Name _____ Date _____ Class _____

GRADE 8

Diagnostic Assessment

Number and Quantitative Reasoning

1. Identify the place value of the underlined digit 4,326,<u>5</u>47,987.

A millions

B hundred thousands

C ten thousands

D hundreds

2. Which is 12.34 million written in standard form?

F 120,340,000

G 12,340,000

H 1,234,000

J 123,400

3. Round 217,429 to the nearest ten thousand.

A 220,000 **C** 216,000

B 217,000 **D** 210,000

4. Which comparison statement is true?

F 435,890 > 453,765

G 889,403 < 881,903

H 6,543,784 < 6,435,970

J 7,502,512 > 7,501,496

5. Which set of numbers is ordered from least to greatest?

A 6327, 5217, 5117, 742

B 6327, 5117, 5217, 742

C 742, 5117, 5217, 6327

D 742, 5217, 5117, 6327

6. Identify the number sets that contain the number 120.

F counting, whole, even

G counting, whole, even, odd

H counting, whole, factor of 7

J counting, odd

7. Which list contains the first three multiples of the number 14?

A 14, 15, 16

B 14, 28, 41

C 14, 28, 42

D 1, 14, 28

8. Which list contains all the factors of 42?

F 1, 6, 7, 42

G 1, 2, 6, 7, 21, 42

H 1, 2, 3, 6, 7, 14, 21, 42

J 1, 42

9. Which number is prime?

A 52 **C** 93

B 71 **D** 111

10. Which number is composite?

F 35 **H** 23

G 47 **J** 89

11. Evaluate 50^2.

A 52 **C** 2500

B 100 **D** 25,000

12. Find the value of 9^5.

F 45 **H** 6561

G 95 **J** 59,049

13. Find the next three numbers in the pattern.
50,000, 10,000, 2000, 400, …

A 200, 100, 50

B 80, 16, 3.2

C 50, 25, 15

D 100, 50, 25

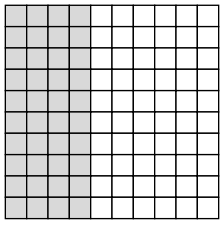
Name _____ Date _____ Class _____

GRADE 8

Diagnostic Assessment

Number and Quantitative Reasoning, continued

14. What number is represented by the shaded portion of the grid?



F $\frac{2}{5}$ **H** $\frac{40}{50}$

G 0.04 **J** 1.04

15. Write 4352.67 in word form.

A four, three, five, two, six, seven

B four thousand three hundred two and sixty-seven hundredths

C four thousand, three hundred and sixty-seven tenths

D four thousand, three hundred fifty-two and sixty-seven hundredths

16. Round 656.3463 to the nearest thousandth.

F 1000 **H** 656.346

G 656.3 **J** 656.4

17. Which set of numbers is ordered from least to greatest?

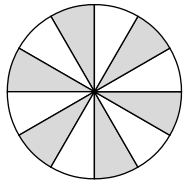
A 2.47, 0.7, 0.83, 0.89

B 0.7, 0.89, 0.83, 2.47

C 0.7, 0.83, 0.89, 2.47

D 2.47, 0.89, 0.83, 0.7

18. Write the fraction for the shaded part of the circle.



F $\frac{5}{11}$ **H** $\frac{6}{13}$

G $\frac{1}{2}$ **J** $\frac{2}{3}$

19. Simplify $\frac{32}{24}$.

A $\frac{6}{7}$ **C** $\frac{3}{4}$

B $\frac{2}{3}$ **D** $1\frac{1}{3}$

20. Round $\frac{14}{15}$ to the nearest benchmark fraction.

F 0 **H** 1

G $\frac{1}{2}$ **J** cannot round

21. Which mixed number is equivalent to $\frac{23}{4}$?

A $4\frac{1}{8}$ **C** $5\frac{3}{4}$

B $5\frac{1}{2}$ **D** $6\frac{1}{3}$

22. Write $6\frac{2}{7}$ as an improper fraction.

F $\frac{62}{7}$ **H** $\frac{44}{7}$

G $\frac{42}{7}$ **J** $\frac{15}{7}$

Name _____ Date _____ Class _____

GRADE 8

Diagnostic Assessment

Number and Quantitative Reasoning, continued

23. Find a common denominator for $\frac{7}{24} + \frac{1}{18}$.

A 24 **C** 48

B 36 **D** 72

24. Which number should replace the question mark to make the statement true?

$\frac{7}{8} = \frac{?}{48}$.

