

Integers



Sixth Grade Math
Central Square Middle School

By Nicole Bishopric

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Teaching Philosophy Statement

Nicole Bishopric

Education is the most important part of every child's life. It molds who they are as a person and creates the opportunity for them to become whatever they want to be. It is the responsibility of the teacher to create these opportunities for their students by allowing creativity and individuality in the classroom. Every student has the right to an appropriate education. It is the responsibility of their teacher to ensure they have these opportunities.

As a teacher, I feel passionate about my students having the opportunity to learn in a caring and supportive environment. I am enthusiastic about the material I teach, which allows the students to be excited about learning. I have observed many teachers in their classrooms and have noted those who obviously are excited about teaching. I have also noticed those with less than acceptable passion about teaching. This has shown me the differences in how students react to each level of interest and effort put forth by teachers. Students respond well to high levels of engagement and interest by their teachers, and conversely they respond poorly to teachers exhibiting less interest. I have found that teachers who are more involved in their lessons receive more detailed responses from their students.

Every student needs to be treated with respect and rewarded for their individual differences. Those differences make them who they are. Students should always be praised on all the accomplishments they make no matter how small they may be. This will let the student know you care and that you are proud of them. I have experienced teachers doing more disciplining than rewarding. Students in these types of classes are told what not to do rather than encouraged when they are doing something acceptable. On the other hand I have experienced classes where the environment is more warm and welcoming. Here students received rewards because they were working well and accomplishing what needed to get done. In this type of setting I noticed the students responded better to the teacher and were more involved in the lessons and cared about the success of their students.

Every student has their own way of learning and processing information. It is my job as a teacher to use multiple methods of teaching and adapt them to meet the needs of the class. I find that addressing a lesson from several different teaching methods will help each type of learner understand the concepts and information presented in a way that they will retain the material easier and will also stay more focused and on topic. Students need to be actively participating in every lesson to get the most out of it. By being actively involved, students will become more successful in reaching their goals. There are also multiple ways of assessing students. Some forms of assessments will work better than others for certain lessons and certain individuals depending on how the material is taught. These forms of assessment allow the learner to be an active participant in evaluating their own learning.

I believe students need to learn more than simply academics. They need to be able to transition from being a student to be an adult. Teachers need to help make their students culturally aware of their society and other societies so they can better adapt to any community they encounter. The world is becoming smaller and more integrated as new technology introduces us to different cultures, both within the USA and the world in general. The students of today have more interactions with varied and diverse cultures from around the world than just 10 years ago. This is an important aspect to blend into curriculum so that students can embrace these diversities rather than be afraid of them. By preparing a student with these skills they will be able to form their own opinions and ideas about how they hope create a better future.

Education provides students with the opportunity to make their dreams a reality. Teachers provide their students with the foundation and fundamentals they need to succeed as they decide what they want to become. It is important for each teacher to treat every student as an individual with hopes, dreams and desires of their own and to encourage them to reach for knowledge every day. Life is a learning experience and each student can make their own decision about how much they will participate in that learning experience. It is a teacher's role to help them find those experiences and make the most of every day.

Learning Teaching Context

Community Characteristics:

My placement is in Central Square Middle School in a sixth grade mathematics classroom in House 3. Central Square Middle School is located in the suburban town of Central Square, New York in Oswego County. The population of the town of Central Square is approximately 8,462, 3,562 housing units, and a population density average of 185.63 people per square mile with a total number of households of 3,394. The town has a total area of 45.58 square miles. The median house value is \$80,600.

The racial ethnicity in the town of Central Square is not very diverse. The racial makeup is 96.7% White, 0.5% Black or African American, 0.7% Native American, 0.4% Asian, 0.0% from other races, and 1.6% from two or more races. In this town, the population is spread out with 26.2% under the age of 18, 7.5% from 18 to 24, 31.9% from 25 to 44, 22.7% from 45 to 64, and 11.8% who were 65 years of age or older. Since diversity is scarce, multicultural education needs to be taught in the classroom so students can become more aware of the many cultures in their nation and community in which they live. The median age is 35 years old. The median income for the household in the town of Central Square is \$46,112, and the median income for a family of four is \$39,015. The types of homes in this area include single-family homes, mobile homes, small apartment buildings and row-houses.

There are 4,840 students enrolled in the 8 schools in the district. These schools include Aura A Cole Elementary School, Brewerton Elementary School, Central Square Intermediate School, Central Square Middle School, Cleveland Elementary School, Hastings Mallory Elementary School, Millard Hawk Primary School, Paul V. High School. Central Square Middle School consists of 1,173 students throughout grades 6 through 8.

There are many companies and businesses in the town of Central Square. These include car dealerships, restaurants, stores, etc. The average commute to work is 25.2 minutes. This includes travel time to near by cities such as Syracuse.

The home life of every student affects how well they perform in the classroom. A student's priorities in this situation may be to put food on the table and take care of their siblings rather than on their school work. A teacher must be accepting of the circumstances and modify their lessons to the needs of the students.

School Characteristics:

Central Square Middle School is a public school which includes grades 6-8 with a total of 1,173 students. The school is divided into three houses, each operating separately with individual Principals. The building has two floors and a basement. Each house is aligned with each other, eighth grade being on the second floor and sixth grade being in the basement. Each team has a teacher for English, Social Studies, Science, Math and Reading. In sixth grade students also attend classes in home and careers and computer basic skills. In seventh grade students attend health and technology classes. Both seventh and eighth grade students enroll in language courses which include French, Spanish, German or American Sign Language.

Approximately 36% of students in the school receive free and reduced lunches however not all families have applied. This lower cost allows children who come from low income families to receive healthy lunches.

This school is not very diverse. 99% of the student population is Caucasian while the remaining 1% is African American. This presents the need for cultural education in the school.

There are several school meetings which I plan to attend. There are a few department meetings. For these meetings the math department throughout the school comes together to discuss curriculum and any issues there may be. There are also several faculty meetings which will be among the faculty of House 3. I will be attending the parent/teacher conferences this spring along with my cooperating teacher and the team teachers. There were a selected amount of parents who were invited to discuss student progress. I will also be attending the spring showcase. At this event, students bring their parents to this evening event and show off all the work they have been working on.

Classroom Characteristics:

When you first enter the school the main office is directly in front of you. My classroom is in the basement. To get to the room you must turn left before the office, then a quick right. After passing the cafeteria there will be a stairwell to your right. At the bottom of the stairwell there is a hallway which only runs one direction. My classroom is room 001.

As you enter the room there is a whiteboard on the opposite side of the room. There are five tables, three in the back and two in the front, which seat either five or four students. At the wall to the left are the five classroom computers, the window, teacher's desk and the student teacher's desk. The set up of the student's seats allows them to work cooperatively either in groups or partners. The tables are set up so that there is one upper level student, one lower level student, and the remaining are right in the middle. This helps to bring the lower leveled students up through the peer tutoring as well as the students in the middle, and it helps the higher leveled student to challenge what they know through helping their peers. This also allows all students to work cooperatively. This set up also makes it easy to create learning centers and stations which students can travel to in their groups. Students have assigned seats so they know where they need to be when they enter the room. This also helps to create groups for centers. Every class period there is a warm up on the front whiteboard for students to get right to work.

Everything in this room very organized and everything is easy to find. The students know where they can find what they need when they are asked to do so. Students know which programs they should use on the computer when they have free time or when the computers become a learning center.

Classroom management is a very important part of every classroom. If students come into a classroom not knowing what they should be doing, the teacher needs to work harder to control the class. By allowing the class to know what is expected of them and setting guidelines in the beginning of the year, the day will run smoothly. As soon as the students enter the room they know they need to hand in their homework to

the basket with their class period on it. There is always a class agenda written on the board for what plans to happen that class period. There is also a place on the board which has the homework assignment for that evening.

Student Characteristics:

My sixth grade team consists of 109 students. In each of my five classes there is an average of 22 students. The class size ranges from 20 to 23. On the team there are 58 boys and 51 girls, all ranging in ages 11-13. I see each class for 80 minutes every other day. There are three classes on one day then two on the next. Among my sixth grade team, 106 of the students are Caucasian, three are African American and one is Native American. Every student on the team speaks English as a first language. In my class, there is a resource teacher who comes into the class to help several students in the room with extra help such as rereading instructions or helping them academically. This teacher is in the class for two of my class periods. There is also a teacher's assistant who comes into the class for another class period. She also assists specific students with instruction and content.

There are 20 students on the team who are required to receive at least one modification. All except for one student will receive extended time on their tests. The majority of these students will take their tests in an alternate location. There are several who will need the directions read to them. When I am giving directions to any assignment and test throughout this unit I will make sure to read the directions and explain specifically what I expect from the students. This will help to reduce any confusion that may occur if the students read the directions without any explanation.

There are also four 504's which I must take into consideration their requirements when creating my lessons. Student A has a hard time taking visual queues and social skills are lacking. I hope to create a positive social interaction within the group of students he works with throughout the cooperative learning portions of each lesson. Student B has trouble staying on task and needs directions read and explained. Throughout this unit on integers I plan to explain what is expected from each lesson and each component in the lessons. This student sits in the front of the room so I can keep

an eye on the student to ensure they are on task. Student C has difficulty sitting for long periods of time. I created my lessons so they are broken up into different parts. During each transition I will allow students to stand up, stretch, and get the materials they will need for the following portion of the lesson. This will give student C a few minutes to refocus “cool off” to diminish any anxiety. Student D has a hard time remaining on task. Throughout my lesson I have found activities which will keep the students interested. There are several activities where student will be using objects to represent integers and others to create problems which they will then need to solve. By keeping students engaged and interested in the lesson, the tendency of getting distracted will diminish.

Throughout each lesson students will be expected to be active participants. There will be many opportunities for students to share their work with the class on the front board. This will give the rest of the class the chance to either agree or disagree with what was written and explain any reason for disagreement.

There are several forms of assessment throughout each lesson. Some consist of worksheets, questions during whole class instruction, and through formal testing. The teacher also assesses based simply on observing the students. Body language and facial expressions are a quick and easy way to see if a student understands what they are doing and if they need extra assistance. There are several forms of assessments which I will be using during the teaching of my lessons. I will assess during the warm up by walking around the room as the students work and take a look at their answers. I will expect all work which is necessary is shown. There are several worksheets I will have the students complete throughout each lesson and I will assess their understanding based on their responses. There will also be a short assessment quiz halfway through the unit to help me gain a better understanding of what the students know and if more time should be spent on the previous material before moving onward.

Students are familiar with the daily routine which is marked on the front board. This helps the students prepare for what will be coming next. Many of the students prefer knowing what will be happening next and feel more comfortable having a plan on the board when they arrive to class.

Students will be given the opportunity to win a prize at the end of the class period. I will hand out tickets for certain questions which I will ask. If the answer is correct the student will receive a ticket. They will write their name on this ticket and put it in the bin in the front of the room. At the end of the class period I will ask a student to pick a ticket from the bin and whose ever name is on the ticket will win the prize. Every student wants to win the prize and they know they will have a better chance if they have more tickets, so the more questions they answer and the more answers they get correct, the more tickets they will receive.

Learning Goals / Objectives and Assessment Plan

Goals	Objectives/Observable Learning Outcomes	Assessments & Performance Criteria	Rationale	Planning for Accessibility/Adaptations
<p>Content Goal 1: Students will understand how to add integers. ELA</p> <p>Content Goal: Students will learn and understand the vocabulary term <i>Integer</i>.</p>	<p>Students will be able to: - demonstrate knowledge of integers by locating the numbers on the number line. - demonstrate application of integers by solving addition problems.</p>	<p>Pre/Post test on Integers: Q1 - Q5 - Students will be evaluated based on their ability to solve specific addition problems involving integers.</p>	<p>It is important for students to accurately solve addition problems involving integers to gain a better understanding or real world situations.</p>	<p>Students will be given explicit directions of what I expect when they are answering each question. Rules for adding integers will be written on the board as well as in their rule book which they can use throughout the unit.</p>
<p>Content Goal 2: Students will understand how to subtract integers.</p>	<p>Students will be able to: - demonstrate knowledge of integers by locating the numbers on the number line. - demonstrate application of integers by solving subtraction problems using the rules discussed.</p>	<p>Pre/Post test on Integers: Q6 - Q10 - Students will be evaluated based on their ability to solve specific subtraction problems involving integers.</p>	<p>It is important for students to accurately solve subtraction problems involving integers to gain a better understanding or real world situations.</p>	<p>Students will be given explicit directions of what I expect when they are answering each question. Rules for subtracting integers will be written on the board as well as in their rule book which they can use throughout the unit.</p>
<p>Content Goal 3: Students will understand how to add and subtract integers.</p>	<p>Students will be able to: - demonstrate application of integers by solving addition and subtraction problems using the rules discussed. - demonstrate evaluation of integers by determining whether they need to add or subtract and if the result will be negative or positive.</p>	<p>Pre/Post test on Integers: Q1 - Q10 - Students will evaluate addition and subtraction problems through various approaches. There will be an assessment quiz at the end of the lesson to test understanding.</p>	<p>It is important for students to accurately solve addition and subtraction problems involving integers. These skills will be beneficial outside of the classroom.</p>	<p>I will explain exactly what I expect each student to accomplish at each center to eliminate from any confusion. In each group I will have students of higher, lower, and mediate ability. This will help with cooperative learning. The rules for adding and subtracting integers will be written on the side board to help remind students of how the problems should be solved.</p>

<p>Content Goal 4: Students will understand how to multiply and divide integers.</p>	<p>Students will be able to: - demonstrate application of integers by solving multiplication and division problems the rules. -demonstrate evaluation of integers by determining if the result will be positive or negative.</p>	<p>Pre/Post test on Integers: Q11 - Q20 Students will be evaluated based on their ability to accurately solve multiplication and division problems. Students will also be evaluated on their ability to choose the correct symbol based on the integers used in the problems.</p>	<p>Assessing students as they work throughout the lesson will provide the teacher with the necessary information on whether they need to reteach the material or not, depending on if students are understanding. Assessments will occur throughout the entire lesson.</p>	<p>A teacher's assistant will be circulating the classroom and helping students who are struggling.</p>
<p>Content Goal 5: Students will understand how to evaluate integers with exponents.</p>	<p>Students will be able to: - demonstrate application of integers by solving negative numbers raised to some exponent. -demonstrate evaluation of integers with exponents by determining if the result will be positive or negative. - demonstrate synthesis of integers with exponents by developing a general rule for determining its resulting sign.</p>	<p>Pre/Post test on Integers: Q21 - Q25 Students will be evaluated based on their ability to accurately evaluate integers with exponents and determine if the result will be negative or positive.</p>	<p>Assessing students as they work throughout the lesson will provide the teacher with the necessary information on whether they need to reteach the material or not, depending on if students are understanding. Assessments will occur throughout the entire lesson.</p>	<p>A teacher's assistant will be circulating the classroom and helping students who are struggling.</p>

<p>Process/Skill Goal 6: Students will be able to manipulate integers in any expression.</p>	<p>Students will be able to: - demonstrate knowledge of integers by locating the numbers on the number line. - demonstrate application of integers by solving various equations and expressions. - demonstrate application of integers by putting to use all the rules for integers and solving various problems.</p>	<p>Pre/Post test on Integers: Q1 - Q25 - Students will be evaluated based on their ability to solve a variety of problems related to integers. This includes solving problems with addition, subtraction, multiplication, division and - evaluating integers with exponents.</p>	<p>Evaluating students in multiple ways allows a teacher to assess the students' ability to use multiple ways of solving a problem.</p>	<p>There are several students in the class who provide greater explanations with their answers. These students will be asked to share first which will show an example to the other students in the class of what is expected in with showing their work.</p>
<p>Attitude/Disposition Goal 7: Students will value how they will put to use the rules for integers outside of the classroom.</p>	<p>Students will be able to: - demonstrate application of integers by putting to use all the rules for integers and solving various problems.</p>	<p>The teacher will assess understanding through class activities involving manipulatives which represents using multiple ways of evaluating integers.</p>	<p>Evaluating students in multiple ways allows a teacher to assess the students' ability to use multiple ways of solving a problem.</p>	<p>There are several students in the class who provide greater explanations with their answers. These students will be asked to share first which will show an example to the other students in the class of what is expected in with showing their work.</p>

Learning Goals and Objectives

When writing every lesson plan it is important to create appropriate learning goals and objectives which are expected to be met. This helps to ensure that students learn what is important for each lesson. By having predetermined goals and objectives the teacher can teach toward accomplishing what is necessary. It is important for every student to learn what is important in every lesson, so by having predetermined goals and objectives those needs can be met.

