

Objectives:

- Students will learn how to take Cornell Notes, as evidenced by their taking of today’s lecture notes in the Cornell Notes format.
- Students will learn how to cancel positive and negative numbers, as evidenced by their completion of classwork and homework where they simplify integers by removing zero pairs.

Materials:

- Updated seating chart
- Warm up handout
- Glass fish bowl
- Positive (purple) and negative (orange) cubes
- “Cornell Notes” handout
- “Zero Pairs Homework” handout

Time	Activity
Before Bell	<p style="text-align: center;">DO NOW</p> <p>Put the updated seating chart transparency on the overhead projector, and write the following “Do Now” on the dry erase board:</p> <ol style="list-style-type: none"> 1. Put your backpack on or below the tables in the back of the room (“Backpack Parking”). 2. For class today, you will need: <ul style="list-style-type: none"> • Readiness Checker • Homework Checker (pink) • Homework Log (yellow) • Pencil(s) • Several Sheets of Binder Paper • Math Autobiography Homework 3. Work on the warm up. <p>Wait for students at the door. As students enter the classroom, shake their hands and give them a copy of the “warm up.”</p>
5 min	<p style="text-align: center;">READINESS AND HOMEWORK CHECK</p> <p>Once students are in the classroom, go around and stamp the readiness checkers of students who are working on the “Do Now.” Collect their “Math Autobiography” homework and stamp their homework checkers if they wrote at least $\frac{3}{4}$ of a page. Afterwards, thank the students for writing about their math experiences, and remind them that you will be the only one reading them.</p>
10 min	<p style="text-align: center;">INTRODUCTORY DEMONSTRATION TO LESSON</p> <p>Take a glass fish bowl (or some other bowl that can be seen through), and put it on top of the overhead projector. Turn off the room lights and turn on the overhead projector, so that the fish bowl is illuminated. Then, take the positive (purple) and negative (orange) cubes, and set up the following scenario:</p> <p>In the magical land of numeracy, you (the teacher) are creating a magic potion that will make everyone in the world love math. But, in order to do that, you need to get the bowl to a temperature of 5 degrees. In this magic land, people don’t use fire. Instead, they use magical temperature cubes. The positive (purple) cubes raise the temperature of the potion by 1 degree. Drop 5 positive (purple) cubes in the fish bowl, one at a time, counting aloud the temperature as you go.</p> <p>Now, pick up a negative (orange) cube and explain that it lowers the temperature of the potion by 1 degree. Then, pretends to accidentally drop the cube into the fish bowl. “Oh no!” you may say. Ask a student, “What’s the temperature of the potion now?” Since there are 5 positive (purple) cubes that together raise the temperature of the potion by 5 degrees, and 1 negative (orange) cube that lowers the temperature of the potion by 1 degree, the temperature of the potion is now 4 degrees.</p>

