

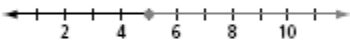
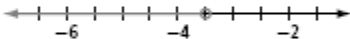
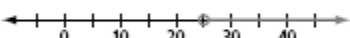
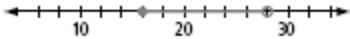
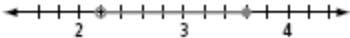
MathLinks 9 Practice and Homework Book

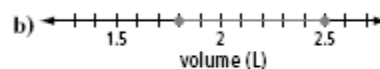
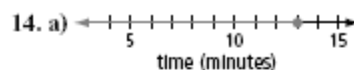
Chapter 9 Answers

9 Get Ready

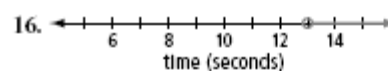
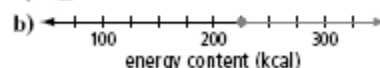
- a) $5 > 2$ b) $7 < 20$ c) 5×3 d) $9 = \frac{18}{2}$
- a) 4 is less than 8.
b) 8 is greater than 2.
c) 14 divided by 2.
d) 4 does not equal $\frac{8}{2}$.
- a) 5, 4 b) -1, 0, 1 c) 5, 6, 7 d) 3, 2, 1, 0
- a) $1 < 7$, $7 > 1$ b) $4 > -1$, $-1 < 4$
c) $3 < 3.5$, $3.5 > 3$ d) $0 < 1$, $1 > 0$
- a) 0, 1, 2, 3 b) 5, 6, 7 c) 12, 13, 14, ...
d) 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
- a) $x = 2$ b) $x = -4$ c) $x = 1$ d) $x = 3$

9.1 Representing Inequalities

- algebraically; graphically; verbally
- boundary 3. closed; left
- open; right 5. less; equal; greater
- combination; conditions
- a) 2, 4, 6 b) -14, -13 c) -6, -2, 1
- a) 
b) 
c) 
- a) $x < 4$; x is less than 4.
b) $x \leq -15$; x is less than or equal to -15.
c) $x \geq 1.375$ (or $\frac{11}{8}$); x is greater than or equal to 1.375 (or $\frac{11}{8}$).
- a) -5.6, 1.7, 3.2 b) -12, -4.3, 0
- a) 
b) 
- a) $x < 3$ and $x > 9$ b) $x \geq -20$ and $x < 10$
- a) Let $t = \text{time}$; $t \leq 13$
b) Let $V = \text{volume}$; $V \geq 1.8$ and $V \leq 2.5$

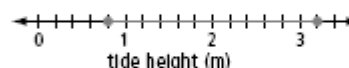


15. a) $c \geq 225$



17. a) A combination of inequalities needs to be used because the tide height varies between two boundary values.

b) Let $h = \text{height of tide}$; $h \geq 0.8$ and $h \leq 3.2$



9.2 Solving Single-Step Inequalities

- True
- False. The inequality $10 \geq -2x$ can be solved by dividing by -2 and reversing the inequality symbol.
- False. The inequality $\frac{x}{5} < -10$ can be solved by multiplying both sides of the equation by 5.
- False. The two inequalities have different solutions. For $-10x < 30$, dividing by -10 causes the inequality to be reversed.
- a) $x < 8$ b) $x \geq -5.3$ c) $-40 \geq x$ or $x \leq -40$
- a) $x \leq -\frac{11}{4}$ or $-2\frac{3}{4}$ or $x \leq -2.75$ b) $x < 63$
c) $-15 \leq x$ or $x \geq -15$
- Reverse the inequality for two cards:
 $\div (-5)$ and $\times (-0.7)$.
- a) 6, 7 b) 3 c) -10, -5, 0 d) -8, -4
- Example: The solution to $10 > x + 4$ is $x < 6$. The boundary point on the number line is correct. However, the arrow should point to the left.
- Example: Yes, you need to reverse the sign when you divide both sides of the inequality by a negative number.