- **Content Goal 1: Students will understand how to add integers.** It is important for students to understand how to add positive and negative numbers. This skill will help in real world situations such as finding the difference in temperature throughout the day during the winter months. Students will be given a set of rules to help remember the steps taken to successfully add integers. Students will also be expected to understand the term *integer* in order to develop throughout the unit.
- **Content Goal 2: Students will understand how to subtract integers.** It is important for students to understand how to subtract integers. Through following the steps for subtracting integers students must understand the rules for adding integers. This is why the previous goal is so important. Understanding subtraction of negative and positive integers will help in and outside of the classroom.
- **Content Goal 3: Students will understand how to add and subtract integers.** It is important for students to understand both adding and subtracting of integers. Students will be faced with both forms of evaluating numbers in the real world so it is important to be able to distinguish between the two and understand the steps which need to be taken to evaluate each.

- **Content Goal 4: Students will understand how to multiply and divide integers.** Multiplication and division are both a major part of the school curriculum. It is important for students understand how to evaluate multiplication and division problems involving integers. This understanding will help to solve real world situations generally involving money. It is important for students to understand if a result becomes either negative or positive depending on the integers in the problem.
- **Content Goal 5: Students will understand how to evaluate integers with exponents.** Once students understand how integers involving multiplication are evaluated they should be able to then evaluate integers with exponents. Students will be expected to find a general rule involving even and odd exponents with negative numbers as a base. Evaluating exponents provides a simpler way of evaluating multiple multiplications of the same number. The rule which students come across will give a quick way of determining the result's sign without multiplying each number out.
- **Process/Skill Goal 6: Students will be able to manipulate integers in any expression.** It is important for students to be able to quickly and accurately evaluate integers in any expression. This ability allows students to further their understanding of integers as they continue with their education. Students will be working with their peers to come to conclusions on information given to them.
- **Attitude/Disposition Goal 7: Students will value how they will put to use the rules for integers outside of the classroom.** It is important for students to understand how integers can be evaluated. This will help when dealing with real world experiences such as in banking, determining the difference in temperature throughout a day or extended period of time. Students will be faced with integers everyday so it is important they understand the correct way of evaluating them in any situation.

It is important for a teacher to set goals for each unit they plan to teach because it creates a direction for success. Each unit the teacher creates has specific goals which relate to the topic and the curriculum. This helps to track the students' progress in meeting the requirements in the curriculum. By having these goals set before the lesson is taught a teacher can ensure students are accomplishing what they need to and are learning what is expected.

Assessment Plan

There are many forms of assessment which I plan to use throughout the unit. It is important to use many types in order to monitor student progress toward the learning goals and objectives. Each student learns at a different pace, but the ultimate goal is always the same: Success. Many types of assessment are administered in order to reach this goal. Throughout the integer unit, informal and formal assessments were used in order to track student progress.

Before beginning this unit I informed the class that we would be begin learning about integers and asked if anyone knew what an integer was. I presented the class with a pretest which I explained wasn't going to be graded. This assessment was an information tool for me to better modify the lessons to incorporate the information the students needed to still learn. The pre-test consisted of ten multiple choice questions, 10 fill in the blank, and 5 choosing between positive and negative. Each multiple choice question had four possible choices. The fill in the blank required students to correctly write the product or result of each problem, and the positive/negative required students to determine if the answer was positive or negative depending on the exponent. Directions were given explicitly then students were given the freedom to work at their own pace to complete the test. If there were any questions, students raised their hands and waited until I arrived at their seat.

When each student was finished with their test I asked them to sit quietly in their seat while the rest of the class finished. I walked around the classroom as the test was being administered which helped to make sure each student was on task and looking at their own paper. There were a few questions that students were unsure about but I suggested that the students use their best judgment. Each student was encouraged to do their very best and this information was going to be for me to better understand what each student already knows about integers.

During this unit, there were several discussions, cooperative activities, and independent work. During each warm up and practice I ask students to share the work they have done to both help their peers and to challenge the ideas of those who may have different answers. We will also be discussing the rules for adding, subtracting,

multiplying and dividing integers. These rules will then be reinforced and put to use through practice using hands on materials. I will also be assessing students verbally throughout the instructional sequence. By assessing students verbally I am getting immediate feedback as to what they understand and what I need to spend more time on. Probing questions were asked to help expand student thought. Students will need to activate prior knowledge of addition, subtraction, multiplication, division and exponents to expand their understanding of integers. Following the instructional sequence students will be given a practice sheet to allow me to assess their understanding of the instruction. They will also add rules discussed to their integer rule book. This book will be a tool students may use when completing the practice and other activities throughout the class.

Each lesson contains an activity which students will need to complete. I assessed students throughout each lesson by verbally listening to their responses and checking the work they completed. These worksheets gave me insight into the information each student has learned from the materials provided to them.

Halfway through the unit I asked students to complete a short assessment quiz. This gave me insight into what they have learned and what needs further instruction. At the end of the unit, a post-test was administered to the class to formally assess what the students had learned. The test was administered exactly the same way as the pre-test, including the same directions and questions, along with giving support to each student to reach success. This also gave me a chance to assess the students and determine if they met the goals that were set prior to the teaching of the unit.

Assessment is such a vital factor in learning and teaching. Teachers are able to use this information to see where their students lie on the determined benchmark. Assessment also gives the teacher information based on what they should do to monitor and adjust to meet each students' needs. In addition, this information is crucial for teachers to be aware of in order to implement the successful parts into following instruction. I am proud of the end results based on the assessment given, and I feel as though I can learn from the way I taught to better my teaching and use this information to teach successful lessons and units in the future.

Name _____

Class _____

Pre-Assessment

Directions: Circle the best answer for each question.

1. $-6 + 3 =$ _____

- a.) 3
- b.) -9
- c.) -3
- d.) 9

2. $25 + -11 =$ _____

- a.) 36
- b.) -36
- c.) 14
- d.) -14

3. $-9 + -15 =$ _____

- a.) 24
- b.) -24
- c.) 6
- d.) -6

4. $-32 + 58 =$ _____

- a.) -26
- b.) 26
- c.) -90
- d.) 90

5. $-9 + 15 + -13 + -27 =$ _____

- a.) 34
- b.) -34
- c.) -54
- d.) 54

6. $6 - (-3) =$ _____

- a.) 9
- b.) -9
- c.) 3
- d.) -3

7. $-9 - 21 =$ _____

- a.) 12
- b.) -30
- c.) 30
- d.) -12

8. $-7 - (-70) =$ _____

- a.) 77
- b.) -77
- c.) -63
- d.) 63

9. $12 - (-13) =$ _____

- a.) -25
- b.) 25
- c.) -1
- d.) 1

10. $-37 - (-12) + 2 =$ _____

- a.) 23
- b.) -23
- c.) -51
- d.) -47

Directions: Write the answer to each question on the line provided.

11. $-6 \times -3 =$ _____

12. $-5 \times 2 =$ _____

13. $-2 \times -11 =$ _____

14. $19 \times -2 =$ _____

15. $7 \times -6 =$ _____

16. $-4 \div 2 =$ _____

17. $-12 \div -3 =$ _____

18. $200 \div 4 =$ _____

19. $72 \div 12 =$ _____

20. $-90 \div -30 =$ _____

Directions: **Circle** positive or negative depending on what the answer will be to each of the following problems.

21. -6^3 positive / negative

22. -2^2 positive / negative

23. -17^1 positive / negative

24. -3^2 positive / negative

25. 2^2 positive / negative

Goal: Students will understand how to add integers.

Objectives:

Learners will demonstrate knowledge of integers by locating the numbers on the number line.

Learners will demonstrate application of integers by solving addition problems.

Standards:

MST3.06.RP2: Reasoning and Proof

MST3.06.RP2.01: Students recognize that mathematical ideas can be supported using a variety of strategies.

MST3.03.CO3: Communication

MST3.06.CO3.06: Students understand mathematical solutions shared by other students.

MST3.06.CO3.07: Students raise questions that elicit, extend, or challenge others' thinking.

MST3.06.CO3.08: Students consider strategies used and solutions found by others in relation to their own work.

MST3.06.RE5: Representation

MST3.06.RE5.01: Students use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations.

Materials:

- Whiteboard and expo markers
- overhead and markers
- Rule sheet for student's tables (Appendix A)
- 2 different colored chips
- integer worksheets (Appendix B)
- construction paper
- markers
- homework sheet (Appendix C)

Time:

- warm up: 5 minutes
- introduction: 2 minutes
- instructional sequence: 17 minutes
- rule book: 15 minutes
- practice: 30 minutes
- closure: 11 minutes
- Total time: 80 minutes

Warm Up:

Before the students come in the room have the four questions below written on the whiteboard for the students to work on as they settle into the room. After everyone has completed their work go over the answers together on the board.

Questions include:

- | | <, >, = | Answers |
|----|----------------------|---------|
| 1. | $-16 \bigcirc 16$ | < |
| 2. | $-28 \bigcirc -27$ | < |
| 3. | $-54 \bigcirc -56$ | > |
| 4. | $-100 \bigcirc -101$ | > |

Ask students to come to the board to answer the questions once everyone is done with their work.

Introduction:

Today we are going to learn about integers. . Who knows what an integer is? Yes, the set of whole numbers and their negatives. Today we are going to learn how to add integers. This includes adding negative and positive numbers

Instructional Sequence:

On the overhead, write notes for students to keep in their notebooks.

Integer: The set of whole numbers and their negatives.

1. To add integers of the same sign

Add their absolute values

The result will have the same sign.

Examples: $2+5=7$; $(-7)+(-2)=-(7+2)=-9$, $(-80)+(-34)=-(80+34)=-114$

2. To add integers of opposite signs:

Take their absolute values

Subtract smaller from larger

Give result the same sign as the integer with the larger absolute value

Examples: $8+(-3)=$

$$|8| - |3|$$

Subtracting the smaller value from the larger gives us $8-3=5$.

The absolute value of 8 is larger than the absolute value of 3 so the result is +5.

*Draw a number line on the overhead and explain examples with this. Also, to use overhead chips to show another method for solving the addition of positive and negative integers.

Ex: $-2 + 3 = 1$

$$-3 + -5 = -8$$

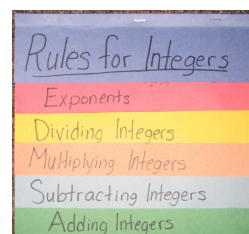
Rule Book:

Hand out one sheet of each size paper to each student (6 different colors). Have each student put them together from smallest to biggest. Ask students to begin labeling each tab:

Rules for Integers

Exponents

Dividing Integers



Multiplying Integers
Subtracting Integers
Adding Integers

The tab "Adding Integers" should be at the very bottom. After students have completed, ask them to write the rules discussed in class in the section of paper above the words "adding integers." Each day this will be added to. These books may be used for completing assignments.

Practice:

Explain and hand out the adding integer worksheet with the number lines. Students may use chips for the back if they feel they will help. Have them determine which side is positive and which is negative, then use them to represent the problems on the page.

Closure:

Ask students a series of questions for more practice of what was learned throughout the day.

For example:

Which number is bigger and why:

-2 or -3

-57 or 57

-100 or -101

What is the sum of:

-15+2

-2+-3

-6+5

Hand out homework for students to complete and bring back to go over at the start of the next class period.

Assessment:

Students will be assessed based on their understanding during the instructional sequence, as well as during the warm-up. Teacher will be observing work throughout the practice and intervene if there are consistent mistakes.

Adaptations for accelerated students:

On a separate sheet of paper, have students create their own addition problems using the 2 sided chips. Have them determine which color is positive and which is negative. Have them place a handful of chips in a cup then pour them out onto the table then write a problem and solve.

Use of Technology:

The overhead projector will be used for the instructional sequence portion of the lesson.

Reflection:

Overall I feel like this lesson went well. I made sure I gave plenty of examples for the students to understand how each problem should be solved. I also made sure that the rules could be understood by each student. I did this by explaining with examples,

writing the notes on the board for students to use when working, and I had each student create a rule book which they can refer to as they work. Throughout the lesson, students were losing focus. I needed to make sure they were focused on what they needed to get done. After assessing students as they completed their practice sheet I noticed that the majority understood how to apply the rules. There were a few I needed to remind to look at the rules to help them correct their work, or use another method to solve the equation.

Goal: Students will understand how to subtract integers.

Objectives:

Learners will demonstrate knowledge of integers by locating the numbers on the number line.

Learners will demonstrate application of integers by solving subtraction problems using the rules discussed.

Standards:

MST3.06.RP2: Reasoning and Proof

MST3.06.RP2.01: Students recognize that mathematical ideas can be supported using a variety of strategies.

MST3.03.CO3: Communication

MST3.06.CO3.06: Students understand mathematical solutions shared by other students.

MST3.06.CO3.07: Students raise questions that elicit, extend, or challenge others' thinking.

MST3.06.CO3.08: Students consider strategies used and solutions found by others in relation to their own work.

MST3.06.RE5: Representation

MST3.06.RE5.01: Students use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations.

Materials:

- Whiteboard and expo markers
- overhead and markers
- notes for overhead
- 2 different colored chips
- integer worksheets
- student integer rule books
- markers
- homework sheet

Time:

- warm up: 10 minutes
- introduction: 2 minutes
- instructional sequence: 17 minutes
- rule book: 5 minutes
- practice: 30 minutes
- closure: 16 minutes
- Total time: 80 minutes

Warm Up:

Before the students come in the room have the four questions below written on the whiteboard for the students to work on as they settle into the room. After everyone has completed their work go over the answers together on the board.

Questions include:

	<i>Answers</i>
1. $-16 + 15 = \underline{\quad}$	-1
2. $-5 + -2 = \underline{\quad}$	-7
3. $-3 + -17 = \underline{\quad}$	-20
4. $17 + -20 = \underline{\quad}$	-3

Ask students to come to the board to answer the questions once everyone is done with their work.

Review homework from the previous lesson to ensure everyone has the correct answer on their paper and understands how to add integers correctly.

Introduction:

Last class we learned how to add integers. Today we are going to learn how to subtract integers. Integers are positive and negative numbers, so we are going to come up with some general rules for subtracting integers.

Instructional Sequence:

On the overhead, write notes for students to keep in their notebooks.

1. Subtracting an integer is the same as adding its opposite.

Examples:

$$7 - 4 = 7 + (-4) = 3$$

$$12 - (-5) = 12 + (5) = 17$$

$$-8 - 7 = -8 + (-7) = -15$$

$$-22 - (-40) = -22 + (40) = 18$$

Here we converted the subtracting integer to its opposite, and added the two integers.

Notice, the result of subtracting two integers could be positive or negative.

*Draw a number line on the overhead and explain examples with this. Also, to use overhead chips to show another method for solving the subtraction of positive and negative integers by turning the subtracting integer into its opposite (by flipping the chip) then adding.

Ex: $-5 - 6 = -11$

$$-4 - -7 = 3$$

Rule Book:

Ask students to take out their rule book. Discuss a common rule for subtracting integers and have them write it into their individual rule book using markers.

Practice:

Explain and hand out the subtracting integer worksheet with the number lines. Students may use chips for the back if they feel they will help. Have them determine which side is positive and which is negative, then use them to represent the problems on the page. Students will need to work independently on the front side of the worksheet and may

choose to work with a partner on completing the back. Students will need to make sure they are on task with their partner and everyone is contributing.

Closure:

Ask students a series of questions for more practice of what was learned throughout the day.

For example:

What is the sum of:

$$-15+2$$

$$-2+-3$$

$$-6+5$$

What is the difference of:

$$-2-3$$

$$-7-(-5)$$

$$5-(-6)$$

Hand out homework for students to complete and bring back to go over at the start of the next class period.

Assessment:

Students will be assessed based on their understanding during the instructional sequence, as well as during the warm-up. Teacher will be observing work throughout the practice and intervene if there are consistent mistakes.

Adaptations for accelerated students:

On a separate sheet of paper, have students create their own subtraction problems using the 2 sided chips. Have them determine which color is positive and which is negative. Have them place a handful of chips in a cup then pour them out onto the table then write a problem and solve.

Use of Technology:

The overhead projector will be used for the instructional sequence portion of the lesson.

