1. Interval Notation

2. You should be familiar with inequalities on the real number line

   In this lesson, we will express inequalities using interval notation.

3. The standard idea of the interval is used when x is between two numbers. Instead of writing the inequalities and the variable x, we can write the inequality in a much shorter way.

4. Interval Notation places the left boundary and right boundary in parentheses. We always put the smaller number on the left and the larger number on the right. The notation only makes sense if the secind number is larger than the first.

5. If we have less than or equal to, instead of strictly less than, we use pointed brackets. The interval with pointed brackets includes the points, the interval with rounded parentheses does not include the endpoints

6. If only one inequality is present, we use plus or minus infinity for the other end. In this case, the right boundary is 5, but x is allowed to be as small as we want. Negative infinity expresses the idea that we can go as far left as we want. Note that infinity is not a number, so we never use the pointed brackets. You can never include infinity in the interval.

7. If x is greater than 5, we use 5 as the left boundary, and we can go as far as we want to the right.

8. We can mix-and-match parentheses and brackets.

9. For all real numbers, we go from negative infinity to infinity

10. To recap: Rounded parentheses do not include the endpoints, pointed brackets do. For a one sided inequality, use infinity on the other side, always with parentheses, never brackets

11. Here are the general forms.