F 6 **H** 42

G 14 **J** 84

25. Compare. $4\frac{5}{6} \square 4\frac{7}{8}$

A $>$ **C** $=$

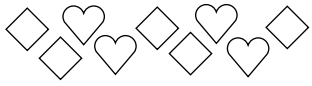
B $<$

26. Which decimal is equivalent to $\frac{11}{20}$?

F 0.11 **H** 0.71

G 0.55 **J** 1.82

27. What is the ratio of hearts to diamonds?



A 5:4 **C** 5:9

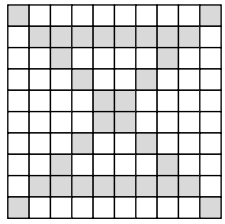
B 4:5 **D** 4:9

28. Simplify: 25 ponies to 15 saddles.

F 5:3 **H** 1:15

G 3:5 **J** 2:1

29. Determine the percent of shaded squares in the grid below.



A 25% **C** 50%

B 32% **D** 64%

30. Which percent is equivalent to 0.785?

F 7.85% **H** 785%

G 78.5% **J** 0.00785%

31. Write $\frac{18}{25}$ as a percent.

A 18% **C** 72%

B 64% **D** 138.89%

32. Which comparison statement is true?

F $\frac{3}{4} > 72.5\%$

G $0.53 < \frac{1}{2}$

H $62\% = 0.266$

J $0.875 > 88\%$

33. Which integer represents a $52 loss?

A −$52

B $52

C $0

D −$520

Name _____ Date _____ Class _____

GRADE 8

Diagnostic Assessment

Operations

34. Find the quotient. $5\overline{)593}$

F 106 **H** 118

G 108 r 7 **J** 118 r 3

35. Find the product.
$8 \times 8 \times 8 \times 8 \times 8$

A 40 **C** 4096

B 3218 **D** 32,768

36. Multiply. 12×11

F 23 **H** 132

G 24 **J** 231

37. $\frac{64}{10{,}000} = \frac{?}{\quad}$

A 0.64 **C** 0.0064

B 0.064 **D** 0.00064

38. Divide. $999 \div 9$

F 11 **H** 111

G 100 **J** 121

39. Divide $18\overline{)585}$. Write any remainder as a decimal.

A 16 **C** 32

B 26 **D** 32.5

40. Multiply. $\begin{array}{r} 12.3 \\ \times 0.06 \\ \hline \end{array}$

F 618 **H** 7.38

G 738 **J** 0.738

41. Multiply. 1000×3.4

A 34 **C** 3400

B 340 **D** 34,000

42. Add. $\begin{array}{r} \frac{6}{18} \\ + \frac{1}{6} \\ \hline \end{array}$

F $\frac{3}{2}$ **H** $\frac{7}{24}$

G $\frac{9}{24}$ **J** $\frac{1}{2}$

43. $\frac{9}{11} - \frac{4}{11}$

A $\frac{5}{11}$ **C** $\frac{13}{11}$

B $\frac{1}{2}$ **D** 0

44. Multiply $\frac{3}{4} \times \frac{7}{8}$. Write the answer in simplest form.

F $\frac{5}{16}$ **H** $\frac{1}{2}$

G $\frac{7}{8}$ **J** $\frac{21}{32}$

45. Multiply. $\frac{3}{5} \times 105$

A 71 **C** 175

B 63 **D** 225

46. What is 15% of 300?

F 20 **H** 2000

G 45 **J** 4500

47. Subtract. $(-15) - (-12)$

A -3 **C** -27

B 3 **D** 27

