

Chapter 8 Practice Test

For #1 to #4, select the correct answer.

1. What is the solution to the equation

$$\frac{1}{3} - \frac{3}{2}x = -\frac{1}{6}?$$

- A $-\frac{1}{9}$ B $\frac{1}{9}$
C $\frac{3}{1}$ D $\frac{1}{3}$

2. What is the solution to the equation

$$\frac{-5.2}{t} = -3.25?$$

- A 1.6 B -1.6
C 0.625 D -0.625

3. What is the solution to the equation
 $0.45 - 0.3g = 0.85 + 0.2g$?

- A 0.8 B -0.8
C 1.25 D -1.25

4. Which equation does not have the solution $y = -2$?

- A $\frac{y}{4} + 1 = \frac{1}{2}$
B $\frac{7}{8} - \frac{1}{y} = 1\frac{3}{8}$
C $\frac{2y - 1}{4} = \frac{5y - 4}{8}$
D $\frac{2}{3}y + \frac{3}{2} = -\frac{1}{12}y$

Complete the statements in #5 and #6.

5. To solve a linear equation, you isolate the .
6. For $2.43 = -0.38v$, the solution expressed to the nearest hundredth is $v = \blacksquare$.

Short Answer

7. Model the solution to the equation $\frac{x}{2} = -\frac{3}{4}$ on a number line. What is the solution?

8. a) Describe the steps you would use to solve the equation $1.5(x + 3) = 0.5(x - 1)$.

b) How would the steps in part a) be different from those you would use to solve $1.5x + 3 = 0.5x - 1$?

9. Solve and check.

a) $\frac{a + 1}{2} = \frac{2a - 1}{5}$

b) $2.8(3d - 2) = -12.32$

10. Solve. Express each solution to the nearest tenth.

a) $-13.9x = 5.7 - 12.5x$

b) $0.8(2s + 3) = -0.6(5s - 2)$

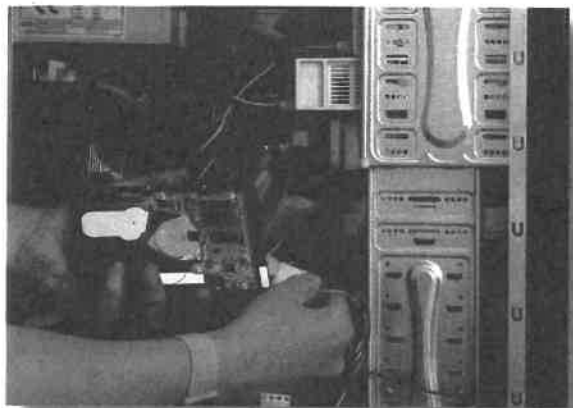
11. Precipitation is moisture that falls in the form of rain or snow. The relationship between the depth of rain, r , and the depth of snow, s , that results from equal quantities of precipitation is $\frac{r}{s} = 0.1$.

a) If a storm delivers 15.5 cm of snow, what depth of rain would result from the same amount of precipitation on a warmer day?

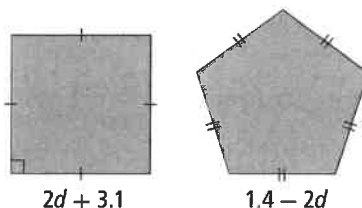
b) If a storm delivers 2.7 cm of rain, what depth of snow would result from the same amount of precipitation on a colder day?

12. Nav is working part time. She pays a monthly fee of \$5.95 for her bank account, plus \$0.75 for each deposit or withdrawal. One month, the total cost of her account was \$12.70. How many deposits or withdrawals did she make that month?

13. Two computer technicians both charge a fee for a home visit, plus an hourly rate for their work. Dana charges a \$64.95 fee, plus \$45/h. Tom charges a \$79.95 fee, plus \$40/h. For what length of service call do Dana and Tom charge the same amount?



14. The square and the regular pentagon have equal perimeters. What is the perimeter of each shape?



Extended Response

15. a) Identify the error in the following solution.

$$\begin{aligned} -3.1(2n + 3) &= 12.3 \\ -6.2n + 3 &= 12.3 \\ -6.2n + 3 - 3 &= 12.3 - 3 \\ -6.2n &= 9.3 \\ \frac{-6.2n}{-6.2} &= \frac{9.3}{-6.2} \\ n &= -1.5 \end{aligned}$$

- b) Correct the error in part a) to determine the correct solution. Express your answer to the nearest tenth.

Math Link: Wrap It Up!

The table shows the energy content, in megajoules, of single servings of some common foods.