Reflection:

Today's lesson went as planned. I began the class with a warm-up followed by the corrections of the homework. This gave the class a refresher on adding integers. Next I began giving notes on subtracting integers. Before I started I asked a few students to state the rules for adding integers. I gave notes then a few examples with different ways of solving. The first method was accomplished by using the rules, then with a number line, followed by using negative and positive chips. This provided multiple ways of solving the same problem. Next I asked each student to take out their rule book and add in the rules for subtracting integers with at least one example. I then explained a worksheet which I asked each student to complete. They were asked to work independently on the first side then compare answers with a partner. With that same partner they were allowed to work together on completing the back side of the worksheet. This allowed students to cooperatively work together on solving each problem. They were asked to explain how they came to that answer and if there was a

disagreement between the two they were instructed to discuss each point of view then refer to the rules. For the most part, students worked very well together on the back page. This helped when I was checking papers because I only needed to check half. When an answer was determined incorrect the group went back to their seats and worked out the problem again to see where they went wrong. The majority of the class seemed to understand the concept. There were a few who needed to be reminded of the process, but for the most part it was understood.

Goal: Students will understand how to add and subtract integers.

Objectives:

Learners will demonstrate knowledge of integers by locating the numbers on the number line.

Learners will demonstrate application of integers by solving addition and subtraction problems using the rules discussed.

Learners will demonstrate evaluation of integers by determining whether they need to add or subtract and if the result will be negative or positive.

Standards:

MST3.06.RP2: Reasoning and Proof

MST3.06.RP2.01: Students recognize that mathematical ideas can be supported using a variety of strategies.

MST3.03.CO3: Communication

MST3.06.CO3.06: Students understand mathematical solutions shared by other students.

MST3.06.CO3.07: Students raise questions that elicit, extend, or challenge others' thinking.

MST3.06.CO3.08: Students consider strategies used and solutions found by others in relation to their own work.

MST3.06.RE5: Representation

MST3.06.RE5.01: Students use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations.

Materials:

- Magic Squares worksheet (Appendix F)
- Shake 'Em Up Subtraction Style! Worksheet (Appendix G)
- dice
- Deal 'em out! (addition) worksheet (Appendix H)
- Deal 'Em Out! (adding and subtracting) worksheet (Appendix I)
- cards
- Flip Chip worksheet (Appendix J)
- 2 different colored chips
- plastic cups
- assessment quiz (Appendix K)
- addition and subtraction mix homework sheet (Appendix L)

Time:

- warm up: 10 minutes
- introduction: 5 minutes
- centers: 50 minutes (10 minutes each)
- assessment: 10 minutes

-closure: 5 minutes
Total time: 80 minutes

Warm Up:

Before the students come in the room have the four questions below written on the whiteboard for the students to work on as they settle into the room. After everyone has completed their work go over the answers together on the board.

Questions include:

	<i>Answers</i>
1. $-12 - (-13) =$	1
2. $-15 - 3 =$	-18
3. $27 - (-4) =$	31
4. $-56 - (-6) =$	-50

Ask students to come to the board to answer the questions once everyone is done with their work.

Review homework from the previous lesson to ensure everyone has the correct answer on their paper and understands how to subtract integers correctly.

Introduction:

*Last class we learned how to add and subtract integers. Practice what we have learned. Before we begin, who can tell me what an integer is? **Integers are positive and negative numbers.** Who can tell me some of the rules we have discussed so far?*

Next, explain what is expected from each student at each center:

Centers:

Magic Squares

Each student at this center will be given a worksheet with 9 magic squares on the front. The goal for this center is to find the sum of the rows, columns, and diagonals, then fill in the missing boxes based on what they determined the sum to be. They will be expected to write the addition problems they need in order to complete each square.

On the back of this page, students will be given the chance to create their own magic square by choosing a number for x, y, and z. They will need to then find the sum of the square they created.

Shake 'Em Up Subtraction Style!

At this center each student will be given two different colored dice. Before they begin they will need to determine which die is for positive numbers and which is for negative. They will then roll the dice together then write down the numbers in either order in the spaces provided. This will create a subtraction problem which they will then need to solve.

Deal 'em out!

At this center, each student or pairs of students will be given a deck of cards. Students will be asked to think of the red cards as being positive, and the black cards as negative, similar to the positive and negative ends of a car battery. Each member will

be dealt a card which is written in the first blank. Next, a second card is dealt. Students need to make sure they are writing the correct signs, then adding to find the sums. The student who has the highest sum wins that round.

Deal 'Em Out! (addition and subtraction)

This is very similar to the previous center in that each student receives cards one at a time, and will need to record them. At this center however, students will be given 3 cards. They will need to add the first two, and then subtract the third from the previous sum. Again, whoever has the highest sum wins the round.

Flip Chip

At this center, students will be given a handful of chips which have a different color on each side. Before they begin, they will need to determine which color is positive and which is negative. They will place the chips into a plastic cup, and then pour the chips onto the table. They will need to record the positives and negatives in the spaces provided. This will create either an addition or a subtraction problem which they will then need to solve.

Assessment:

For this portion of the lesson, students will be asked to complete a short 10 question assessment quiz which will help me gain a better understanding of the students' understandings and adjust any further lessons. Also, students will be assessed based on their understanding of the directions for each center. Teacher will be observing work throughout the practice and intervene if there are consistent mistakes.

Closure:

Ask students a series of questions for more practice of what was learned throughout the day.

For example:

What is the sum of:

$$-15+2$$

$$-2+-3$$

$$-6+5$$

What is the difference of:

$$-2-3$$

$$-7-(-5)$$

$$5-(-6)$$

Hand out homework for students to complete and bring back to go over at the start of the next class period.

Adaptations for accelerated students:

For those who have finished what they were asked to complete at their center, they may create new problems. Have them try to create more challenging problems by including multiple steps.

Reflection:

Overall this lesson went very well. Students enjoyed working with objects such as dice, cards, and double-sided chips. They were very into their work. Students were talking throughout the whole center activity, but they were on task. Students were discussing the problems they created with their manipulatives and worked together to answer others. Students were willing to help one another when others were confused with how to solve a question or to describe exactly what the questions were asking.

With these centers I think it would be a good idea to use a timer that everyone in the room can see so they can look to see how much time they have left, and finish up what they need to get done. Throughout the centers I warned the students when they had about a minute left then told them when time was up. I didn't expect every student to complete each worksheet within the 7-10 minutes at each center but I expected them to do what they could to get as many accurate answers as they could.

Name _____

Class _____

Assessment Quiz

Directions: Write the sum or difference of each.

1. $-5 + 8 =$ _____

6. $19 - (-12) =$ _____

2. $-11 + -3 =$ _____

7. $-32 - 12 =$ _____

3. $17 + -6 =$ _____

8. $-57 + (-13) =$ _____

4. $2 - 8 =$ _____

9. $12 + (-35) =$ _____

5. $-9 - 14 =$ _____

10. $-12 - 29 =$ _____

Name _____

Class _____

Assessment Quiz

Directions: Write the sum or difference of each.

1. $-5 + 8 =$ _____

6. $19 - (-12) =$ _____

2. $-11 + -3 =$ _____

7. $-32 - 12 =$ _____

3. $17 + -6 =$ _____

8. $-57 + (-13) =$ _____

4. $2 - 8 =$ _____

9. $12 + (-35) =$ _____

5. $-9 - 14 =$ _____

10. $-12 - 29 =$ _____

Goal: Students will understand how to multiply and divide integers.

Objectives:

Learners will demonstrate application of integers by solving multiplication and division problems while using the rules.

Learners will demonstrate evaluation of integers by determining if the result will be positive or negative.

Standards:

MST3.06.RP2: Reasoning and Proof

MST3.06.RP2.01: Students recognize that mathematical ideas can be supported using a variety of strategies.

MST3.03.CO3: Communication

MST3.06.CO3.06: Students understand mathematical solutions shared by other students.

MST3.06.CO3.07: Students raise questions that elicit, extend, or challenge others' thinking.

MST3.06.CO3.08: Students consider strategies used and solutions found by others in relation to their own work.

MST3.06.RE5: Representation

MST3.06.RE5.01: Students use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations.

Materials:

- Whiteboard and expo markers
- overhead and markers
- note for overhead
- student integer rule book
- multiplying / dividing integer worksheet
- Shake 'Em Up / Deal 'Em Out worksheet
- dice
- playing cards
- multiplication/division homework sheet
- famous farming expression worksheet

Time:

- warm up: 10 minutes
 - introduction: 2 minutes
 - instructional sequence: 17 minutes
 - rule book: 5 minutes
 - practice: 20 minutes
 - Activity: 20 minutes
 - closure: 6 minutes
- Total time: 80 minutes

Warm Up:

Before the students come in the room have the four questions below written on the whiteboard for the students to work on as they settle into the room. After everyone has completed their work go over the answers together on the board.

Questions include:

	<i>Answers</i>
1. $-12 + -2 =$	-14
2. $-6 - (-4) =$	-2
3. $12 - (-12) =$	24
4. $15 + (-3) =$	12

Ask students to come to the board to answer the questions once everyone is done with their work.

Review homework from the previous lesson to ensure everyone has the correct answer on their paper and understands how to add and subtract integers correctly.

Introduction:

We have already learned how to add and subtract integers, today we are going to learn how to multiply and divide integers. Integers are positive and negative numbers, so we are going to come up with some general rules for multiplying and dividing integers. We are learning both multiplication and division in the same day because their rules are basically the same.

Instructional Sequence:

On the overhead, write notes for students to keep in their notebooks.

Multiplication

Multiply the absolute values of each integer, then determine the sign.

1. If both numbers have the same sign, their product is positive.

$$(+) \times (+) = +$$

$$(-) \times (-) = +$$

2. If both their numbers have opposite signs, their product is negative.

$$(-) \times (+) = -$$

$$(+) \times (-) = -$$

Ex. $(-7) \times (-2) =$ $(-4) \times 3 =$
 $|-7| \times |-2| =$ $|-4| \times |3| =$
 $7 \times 2 = 14$ $4 \times 3 = 12$ (since there is one negative sign, the product will be negative...-12)

Division:

Divide the absolute values of each integer, then determine the sign.

1. If both numbers have the same sign, their result is positive.

$$(+) \div (+) = +$$

$$(-) \div (-) = +$$

2. If both their numbers have opposite signs, their result is negative.

$$(-) \div (+) = -$$

$$(+) \div (-) = -$$

Ex. $(-6) \div (-2) =$ $(-9) \div 3 =$
 $|-6| \div |-2| =$ $|-9| \div |3| =$

$$6 \div 2 = 3$$

$9 \div 3 = 3$ (since there is one negative sign, the product will be negative...-3)

Rule Book:

Ask students to take out their rule book. Discuss a common rule for multiplying integers and for dividing integers. Have them write it in their individual rule book using markers.

Practice:

Explain and hand out the multiplying and dividing integer worksheet. They should be encouraged to refer to their rule book.

Activity:

Each student will be given the worksheet with "Shake 'em up" on one side and "Deal 'em out" on the other. Both of these sheets will help with multiplication, and students will be given the chance to use hands on materials. Once students finish with their practice pages they may pick up this worksheet and either 2 dice or a deck of cards. They will start with the corresponding side. When they finish they will pick up the necessary materials for the other side, and complete the work.

Closure:

Ask students a series of questions for more practice of what was learned throughout the day.

For example:

What is the product of:

$$-15 \times 2$$

$$-2 \times -3$$

$$-6 \times 5$$

What is the result of:

$$-6 \div 3$$

$$-25 \div (-5)$$

$$48 \div (-6)$$

What is the sum of:

$$-15 + 2$$

$$-2 + -3$$

$$-6 + 5$$

What is the difference of:

$$-2 - 3$$

$$-7 - (-5)$$

$$5 - (-6)$$

Hand out homework for students to complete and bring back to go over at the start of the next class period.

Assessment:

Students will be assessed based on their understanding during the instructional sequence. Teacher will be observing work throughout the practice and intervene if there are consistent mistakes.

Adaptations for accelerated students:

Students may borrow the Figuro Game and play the integer game with a partner or small group. Students may also pick up a “Famous Farming Expression” worksheet to practice multiplication of integers.

Use of Technology:

The overhead projector will be used for the instructional sequence portion of the lesson.

Goal: Students will understand how to evaluate integers with exponents.

Objectives:

Learners will demonstrate application of integers by solving negative numbers raised to some exponent.

Learners will demonstrate evaluation of integers with exponents by determining if the result will be positive or negative.

Learners will demonstrate synthesis of integers with exponents by developing a general rule for determining its resulting sign.

Standards:

MST3.06.RP2: Reasoning and Proof

MST3.06.RP2.01: Students recognize that mathematical ideas can be supported using a variety of strategies.

MST3.03.CO3: Communication

MST3.06.CO3.06: Students understand mathematical solutions shared by other students.

MST3.06.CO3.07: Students raise questions that elicit, extend, or challenge others' thinking.

MST3.06.CO3.08: Students consider strategies used and solutions found by others in relation to their own work.

MST3.06.RE5: Representation

MST3.06.RE5.01: Students use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations.

Materials:

- Whiteboard and expo markers
- overhead and markers
- note for overhead
- student integer rule book
- integer with exponents worksheet (Appendix Q)
- Shake 'Em Up Exponent worksheet (Appendix R)
- dice
- mixed review homework sheet (Appendix S)

Time:

- warm up: 10 minutes
- introduction: 2 minutes
- instructional sequence: 17 minutes
- rule book: 5 minutes
- practice: 20 minutes
- Activity: 20 minutes
- closure: 6 minutes
- Total time: 80 minutes

Warm Up:

Before the students come in the room have the four questions below written on the whiteboard for the students to work on as they settle into the room. After everyone has completed their work go over the answers together on the board.

Questions include:

	<i>Answers</i>
1. $-2 \times -6 =$	12
2. $-5 \times 4 =$	-20
3. $20 \div -5 =$	-4
4. $-15 \div -3 =$	-5

Ask students to come to the board to answer the questions once everyone is done with their work.

Review homework from the previous lesson to ensure everyone has the correct answer on their paper and understands to multiply and divide integers correctly.

Introduction:

We have already learned how to add, subtract, multiply and divide integers, today we are going to learn how to evaluate integers with exponents. Integers are positive and negative numbers, so we are going to come up with some general rules for integers with exponents. Who knows what it means to have an exponent? Yes, the integer is multiplied by itself that number of times. If the base number is negative however, the result may be negative or positive depending on the exponent.

Instructional Sequence:

On the overhead, write notes for students to keep in their notebooks.

Negative Integers and their Exponents

1. If an integer is negative and is raised to an odd exponent, the result is negative.

$$\text{Ex. } -2^3 = -2 \times -2 \times -2 = -8$$

2. If an integer is negative and is raised to an even exponent, the result is positive.

$$\text{Ex: } -3^2 = -3 \times -3 = 9$$

Provide a few examples for students to try on their own.

$$\text{Ex. } -6^3 = -216$$

$$-5^4 = 625$$

Rule Book:

Ask students to take out their rule book. Discuss a common rule for evaluating negative integers with exponents. Have them write it in their individual rule book using markers.

Practice:

Explain and hand out the Integer with Exponents worksheet. They should be encouraged to refer to their rule book.

Activity:

Each student will be given the worksheet with "Shake 'em up". Students will be given the chance to use hands on materials. Once students finish with their practice pages they may pick up this worksheet and 2 different colored dice.

Closure:

Ask students a series of questions for more practice of what was learned throughout the day. When they answer make sure they are using the correct sign (negative/positive)

For example:

What is:

$$-2^4$$

$$-3^2$$

$$-4^1$$

What is the product of:

$$-15 \times 2$$

$$-2 \times -3$$

$$-6 \times 5$$

What is the result of:

$$-6 \div 3$$

$$-25 \div (-5)$$

$$48 \div (-6)$$

What is the sum of:

$$-15 + 2$$

$$-2 + -3$$

$$-6 + 5$$

What is the difference of:

$$-2 - 3$$

$$-7 - (-5)$$

$$5 - (-6)$$

Hand out homework for students to complete and bring back to go over at the start of the next class period.

Assessment:

Students will be assessed based on their understanding during the instructional sequence. Teacher will be observing work throughout the practice and intervene if there are consistent mistakes. Students will be assessed based on their ability to correctly answer each problem on the practice page and on the activity. Homework will be corrected during the following lesson.

Adaptations for accelerated students:

Students may borrow the Figuro Game and play the integer game with a partner or small group. Students may also use the dice or playing cards to create their own problems.

Use of Technology:

The overhead projector will be used for the instructional sequence portion of the lesson.

Reflection:

Students responded very well to the rules used for evaluating integers with exponents. Once they understood whether the answer was going to be positive of

negative the only thing they needed to figure out was what the numerical answer was. The practice page took longer than I expected. Not every student was able to get to the activity. I didn't worry about this, as long as they got through the practice I knew they were able to evaluate negative integers with exponents. The activity was basically more practice only in a more interesting way; students created their own problems with the use dice.

Now that the unit is nearing its end I am interested in seeing what the tests results will show.

