

9.1 Representing Inequalities

MathLinks 9, pages 340–349

Key Ideas Review

Choose from the following terms to complete the statements in #1 to 6.

algebraically	boundary	closed	conditions	combination	equal
graphically	greater	left	less	open	right
					verbally

- Inequalities can be represented _____, _____, and _____.
- A(n) _____ point separates values greater than from values less than a specified value.
- On a number line, the inequality $x \leq -7.2$ has a(n) _____ circle at -7.2 and an arrow to the _____.
- When shown graphically, the inequality $x > 5$ has a(n) _____ circle at 5 and an arrow pointing to the _____.
- The inequality $13 \geq x$ means that all values of the variable are _____ than or _____ to 13. Values _____ than 13 are not possible for x .
- A(n) _____ of inequalities can be used to represent a situation involving two _____.

Check Your Understanding

- For each list of numbers, circle the values that are possible for x in the inequality.

a) 2, 4, 6, 8, 10

$$x \leq 6$$

b) $-17, -16, -15, -14, -13$

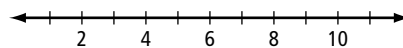
$$x > -15$$

c) $-6, -2, 1, 4, 5$

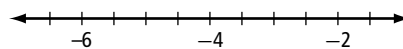
$$3 \geq x$$

- Show each inequality on the number line.

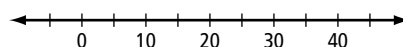
a) $x \geq 5$



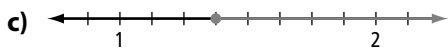
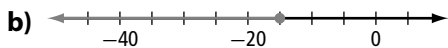
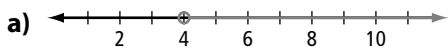
b) $x < -3.5$



c) $25 < x$



9. Express each inequality shown on the number line algebraically and verbally.

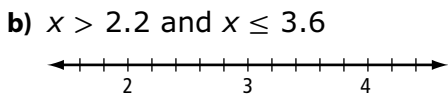
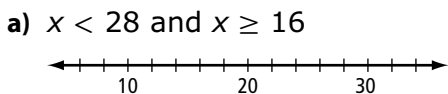


10. For each list of numbers, circle the values that are possible for x in the corresponding combination of inequalities.

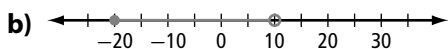
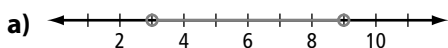
a) $-9.1, -5.6, 1.7, 3.2, 7.8$
 $x > -7$ and $x < 5$

b) $-26, -14.5, -12, -4.3, 0$
 $x \leq 0$ and $x > -14$

11. Sketch each combination of inequalities.



12. Write a combination of inequalities for each.

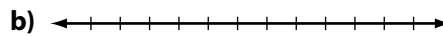
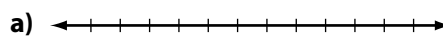


13. Represent each with an inequality.

a) The time spent on the activity can be at most 13 min.

b) The volume of the container must be a minimum of 1.8 L and a maximum of 2.5 L.

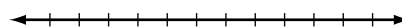
14. Label the number line and sketch the inequalities from #13.



15. In Canada, by law, any product sold as a *nutritional supplement* or *meal replacement* must provide a minimum of 225 kcal of energy per serving.

a) If c represents the energy content of one serving, write an inequality to represent this regulation.

b) Use the number line below to show the possible energy content values according to the regulation.



16. Danielle's track coach tells the team that to be considered for the 100-m race, a runner has to be able to run 100 m in less than 13 s. Draw and label a number line to represent this situation.

17. On Saltspring Island in British Columbia, the height of the tide varies one day from a low of 0.8 m to a high of 3.2 m.

a) What type of inequality do you need to use to show the range of tide heights? Explain.

b) Express the situation algebraically, and then represent it using a number line.