Food	Serving Size	Energy (MJ)
Brazil nuts (raw)	125 mL	2.03
Buttermilk	250 mL	0.44
Canola oil	15 mL	0.52
Cheddar cheese	45 g	0.76
Corn (boiled)	1 ear	0.35
Lentils (cooked, drained)	250 mL	1.02
Mango (peeled)	1 mango	0.48
Potato (baked)	1 potato	0.94
Salmon (canned)	95 g	0.81

Use data from the table to write a word problem that can be solved using each of the following types of linear equations. Show the complete solutions to your own problems.

Have a classmate check your solutions. Modify your problems or correct your solutions, if necessary.

- a) an equation of the form $ax = b$
- b) an equation of the form $\frac{x}{a} = b$
- c) an equation of the form $ax + b = c$
- d) an equation that includes a grouping symbol
- e) an equation with the same variable on both sides



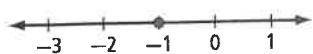
Chapter 9 Practice Test

For #1 to #5, select the best answer.

1. Karen told her mother that she would be out for no more than 4 h. If t represents the time in hours, which inequality represents this situation?

A $t < 4$ B $t \leq 4$
C $t > 4$ D $t \geq 4$

2. Which inequality does the number line represent?



A $x < -1$ B $x \leq -1$
C $x > -1$ D $x \geq -1$

3. Which number is not a specific solution for the inequality $y - 2 \geq -4$?

A -6 B -2
C 2 D 6

4. Solve: $5 - x < 2$

A $x < 3$ B $x > 3$
C $x < 7$ D $x > 7$

5. What is the solution of $5(x - 3) \leq 2x + 3$?

A $x \leq -6$ B $x \geq -6$
C $x \leq 6$ D $x \geq 6$

Complete the statements in #6 and #7.

6. The number line representing the inequality $x < 5$ would have a(n) circle at 5 and an arrow pointing to the .

7. The solution to $-4x < 16$ is x than .

Short Answer

8. Represent each inequality on a number line.

a) $-3 < x$

b) $x \leq 6.8$

9. Verify whether $x > -3$ is the correct solution to the inequality $8 - 5x < 23$. Show your thinking. If the solution is incorrect, explain why.

10. Christine is researching a career as an airline pilot. One airline includes the following criteria for pilots. Express each of the criteria algebraically as an inequality.

a) Pilots must be shorter than 185 cm.

b) Pilots must be at least 21 years old.

11. Solve and graph each inequality.

a) $-6 + x \geq 10$

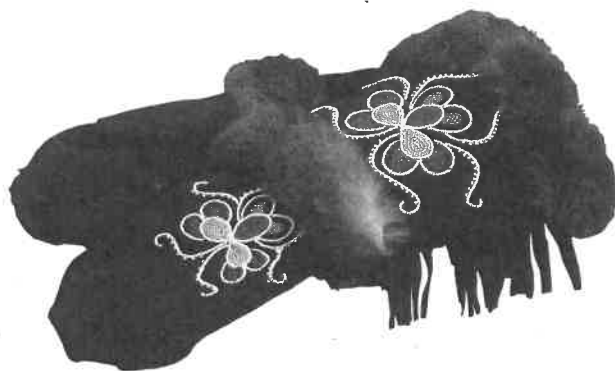
b) $2.4x - 11 > 4.6$

c) $12 - 8x < 17 - 6x$

12. Represent each situation algebraically as an inequality.

a) Luke earns \$4.75 per item sold and must earn over \$50.

b) It takes Nicole 3 h to sew beads on a pair of mitts. She has no more than 40 h of time to sew beads on all the mitts she plans to give to her relatives as presents.



Extended Response

13. Consider the inequality $6x - 4 > 9x + 20$.
- Solve the inequality algebraically.
 - Represent the solution graphically.
 - Give one value that is a specific solution and one that is a non-solution.
 - To solve the inequality, Min first subtracted $6x$ from both sides. Alan first subtracted $9x$ from both sides. Which method do you prefer? Explain why.
14. The Lightning Soccer Club plans to buy shirts for team members and supporters. Pro-V Graphics charges a \$75 set-up fee plus \$7 per shirt. BT Designs has no set-up fee but charges \$10.50 per shirt. How many shirts does the team need to order for Pro-V Graphics to be the better option?
15. Dylan is organizing a curling tournament. The sports complex charges \$115/h for the ice rental. Dylan has booked it for 6 h. He will charge each of the 14 teams in the tournament an entrance fee. How much must he charge each team in order to make a profit?



Math Link: Wrap It Up!

You are an amusement park manager who has been offered a job planning a new park in a different location.