Name _____

Class _____

Evaluating Integers

Directions:

1. Find the value of each.
2. Shade the boxes whose value is negative.

$-1^2 = \underline{\hspace{2cm}}$	$-1^3 = \underline{\hspace{2cm}}$	$-4^2 = \underline{\hspace{2cm}}$	$-3^5 = \underline{\hspace{2cm}}$	$-6^4 = \underline{\hspace{2cm}}$
$-3^4 = \underline{\hspace{2cm}}$	$-8^1 = \underline{\hspace{2cm}}$	$-6^4 = \underline{\hspace{2cm}}$	$-9^3 = \underline{\hspace{2cm}}$	$-2^6 = \underline{\hspace{2cm}}$
$-2^4 = \underline{\hspace{2cm}}$	$-10^2 = \underline{\hspace{2cm}}$	$-3^4 = \underline{\hspace{2cm}}$	$-4^4 = \underline{\hspace{2cm}}$	$-9^2 = \underline{\hspace{2cm}}$
$-5^1 = \underline{\hspace{2cm}}$	$-6^4 = \underline{\hspace{2cm}}$	$-2^6 = \underline{\hspace{2cm}}$	$-10^4 = \underline{\hspace{2cm}}$	$-6^3 = \underline{\hspace{2cm}}$
$-8^3 = \underline{\hspace{2cm}}$	$-10^3 = \underline{\hspace{2cm}}$	$-4^4 = \underline{\hspace{2cm}}$	$-2^5 = \underline{\hspace{2cm}}$	$-2^1 = \underline{\hspace{2cm}}$
$-4^2 = \underline{\hspace{2cm}}$	$-6^1 = \underline{\hspace{2cm}}$	$-7^3 = \underline{\hspace{2cm}}$	$-3^5 = \underline{\hspace{2cm}}$	$-5^2 = \underline{\hspace{2cm}}$
$-9^2 = \underline{\hspace{2cm}}$	$-4^6 = \underline{\hspace{2cm}}$	$-7^2 = \underline{\hspace{2cm}}$	$-1^6 = \underline{\hspace{2cm}}$	$-12^2 = \underline{\hspace{2cm}}$

Work Space:

Goal: Students will understand how to manipulate integers in any expression.

Objectives:

Learners will demonstrate knowledge of integers by locating the numbers on the number line.

Learners will demonstrate application of integers by solving various equations and expressions.

Learners will demonstrate application of integers by putting to use all the rules for integers and solving various problems.

Standards:

MST3.06.RP2: Reasoning and Proof

MST3.06.RP2.01: Students recognize that mathematical ideas can be supported using a variety of strategies.

MST3.03.CO3: Communication

MST3.06.CO3.06: Students understand mathematical solutions shared by other students.

MST3.06.CO3.07: Students raise questions that elicit, extend, or challenge others' thinking.

MST3.06.CO3.08: Students consider strategies used and solutions found by others in relation to their own work.

MST3.06.RE5: Representation

MST3.06.RE5.01: Students use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations.

Materials:

- Whiteboard and expo markers
- student integer rule book
- BINGO cards (Appendix T)
- BINGO boards (Appendix U)
- post-test

Time:

- warm up: 10 minutes
- introduction: 2 minutes
- practice: 13 minutes
- Activity: 30 minutes
- Post-Test: 15 minutes
- closure: 10 minutes
- Total time: 80 minutes

Warm Up:

Before the students come in the room have the four questions below written on the whiteboard for the students to work on as they settle into the room. After everyone has completed their work go over the answers together on the board.

Questions include:

	<i>Answers</i>
1. $(-6 + 2) \times -2^3 =$	32
2. $-16 \div (-5-3) =$	-2
3. $-5 + (6+ -2) =$	-9
4. $-5^2 - (7 - 2) =$	20

Ask students to come to the board to answer the questions once everyone is done with their work.

Review homework from the previous lesson to ensure everyone has the correct answer on their paper and understands to evaluate integers with exponents correctly.

Introduction:

We have now learned how to add, subtract, multiply, and divide integers. We also know how to evaluate integers with exponents. We are going to use the time today to review what we have learned before we take a test.

Practice:

As a group ask review questions. For correct answers students receive one ticket which will be used at the end for a chance to win a prize.

Review questions include:

$-6 + 3 =$ -3	$-6 \times -3 =$ 18	$-6^3 =$ -216
$25 + -11 =$ 14	$-5 \times 2 =$ -10	$-2^2 =$ 4
$-9 + -15 =$ -24	$-2 \times -11 =$ 22	$-17^1 =$ -17
$-32 + 58 =$ 26	$19 \times -2 =$ -38	$-3^2 =$ 9
$-9 + 15 + -13 + -27 =$ -34	$7 \times -6 =$ -42	$2^2 =$ 4
$6 - (-3) =$ 9	$-4 \div 2 =$ -2	
$-9 - 21 =$ -30	$-12 \div -3 =$ 4	
$-7 - (-70) =$ 63	$200 \div 4 =$ 50	
$12 - (-13) =$ 25	$72 \div 12 =$ 6	
$-37 - (-12) + 2 =$ -23	$-90 \div -30 =$ 3	

Activity:

After the review, each student's will each receive one BINGO board. They will be asked to fill out each box with integers from -15 to 15. 0 is not an integer so they should not write this in any box. Mix up the BINGO cards and begin calling out equations. Once a student has a match they may draw an X in the respectful box.

Post Test:

Administer the post test and allow students enough time to put forth their best effort. They may raise their hand if they have any questions.

Closure:

Ask students a series of questions for more practice of what was learned throughout the day. When they answer make sure they are using the correct sign (negative/positive)

For example:

What is:

$$-2^4$$

$$-3^2$$

$$-4^1$$

What is the product of:

$$-15 \times 2$$

$$-2 \times -3$$

$$-6 \times 5$$

What is the result of:

$$-6 \div 3$$

$$-25 \div (-5)$$

$$48 \div (-6)$$

What is the sum of:

$$-15 + 2$$

$$-2 + -3$$

$$-6 + 5$$

What is the difference of:

$$-2 - 3$$

$$-7 - (-5)$$

$$5 - (-6)$$

Assessment:

Students will be assessed based on their understanding during the review and their ability to correctly answer the questions during the BINGO game (notice correct answers through observation). Students will also receive a test grade for the post test.

Reflection:

This lesson was a good review for some students. They had the chance to practice what they have been learning about before the test at the end of the class period. I wanted to make sure there was enough time at the end of the class period so we didn't have as much time playing BINGO as I had planned, but I made sure the practice section wasn't rushed so students understood exactly what they needed to do when they come across integers in equations. I also wanted to make sure I gave each class a few minutes to study anything they needed to right before the test. I covered up the notes that were on the board to see if they remembered the rules. They knew ahead of time the rules weren't going to be on the board for the test so they knew they needed to study.

Integer Bingo

The following are a list of problems which are written on bingo cards:

$$5 \times -3 = -15$$

$$-7 \times 2 = -14$$

$$-7 - 6 = -13$$

$$-15 + 3 = -12$$

$$3 - 14 = -11$$

$$-5 \times 2 = -10$$

$$-18 + 9 = -9$$

$$-2^3 = -8$$

$$-4 - 3 = -7$$

$$12 - 18 = -6$$

$$-3 - 2 = -5$$

$$-2 \times 2 = -4$$

$$9 \div -3 = -3$$

$$-2^1 = -2$$

$$12 - 13 = -1$$

$$-12 - (-13) = 1$$

$$-8 \div -4 = 2$$

$$-12 \div -4 = 3$$

$$-2^2 = 4$$

$$-25 \div -5 = 5$$

$$-3 \times -2 = 6$$

$$-4 + 11 = 7$$

$$-16 \div -2 = 8$$

$$-3^2 = 9$$

$$-2 \times -5 = 10$$

$$6 - (-5) = 11$$

$$-3 \times -4 = 12$$

$$15 + -2 = 13$$

$$-28 \div -2 = 14$$

$$-3 \times -5 = 15$$

Name: _____

Class _____

Integer Bingo

Directions: Fill in each square with a **different** integer. Use integers **-15 to 15** in the boxes. Remember, 0 is not an integer.

Analysis of Student Learning

The results from pre-test and post-test assessments for any unit can provide a great deal of information. The results generally show growth and success a student has on what is being taught. The instructional sequence I taught focused the manipulation of integers in various formats. The results of the post-test showed a major achievement for most students. This unit was taught to five separate math classes.

2/3 ACE

Almost every student received either the same score or a higher score than their pre-test results. Overall there was a 47% achievement rate from the pre-test to the post-test. When students took the pre-test they were extremely unsure about what to do because they weren't used to seeing a negative sign. On the post-test however, they were extremely confident and were used to the type of questions. The scores of the pre-test averaged around 38% while the post-test scored averaged around 85% for this class. As the students were taking the post-test I knew they had learned a great deal based on their confidence when they were answering the questions.

As a whole the class averaged 9.6 out of 25 questions correct on the pre-test and raised their average to 21.3 out of 25 on the post-test. This is a difference of 11.7 questions. It is extremely encouraging to see an increase in scores no matter what the difference may be. An increase shows that the class has learned important information from the lesson which they will take with them for the rest of their lives. Every student in this class raised their grade from the pre test to the post test with the exception of one student. This student went down by one question. I do believe these students learned a great deal from the lesson sequence but have difficulty with the testing process.

I separated the class into two categories for additional analysis; males and females. I did notice a difference between the scores of the two groups. On average, the males answered 8.9 questions correctly on the pre-test and the females answered an average of 10.5 questions correctly. On the post-test, the males answered an average of 22.1 questions correctly and the females answered 20.3 correct.. It is interesting to see that, even though the females did better on the pre test, the males

made the most improvement and raised their scores more than the females. There is a slight difference in the scores between the two groups but as a teacher I am proud that both groups studied increased their scores.

6/7 ACE

Every student in this class received a higher score than their pre-test results. Overall there was a 46% achievement rate from the pre-test to the post-test. When students took the pre-test they were unsure about what to do because they weren't used to seeing a negative sign. On the other hand, when taking the post-test they were extremely confident because they were used to the types of questions. The scores of the pre-test averaged around 41% while the post-test scored averaged around 87%. As the students were taking the post-test I knew they had learned a great deal based on their confidence when they were answering the questions.

As a whole the class averaged 10.2 out of 25 questions correct on the pre-test and raised their average to 21.8 out of 25 on the post-test. This is a difference of 11.6 questions. It is extremely encouraging to see an increase in scores no matter what the difference may be. An increase shows that the class has learned important information from the lesson which they will take with them for the rest of their lives. Every student in this class raised their grade from the pre test to the post test. I do believe these students learned a great deal from the lesson sequence but have difficulty with the testing process.

I separated the class into two categories for additional analysis; males and females. I did notice a difference between the scores of the two groups. On average, the males answered 9.5 questions correctly on the pre-test and the females answered an average of 10.8 questions correctly. On the post-test, the males answered an average of 22.4 questions correctly and the females answered 22.2 correct. According to these scores the females produced higher scores than the males. There is a slight difference in the scores between the two groups but as a teacher I am proud that both groups studied increased their scores.

8/9 ACE

Almost every student received either the same score or a higher score than their pre-test results. Overall there was a 36% achievement rate from the pre-test to the post-test. When students took the pre-test they were extremely unsure about what to do because they weren't used to seeing a negative sign. On the post-test however, they were extremely confident and were used to the type of questions. The scores of the pre-test averaged around 45% while the post-test scored averaged around 80%. As the students were taking the post-test I knew they had learned a great deal based on their confidence when they were answering the questions.

As a whole the class averaged 11.1 out of 25 questions correct on the pre-test and raised their average to 20.1 out of 25 on the post-test. This is a difference of 9 questions. It is extremely encouraging to see an increase in scores no matter what the difference may be. An increase shows that the class has learned important information from the lesson which they will take with them for the rest of their lives. Every student in this class raised their grade from the pre test to the post test with the exception of one student. This student went down by one question. I do believe these students learned a great deal from the lesson sequence but have difficulty with the testing process.

I separated the class into two categories for additional analysis; males and females. I did notice a difference between the scores of the two groups. On average, the males answered 11.4 questions correctly on the pre-test and the females answered an average of 10.8 questions correctly. On the post-test, the males answered an average of 20.3 questions correctly and the females answered 19.8 correct questions on average. According to these scores the males produced higher scores than the females. There is a slight difference in the scores between the two groups but as a teacher I am proud that both groups studied increased their scores.

2/3 BDF

Almost every student received either the same score or a higher score than their pre-test results. Overall there was a 40% achievement rate from the pre-test to the post-test. When students took the pre-test they were extremely unsure about what to do because they weren't used to seeing a negative sign. On the post-test however,

students were extremely confident and were used to the type of questions. The scores of the pre-test averaged around 39% while the post-test scores averaged around 79% for this class. As the students were taking the post-test I knew they had learned a great deal based on their confidence when they were answering the questions.

As a whole the class averaged 9.8 out of 25 questions correct on the pre-test and raised their average to 19.7 out of 25 on the post-test. This is a difference of 9.9 questions. It is extremely encouraging to see an increase in scores no matter what the difference may be. An increase shows that the class has learned important information from the lesson which they will take with them for the rest of their lives. Every student in this class raised their grade from the pre test to the post test with the exception of one student. This student went down by one question. I do believe these students learned a great deal from the lesson sequence but have difficulty with the testing process.

I separated the class into two categories for additional analysis; males and females. I did notice a difference between the scores of the two groups. On average, the males answered 8.9 questions correctly on the pre-test and the females answered an average of 10.9 questions correctly. On the post-test, the males answered an average of 19.2 questions correctly and the females answered 20.2 correct. According to these scores the females produced higher scores than the males. There is a slight difference in the scores between the two groups but as a teacher I am proud that both groups studied increased their scores.

6/7 BDF

Almost every student received either the same score or a higher score than their pre-test results. Overall there was a 35% achievement rate from the pre-test to the post-test. When students took the pre-test they were extremely unsure about what to do because they weren't used to seeing a negative sign. On the post-test however, students were extremely confident and were used to the type of questions. The scores of the pre-test averaged around 41% while the post-test scores averaged around 82% for this class. As the students were taking the post-test I knew they had learned a great deal based on their confidence when they were answering the questions.

As a whole the class averaged 11.7 out of 25 questions correct on the pre-test and raised their average to 20.4 out of 25 on the post-test. This is a difference of 8.9 questions. It is extremely encouraging to see an increase in scores no matter what the difference may be. An increase shows that the class has learned important information from the lesson which they will take with them for the rest of their lives. Every student in this class raised their grade from the pre test to the post test with the exception of one student. This student went down by two questions. I do believe these students learned a great deal from the lesson sequence but have difficulty with the testing process.

I separated the class into two categories for additional analysis; males and females. I did notice a difference between the scores of the two groups. On average, the males answered 10.6 questions correctly on the pre-test and the females answered an average of 12.6 questions correctly. On the post-test, the males answered an average of 19.0 questions correctly and the females answered 21.5 correct. According to these scores the females produced higher scores than the males. There is a slight difference in the scores between the two groups but as a teacher I am proud that both groups studied increased their scores.

Throughout the lesson sequence I used various forms of informal assessments which provided me with the information I needed to learn what the students know and what else I should do to give them any other needed information. Throughout each lesson I had students practice what they just learned, then complete an activity which allowed them to practice in an alternative method. After reviewing what the students were practicing I was able to adjust any of my teachings to increase understanding. This also told me when I needed to stop the entire class to go over something that the majority of the class was missing. I also assessed through observation. As each student completed various tasks I could visually tell if they understood what was being asked of them based on their confidence in understanding.

Overall I do believe the classes met the desired goals for the unit. I had students create a rule book of all the rules for integers. This rule book could be brought with them as they completed their homework outside of class and in class when they

completed various assignments. They now have a better understanding of how to manipulate integers as they see them in school and in the real world.

Throughout the assessment processes I could see each student making progress whether it was with the pre-post tests or the informal assessments throughout each lesson. For this unit it was important to use a wide variety of assessments in order to gain a better understanding of what each student knew and learned. As a whole I know the class has learned a great deal about manipulating integers through addition, subtraction, multiplication and division.

PRE/POST TEST SCORE ANALYSIS: Student Characteristics

DIRECTIONS:

Enter the name of up to 30 students who took BOTH tests below. This information will appear on other worksheets automatically.

TIP -- Put the names in alphabetical order if desired BEFORE you enter grades on the next sheet.

OPTIONAL -- Describe what each code below means, then enter the appropriate "characteristic code" for each student on the list.

Characteristic codes must refer to ONE mutually exclusive characteristic (e.g., for SES, 1=Eligible for free lunch, 2=Eligible for reduced lunch, 3=Not eligible for free or reduced lunch). Leave unused codes blank.

