

Diagnostic Test

For use before Topic 1

Factors and Multiples (Topic 1, Lesson 1, pages 1–5)

List the factors of both numbers. Name the greatest common factor and the least common multiple of the two numbers.

1. 21, 49 2. 99, 33 3. 48, 52

Write the prime factorization of the number. If the number is prime, write *prime*.

4. 84 5. 117 6. 41

Comparing and Ordering Numbers (Topic 1, Lesson 2, pages 6–10)

Compare the two numbers. Write your answer using $<$, $>$, or $=$.

7. $77 \bigcirc 71$ 8. $111.10 \bigcirc 111.08$
9. $2\frac{4}{5} \bigcirc 1\frac{9}{5}$

Write the numbers in order from least to greatest.

10. 3368, 3168, 3367, 3370 11. 16.01, 16.005, 16.42, 16.0009
12. $\frac{1}{2}, \frac{3}{7}, \frac{2}{3}, \frac{8}{9}$ 13. $3\frac{1}{2}, 4\frac{1}{3}, 4\frac{1}{2}, 3\frac{3}{4}$

Whole Number and Decimal Operations
(Topic 1, Lesson 3, pages 11–16)

Find the sum or difference.

14. $169 + 215$ 15. $368.5 - 79.83$
16. $72.62 + 84.9 - 56.48$

Find the product or quotient.

17. 8.2×4.3 18. $5.35 \div 0.5$ 19. $96 \div 6.25$

Fraction Operations (Topic 1, Lesson 4, pages 17–22)

Find the sum or difference.

20. $\frac{1}{3} + \frac{7}{9}$ 21. $\frac{3}{10} - \frac{1}{5}$ 22. $8\frac{5}{8} - 3\frac{23}{24}$

1. **Factors:** _____

GCF: _____

LCM: _____

2. **Factors:** _____

GCF: _____

LCM: _____

3. **Factors:** _____

GCF: _____

LCM: _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____

16. _____

17. _____

18. _____

19. _____

20. _____

21. _____

22. _____

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Find the reciprocal of the number.

23. $\frac{3}{5}$

24. 16

25. $6\frac{3}{7}$

Find the product or quotient.

26. $\frac{2}{4} \times 18$

27. $\frac{1}{6} \div \frac{9}{14}$

28. $3\frac{5}{8} \div \frac{11}{12}$

Mean, Median, Mode, and Range (Topic 2, Lesson 1, pages 24–28)

Find the mean, the median, the mode(s), and the range for each set of data. If necessary, round your answers to the nearest hundredth.

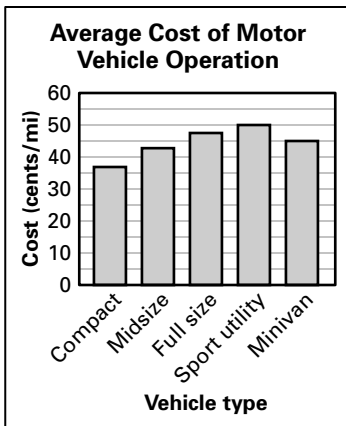
29. Cost of CDs: \$11.99, \$8.95, \$12.99, \$14.95, \$12.99

30. *All-Time Leading Touchdown Scorers*

Jerry Rice	165
Marcus Allen	134
Jim Brown	126
Walter Payton	125
John Riggins	116

Bar Graphs and Line Graphs (Topic 2, Lesson 2, pages 29–34)

For Exercises 31 and 32, use the bar graph.



31. Estimate the average cost of operating a sport utility vehicle.

32. Which types of vehicles cost 45 cents/mile or less?

33. Draw a line graph to display the data in the table.

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
45°	51°	56°	61°	67°	74°	80°	80°	75°	64°	53°	46°

23. _____

24. _____

25. _____

26. _____

27. _____

28. _____

29. **Mean:** _____

Median: _____

Mode: _____

Range: _____

30. **Mean:** _____

Median: _____

Mode: _____

Range: _____

31. _____

32. _____

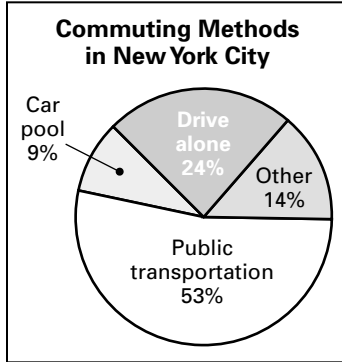
33. _____

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Circle Graphs (Topic 2, Lesson 3, pages 35–39)

For Exercises 34 and 35, use the circle graph.



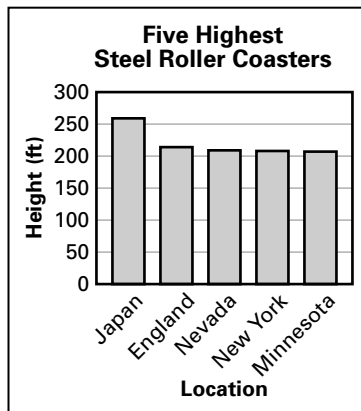
34. _____
35. _____
36. _____
37. _____

34. If the population of the New York metropolitan area is about 20 million, how many people take public transportation?
35. If the population of the New York metropolitan area is about 20 million, how many more people drive alone than carpool?

