

## Opposite Numbers and Values with Bee Bots

**Learning Segment Focus: Integers**

**Lesson: 1 of 1      Topic :Positive and Negative Numbers      Date: NA      Grade: 6**

### Student Outcomes

Specific learning <b>objectives</b> for this lesson.	Students will understand that positive and negative numbers are used together to describe quantities having opposite directions or values
Justify how learning tasks are appropriate using examples of <b>students' prior academic learning.</b>	Students know how to use positive numbers in multiplication, division, addition, and subtraction.
Justify how learning tasks are appropriate using examples of <b>students' personal, cultural, linguistic, or community assets.</b>	All students need an understanding of positive and negative number.

### State Academic Content Standards

List the <b>state academic content standards</b> with which this lesson is aligned. Include abbreviation, number & text of the standard(s).	<p><b>AR.Math.Content.6.NS.C.5</b> Understand that positive and negative numbers are used together to describe quantities having opposite directions or values, explaining the meaning of 0 (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge) A</p> <p><b>AR.Math.Content.6.NS.C.6</b> Understand a rational number as a point on the number line Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates: • Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line • Recognize that the opposite of the opposite of a number is the number itself (e.g., <math>-(-3) = 3</math>, and that 0 is its own opposite) • Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane • Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes • Find and position integers and other rational numbers on a horizontal or vertical number line diagram • Find and position pairs of integers and other rational numbers on a coordinate plane</p>
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### Key Vocabulary

What <b>vocabulary terms/content specific terminology</b> must be addressed for students to master the content?	Negative, number line, positive, integer, negative sign
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### Academic Language Support

<p>What are the <b>Academic Language Function(s)</b> (the content and language focus of the learning task represented by the active verbs within the learning objectives/outcomes) and explain how they are utilized in the lesson plan?                  What planned <b>Academic Language Supports</b> will you use to assist students in their understanding of key academic language to express and develop their content learning and to provide varying supports for students at different levels of Academic Language development? How do these supports address all three <b>Academic Language Demands (vocabulary, syntax, and discourse)</b>?</p>	<p>I will provide graphic that remind students what negative signs are and which direction the number goes.</p>
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**Materials**

<p>Materials needed by the teacher for this lesson. (such as books, writing materials, computers, models, colored paper, etc.)</p>	<p>Bee Bot hand out                  Bee Bot Activity Directions Sheet                  Bee Bot How To Video Created by Me using Clips</p>
<p>Materials needed by <b>students</b> for this lesson. (computers, journals, textbook, etc.)</p>	<p>Bee Bots                  Number line chart</p>

**Lesson Timeline with Instructional Strategies & Learning Tasks**

Amount of Time	Teaching & Learning Activities (This should be a BULLETED LIST)	Describe what YOU (teacher) will be doing and/or what STUDENTS will be doing during this part of the lesson. (This should be VERY DETAILED)
5- 10 minutes	<p><b><u>Introduction:</u></b>                       Introduce Topic</p>	<p>Quick overview of plans for today, learning outcome goal.                       Ask Students: how can a number go in different directions?                      • Scaffold until students mention negative numbers                       (assessing background knowledge)</p>
5 minutes	<p><b><u>Instruction:</u></b>   <b>Review Number Lines</b></p>	<p>Review Skip number lines                      Give examples with multiple equations</p>
5 minutes	<p><b>Direct instruction</b></p>	<p>Show how negative numbers move left across number line, and positive numbers move right.</p>
8-10 minutes	<p><b>Bee Bot Instruction</b></p>	<p>Show Bee Bot How to Video</p>

<p>20 minutes</p>	<p><b>Student Group Exploration Activity</b></p>	<p>Point to buttons and ask what each button does.</p> <p>I will put. Students into pairs and give them a Bee Bot to share, a number line, and an activity step by step instruction sheet.</p> <p>This activity will lead students to the conclusion that</p> <ul style="list-style-type: none"> <li>• negative numbers move the bot (sum) closer to and below zero</li> <li>• positive numbers move the bot above zero to bigger numbers</li> <li>• if the positive and negative numbers are the same, the bot will land on zero.</li> </ul> <p>During Activity I will walk around and make sure students understand how to use the bots and they are coming to the correct conclusions about positive and negative numbers.</p>
<p>5 minutes</p>	<p><b>Closure:</b> <b>Reflection</b></p>	<p>Students will write 3-4 things they discovered about integers and one new question they have.</p>