1= Female

3=

2= Male

4=

#	Student Name (Last, First)	Char Code
1	Tom A.	2
2	Brian R.	2
3	Sandy O.	1
4	Katie C.	1
5	Joe G.	2
6	Gage E.	2
7	Charlie M.	1
8	Domenic G.	2
9	Morgan H.	1
10	Devin W.	2
11	Marc B.	2
12	Katie O.	1
13	Justice F.	2
14	Joey L.	2
15	Breanna B.	1
16	Christian W.	2
17	Elena A.	1
18	Max S.	2
19	Sam S.	1
20	Sara S.	1
21	Riely O.	2
22	Ryan Z.	2
23	Schyler L.	1
24		
25		
26		
27		
28		
29		
30		

PRE/POST TEST SCORE ANALYSIS: Pre-Test Data Entry

DIRECTIONS: For each student, enter a "1" for any question that was answered CORRECTLY on the pre-test.

Enter the total number of questions on the test here: Q= 25

Enter the total number of students who took BOTH tests here: N= 23

#	Student Name	Question																									Pre-Test			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	%		
1	Tom A.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	Brian R.	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	0	0	1	1	0	1	0	1	0	1	0	1	14	56%
3	Sandy O.	0	1	1	0	0	0	0	0	1	0	1	0	1	0	0	1	0	0	1	0	1	0	1	1	1	1	1	12	48%
4	Katie C.	1	0	1	0	0	0	0	0	1	1	1	0	1	0	1	1	1	0	1	0	0	1	0	1	0	1	13	52%	
5	Joe G.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
6	Gage E.	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	10	40%	
7	Charlie M.	1	1	1	1	1	1	0	0	1	1	0	0	0	0	0	0	1	0	1	1	0	1	0	1	0	1	13	52%	
8	Domenic G.	1	1	1	1	1	0	0	1	0	0	0	1	0	1	0	1	0	1	0	1	1	0	1	0	1	0	1	14	56%
9	Morgan H.	1	1	1	0	1	0	0	0	0	0	0	1	0	1	1	0	0	1	1	0	1	0	1	0	0	0	10	40%	
10	Devin W.	1	1	1	1	1	0	0	0	0	0	0	1	0	1	1	1	0	1	1	0	1	0	1	0	1	0	1	14	56%
11	Marc B.	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	10	40%	
12	Katie O.	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	1	0	1	1	0	1	0	1	0	1	0	1	10	40%
13	Justice F.	1	1	0	1	1	1	1	0	1	1	0	1	0	1	1	1	0	1	0	0	1	0	1	0	1	0	1	16	64%
14	Joey L.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
15	Breanna B.	1	1	1	1	0	0	0	0	0	1	0	0	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	12	48%
16	Christian W.	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1	6	24%	
17	Elena A.	1	0	1	0	1	0	1	0	0	1	0	1	0	1	1	0	0	1	0	0	1	0	1	0	1	0	1	12	48%
18	Max S.	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	6	24%
19	Sam S.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
20	Sara S.	1	1	0	1	0	0	1	0	0	1	0	1	0	0	0	1	0	1	0	0	1	0	1	0	1	0	1	11	44%
21	Riely O.	1	1	1	1	1	0	1	0	0	0	0	1	0	1	1	1	0	1	1	0	1	0	1	0	1	0	1	15	60%
22	Ryan Z.	1	1	1	1	0	1	0	0	0	0	0	1	0	0	0	1	0	1	1	0	0	0	1	0	1	1	0	11	44%
23	Schlyer L.	1	1	0	0	1	0	0	0	0	0	0	1	0	1	1	1	0	1	1	0	1	0	1	0	1	0	1	12	48%
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Sum Qs and Means		16	14	15	11	11	3	5	5	3	7	0	14	1	10	9	12	1	15	13	0	16	3	17	4	16	9.609	38%		

PRE/POST TEST SCORE ANALYSIS: Post-Test Data Entry

DIRECTIONS: For each student, enter a "1" for any question that was answered CORRECTLY on the post-test.

Total number of questions on the test:

Q= 25

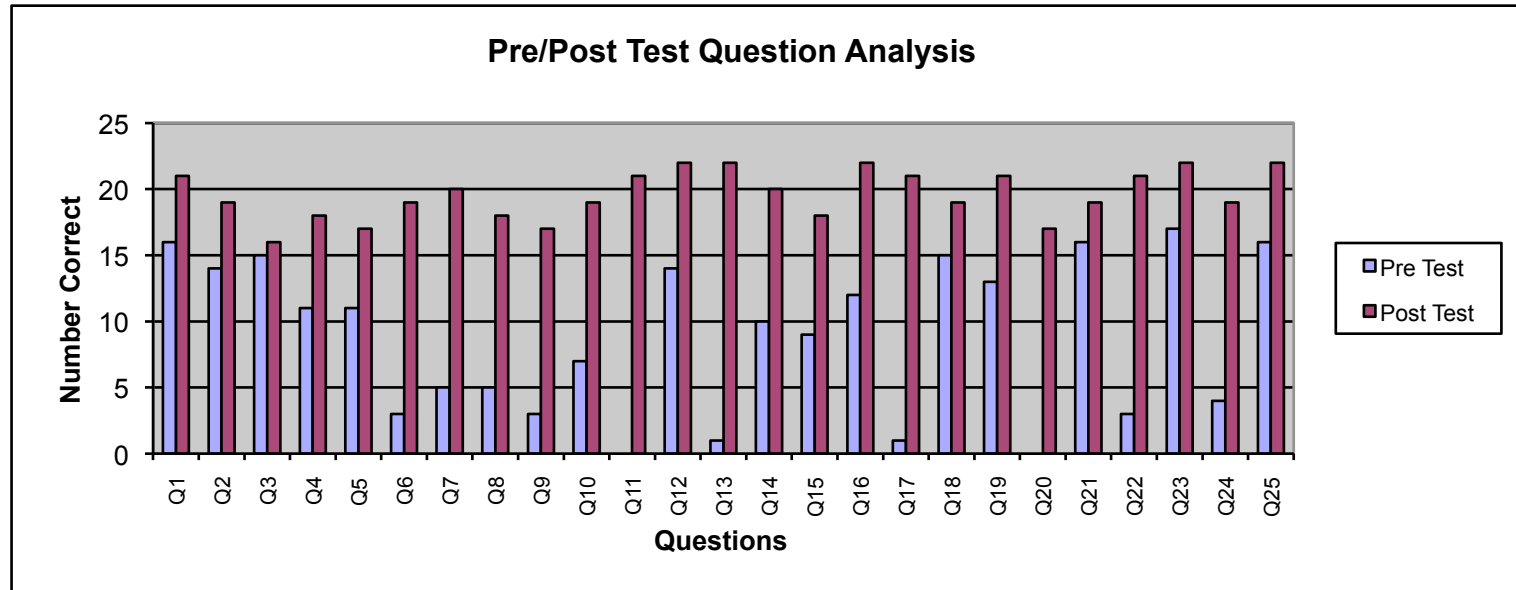
Total number of students who took the test:

N= 23

#	Student Name	Question																									Post-Test	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	%
1	Tom A.	1	1	0	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	22	88%
2	Brian R.	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%
3	Sandy O.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	23	92%
4	Katie C.	1	1	1	0	0	1	1	0	0	1	0	1	0	0	1	0	1	0	1	1	0	1	1	1	1	15	60%
5	Joe G.	1	0	0	0	1	0	1	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	17	68%
6	Gage E.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
7	Charlie M.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	24	96%
8	Domenic G.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
9	Morgan H.	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%
10	Devin W.	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	92%
11	Marc B.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
12	Katie O.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	21	84%
13	Justice F.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
14	Joey L.	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%
15	Breanna B.	1	0	1	0	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	1	0	0	1	1	1	14	56%
16	Christian W.	1	0	1	0	1	1	1	0	1	0	1	0	1	1	1	1	1	1	0	1	1	0	0	0	0	14	56%
17	Elena A.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
18	Max S.	0	1	0	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	17	68%
19	Sam S.	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	23	92%
20	Sara S.	1	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	0	0	1	0	1	1	0	1	0	10	40%
21	Riely O.	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%
22	Ryan Z.	1	1	0	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22	88%
23	Schlyer L.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	24	96%
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Sum Qs and Means		21	19	16	18	17	19	20	18	17	19	21	22	22	20	18	22	21	19	21	17	19	21	22	19	22	21.3	85%

PRE/POST Question SUMMARY ANALYSIS

	Question																								
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25
Pre Test	16	14	15	11	11	3	5	5	3	7	0	14	1	10	9	12	1	15	13	0	16	3	17	4	16
Post Test	21	19	16	18	17	19	20	18	17	19	21	22	22	20	18	22	21	19	21	17	19	21	22	19	22



PRE/POST TEST SCORE SUMMARY ANALYSIS

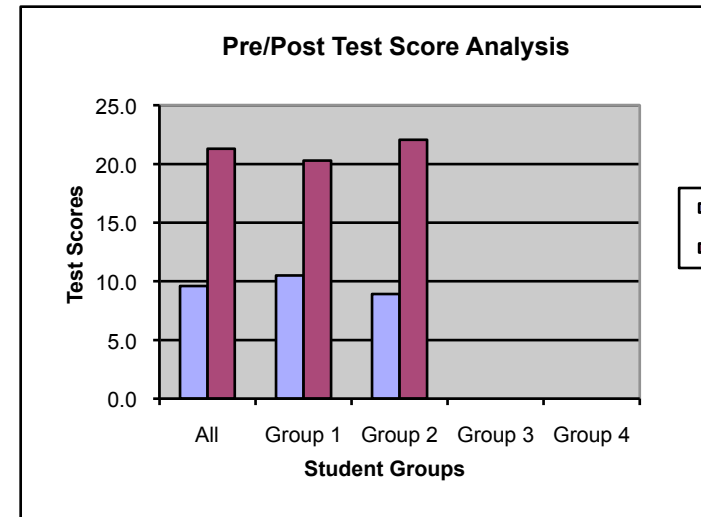
Total number of questions on the test: Q= 25
 Total number of students who took the test: N= 23

Student Group Characteristics:

1= Female
 2= Male
 3=
 4=

#	DO NOT REPORT Student Names	Char Code	Pre-Test		Post-Test		Pre vs Post Test	
			Total	%	Total	%	Gain/Loss	%
1		2	0	0%	22	88%	22	88%
2		2	14	56%	24	96%	10	40%
3		1	12	48%	23	92%	11	44%
4		1	13	52%	15	60%	2	8%
5		2	0	0%	17	68%	17	68%
6		2	10	40%	25	100%	15	60%
7		1	13	52%	24	96%	11	44%
8		2	14	56%	25	100%	11	44%
9		1	10	40%	24	96%	14	56%
10		2	14	56%	23	92%	9	36%
11		2	10	40%	25	100%	15	60%
12		1	10	40%	21	84%	11	44%
13		2	16	64%	25	100%	9	36%
14		2	0	0%	24	96%	24	96%
15		1	12	48%	14	56%	2	8%
16		2	6	24%	14	56%	8	32%
17		1	12	48%	25	100%	13	52%
18		2	6	24%	17	68%	11	44%
19		1	0	0%	23	92%	23	92%
20		1	11	44%	10	40%	-1	-4%
21		2	15	60%	24	96%	9	36%
22		2	11	44%	22	88%	11	44%
23		1	12	48%	24	96%	12	48%
24		0	0	0%	0	0%	0	0%
25		0	0	0%	0	0%	0	0%
26		0	0	0%	0	0%	0	0%
27		0	0	0%	0	0%	0	0%
28		0	0	0%	0	0%	0	0%
29		0	0	0%	0	0%	0	0%
30		0	0	0%	0	0%	0	0%
Mean Scores			9.608696	38%	21.30435	85%	11.695652	47%

	Mean Scores			
	All	Group 1	Group 2	Group 3
Pre-Test	9.6	10.5	8.9	
Post-Test	21.3	20.3	22.1	
Difference	11.7	9.8	13.2	
Total Number	23	10	13	0



PRE/POST TEST SCORE ANALYSIS: Student Characteristics

DIRECTIONS:

Enter the name of up to 30 students who took BOTH tests below. This information will appear on other worksheets automatically.

TIP -- Put the names in alphabetical order if desired BEFORE you enter grades on the next sheet.

OPTIONAL -- Describe what each code below means, then enter the appropriate "characteristic code" for each student on the list.

Characteristic codes must refer to ONE mutually exclusive characteristic (e.g., for SES, 1=Eligible for free lunch, 2=Eligible for reduced lunch, 3=Not eligible for free or reduced lunch). Leave unused codes blank.

1= Female

3=

2= Male

4=

#	Student Name (Last, First)	Char Code
1	Scott R.	2
2	Jessica B	1
3	Nic R.	2
4	Jenna F.	1
5	Miranda K.	1
6	Annalise K	1
7	Zach C.	2
8	Haley P.	1
9	Jacob H.	2
10	Joseph W	2
11	Alicia S	1
12	Chardea D.	1
13	Adam S	2
14	Michael H.	2
15	Kaelee L	1
16	Tristian M	2
17	Amanda A	1
18	Dan L.	2
19	Katelyn M	1
20	Taylor M	1
21	Aaron H.	2
22		
23		
24		
25		
26		
27		
28		
29		
30		

PRE/POST TEST SCORE ANALYSIS: Pre-Test Data Entry

DIRECTIONS: For each student, enter a "1" for any question that was answered CORRECTLY on the pre-test.

Enter the total number of questions on the test here: Q= 25

Enter the total number of students who took BOTH tests here: N= 21

#	Student Name	Question																									Pre-Test		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	%	
1	Scott R.	1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	1	0	1	1	0	1	0	1	0	1	12	48%	
2	Jessica B	1	0	1	0	1	0	0	1	0	1	0	0	0	0	1	0	0	1	0	1	0	1	0	1	0	1	10	40%
3	Nic R.	1	1	1	1	0	0	0	1	0	1	0	1	0	0	0	1	0	1	0	0	1	0	1	0	1	12	48%	
4	Jenna F.	0	1	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	1	1	0	1	1	10	40%	
5	Miranda K.	0	1	1	1	1	0	0	0	0	0	0	1	0	1	0	1	1	1	1	0	1	0	1	0	1	13	52%	
6	Annalise K	1	0	1	1	1	0	0	1	0	1	0	1	0	0	0	1	0	1	1	0	1	0	1	0	1	13	52%	
7	Zach C.	1	0	1	0	1	0	1	1	0	1	0	0	0	0	1	0	1	1	0	1	0	1	0	1	0	1	12	48%
8	Haley P.	1	1	1	1	1	0	0	0	0	1	0	1	0	1	0	0	0	1	1	0	1	0	1	0	1	12	48%	
9	Jacob H.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
10	Joseph W	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	24%
11	Alicia S	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	1	0	1	0	1	0	0	10	40%	
12	Chardea D.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
13	Adam S	0	0	1	0	0	0	0	1	0	1	0	1	0	0	0	1	0	1	1	0	1	0	1	0	1	10	40%	
14	Michael H.	1	1	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	1	1	0	8	32%
15	Kaelee L	1	1	0	1	1	0	0	1	0	0	0	1	0	1	1	1	0	1	1	0	0	1	1	1	1	15	60%	
16	Tristian M	0	1	1	0	0	0	1	1	0	1	0	1	0	0	0	1	0	1	1	0	1	1	0	1	0	1	13	52%
17	Amanda A	1	0	1	0	1	0	0	1	0	1	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	1	9	36%
18	Dan L.	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	0	1	1	1	1	1	9	36%	
19	Katelyn M	1	1	1	1	1	1	0	1	0	0	0	1	0	1	1	1	1	1	1	1	1	0	1	0	1	18	72%	
20	Taylor M	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0	1	0	1	0	1	0	1	9	36%
21	Aaron H.	1	1	1	1	1	1	0	0	0	0	0	1	0	1	1	0	0	1	1	0	1	0	1	0	0	13	52%	
22		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
23		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Sum Qs and Means		14	13	16	10	11	3	2	12	0	8	1	13	1	5	3	14	2	15	14	2	15	5	16	4	15	10.19	41%	

PRE/POST TEST SCORE ANALYSIS: Post-Test Data Entry

DIRECTIONS: For each student, enter a "1" for any question that was answered CORRECTLY on the post-test.

