific drawing are clearly labeled.				
8. A detailed, written explanation of what the scientific drawing is intended to show is included.				
9. A key or legend, if needed to explain the drawing(s), is provided.				
10. The scientific drawing(s) is of an appropriate size and scale for details to be easily recognized.				
11. A very precise scale and proportion is used consistently. The scale is stated and uses the metric system when possible.				

Scientific Drawing (continued)

O Comments	O Goals	O Actions

Graphing Scientific Data (Lantz, 2004)

Name _____ Date _____ Course/Class _____

Task/Assignment _____

Performance Criteria	Assessment			
	Points	Self	Teacher	Other(s)
1. An appropriate type of graph was expertly used (line graph, bar graph, pictograph, histogram, stem-and-leaf, circle graph, line plot, etc.) to display the data set(s).				
2. The title of the graph clearly identifies the data displayed on the graph.				
3. The range of data was used to choose an appropriate sequence of numbers for both the x and the y-axes (2's, 3's, 5's, 10's, 100's, etc.).				
4. Physical intervals on the graph are scaled appropriately and spaced equally.				
5. All the parts of the graph are clearly labeled (modules of measurement, x and y-axes, columns, rows, etc.).				
6. The independent (manipulated) variable is labeled on the x - axis and the dependent (responding) variable is labeled on the y - axis.				
7. A very precise technique is used to plot the data points.				
8. The set of data is plotted on the graph completely and accurately and the slope of the relationship is indicated.				
9. The graph can be used for predictive purposes.				

Graphing Scientific Data (continued)

Performance Criteria

10. If needed, a key is provided.
11. Colors, textures, labels, graphics or other features are used to enhance the graph.
12. The graph is clear and complete.

Assessment			
Points	Self	Teacher	Other(s)

Comments

Goals

Actions

Data Organization Table (Lantz, 2004)

Name _____ Date _____ Course/Class _____

Task/Assignment _____

Performance Criteria	Assessment			
	Points	Self	Teacher	Other(s)
1. The design of the table is appropriate for the types and quantities of data being collected.				
2. All relevant data are accurately and completely recorded in the table.				
3. The data organization table has a title that reflects the relationship between the independent and dependent variables.				
4. A key or legend for the table is provided (if needed).				
5. The information in the columns and rows is appropriately organized and correctly labeled.				
6. The cells within the table are appropriately scaled, and consistent in size.				
7. The set of data was recorded within the appropriate cells.				
8. All measurements are labeled with the correct magnitude (numerical value) using metric modules.				
9. The data organization table is complete, attractive, and presentable.				
Optional				
a. The data organization table has been constructed with computer generated or other graphic tools.				
b. Data from multiple trials are clearly shown.				

Data Organization Table (continued)

O Comments	O Goals	O Actions

Data Interpretation (Lantz, 2004)

Name _____ Date _____ Course/Class _____

Task/Assignment _____

Performance Criteria	Assessment			
	Points	Self	Teacher	Other(s)
1. The interpretation includes all relevant data elements.				
2. Appropriate statistical procedures were selected and applied.				
3. The formula(s) for the statistical interpretation is correctly applied to solve for the unknown quantity.				
4. All mathematical calculations are accurate.				
5. Appropriate graphic display techniques were used (in addition to the mathematical formulas) to further analyze the data.				
6. The interpretation revealed any significant patterns in the data.				
7. Appropriate inferences and/or conclusions were made based on the data interpretation.				

O Comments	O Goals	O Actions
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Hypothesis Testing (Lantz, 2004)

Name _____ Date _____ Course/Class _____

Task/Assignment _____

Performance Criteria	Assessment			
	Points	Self	Teacher	Other(s)
1. The hypothesis is formulated in such a way as to clearly guide the development of an experiment of the question.				
2. The hypothesis is based upon extensive background research, observations, and/or what is already known about the question.				
3. The hypothesis links the effect to the independent variable.				
4. The directionality of the effect is stated.				
5. The hypothesis states what will be the expected effect/change.				
6. Both the dependent and independent variables are identified within the hypothesis statement.				
7. The hypothesis is written in the "If-and- then" format. Example: If baking soda is added to the water and the <u>Elodea</u> is placed in front of a strong light source, then the rate of photosynthesis should increase.				
8. The hypothesis is written as a clear declarative sentence and the language used is purposeful and appropriate for the audience.				