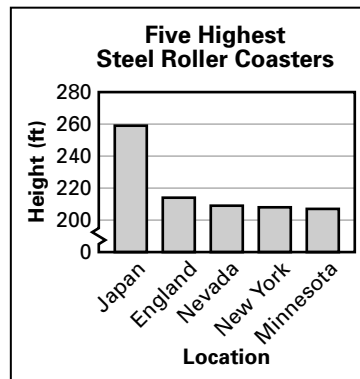
Interpreting Graphs (Topic 2, Lesson 4, pages 40–44)

For Exercises 36 and 37, use the two graphs below that illustrate the same data.

Graph A



Graph B



36. Which graph suggests that the Roller Coaster in Japan is about five times as high as the Roller Coaster in England? Is this impression correct?
37. Why do these graphs give such a different visual impression?

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Rates and Ratios (Topic 3, Lesson 1, pages 46–50)**Write each ratio in lowest terms.**

38. 5:10

39. 18:15

Find the unit rate.

40. 165 miles in 3 hours

41. \$18,000 in 12 months

Equal Rates (Topic 3, Lesson 2, pages 51–54)

42. John worked for 6 hours and got paid \$31.50. Rhonda worked for 9 hours and got paid \$46.80. Are both John and Rhonda paid the same rate per hour?

Find the missing number.

43. $\frac{9}{12} = \frac{?}{4}$

44. $\frac{5}{12} = \frac{15}{?}$

Fractions, Decimals, and Percents (Topic 3, Lesson 3, pages 55–60)**Write each fraction or mixed number as a decimal.**

45. $\frac{9}{10}$

46. $1\frac{5}{8}$

47. $2\frac{2}{3}$

Write each fraction or mixed number in lowest terms.

48. $\frac{12}{36}$

49. $6\frac{8}{24}$

50. $\frac{28}{49}$

Write each percent as a decimal and as a fraction or mixed number in lowest terms.

51. $66.\overline{6}\%$

52. 0.2%

53. 150%

Finding a Percent of a Number (Topic 3, Lesson 4, pages 61–64)

54. What number is 40% of 25?
55. 10% of 300 is what number?
56. What number is 50% of 96?
57. 22% of 45 is what number?

38. _____

39. _____

40. _____

41. _____

42. _____

43. _____

44. _____

45. _____

46. _____

47. _____

48. _____

49. _____

50. _____

51. _____

52. _____

53. _____

54. _____

55. _____

56. _____

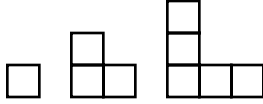
57. _____

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Patterns in Geometry (Topic 4, Lesson 1, pages 66–69)

For Exercises 58–59, use the figures to find a pattern.



58. Draw the next two figures in the pattern.
59. Use the table to predict how many squares will be in the seventh figure in the pattern.

<i>Figure Number</i>	1	2	3
<i>Number of squares</i>	1	3	5

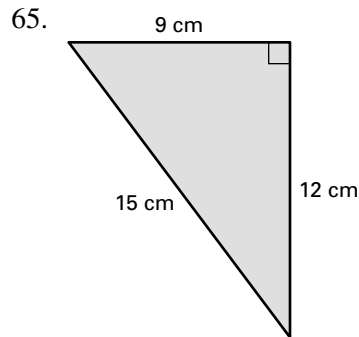
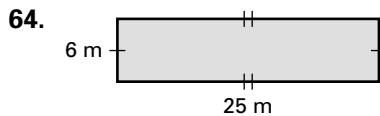
Polygons (Topic 4, Lesson 2, pages 70–74)

Complete the statement.

60. A _____ is where the sides of a polygon meet.
61. A polygon with four sides is a _____.
62. A rectangle that has four congruent sides is a _____.
63. Sketch a triangle that is not regular.

Perimeters and Areas of Polygons (Topic 4, Lesson 3, pages 75–79)

Find the perimeter and area of each polygon.



Circles and Areas (Topic 4, Lesson 4, pages 80–84)

66. Find the circumference and area of a circle with diameter of 36 ft.
Use 3.14 for π .

58. _____

59. _____

60. _____

61. _____

62. _____

63. _____

64. **Perimeter:** _____

Area: _____

65. **Perimeter:** _____

Area: _____

66. **Circumference:** _____

Area: _____

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Integer Concepts (Topic 5, Lesson 1, pages 87–91)**Find the opposite and the absolute value of the integer.**

67. 16

68. -8

Write the set of integers in order from least to greatest.

69. 1, 0, -3

70. 6, -2 , 5, -7

Adding Integers (Topic 5, Lesson 2, pages 92–95)**Find each sum.**

71. $-12 + 15$

72. $-25 + (-41)$

73. $-24 + 21$

Subtracting Integers (Topic 5, Lesson 3, pages 96–100)**Find each difference.**

74. $-15 - 30$

75. $-28 - (-20)$

76. $24 - 40$

Multiplying and Dividing Integers (Topic 5, Lesson 4, pages 101–105)**Find each product or quotient.**

77. $8(-5)$

78. $-48 \div (-6)$

79. $(-3)(7)(-2)$

67. **Opposite:** _____**Absolute Value:** _____68. **Opposite:** _____**Absolute Value:** _____

69. _____

70. _____

71. _____

72. _____

73. _____

74. _____

75. _____

76. _____

77. _____

78. _____

79. _____