

**Mid-Course Test**

Form G

## Chapters 1–6

1. At sea level, the atmosphere exerts a pressure of 450 pounds on a surface with an area of 30 square inches. How much pressure per square inch does the atmosphere exert on surfaces at sea level? Include correct units in your answer.

2. Micaela measures her floor and records its width as 3.2 m and its length as 3.8 m. She rounds her measurements to the nearest meter and estimates that the floor space in her room is 12 square meters. What is the percent error of her estimate? Round your answer to the nearest tenth of a percent.

3. The formula for simple interest is  $I = prt$ , where  $I$  is interest earned,  $p$  is the principal invested,  $r$  is the interest rate, and  $t$  is time. Rearrange the quantities in this formula to give a new formula for the time  $t$ .

4. Solve the proportion.  $\frac{16}{9} = \frac{42}{x}$

5. The ratio of the number of right-handed students in school to the number of left-handed students in school is 9 : 1. There are 360 right-handed students in school. How many left-handed students are in school?

6. The formula for the volume of a cylinder is  $V = \pi r^2 h$ , where  $V$  is the volume,  $r$  is the radius of the circular base, and  $h$  is the height of the cylinder. If the radius is doubled, what will be the change in the volume of the cylinder?

7.  $f(x) = x^2 + 4x + 3$ . Find  $f(-5)$ .

**Solve each equation or inequality.**

8.  $3x + 9 = 24$

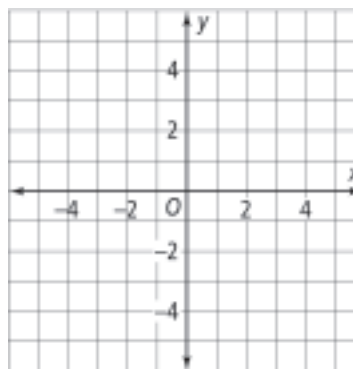
9.  $8(x - 5) = -40$

10.  $-\frac{5}{6}y - 5 \geq 30$

11.  $-5 < 2d - 1 < 3$

12. Graph the real number solutions of  $2x + 4 \geq 16$ .

13. Graph the solutions of the inequality  $y > 2x + 3$ .



14. Write a function rule to describe the amount of change  $c(x)$  from a \$20 bill if you buy  $x$  pounds of grapes at \$1.29 per pound.

15. What is the range of  $y = x^2 - 5$  when the domain is  $\{-1, 0, 3.5\}$ ?

**Mid-Course Test** (continued)

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16. Find the sixth term in the sequence  
8, -2, -12, -22, . . .

17. Is (6, 3) a solution of  $2y - 9 \geq 4(x - 8)$ ?  
Explain why or why not.

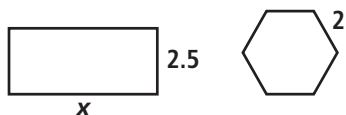
18. Tell whether the following system has  
*one solution*, *infinitely many solutions*, or  
*no solution*.

$$\frac{x}{4} + \frac{y}{9} = 27$$

$$\frac{3x}{2} + \frac{2y}{3} = 19$$

**Write an equation or inequality to model each situation. Then solve.**

19. Mike withdrew \$32 from his bank account at an ATM. The transaction slip said his balance was \$289.14. What was his previous balance?
20. After you put 8 gallons of gas into an empty tank, the gas gauge reads  $\frac{2}{3}$  full. What is the capacity of the tank?
21. The perimeter for the rectangle and regular hexagon below are equal. Find  $x$ .



22. Fair tickets for 2 adults and 3 children cost \$34. An adult ticket costs \$2 more than a child ticket. What is the price of an adult ticket?

23. What is the greatest number of \$0.25 gumballs you can buy with \$2.20?

**Solve.**

24. 12 is what percent of 37.5?
25. 82% of 350 is what number?
26. A package delivery company handles 14 million packages per year in the Midwest. If this represents only 35% of their total business how many total packages do they handle in a year?

**Find the slope of the line passing through each pair of points.**

27. (-3, 4) and (6, 1)
28. (4, 16) and (0, 8)

**Write the equation of the line for each of the following conditions.**

29. through two points (2, 4) and (4, 7)
30. a horizontal line passing through the point (6, 18)
31. parallel to the line  $y = \frac{4}{9}x + 5$  through point (-2, 1)
32. Write the equation of direct variation that includes the point (-6, 2).