O Comments	O Goals	O Actions
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Brief Constructed Response to Open-ended Science Questions (Lantz, 2004)

Name _____ Date _____ Course/Class _____

Task/Assignment _____

Expert 4	The responses show an in-depth understanding of the topic. Relationships among science facts and concepts are clearly, completely, and accurately explained and fully supported with relevant data, examples, or citations. Ideas are expressed clearly and succinctly in a logical manner. All aspects of the questions are addressed. Spelling and language conventions are correctly applied. Language used in the responses is appropriate for the needs of the audience.
Proficient 3	The responses show a solid understanding of the topic Relationships among science facts and concepts are explained and generally supported with relevant data, examples, or citations. Ideas are expressed, for the most part, clearly and succinctly. The various aspects of the questions are generally addressed. Spelling and language conventions are generally correct. Language used in the responses is largely appropriate for the needs of the audience. Minor errors do not interfere with meaning.
Emergent 2	The responses show a partial understanding of the topic. There is an attempt to explain the relationships among science facts and concepts, but some serious omissions or misconceptions are evident. Insufficient support is provided. Ideas are not always expressed in a clear and logical manner, making the response difficult to follow. The questions are only partially addressed. Flaws in spelling and language conventions interfere. Language used in the response is mostly inappropriate for the needs of the audience.
Novice 1	The responses show a very limited understanding of (or serious misconceptions about) the topic. Relationships among science facts and concepts are not explained. Little or no support is provided. Ideas are not presented in a clear and logical manner. The questions are not completely or satisfactorily addressed. Major flaws in spelling and language conventions make the responses difficult to follow. Language used in the responses is inappropriate for the needs of the audience.

○ Comments	○ Goals	○ Actions
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Poster (Lantz, 2004)

Name _____ Date _____ Course/Class _____

Task/Assignment _____

Performance Criteria	Assessment			
	Points	Self	Teacher	Other(s)
1. The poster contains a title that clearly reflects the topic or theme.				
2. The poster contains relevant and accurate information about the topic or theme.				
3. The format of the poster is appropriate to the content, purpose, and audience for which it is designed.				
4. Graphic elements, such as pictures, photographs, charts, tables, scientific drawings, diagrams, graphs, etc., add to the overall effectiveness of the poster				
5. There is a coherent, flowing organization to the poster with the various elements (text, graphics, etc.) working well together.				
6. The poster is aesthetically pleasing, with effective use of space, color, texture, and shape.				
7. The poster is skillfully designed and crafted using appropriate graphic design tools				
8. The poster effectively communicates its theme in convincing fashion to the intended audience.				
9. The poster is creative and draws attention.				
10. Language chosen for the poster is captivating, persuasive, informative, accurate, and concise.				

<input type="checkbox"/> Comments	<input type="checkbox"/> Goals	<input type="checkbox"/> Actions
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Engineering a Hypothetical Baby Rubric

Traits	Understanding of Content	Product or Performance
Scale	Weights \longrightarrow 70 %	30%
4 Expert	Shows an in-depth and advanced understanding of the concepts of heredity and genetics contained with the module “Chip Off the Old Block.” These concepts are applied accurately to the scientific drawings of the heads of the two hypothetical babies. Question 9e is answered in depth and the language used reveals an in-depth understanding of heredity and genetics. There are no misunderstandings of science and mathematics key concepts.	All traits for the hypothetical baby have been determined through coin tosses. The genotypes are complete, accurate, and effectively communicated. The scientific drawings of the head of the hypothetical babies are completed using the Scientific Drawing Performance List rubric The drawings are presented in an engaging and highly informative manner.
3 Proficient	Shows a solid understanding of the concepts of heredity and genetics contained with the module “Chip Off the Old Block.” These concepts are mostly applied accurately to the scientific drawings of the heads of the two hypothetical babies. Question 9e is answered and the language used reveals an understanding of heredity and genetics. There are minor misunderstandings of science and mathematics key concepts.	All traits for the hypothetical baby have been determined through coin tosses. The genotypes are mostly complete, accurate, and effectively communicated. The scientific drawings of the head of the hypothetical babies are mostly completed using the Scientific Drawing Performance List rubric The drawings are mostly presented in an engaging and highly informative manner.
2 Emergent	Shows a limited understanding of the concepts of heredity and genetics contained with the module “Chip Off the Old Block.” These concepts are loosely applied to the scientific drawings of the heads of the two hypothetical babies. Question 9e is answered but the language used reveals a limited understanding of heredity and genetics. There are major misunderstandings of science and mathematics key concepts	Most traits for the hypothetical baby have been determined through coin tosses. The genotypes are incomplete, inaccurate, and not effectively communicated. The scientific drawings of the head of the hypothetical babies are completed using some of the criteria of the Scientific Drawing Performance List rubric The drawings are not presented in an engaging and highly informative manner.
1 Novice	Shows little understanding of the concepts of heredity and genetics contained with the module “Chip Off the Old Block.” These concepts are not applied to the scientific drawings of the heads of the two hypothetical babies. Question 9e is answered but the language used reveals little to no understanding of heredity and genetics. There are major misunderstandings of science and mathematics key concepts	Some traits for the hypothetical baby have been determined through coin tosses. The genotypes are mostly incomplete, inaccurate, and not effectively communicated. The scientific drawings of the head of the hypothetical babies are incomplete and show little to no use of the criteria of the Scientific Drawing Performance List rubric.



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