# INEQUALITIES

For the Inequalities key concept

## Summary

Students explore the sets of numbers that satisfy inequalities by matching up number-lines with different inequalities.

## Suitable for 2-6 students

## Length 30 min (approximately)

## Lesson Preparation

- **Fact Sheet** (download) – one teacher copy
- **Matching Sets** (download) – one per pair of students
  *[Note: Either cut up the sets of cards prior to running the activity or set aside time during the activity for students to do this.]*

### Optional:

- **Answers for Matching Sets** (download) – one for teacher reference
- **Scissors** – one for each student

## LEARNING INTENTIONS

This activity helps students to:

- Understand how to represent inequalities on a number line
- Describe sets of numbers using inequalities

## CURRICULUM LINKS

- Describing sets as less than or greater than, solving simple inequalities and plotting them on number-lines (ACMNA236)

## AFTER THE LESSON

In later lessons, students can create their own matching cards with number lines and inequalities, and challenge peers to put the cards together.

| INTRODUCTION | 2 MINUTES |
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| **Explain to students that in this activity they will be exploring something called inequalities.** What word does it remind you of? Unequal. So inequalities are like equations, but one side can be greater or less than the other. As a brief reminder, ask students what these symbols stand for: <, >.<br><br>[*Note: the emphasis in this mini-lesson is specifically on testing different values that form the set for an inequality. This is done to build conceptual understanding of inequalities.*] | **Whole group:**<br><br>Describe inequalities symbols. |

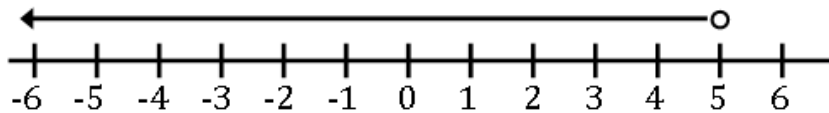| TEACHER LEAD DISCUSSION | 5 MINUTES |
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| Here is one inequality that is used to describe a set of possible numbers: $n<5$.<br>**Ask students:** *What values of $n$ can be in this set?* [e.g. 3, 1.7, 0, −2011] On the Fact Sheet, record a list of these numbers under the inequality. *Is there a highest possible number?* [4.999999...] *Lowest?* [No]<br>Now give students a second inequality: $n-1<4$.<br>**Again, ask them:** *What numbers satisfy this inequality? Is there a highest possible number? Lowest?* [Answers are the same as for the previous inequality.]<br>Here's a number-line showing the inequality $n<5$ – check that students can see how it also shows the inequality $n-1<4$. Explain that since n can't be 5, we use an open circle above the 5. The arrow shows that n can be any number less than 5.<br><br> | **Whole group:**<br><br>Answer questions for each inequality. |

| DIRECT PAIRS OF STUDENTS | 15 MINUTES |
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| **Give each pair of students a set of cards to match up.** Just like the example they have just seen, each number-line in the set has two inequalities that it matches with. Some cards are empty – students will need to work out what to put on them.<br>Prompt student thinking: As students work, ask scaffolding questions e.g.:<br>• Have you tried substituting easier numbers into the inequality (e.g. 0, 1)?<br>• How can you convince me that the match you have is correct? Is there another way you can check?<br>• What do you notice about the inequalities that match with −2$n$>2 and 5−$n$<3? Can you explain why they have different inequality signs? | **In pairs:**<br><br>Match each of the eight number lines with two inequalities. Fill in the blank cards to make a complete set. |

| DISCUSSION | 8 MINUTES |
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| **Go through the answers as a group, getting students to explain their reasoning for each match.** Finish the activity by asking students questions about what they have learned, such as:<br>• What matches were easy to make? Why?<br>• What matches were hard to make? Why?<br>• How can you tell if a match you have made is correct? | **Whole group:**<br><br>Contribute to discussion. Describe use of substitution or other methods. |