11. Examples:

- a) Let b equal the number of books;
 $4b \leq 150$ or $b \leq \frac{150}{4}$.
- b) $b \leq 37.5$. Lauren can buy 37 or fewer books.
- c) $37 \times 4 < 150$, $148 < 150$. True

12. Examples:

- a) Let n equal the number of uses;
 $37.5n > 285$.
- b) $n > 7.6$. Eight or more uses make the members' plan cheaper.
- c) No. The boundary point of 7.6 is not a reasonable solution because only whole numbers are possible for the number of uses.

13. a) $3.49x > 49.95$

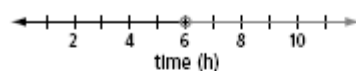
- b) It becomes cheaper to buy the game when the number of days is greater than 14.
- c) She should buy the game.

9.3 Solving Multi-Step Inequalities

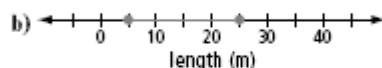
- isolate; equation; reverse; multiplying; dividing; negative
- multi-step; left; right
- comparing; inequalities
- a) $x < 9$ b) $x \geq -18$
 c) $x < -\frac{12}{5}$ or $x < -2.4$
 d) $-\frac{3}{2} \leq x$ or $x \geq -\frac{3}{2}$ or $-1.5 \leq x$ or $x \geq -1.5$
- a) $x \leq -12$ b) $x > -2$
 c) $x \leq -\frac{5}{2}$ or $x \leq -2.5$ d) $1 < x$ or $x > 1$
- a) The solution is correct.
 b) The solution is not correct. $x > 1.5$.
 c) The solution is not correct. $3\frac{2}{3}$ is the boundary point, not part of the solution.
 d) The solution is correct.
- a) Example: Let d = number of downloads per month.
 b) $29 + 0.8d < 17 + 1.19d$
 c) $d > 30.769 \dots$. Site A is a better deal when Ethan makes more than 30 downloads.
- a) Example: Let t = time in hours a bike is rented.
 b) $25 + 8t > 55$
 c) $t > 3.75$. The all-day plan is better if renting for at least 4 h.
- a) Sheila will be closer after 2.6 h (2 h 36 min).
 b) Sheila would have to travel at least 89.6 km/h.

9 Chapter Link

1. Let
- t
- = time (h);
- $t > 6$



2. Examples: a) Let
- L
- = length painted on Michele's side;
- $L \geq 5$
- and
- $L \leq 25$



3. a) Let t = time in hours; $3.5t \geq 5$
 b) Example: Hani can take a break after a little more than 1.4 h.
4. a) $3.5t > 3t + 5$. Hani will have painted farther after more than 10 h.
 b) Example: $3.5(11) > 3(11) + 5$, $38.5 > 38$. True

9 Vocabulary Link

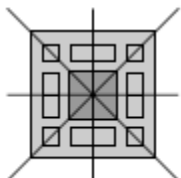
- inequality
- open circle
- combination of inequalities
- closed circle
- graphically
- verbally
- algebraically
- solution of an inequality
- boundary point

Chapters 1–9 Review

- Example: $5x^2 - 4xy + 6$
- a) Example: $y = -1.75$ b) Example: $x = 3$
 c) $y = \frac{3}{2}x - 4$ or $y = 1.5x - 4$
- a) $8x - 14$ b) $4a^2 + 3a - 1$
 c) $10t^2 - 12t + 4$ d) $-2.3x + 0.2$
- a) $\frac{1}{48}$ b) 604.8 cm
- a) -2 b) $-14mn + 42n^2$ c) $9p - 1 + 3q$
 d) $\frac{2}{5}s^2 - \frac{4}{15}s$
- 3.9 cm

7. a) Yes; order of 4; 90° ; $\frac{1}{4}$

b) Yes; vertical, horizontal, and two oblique lines of symmetry



8. a) In step 2, the 5 and 81 need to be multiplied before adding -64 ; 341

b) In step 1, the 4 and 3 need to be added before being squared; 130

9. a) small block: 436 cm^2 ; large block: 1048 cm^2

b) 1264 cm^2

10. a) $a = 81$ b) $p = 9$

11. a) 15.21 b) 0.69 c) Example: 3.2 d) 3.16

12. $x < -\frac{3}{8}$