	<p>Pose the question to the class, “How can I get the temperature of the potion back to 5 degrees?” Take student responses. If a student responds, “Take out the orange cube,” then explain along the lines that the cube is already in the potion and can’t be taken out. The teacher may also hint that the lesson is on <i>addition</i>, and removing a cube is subtraction. The correct answer is to add another positive (purple) cube.</p> <p>So, one positive (purple) cube cancels with one negative (orange) cube. That is, a pair of one positive cube and one negative cube makes zero. Let’s call these pairs <i>zero pairs</i>. Ask, “So, what happens if I drop in another zero pair of one positive cube and one negative cube into the potion?” After getting the correct student response that the temperature does not change, the teacher drops zero pairs into the potion.</p> <p>The whole point of this demonstration is that zero pairs do not affect the temperature.</p>
10 min	<p style="text-align: center;">CORNELL NOTES</p> <p>Explain to the students that you just spent the last 10 minutes explaining <i>zero pairs</i> through a demo. That’s pretty important information, and is used to explain how positive and negative numbers add. So, how do you take notes on this information in a way that’s easy and good for studying? The answer is Cornell Notes, which students will also be learning later in College Readiness.</p> <p>Have students take out a sheet of binder paper. Show them how to fold the piece of paper to make the “key points” column, and have them do the same with their paper. Draw a sheet of paper on the board, and put a dotted vertical line to designate the fold. Explain that the problem with most note taking systems is that, in order to find a piece of important information, you have to read tons of information. With Cornell Notes, you have all they key points written in the “key points column.” Then, when you study, you can just go down the key points and see if you remember them. If you do, you can skip to the next key point. This saves tons of time. If you want more information, the notes are right next to the key point in the “notes section.”</p> <p>After describing the benefits of Cornell Notes, show students how to label it with their name, date, period, and teacher by writing the information on the board. Let them know that this information is for their own sake so they will know what notes come from where. That way, students have purpose and it’s not just something they have to do for the teacher.</p> <p>Finally, lead students in writing down the title of the lesson (“Zero Pairs”) by writing it on the board.</p> <p>Recall you’ve already drawn a piece of paper on the board, which represents the student’s own paper. The idea is that whatever you write on the board’s paper, the students should write on their own.</p>
1 min	<p style="text-align: center;">STRETCH BREAK</p> <p>Before having students actually take notes, lead them through some exercises to refresh them.</p>
20 min	<p style="text-align: center;">LESSON: ZERO PAIRS</p> <p>Please see the handwritten Cornell Notes for what the notes might look like.</p> <p>Notes for the Demo Since students didn’t take notes for the demo, go back and write them as Cornell notes. The key point from the demo is the idea that zero pairs do not do anything.</p> <p>Integer Mats In this section, abstract the bowl analogy to integer mats, which students have been using for the past five weeks in Summerbridge. Explain that trying to count everything in the bowl can become very challenging once there are many cubes. Take cubes out of the bowl and put them on the table in front, so that everyone can see, such that there are 3 positives on the students’ right and 2 negatives on the students’ left. The goal is to find the temperature. Remove zero pairs until only one positive remains. So, the temperature is 1.</p>

	<p>Write as Cornell Notes the previous demo, and explain that you actually used an “integer mat,” which they’ve used throughout Summerbridge.</p> <p>Do an additional example of simplifying integers by removing zero pairs on an integer mat.</p> <p>Cornell Notes Recap Now that students have taken their first Cornell Notes for numeracy, remind students of the benefits of such notes (faster to write, faster to study, key notes easily accessible). Pass out the “Cornell Notes” handout for students to keep for future reference.</p> <p>Homework Pass out the “Zero Pairs” homework assignment and have students write down the assignment on their homework logs.</p>
1 min	<p style="text-align: center;">STRETCH BREAK</p> <p>Lead the students through some exercises to refresh them.</p>
30 min	<p style="text-align: center;">ALEKS</p> <p>Binder Paper and Pencil Have students take out binder paper and a pencil for ALEKS work.</p> <p>Computer Use Contract Review Remind students what the key points of the computer use contract are. You can point to the “Computer Use Contract Poster” for this. Then, pass out the laptops.</p> <p>Continue ALEKS Students should continue with ALEKS. Some may still be on the personalized assessment. Others may be on lessons. As students work, go around and help them with any questions they may have.</p>
3 min	<p style="text-align: center;">PAIR SHARE</p> <p>Review Briefly state that we did the following in class today:</p> <ul style="list-style-type: none"> • Cornell notes • Zero pairs <p>Discuss Remind students of the tick system. Have students pair up with their table partner and discuss the day’s lesson. While they do that, go around and check that the homework assignment (“zero pairs worksheet”) was correctly written down on their homework logs. Enforce the tick system.</p>

Today, we will learn about adding positive and negative numbers. Try evaluating the following problems. By the end of the lecture today, you will better understand how these problems work.

1) $1 + 2 =$

2) $(-1) + (-2) =$

3) $5 + (-3) =$

4) $(-5) + 3 =$

5) $123 + (-83) =$

6) $(-77) + 21 =$

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6) $(-77) + 21 =$

fold paper to make line

title of lecture

info to organize notes

Freddy Freshman
6/12/08 Per. 1
Mr. Wong

Cornell Notes

key points here

main notes here

Overview

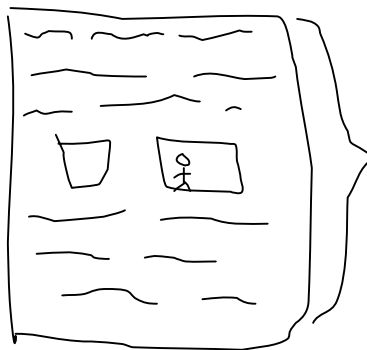
CN for taking lecture notes.
Created by Prof. Walter Pauk @ Cornell Univ in 1950's.
Will learn in College Readiness too.