Total number of questions on the test:

Q= 25

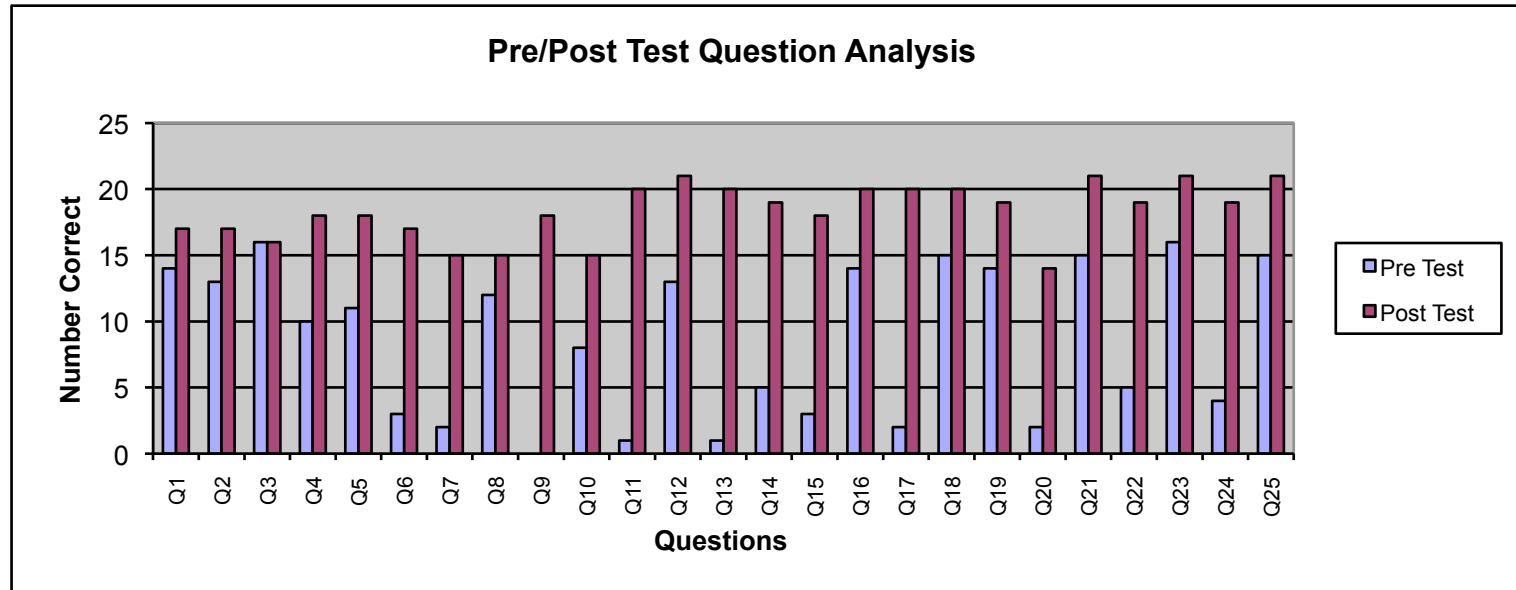
Total number of students who took the test:

N= 21

#	Student Name	Question																									Post-Test	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	%
1	Scott R.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
2	Jessica B	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	24	96%
3	Nic R.	1	1	1	1	1	0	1	0	1	1	0	1	0	0	0	0	0	1	1	0	1	1	1	1	1	16	64%
4	Jenna F.	1	0	0	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17	68%
5	Miranda K.	1	0	0	1	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	17	68%
6	Annalise K	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	24	96%
7	Zach C.	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	92%
8	Haley P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
9	Jacob H.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
10	Joseph W	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
11	Alicia S	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%
12	Chardea D.	1	1	0	1	0	0	0	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	19	76%
13	Adam S	0	1	0	0	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	0	1	16	64%
14	Michael H.	1	0	1	0	1	1	0	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	20	80%
15	Kaelee L	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
16	Tristian M	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%
17	Amanda A	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	22	88%
18	Dan L.	0	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	0	1	0	1	17	68%
19	Katelyn M	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
20	Taylor M	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	22	88%
21	Aaron H.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	23	92%
22		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
23		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Sum Qs and Means		17	17	16	18	18	17	15	15	18	15	20	21	20	19	18	20	20	20	19	14	21	19	21	19	21	21.81	87%

PRE/POST Question SUMMARY ANALYSIS

	Question																								
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25
Pre Test	14	13	16	10	11	3	2	12	0	8	1	13	1	5	3	14	2	15	14	2	15	5	16	4	15
Post Test	17	17	16	18	18	17	15	15	18	15	20	21	20	19	18	20	20	20	19	14	21	19	21	19	21



PRE/POST TEST SCORE SUMMARY ANALYSIS

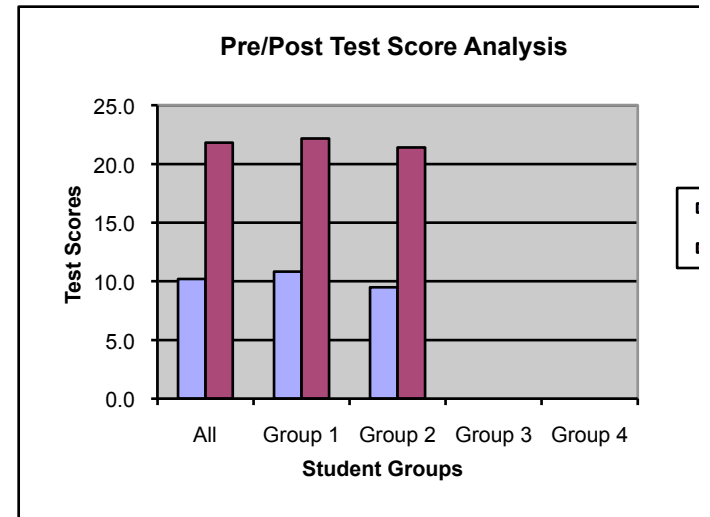
Student Group Characteristics:

- 1= Female
- 2= Male
- 3=
- 4=

Total number of questions on the test: Q= 25
 Total number of students who took the test: N= 21

#	DO NOT REPORT Student Names	Char Code	Pre-Test		Post-Test		Pre vs Post Test	
			Total	%	Total	%	Gain/Loss	%
1		2	12	48%	25	100%	13	52%
2		1	10	40%	24	96%	14	56%
3		2	12	48%	16	64%	4	16%
4		1	10	40%	17	68%	7	28%
5		1	13	52%	17	68%	4	16%
6		1	13	52%	24	96%	11	44%
7		2	12	48%	23	92%	11	44%
8		1	12	48%	25	100%	13	52%
9		2	0	0%	25	100%	25	100%
10		2	6	24%	25	100%	19	76%
11		1	10	40%	24	96%	14	56%
12		1	0	0%	19	76%	19	76%
13		2	10	40%	16	64%	6	24%
14		2	8	32%	20	80%	12	48%
15		1	15	60%	25	100%	10	40%
16		2	13	52%	24	96%	11	44%
17		1	9	36%	22	88%	13	52%
18		2	9	36%	17	68%	8	32%
19		1	18	72%	25	100%	7	28%
20		1	9	36%	22	88%	13	52%
21		2	13	52%	23	92%	10	40%
22		0	0	0%	0	0%	0	0%
23		0	0	0%	0	0%	0	0%
24		0	0	0%	0	0%	0	0%
25		0	0	0%	0	0%	0	0%
26		0	0	0%	0	0%	0	0%
27		0	0	0%	0	0%	0	0%
28		0	0	0%	0	0%	0	0%
29		0	0	0%	0	0%	0	0%
30		0	0	0%	0	0%	0	0%
Mean Scores			10.19048	41%	21.80952	87%	11.619048	46%

	Mean Scores			
	All	Group 1	Group 2	Group 3
Pre-Test	10.2	10.8	9.5	
Post-Test	21.8	22.2	21.4	
Difference	11.6	11.4	11.9	
Total Number	21	11	10	0



PRE/POST TEST SCORE ANALYSIS: Student Characteristics

DIRECTIONS:

Enter the name of up to 30 students who took BOTH tests below. This information will appear on other worksheets automatically.

TIP -- Put the names in alphabetical order if desired BEFORE you enter grades on the next sheet.

OPTIONAL -- Describe what each code below means, then enter the appropriate "characteristic code" for each student on the list.

Characteristic codes must refer to ONE mutually exclusive characteristic (e.g., for SES, 1=Eligible for free lunch, 2=Eligible for reduced lunch, 3=Not eligible for free or reduced lunch). Leave unused codes blank.

1= Female

3=

2= Male

4=

#	Student Name (Last, First)	Char Code
1	Gary B	2
2	Cody S	2
3	Curtis B	2
4	Austyn S	2
5	Sam B.	1
6	Cougar M	2
7	Katie W,	1
8	Peter P.	2
9	Chad D.	2
10	Hannah K	1
11	Connor F	2
12	Arianna W	1
13	Matt D.	2
14	Silas C	2
15	Cody E	2
16	Katelynn A	1
17	Toby P	2
18	Kayla R	1
19	Allyson K	1
20	Arthur J	2
21	Alex R.	2
22	Amanda M	1
23		
24		
25		
26		
27		
28		
29		
30		

PRE/POST TEST SCORE ANALYSIS: Pre-Test Data Entry

DIRECTIONS: For each student, enter a "1" for any question that was answered CORRECTLY on the pre-test.

Enter the total number of questions on the test here: Q= 25

Enter the total number of students who took BOTH tests here: N= 22

#	Student Name	Question																									Pre-Test		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	%	
1	Gary B	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	7	28%	
2	Cody S	0	0	1	0	0	0	0	1	0	1	0	1	0	1	1	1	0	1	0	0	1	0	1	0	1	11	44%	
3	Curtis B	1	0	1	0	1	0	0	0	0	1	0	1	0	0	1	1	0	1	0	0	1	1	0	1	1	12	48%	
4	Austyn S	1	0	1	0	0	0	0	1	0	1	0	1	0	0	0	1	0	1	1	0	1	0	1	1	1	12	48%	
5	Sam B.	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	1	1	1	11	44%	
6	Cougar M	1	1	1	1	1	0	0	0	0	0	0	1	0	1	1	0	0	1	1	0	1	0	1	0	1	13	52%	
7	Katie W.	1	1	1	1	0	0	0	0	0	0	1	0	0	1	1	0	0	1	1	0	1	0	1	0	1	12	48%	
8	Peter P.	1	1	1	1	0	1	1	0	0	1	0	1	0	1	1	0	0	1	1	0	0	0	1	1	1	15	60%	
9	Chad D.	1	1	1	1	0	1	0	0	0	0	0	1	0	1	0	1	0	1	1	0	1	0	1	0	1	13	52%	
10	Hannah K	0	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	1	0	1	0	1	11	44%	
11	Connor F	1	1	1	1	1	0	0	1	0	1	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	13	52%	
12	Arianna W	1	1	1	1	0	0	1	1	0	0	0	1	0	0	0	0	0	1	1	0	0	0	1	0	1	11	44%	
13	Matt D.	1	1	1	1	0	0	0	0	0	1	0	1	0	1	1	1	0	1	1	0	1	0	1	0	1	14	56%	
14	Silas C	0	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	0	0	0	1	1	1	9	36%	
15	Cody E	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	10	40%	
16	Katelynn A	0	0	1	0	1	0	0	0	0	1	0	0	1	0	1	1	1	1	1	0	1	0	1	0	1	12	48%	
17	Toby P	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1	0	1	0	8	32%	
18	Kayla R	0	0	1	0	0	1	0	1	0	0	0	1	0	1	1	1	0	1	1	0	1	0	1	0	1	12	48%	
19	Allyson K	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	6	24%	
20	Arthur J	1	1	1	1	0	0	0	1	0	1	0	1	0	1	1	1	0	1	1	0	1	0	1	0	0	1	14	56%
21	Alex R.	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	1	0	1	1	0	0	0	0	0	0	8	32%	
22	Amanda M	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	1	1	1	1	0	1	0	1	0	1	11	44%	
23		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Sum Qs and Means		13	14	21	13	6	5	5	9	0	9	2	14	1	9	10	11	3	18	18	0	15	3	18	6	22	11.14	45%	

PRE/POST TEST SCORE ANALYSIS: Post-Test Data Entry

DIRECTIONS: For each student, enter a "1" for any question that was answered CORRECTLY on the post-test.

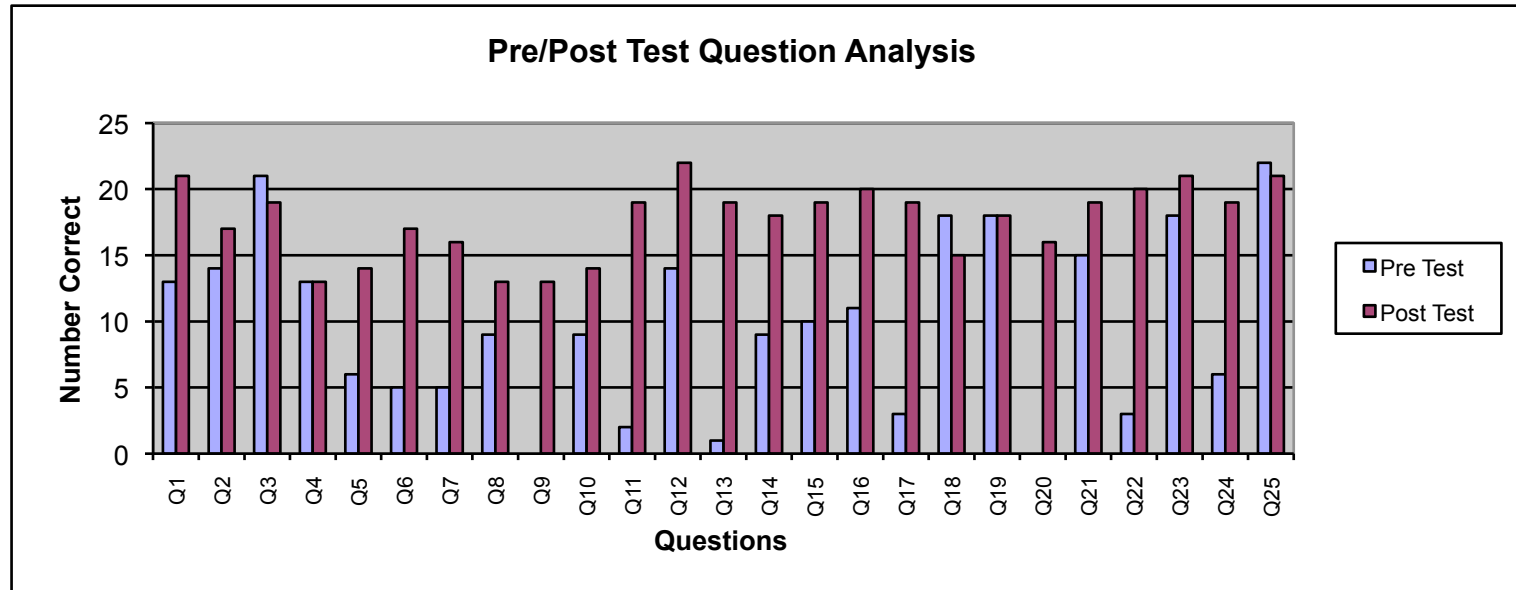
Total number of questions on the test: Q= 25

Total number of students who took the test: N= 22

#	Student Name	Question																									Post-Test		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	%	
1	Gary B	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	20	80%
2	Cody S	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	21	84%	
3	Curtis B	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	23	92%	
4	Austyn S	1	1	1	0	0	0	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	80%	
5	Sam B.	1	1	1	1	0	0	1	0	0	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	19	76%	
6	Cougar M	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%	
7	Katie W.	1	0	0	0	0	1	0	0	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	17	68%	
8	Peter P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	24	96%	
9	Chad D.	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0	1	1	0	1	20	80%	
10	Hannah K	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	22	88%	
11	Connor F	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	22	88%	
12	Arianna W	1	0	1	0	1	0	0	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	18	72%	
13	Matt D.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%	
14	Silas C	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	1	0	1	0	19	76%	
15	Cody E	1	0	1	0	0	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18	72%	
16	Katelynn A	1	0	1	0	0	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18	72%	
17	Toby P	1	1	1	1	1	1	1	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	1	0	1	14	56%	
18	Kayla R	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	24	96%	
19	Allyson K	1	0	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	16	64%	
20	Arthur J	0	1	0	0	0	1	1	0	1	0	0	1	0	0	0	1	0	0	0	0	0	1	1	1	1	11	44%	
21	Alex R.	1	1	1	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22	88%	
22	Amanda M	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	24	96%	
23		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	
27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	
28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	
29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	
30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%	
Sum Qs and Means		21	17	19	13	14	17	16	13	13	14	19	22	19	18	19	20	19	15	18	16	19	20	21	19	21	20.09	80%	