- Give your park a name and choose a location. Explain how you made your choice. State the population of the area around the park that you chose.
- Choose a reasonable number of rides for your park. Assume that the fixed costs include \$5000 in addition to maintenance and wages. Assume maintenance and repairs cost \$400 per ride and that it takes eight employees to operate and supervise each ride. Conduct research and then decide:
 - the number of hours that rides will be open
 - the average hourly wage for employees
- Organize your estimates about operating expenses and revenues for the park. You can use the table in the Math Link on page 367 as a reference.
- Write an expression to represent each of the following for the number of rides you chose:
 - expenses per visitor
 - revenue per visitor
- For the number of rides you chose, how many visitors will be needed for the park to make a profit? Show all your work. Justify your solution mathematically.
- Assume that you have now opened your park. You find that 0.1% of the people in the area come to the park per day, on average. Using this information, will your park earn a profit? If not, explain what changes you could make. Show all your work and justify your solution.

What might be the problem if you choose too few or too many rides?

Chapter 8 Review

Key Words

For #1, fill in each blank by selecting from the terms provided. Terms can be used more than once.

1. In the $\frac{2}{3}k + \frac{1}{2} = -\frac{5}{6}$,

- k is a ,
- $\frac{2}{3}$ is a ,
- $\frac{1}{2}$ is a , and
- $-\frac{5}{6}$ is a .

- A numerical coefficient
- B variable
- C constant
- D equation

For #2 and #3, unscramble the letters to complete the statements using key words. Explain the meanings of the key words.

2. Subtraction is the to addition.

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3. When solving equations, you can remove brackets using the .

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8.1 Solving Equations: $ax = b$, $\frac{x}{a} = b$, $\frac{a}{x} = b$, pages 292–303

4. Model the solution to the equation $\frac{x}{2} = -0.4$ on a number line. What is the solution?
5. Solve and check.
- a) $4d = -\frac{2}{5}$
 - b) $2.68 = \frac{y}{3}$
 - c) $\frac{3.5}{h} = -0.2$
 - d) $-7.6u = -14.44$

6. Solve. Express each solution to the nearest tenth.

a) $67.5 = -14.3w$

b) $-\frac{68.3}{k} = -7.6$

7. The density of an object, D , in grams per cubic centimetre, is defined by $D = \frac{m}{V}$. In this formula, m is the mass, in grams, and V is the volume, in cubic centimetres. The density of pure iron is 7.87 g/cm^3 .

- a) What is the mass of a piece of pure iron with a volume of 5.5 cm^3 ?
- b) What is the volume of a piece of pure iron with a mass of 98.375 g ?

8. Raj and Tom are the top scorers on their soccer team. One season, Raj scored one quarter of their team's goals and Tom scored one sixth of their team's goals. Raj and Tom scored a total of 25 goals. How many goals did their team score?

8.2 Solving Equations: $ax + b = c$, $\frac{x}{a} + b = c$, pages 304–313

9. Model the solution to the equation $2x + \frac{1}{12} = \frac{3}{4}$ on a number line. What is the solution?
10. Nona solved the equation $-3.3g + 1.5 = -8.4$ as shown.
- $$\begin{aligned} -3.3g + 1.5 &= -8.4 \\ -3.3g + 1.5 - 1.5 &= -8.4 - 1.5 \\ -3.3g &= -9.9 \\ \frac{-3.3g}{-3.3} &= \frac{-9.9}{-3.3} \\ g &= -3 \end{aligned}$$
- a) What mistake did Nona make?
 - b) What is the correct solution?

11. Solve and check.

a) $\frac{t}{1.6} + 5.9 = -3.2$

b) $2.05 = 0.9x - 6.5$

c) $\frac{2}{5} = \frac{2}{3} - \frac{r}{5}$

d) $2\frac{1}{2} + 1\frac{1}{6}v = -\frac{5}{6}$

12. Oksana paid a \$14.00 handling charge to buy four Leela Gilday concert tickets on the Internet. The total cost of her order, including the handling charge, was \$153.80. What was the cost of each ticket?

Did You Know?

Leela Gilday was born and raised in Yellowknife, Northwest Territories. She is a singer/songwriter from the Dene Nation. Leela started singing at an early age, and her performing career began at the Folk on the Rocks Music Festival when she was eight years old. Leela now performs across Canada and abroad with her band.

13. The sun takes 25.38 Earth days to rotate once about its axis. This time is 3.92 Earth days less than half the time that Mercury takes to rotate once about its axis. How many Earth days does Mercury take to rotate once about its axis?



8.3 Solving Equations: $a(x + b) = c$, pages 314–321

14. Solve and check.

a) $3(5.8 + e) = -2.7$

b) $-\frac{5}{6} = \frac{r-4}{3}$

c) $10.1 = \frac{0.9 + h}{-2}$

d) $-\frac{4}{5}(q + 1) = -1\frac{1}{2}$

15. Solve $0.11 = -3(1.93 + m)$. Express the solution to the nearest hundredth.

16. An equilateral triangle has a perimeter of 17.85 m. The side length of the triangle, in metres, is $2k - 0.5$. What is the value of k ?