Abbrev words

Create your own abbrev for words (Ex: "Univ" for "University")
" " " acronyms for phrases (Ex: "CN" for "Cornell Notes")

Other notes slow

Most other notes bad b/c slow to study



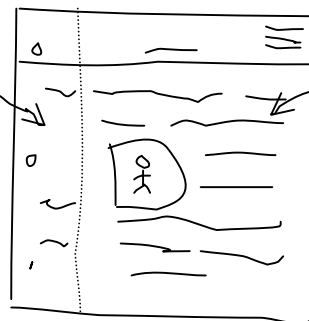
Hard to find info. too much detail!

where are the main points?

CN faster to study

CN better b/c key points easy to find = faster

key points



detailed notes

to study, can skim key points
if know info already, can skip to next key point
if want more info, details right there

draw a line

summary here

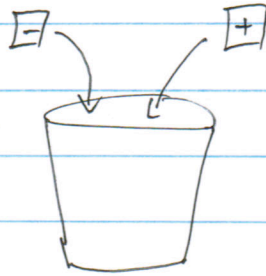
CN useful for taking lecture notes. Use abbrev words to write faster. Faster for studying since can find key points, but details still there if want them. Summary highlights key points in sentences.

Zero Pairs

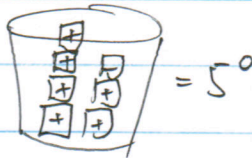
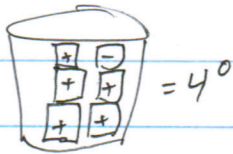
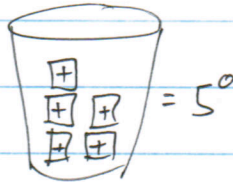
Section →

Demo

lowers temp by 1°



raises temp by 1°



zero pair

$$- + = \text{zero pair}$$



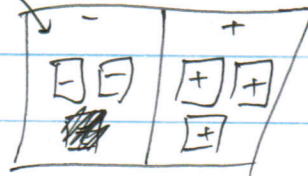
no change in temp

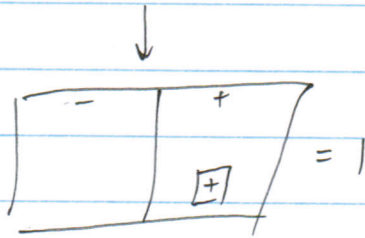
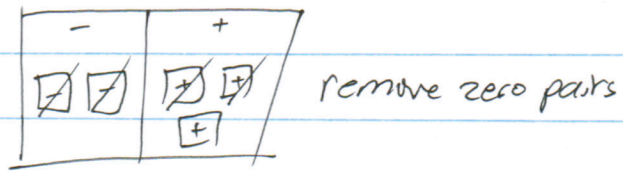
Section →

Integer Mats

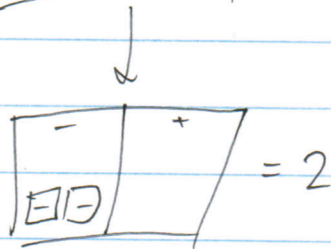
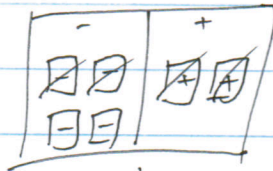
Integer mat Ex:

integer mat

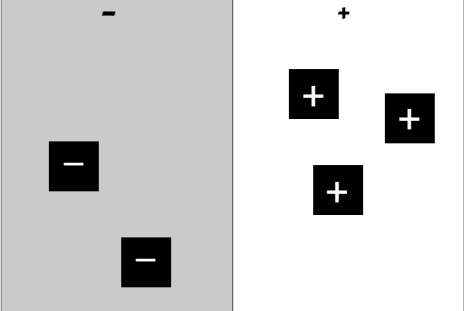
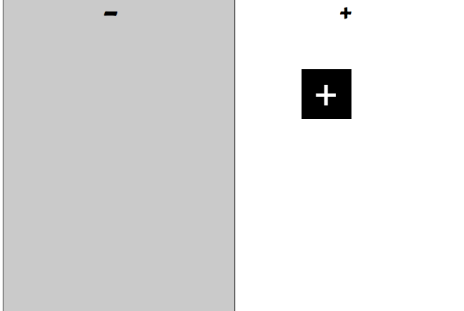