PRE/POST Question SUMMARY ANALYSIS

	Question																								
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25
Pre Test	13	14	21	13	6	5	5	9	0	9	2	14	1	9	10	11	3	18	18	0	15	3	18	6	22
Post Test	21	17	19	13	14	17	16	13	13	14	19	22	19	18	19	20	19	15	18	16	19	20	21	19	21



PRE/POST TEST SCORE SUMMARY ANALYSIS

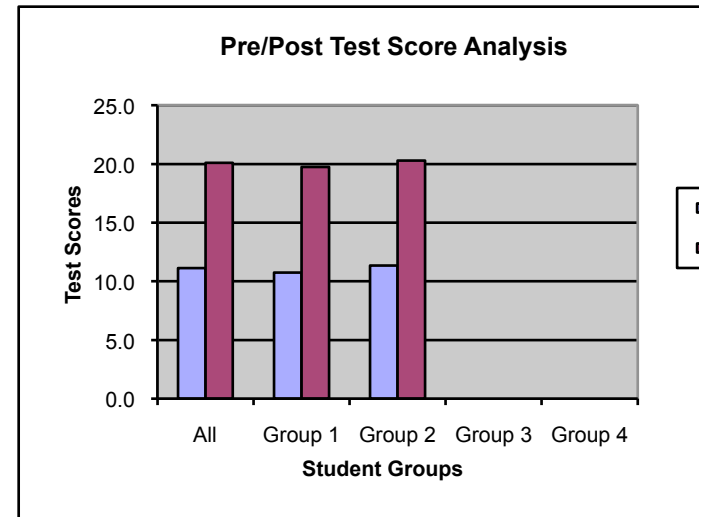
Student Group Characteristics:

Total number of questions on the test: Q= 25
 Total number of students who took the test: N= 22

1= Female
 2= Male
 3=
 4=

#	DO NOT REPORT Student Names	Char Code	Pre-Test		Post-Test		Pre vs Post Test	
			Total	%	Total	%	Gain/Loss	%
1		2	7	28%	20	80%	13	52%
2		2	11	44%	21	84%	10	40%
3		2	12	48%	23	92%	11	44%
4		2	12	48%	20	80%	8	32%
5		1	11	44%	19	76%	8	32%
6		2	13	52%	25	100%	12	48%
7		1	12	48%	17	68%	5	20%
8		2	15	60%	24	96%	9	36%
9		2	13	52%	20	80%	7	28%
10		1	11	44%	22	88%	11	44%
11		2	13	52%	22	88%	9	36%
12		1	11	44%	18	72%	7	28%
13		2	14	56%	25	100%	11	44%
14		2	9	36%	19	76%	10	40%
15		2	10	40%	18	72%	8	32%
16		1	12	48%	18	72%	6	24%
17		2	8	32%	14	56%	6	24%
18		1	12	48%	24	96%	12	48%
19		1	6	24%	16	64%	10	40%
20		2	14	56%	11	44%	-3	-12%
21		2	8	32%	22	88%	14	56%
22		1	11	44%	24	96%	13	52%
23		0	0	0%	0	0%	0	0%
24		0	0	0%	0	0%	0	0%
25		0	0	0%	0	0%	0	0%
26		0	0	0%	0	0%	0	0%
27		0	0	0%	0	0%	0	0%
28		0	0	0%	0	0%	0	0%
29		0	0	0%	0	0%	0	0%
30		0	0	0%	0	0%	0	0%
Mean Scores			11.13636	45%	20.09091	80%	8.9545455	36%

	Mean Scores			
	All	Group 1	Group 2	Group 3
Pre-Test	11.1	10.8	11.4	
Post-Test	20.1	19.8	20.3	
Difference	9.0	9.0	8.9	
Total Number	22	8	14	0



PRE/POST TEST SCORE ANALYSIS: Student Characteristics

DIRECTIONS:

Enter the name of up to 30 students who took BOTH tests below. This information will appear on other worksheets automatically.

TIP -- Put the names in alphabetical order if desired BEFORE you enter grades on the next sheet.

OPTIONAL -- Describe what each code below means, then enter the appropriate "characteristic code" for each student on the list.

Characteristic codes must refer to ONE mutually exclusive characteristic (e.g., for SES, 1=Eligible for free lunch, 2=Eligible for reduced lunch, 3=Not eligible for free or reduced lunch). Leave unused codes blank.

1= Female

3=

2= Male

4=

#	Student Name (Last, First)	Char Code
1	Amanda T	1
2	John L	2
3	Desteny M	1
4	Jacob W	2
5	Peter R	1
6	Thomas	2
7	Mara D	1
8	Maria F	1
9	Parker W	2
10	Tyler M	2
11	Madison B	1
12	Zach C	2
13	Sara F	1
14	Randy B	2
15	Candace T	1
16	Ed L	2
17	Dallas P	2
18	Kayla B	1
19	Paul W	2
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

PRE/POST TEST SCORE ANALYSIS: Pre-Test Data Entry

DIRECTIONS: For each student, enter a "1" for any question that was answered CORRECTLY on the pre-test.

Enter the total number of questions on the test here: Q= 25

Enter the total number of students who took BOTH tests here: N= 19

#	Student Name	Question																									Pre-Test		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	%	
1	Amanda T	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	11	44%	
2	John L	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	5	20%	
3	Desteny M	0	0	1	0	0	0	0	0	0	0	0	1	0	1	1	1	0	1	1	0	1	0	1	0	1	10	40%	
4	Jacob W	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	7	28%	
5	Peter R	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	0	1	0	1	10	40%	
6	Thomas	1	1	1	1	1	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	1	0	0	0	1	11	44%	
7	Mara D	1	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	0	1	11	44%
8	Maria F	1	0	0	1	0	0	0	1	0	1	0	1	0	0	0	1	0	1	1	0	1	0	1	0	1	11	44%	
9	Parker W	1	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	10	40%	
10	Tyler M	1	1	1	1	0	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	0	1	17	68%
11	Madison B	1	1	1	1	1	0	0	0	0	1	0	1	0	1	1	1	0	0	1	0	1	0	1	0	1	14	56%	
12	Zach C	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0	1	5	20%	
13	Sara F	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	0	1	1	1	1	13	52%	
14	Randy B	1	1	1	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	0	0	1	0	1	0	1	10	40%	
15	Candace T	0	0	1	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	1	1	1	0	9	36%	
16	Ed L	1	1	1	1	1	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	1	0	12	48%	
17	Dallas P	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	1	0	0	1	0	1	0	8	32%	
18	Kayla B	0	0	1	0	0	0	0	1	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	1	0	8	32%	
19	Paul W	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	16%	
20		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
21		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
22		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
23		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Sum Qs and Means		13	12	12	10	7	0	3	10	1	5	1	10	1	8	5	11	1	10	8	3	14	4	16	2	19	9.789	39%	

PRE/POST TEST SCORE ANALYSIS: Post-Test Data Entry

DIRECTIONS: For each student, enter a "1" for any question that was answered CORRECTLY on the post-test.

Total number of questions on the test:

Q= 25

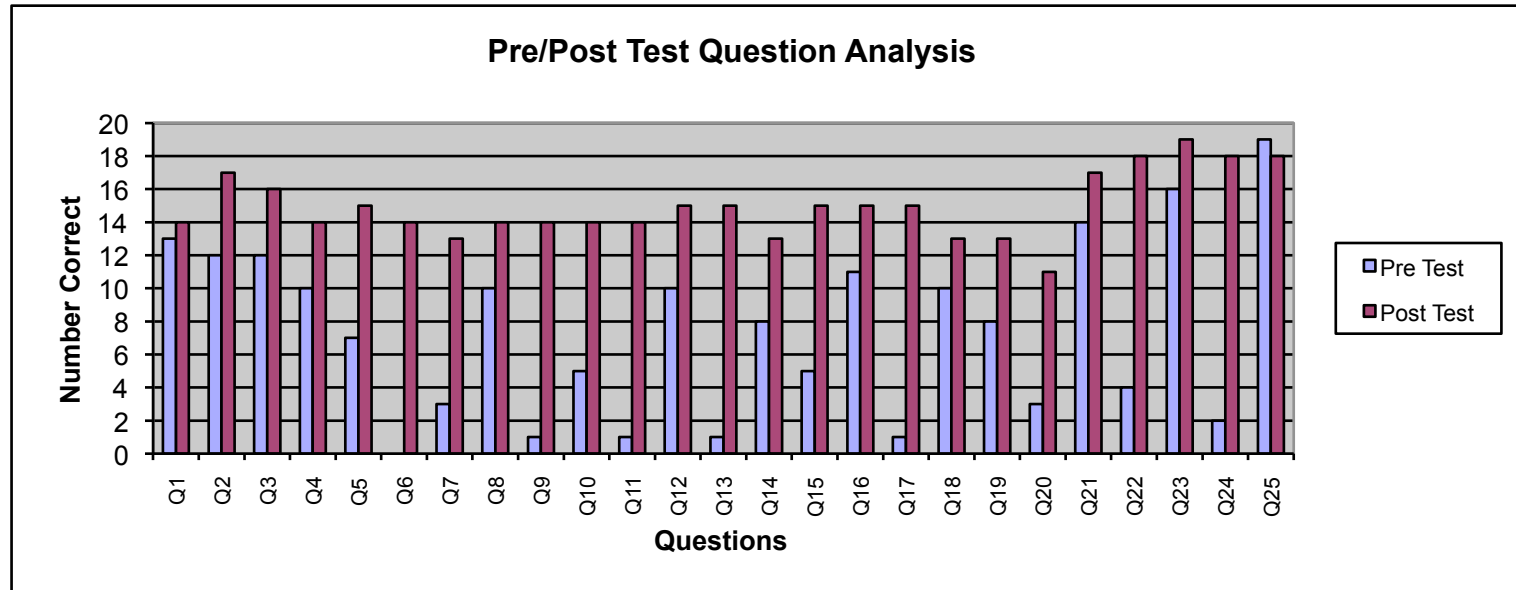
Total number of students who took the test:

N= 19

#	Student Name	Question																									Post-Test	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	%
1	Amanda T	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	24	96%
2	John L	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	10	40%
3	Desteny M	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%
4	Jacob W	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	23	92%
5	Peter R	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
6	Thomas	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%
7	Mara D	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	92%
8	Maria F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	24	96%
9	Parker W	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
10	Tyler M	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	23	92%
11	Madison B	1	1	1	0	0	0	0	0	1	0	0	1	0	1	1	1	1	1	1	0	1	1	1	1	1	15	60%
12	Zach C	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	18	72%
13	Sara F	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
14	Randy B	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	0	0	1	1	1	1	1	21	84%
15	Candace T	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	8	32%
16	Ed L	0	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	18	72%
17	Dallas P	0	1	0	0	0	1	1	1	1	1	0	1	0	0	0	0	0	0	0	1	1	1	1	1	1	14	56%
18	Kayla B	1	1	0	0	1	1	1	1	1	0	1	1	1	0	0	0	1	0	1	0	0	0	1	1	0	14	56%
19	Paul W	1	1	1	1	1	1	0	1	1	1	0	1	0	0	0	1	0	1	1	0	0	1	1	0	1	16	64%
20		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
21		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
22		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
23		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Sum Qs and Means		14	17	16	14	15	14	13	14	14	14	14	15	15	13	15	15	15	13	13	11	17	18	19	18	18	19.68	79%

PRE/POST Question SUMMARY ANALYSIS

	Question																								
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25
Pre Test	13	12	12	10	7	0	3	10	1	5	1	10	1	8	5	11	1	10	8	3	14	4	16	2	19
Post Test	14	17	16	14	15	14	13	14	14	14	14	15	15	13	15	15	15	13	13	11	17	18	19	18	18



PRE/POST TEST SCORE SUMMARY ANALYSIS

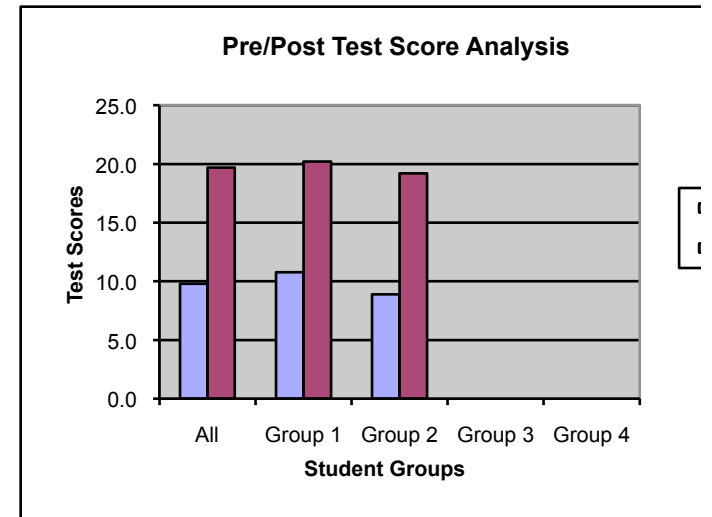
Student Group Characteristics:

Total number of questions on the test: Q= 25
 Total number of students who took the test: N= 19

1= Female
 2= Male
 3=
 4=

#	DO NOT REPORT Student Names	Char Code	Pre-Test		Post-Test		Pre vs Post Test	
			Total	%	Total	%	Gain/Loss	%
1		1	11	44%	24	96%	13	52%
2		2	5	20%	10	40%	5	20%
3		1	10	40%	24	96%	14	56%
4		2	7	28%	23	92%	16	64%
5		1	10	40%	25	100%	15	60%
6		2	11	44%	24	96%	13	52%
7		1	11	44%	23	92%	12	48%
8		1	11	44%	24	96%	13	52%
9		2	10	40%	25	100%	15	60%
10		2	17	68%	23	92%	6	24%
11		1	14	56%	15	60%	1	4%
12		2	5	20%	18	72%	13	52%
13		1	13	52%	25	100%	12	48%
14		2	10	40%	21	84%	11	44%
15		1	9	36%	8	32%	-1	-4%
16		2	12	48%	18	72%	6	24%
17		2	8	32%	14	56%	6	24%
18		1	8	32%	14	56%	6	24%
19		2	4	16%	16	64%	12	48%
20		0	0	0%	0	0%	0	0%
21		0	0	0%	0	0%	0	0%
22		0	0	0%	0	0%	0	0%
23		0	0	0%	0	0%	0	0%
24		0	0	0%	0	0%	0	0%
25		0	0	0%	0	0%	0	0%
26		0	0	0%	0	0%	0	0%
27		0	0	0%	0	0%	0	0%
28		0	0	0%	0	0%	0	0%
29		0	0	0%	0	0%	0	0%
30		0	0	0%	0	0%	0	0%
Mean Scores			9.789474	39%	19.68421	79%	9.8947368	40%

	Mean Scores			
	All	Group 1	Group 2	Group 3
Pre-Test	9.8	10.8	8.9	
Post-Test	19.7	20.2	19.2	
Difference	9.9	9.4	10.3	
Total Number	19	9	10	0



PRE/POST TEST SCORE ANALYSIS: Student Characteristics

DIRECTIONS:

Enter the name of up to 30 students who took BOTH tests below. This information will appear on other worksheets automatically.

TIP -- Put the names in alphabetical order if desired BEFORE you enter grades on the next sheet.

OPTIONAL -- Describe what each code below means, then enter the appropriate "characteristic code" for each student on the list.

Characteristic codes must refer to ONE mutually exclusive characteristic (e.g., for SES, 1=Eligible for free lunch, 2=Eligible for reduced lunch, 3=Not eligible for free or reduced lunch). Leave unused codes blank.

1= Female

2= Male

3=

4=

#	Student Name (Last, First)	Char Code
1	Paul F	2
2	Devin E	2
3	Shannon D	1
4	Taylor C	1
5	Marissa L	1
6	Jacob S	2
7	Tricia S	1
8	Robert D	2
9	Chrystal M	1
10	Mackenzie A	1
11	Shannon K	1
12	Matt L	2
13	Georgiann T	1
14	Jamie A	2
15	Brianna M	1
16	Jordan G	2
17	Kari W	1
18	Randall M	2
19	Colleen H	1
20	Jon C	2
21	Carrie	1
22	Kevin T	2
23	Mariah M	1
24		
25		
26		
27		
28		
29		
30		

PRE/POST TEST SCORE ANALYSIS: Pre-Test Data Entry

DIRECTIONS: For each student, enter a "1" for any question that was answered CORRECTLY on the pre-test.