**Technology Integration**

<p>Provide your <b>rationale</b> for your technology choices that accurately reflects those choices within your teaching context. <b>Identify</b> what technology(s) you are using as part of your lesson plan. <b>Describe</b> how the use of technology aligns to your learning objectives, content standards, and central focus. <b>Explain</b> how technology-based instructional strategies are essential to students accomplishing the learning objectives (beyond what could be accomplished without using the technology). <b>Specify</b> how the technology selections meet or exceed the needs/strengths of all students. <b>Justify the “fit”</b> of chosen technologies, showing how the content, instructional strategies, and</p>	<p>I chose to use the Bee Bot to allow students to explore the direction of positive and negative numbers on a number line because it is hands-on and interesting. While it would have been easier to have students ONLY draw “skips” on a paper number line, the Bee Bot is more engaging and inspiring for students. They are having fun AND learning.</p> <p>I chose to use Clips to make a How to video rather than demonstrating in person how to use the Bee bot so that</p>
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technology “fit” together.	the students would be able to rewatch the video if needed. Also, the Screen is a lot bigger than the Bee Bot so students will be able to see the buttons easier.
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**Accommodations/Modifications**

How might I <b>modify</b> instruction for: <i>Remediation?</i> <i>Intervention?</i> <i>IEP/504?</i> <i>LEP/ESL?</i> (All students who have plans mandated by federal and state law.)	Video instruction for Bee Bot that is large print.
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**Differentiation**

How might you provide a variety of techniques (enhanced scaffolding, explicit instruction, contextualized materials, highlighters/color coding, etc.) <b>to ensure all student needs are met?</b> (All students who are not on specific plans mandated by federal and state law.)	Verbal scaffolding to get desired conclusion during introduction and instruction. Word Wall
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**Assessments: Formative and/or Summative**

Describe the <b>tools/procedures</b> that will be used in this lesson to monitor students’ learning of the lesson objective(s) (include type of assessment & what is assessed).	<input checked="" type="checkbox"/> Formative / <input type="checkbox"/> Summative	Checking background knowledge through discussion
	<input checked="" type="checkbox"/> Formative / <input type="checkbox"/> Summative	Bee Bot understand through repeating instruction
	<input checked="" type="checkbox"/> Formative / <input type="checkbox"/> Summative	Reflection and Discovery Response

**Research/Theory**

Explain <b>connections to theories and/or research</b> (as well as experts in the field or national organization positions) that support the approach you chose and justify your choices using <b>principles of the connected theories and/or research.</b>	Herbert Thelen developed group investigation.  Inquiry based learning
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**Lesson Reflection/Evaluation**

What went <b>well</b> ? What <b>changes</b> should be made? How will I <b>use assessment data</b> for next steps?	<i>TO BE FILLED IN AFTER TEACHING</i>
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Include supporting material such as slides, pictures, copy of textbook, and handouts for any activities students will be using as part of your lesson.

\*adapted from: <http://webcache.googleusercontent.com/search?q=cache:EsQcNWuG1ZoJ:web.mnstate.edu/harms/StudentTeachers/edTPA-LessonPlan.doc+&cd=2&hl=en&ct=clnk&gl=us>; <http://www.moreheadstate.edu/getmedia/ed3fd026-939f-4a47-a938-29c06d74ca01/Lesson-Plan-and-Reflections.aspx>; <http://www.mcneese.edu/f/c/9cb690d2/Lesson%20Plan%20Rubric%20Aligned%20with%20InTASC.docx>; <https://www.uwsp.edu/education/Documents/edTPA/Resource12.pdf>; <https://www.uwsp.edu/education/Documents/edTPA/Resource11.pdf>; <https://www.uwsp.edu/education/Documents/edTPA/Resource11a.pdf>; <https://www.uwsp.edu/education/Documents/edTPA/LessonPlanTemplateSOE.docx>;

Updated 12-12-20 NLC

<https://www.uwsp.edu/education/Documents/edTPA/SpecEdLessonPlanGuide.docx>;  
<https://www.uwsp.edu/education/Documents/edTPA/SpecEdLessonPlanTemplate.docx>