# Mid-Course Test (continued)

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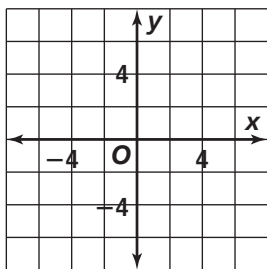
## Chapters 1–6

33. Which function has the greater value when  $x = 4$ :  $y = x^3$  or the function represented by the table of values?

$x$	0	1	2	3
$y$	1	3	9	27

34. A line of best fit for a data set had the correlation coefficient  $r = 0.92659$ . Is this an example of positive correlation, negative correlation, or no correlation? Is this an example of a strong or weak correlation?

35. Graph the function  $y = |x| - 4$  by translating  $y = |x|$ .



36. Write an equation representing  $y = |x|$ , translated 6 units to the left.

37. Using the formula  $C = \frac{5}{9}(F - 32)$ , find the Fahrenheit temperature when the Celsius temperature is  $45^\circ$ .

38. Mr. Smith expects to pay \$19,400 in taxes. This is no more than  $\frac{1}{3}$  of his salary. What is his least possible earned income?

39. Which property is illustrated?  
 $6(12 - 3) = 6(12) - 6(3)$

40. Which employee has the highest hourly rate? Keep in mind that they do not get paid for lunch.

	Total Hours Worked	Lunch Hour	Pay Before Taxes
Scott	42.5	3.5	\$645.60
Mike	38.75	2.75	\$629.70
Todd	40.5	3.25	\$641.25
Jason	41.25	4.0	\$647.50

41. Solve the following system.

$$3x + 2y = 18$$

$$y = -\frac{2}{3}x + 12$$

42. A person's cumulative fundraising total is shown after each week. Write a recursive rule to represent the totals as an arithmetic sequence.

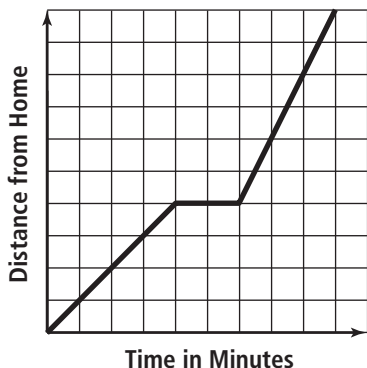
1	2	3	4
\$50	\$80	\$100	\$140

# Mid-Course Test (continued)

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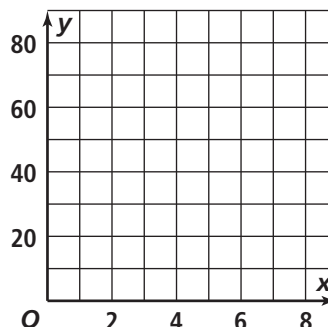
## Chapters 1–6

- 43.** Luis leaves home riding his bike. The graph below relates two quantities—distance from home and time in minutes—of Luis’s trip. Use the graph to write your own summary of Luis’s trip. Be sure to include descriptions of Luis’s relative speed during different intervals of the trip, as modeled by the graph.



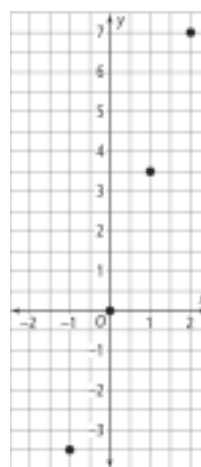
- 44.** What is the solution of  $|-2x + 5| < 60$ ?
- 45.** Joe’s salary in 2001 was \$32,600. In 2002 he received a raise of \$1560. Assume he receives the same raise every year.
- Write a function rule for finding Joe’s salary after 2001.
  - Find Joe’s salary in 2007.
- 46.** A boy 4 ft tall casts a shadow 6 ft long. He stands next to a monument that has a 52 ft long shadow. How tall is the monument?
- 47.** You start a pet-sitting service. You spend \$35 on advertising. You plan to charge \$5 a day to watch each pet.
- Write an equation to relate your daily income  $y$  to the number of pets  $x$  you watch.

- b.** Graph the equation. What are the  $x$ - and  $y$ -intercepts?



- c.** How many days do you need to watch a pet to pay for advertising?

- 48.** Write a function rule for the data in the scatter plot.



- 49.** Suppose you receive a digital file of an image that is 25% larger than the original image. By what percent decrease would you need to reduce the image to return it to its original size?
- 50.** Describe how you can tell whether two lines are parallel, perpendicular, or neither without graphing them.