Enter the total number of questions on the test here: Q= 25

Enter the total number of students who took BOTH tests here: N= 23

#	Student Name	Question																									Pre-Test	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	%
1	Paul F	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0	1	0	1	9	36%	
2	Devin E	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	1	0	1	1	0	1	0	1	0	1	18	72%
3	Shannon D	1	1	1	1	1	1	1	0	1	1	0	1	0	1	0	1	0	1	1	0	1	0	1	0	1	17	68%
4	Taylor C	1	1	1	1	1	1	1	0	1	1	0	1	0	1	1	0	0	1	1	0	1	0	1	0	1	17	68%
5	Marissa L	1	1	1	1	1	0	0	1	1	1	0	1	0	1	1	1	0	1	1	0	1	0	1	0	1	17	68%
6	Jacob S	1	1	1	1	1	0	0	0	0	0	0	1	0	0	1	1	0	1	1	0	1	0	1	0	1	13	52%
7	Tricia S	0	0	1	1	0	0	0	1	0	1	0	1	0	1	1	1	0	1	0	0	1	0	1	0	1	12	48%
8	Robert D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
9	Chrystal M	1	1	1	1	1	0	0	0	0	1	0	1	0	1	1	1	0	1	1	0	1	0	1	0	1	15	60%
10	Mackenzie A	1	1	1	1	0	0	1	1	0	1	0	1	0	1	1	1	0	1	0	0	1	0	1	0	1	15	60%
11	Shannon K	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	1	0	10	40%
12	Matt L	1	1	0	0	1	1	0	1	1	0	0	1	0	0	0	1	0	1	1	0	1	1	1	1	1	15	60%
13	Georgiann T	1	0	1	1	1	1	1	0	1	0	0	0	0	0	0	1	0	1	1	0	1	0	0	1	1	13	52%
14	Jamie A	1	1	1	1	1	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	1	1	0	1	12	48%
15	Brianna M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
16	Jordan G	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	6	24%
17	Kari W	1	1	1	1	1	0	0	1	0	1	0	1	0	1	1	1	0	1	1	0	1	0	1	0	0	15	60%
18	Randall M	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	6	24%
19	Colleen H	1	1	1	1	1	0	0	0	0	1	0	1	0	1	1	1	0	1	1	0	1	0	1	0	1	15	60%
20	Jon C	1	0	1	0	0	0	0	1	0	1	1	1	0	1	1	1	0	1	1	0	1	0	0	0	0	13	52%
21	Carrie	1	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5	20%
22	Kevin T	1	1	0	1	0	1	1	0	1	0	0	0	1	0	1	1	1	1	0	0	1	0	1	0	1	14	56%
23	Mariah M	1	1	1	1	1	0	0	0	0	1	0	1	0	1	0	1	0	1	0	0	1	0	1	0	1	13	52%
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Sum Qs and Means		17	16	17	16	12	8	6	9	7	13	2	14	2	11	12	14	1	19	14	1	19	2	17	3	18	11.74	47%

PRE/POST TEST SCORE ANALYSIS: Post-Test Data Entry

DIRECTIONS: For each student, enter a "1" for any question that was answered CORRECTLY on the post-test.

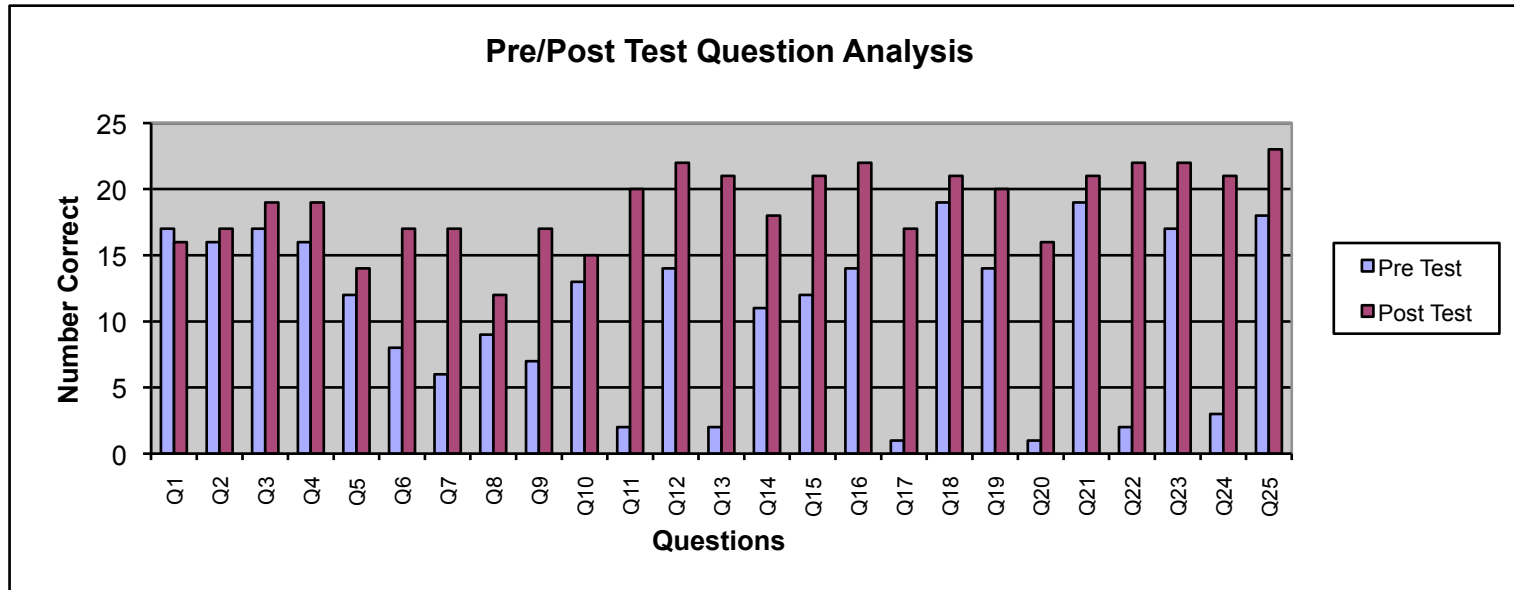
Total number of questions on the test: Q= 25

Total number of students who took the test: N= 23

#	Student Name	Question																									Post-Test	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total	%
1	Paul F	0	0	0	0	0	1	0	0	0	0	1	0	1	0	1	0	0	0	0	1	0	1	0	1	7	28%	
2	Devin E	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	24	96%
3	Shannon D	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%
4	Taylor C	1	0	0	1	0	0	0	1	1	0	1	1	1	1	0	1	1	1	1	1	0	1	0	0	1	15	60%
5	Marissa L	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	24	96%
6	Jacob S	1	1	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21	84%
7	Tricia S	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21	84%
8	Robert D	0	0	1	0	0	1	1	0	1	0	0	1	1	0	1	1	1	1	1	1	0	1	1	1	1	16	64%
9	Chrystal M	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	24	96%
10	Mackenzie A	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	92%
11	Shannon K	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	24	96%
12	Matt L	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	24	96%
13	Georgiann T	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	92%
14	Jamie A	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
15	Brianna M	0	0	1	0	0	1	1	0	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	18	72%
16	Jordan G	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	96%
17	Kari W	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	21	84%
18	Randall M	0	1	1	1	1	0	1	0	0	0	0	1	0	1	1	1	1	1	1	1	0	1	1	1	1	17	68%
19	Colleen H	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	23	92%
20	Jon C	1	1	1	1	0	0	0	1	0	1	0	1	0	0	0	1	0	1	1	0	1	1	1	1	1	15	60%
21	Carrie	0	0	1	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	15	60%
22	Kevin T	0	0	0	1	0	1	0	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	17	68%
23	Mariah M	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	100%
24		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
25		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
26		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
27		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
28		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
29		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
30		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
Sum Qs and Means		16	17	19	19	14	17	17	12	17	15	20	22	21	18	21	22	17	21	20	16	21	22	22	21	23	20.43	82%

PRE/POST Question SUMMARY ANALYSIS

	Question																								
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25
Pre Test	17	16	17	16	12	8	6	9	7	13	2	14	2	11	12	14	1	19	14	1	19	2	17	3	18
Post Test	16	17	19	19	14	17	17	12	17	15	20	22	21	18	21	22	17	21	20	16	21	22	22	21	23



PRE/POST TEST SCORE SUMMARY ANALYSIS

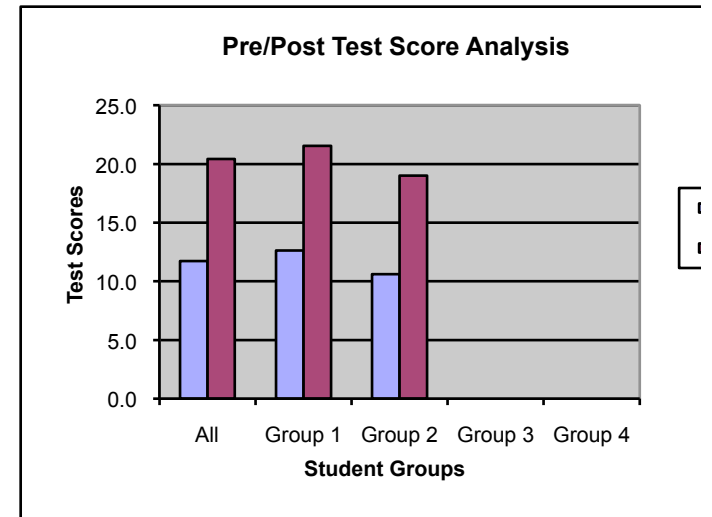
Total number of questions on the test: Q= 25
 Total number of students who took the test: N= 23

Student Group Characteristics:

1= Female
 2= Male
 3=
 4=

#	DO NOT REPORT Student Names	Char Code	Pre-Test		Post-Test		Pre vs Post Test	
			Total	%	Total	%	Gain/Loss	%
1		2	9	36%	7	28%	-2	-8%
2		2	18	72%	24	96%	6	24%
3		1	17	68%	24	96%	7	28%
4		1	17	68%	15	60%	-2	-8%
5		1	17	68%	24	96%	7	28%
6		2	13	52%	21	84%	8	32%
7		1	12	48%	21	84%	9	36%
8		2	0	0%	16	64%	16	64%
9		1	15	60%	24	96%	9	36%
10		1	15	60%	23	92%	8	32%
11		1	10	40%	24	96%	14	56%
12		2	15	60%	24	96%	9	36%
13		1	13	52%	23	92%	10	40%
14		2	12	48%	25	100%	13	52%
15		1	0	0%	18	72%	18	72%
16		2	6	24%	24	96%	18	72%
17		1	15	60%	21	84%	6	24%
18		2	6	24%	17	68%	11	44%
19		1	15	60%	23	92%	8	32%
20		2	13	52%	15	60%	2	8%
21		1	5	20%	15	60%	10	40%
22		2	14	56%	17	68%	3	12%
23		1	13	52%	25	100%	12	48%
24		0	0	0%	0	0%	0	0%
25		0	0	0%	0	0%	0	0%
26		0	0	0%	0	0%	0	0%
27		0	0	0%	0	0%	0	0%
28		0	0	0%	0	0%	0	0%
29		0	0	0%	0	0%	0	0%
30		0	0	0%	0	0%	0	0%
Mean Scores			11.73913	47%	20.43478	82%	8.6956522	35%

	Mean Scores			
	All	Group 1	Group 2	Group 3
Pre-Test	11.7	12.6	10.6	
Post-Test	20.4	21.5	19.0	
Difference	8.7	8.9	8.4	
Total Number	23	13	10	0



Evaluation and Reflection

I really enjoyed teaching my unit on integers because the students were interested in learning how each operation is actually solved and what the resulting answer truly means. Every student was an active participant in each lesson which made it more enjoyable for them. They also seemed to really enjoy each activity with the hands-on materials. This was a little different from other activities they have done so they were excited to try something new. I also learned a great deal about teaching throughout this whole unit.

Throughout the whole unit I incorporated a variety of teaching techniques. For each lesson I began with a warm-up which got their minds back in the mode of solving integer related problems. I asked questions based on the material they learned in the previous lesson. Since this was the first thing students did when they came into the room they were given the independence of doing what they knew they needed to do and get their mind set in the math mode. For almost every lesson there was a set of notes which came after the warm up. This helped introduce the rules and allowed for me as the teacher to monitor and adjust if I feel they are grasping the idea or if I need to use further explanation and more examples before I allowed the students to practice on their own. After taking notes as a class I asked students to then write the notes in their rule book under the corresponding section. This rule book was created to allow the students to write their rules one more time, use as source as they practice, and to take home to refer to throughout the completion of their homework. I explained each practice page and activity thoroughly before allowing the students to go ahead with it. If students needed further instruction I spoke with them individually to ensure they understood what I was asking them to accomplish. Each of the activities used in the lessons were activities similar to those previously done and corresponded with material recently learned, which allowed students to use their prior knowledge from to complete various tasks. Each homework assignment then corresponds with the lesson from that day.

The students really enjoyed working with the playing cards, dice, and 2-sided chips. There were a few parts of some of the lessons which were instructional, such as

during the notes, which they were active with answering questions. This shows me they are learning. They love moving around and being active participants of every aspect of the lessons. Lesson three which involved five centers gave students to try different things throughout the class period and move around the room.

Each class period was 80 minutes long. I was given as much time as I needed to make sure each student understood the information. I planned on taking one day to teach adding integers, another day for subtracting then the following day to practice both of these skills. These two skills were more difficult than the others were going to be so I wanted to make sure I gave plenty of time for students to practice. These three lessons also used a variety of teaching strategies which helped to make sure I reached each student's way of learning. The next lessons included teaching about multiplying and dividing integers together then evaluating integers with exponents. The practice section of each lesson required students to work independently, then share their work with a peer. Once students knew what they needed to do they were able to work independently and at their own pace. As the practice turned into the activity the problems became more difficult. This allowed students to challenge themselves.

All of the goals and objectives were met by the majority of the class. I based my instruction off of the goals and objectives to ensure they were met. I used alternative forms of assessments to assess their understanding of the material from the lessons which led me to determine what needed to be done to ensure they learned what was needed. The main goal for this lesson was for students to learn how to evaluate problems where integers are present. I modeled how the rules are used for each type of problem so students understood exactly how the rules should be applied.

One of the most successful aspects of my instructional sequence was the centers during the third lesson. These activities gave students more practice with adding and subtracting integers, which was the most difficult part of the integer unit to comprehend. I kept a section of the whiteboard as a portion which contained each rule. As the lessons progressed more rules were added. This helped the students as they continued with their practice and activities in the lesson because they were able to refer to the board when they needed a quick reminder.

Many of the students were excited to take the post-test because they recognized it from the pre-test. They knew what to expect and the answers to the questions made more sense to them this time around because they recognized many of them from the activities I had them complete. As they were taking the post-test I could see the amount of confidence on each student's faces. It was much more reassuring than responses I received from the pre-test. When the students were taking their pre-test they were very unsure of what to circle because they have never worked with integers before. By giving a pre-test before I taught the lessons I knew what I needed to cover and how it should be taught.

If I was going to teach this unit again I would include teachable moments and relate the material to the world as they experience it such as relating weather and temperature changes in upstate New York. I may also describe some of the job professions which use these skills in their work, such as a statistician, or an engineer. I would also try to include more group work so students could collaborate before and during each activity rather than after the assignments. I have learned that this class really enjoys working with different activities and moving around. The class period is on the long side so the students need to keep active so they don't lose focus. After they learned and understood how to solve each math problem they enjoyed completing the practice so they could get to the activity and make their own problem with the different materials.

Bibliography

Math League Press. (2006). *Integers*. Retrieved Mar. 28, 2009, from <http://www.mathleague.com/help/integers/integers.htm>

Office of Social and Economic Data Analysis. (2008). *MCDC Demographic Profile 3, 2000 Census*. Retrieved Mar. 28, 2009, from http://mcdc2.missouri.edu/cgi-bin/broker?_PROGRAM=websas.dp3_2k.sas&_SERVICE=sasapp&zi=13036

Teacher provided worksheets:

- Adding Integers from Macmillian/McGraw-Hill
- 5-6 Adding Integers p. 217
- Subtracting Integers from Macmillian/McGraw-Hill
- 5-7 Subtracting Integers
- Magic Squares
- Shake 'Em Up Subtraction Style!
- Deal 'em out!
- Adding and Subtracting Integers from MCMXCIV Instructional Fair, Inc
- Multiplying Integers from Macmillian/McGraw-Hill
- Dividing Integers from Macmillian/McGraw-Hill
- Deal "Em Out! (Multiplication)
- Shake 'Em Up
- 5-8 Multiplying and Dividing Integers
- Famous Farming Expression
- Unit 4 Review

Hand-made worksheets:

- Flip Chip
- Assessment Quiz
- Evaluating Integers
- Shake 'Em Up: Exponents
- Integer BINGO