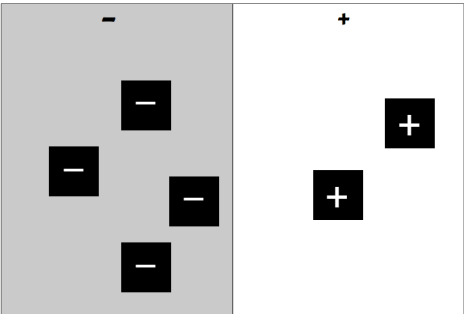
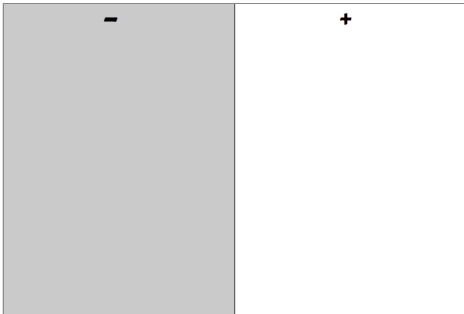


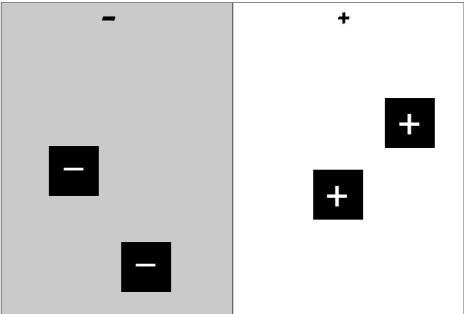

Ex:

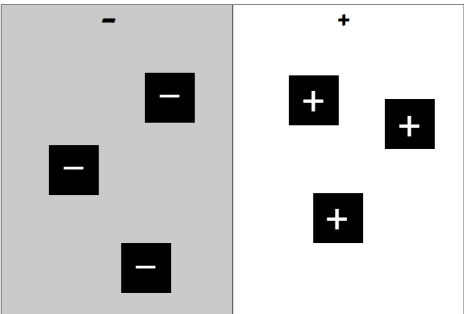
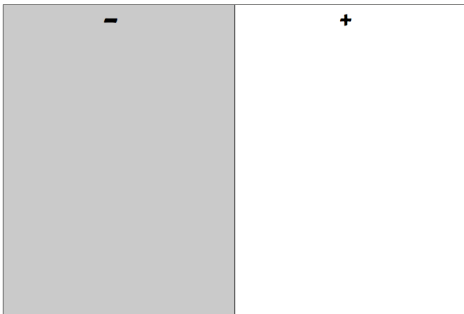


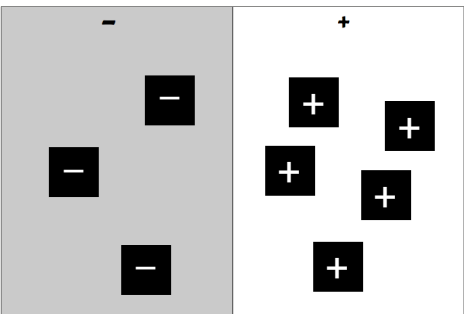
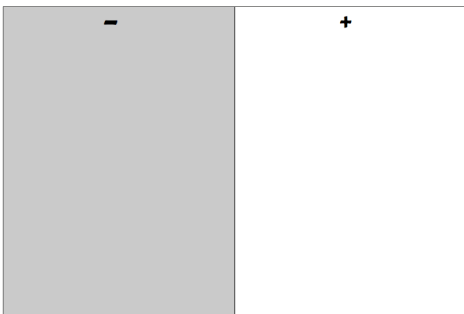
Simplify the following integers by removing zero pairs. Write the value of the integer. Problem 1 has been done for you—woohoo!

1)  =  = 1

2)  =  = _____

3)  =  = _____

4)  =  = _____

5)  =  = _____