17. Lorna took three of her friends to visit the zoo. The bus fares cost \$5.50 per person. The cost of admission to the zoo was the same for each person in the group. Lorna spent \$109 altogether on fares and admission. What was the cost of each admission?



8.4 Solving Equations: $ax = b + cx$, $ax + b = cx + d$, $a(bx + c) = d(ex + f)$, pages 322–329

18. Solve and check.

a) $\frac{1}{5}n + \frac{3}{2} = \frac{3}{10}n$

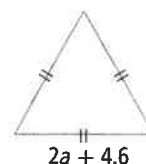
b) $-0.25f = 0.35 - 0.45f$

c) $12.4g + 34.3 = 9.5 - 3.1g$

d) $1.4(2h + 3) = 0.9(3h - 2)$

e) $\frac{3v + 2}{3} = \frac{2v - 1}{4}$

19. The square and the equilateral triangle have equal perimeters.



a) What is the value of a ?

b) What is the perimeter of each shape?

20. The perimeter of a rectangle is 3.5 times the length. The width is 2.5 cm less than the length. What is the width?

Math 9 - Unit 8 Review

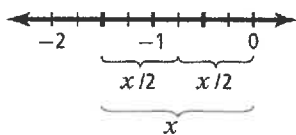
- 1) Chapter 8 Practice Test: pg. 332/ 1 – 4, 9 – 13, 15
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- 2) Chapter 9 Practice Test: pg. 370/ 1 – 5, 8, 11, 13 – 15
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- 3) Chapter 8 Review: pg. 330/ 1 – 3, 5 – 8, 10 – 20
[key in text]
- 4) ~~Chapter 9 Review: pg. 368/ 1 – 20~~
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All
Worksheets.

Chapter 8 Practice Test KEY

Chapter 8 Practice Test

1. D 2. A 3. B 4. C 5. variable 6. $v = -6.39$
7. $x = -\frac{3}{2}$



8. a) Example: Distribute, combine like terms, divide
b) No, distribution is the only difference.

Chapter 9 Practice Test KEY

Chapter 9 Practice Test

1. B 2. D 3. A 4. B 5. C

6. open; left

7. greater; -4



9. The solution is correct.

10. a) $h < 185$
b) $a \geq 21$

11. a) $x \geq 16$;

b) $x > 6.5$;

c) $-2.5 < x$;

9. a) $a = -7$ b) $d = -0.8$

10. a) $x = -4.07$ b) $s = -0.26$

11. a) $r = 1.55$ cm b) $s = 27$ cm

12. 9 deposits

13. At 3 h, Dana and Tom charge the same amount.

14. The perimeter is 10 units.

15. a) The error was forgetting to distribute the -3.1 to the 3 in step 1.
b) $n = -3.48$

12. a) $4.75x > 50$
b) $3p \leq 40$

13. a) $-8 > x$



c) Example: A specific solution is -13 and a non-solution is 3 .

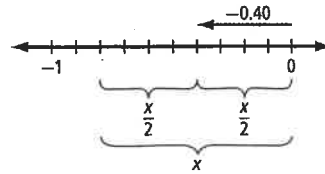
d) Example: Min's method does not involve dividing both sides of the inequality by a negative number. Therefore, the direction of the inequality will not be reversed.

14. Pro-V Graphics will be a better option when more than 21 shirts are ordered.

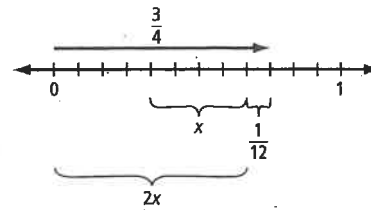
15. Dylan must charge each team an entrance fee of at least \$49.29 in order to make a profit.

Chapter 8 Review, pages 330-331

1. D, B, A, C, C
2. opposite operation
3. distributive property
4. $x = -0.8$



5. a) $d = -\frac{1}{10}$ b) $y = 8.04$ c) $h = -17.5$ d) $u = 1.9$
6. a) $w = -4.7$ b) $k = 9.0$
7. a) $m = 43.3$ g b) $v = 12.5$ cm³
8. 60 goals
9. $x = \frac{1}{3}$



10. a) She should have divided by -3 . b) $g = 3$

11. a) $t = -14.56$ b) $x = 9.5$ c) $r = \frac{4}{3}$ d) $v = -\frac{20}{7}$
12. \$34.95
13. 58.6 Earth days
14. a) $e = -6.7$ b) $r = 1.5$ c) $h = -21.1$ d) $q = \frac{7}{8}$
15. $m = -1.97$
16. $k = 3.225$ m
17. \$21.75
18. a) $n = 15$ b) $f = 1.75$ c) $g = -1.6$ d) $h = -60$
- e) $v = -\frac{11}{6}$
19. a) $a = 1.9$ b) $P = 25.2$ units
20. $w = 7.5$ cm