Name _____ Date _____ Class _____

GRADE 8

Diagnostic Assessment

Algebra

48. Identify the property shown.
$15 \times (8 \times 2) = (15 \times 8) \times 2$

F Commutative Property of Multiplication

G Associative Property of Multiplication

H Multiplication Property of One

J Multiplication Property of Zero

49. Which is the correct use of the Distributive Property to find the product 7×19?

A $(7 \times 10) + (7 \times 9)$

B 7×19

C $(7 \times 10) \times (7 \times 9)$

D $(7 + 10) \times (7 + 9)$

50. Evaluate. $89 - (15 + 34)$

F 108 **H** 40

G 49 **J** 29

51. $\frac{(35 - 3)}{4} + 6^2$

A 20 **C** 35

B 41 **D** 44

52. Simplify. $\frac{1}{2}(6 + 7)(4)$

F 8.5 **H** 31

G 26 **J** 40

53. Which expression represents 32 less than w?

A $w - 32$

B $32w$

C $32 - w$

D $32 \div w$

54. Evaluate the expression $\frac{3}{4}xy + 8$ for $x = 4$ and $y = 3$.

F 17 **H** 72

G 44 **J** 122.33

55. Simplify. $10y - 5x + 7 - 3x + 9$

A 10y − 8x + 16

B 10y − 2x + 16

C 10y + 2x + 16

D 10y − 8x + 2

56. Which algebraic equation matches the expression "a number divided by 8 is $\frac{3}{5}$"?

F $\frac{8}{n} = \frac{3}{5}$ **H** $8n = \frac{3}{5}$

G $\frac{n}{8} = \frac{3}{5}$ **J** $8 + n = \frac{3}{5}$

57. Use inverse operations to solve the equation $n + 124 = 436$.

A $n = 3.5$ **C** $n = 560$

B $n = 312$ **D** $n = 54{,}064$

58. Solve. $56 - n = 88$

F $n = -32$ **H** $n = 1.57$

G $n = 32$ **J** $n = -34$

59. Solve. $0.06t = 4.8$

A $t = 0.288$ **C** $t = 16$

B $t = 2.88$ **D** $t = 80$

60. Solve. $\frac{w}{6} + 15 = 52$

F $w = 6.17$ **H** $w = 222$

G $w = 184$ **J** $w = 402$

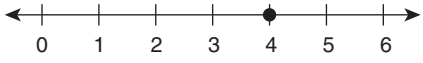
Name _____ Date _____ Class _____

GRADE 8

Diagnostic Assessment

Algebra, continued

61. Identify the point graphed on the number line.

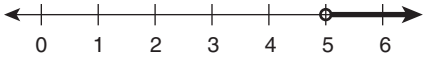


A −4 **C** 4

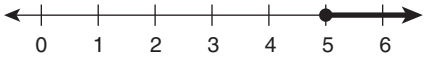
B 3 **D** 5

62. Which graph is the solution to the inequality $4x < 20$?

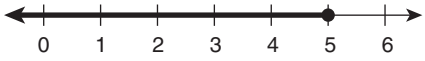
F



G



H



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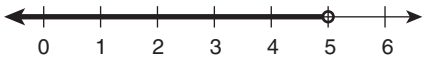
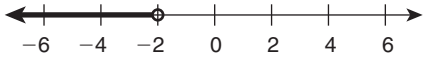


63. Which inequality represents the graph?

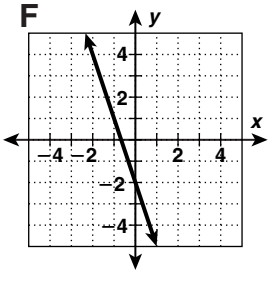


A $x > -2$ **C** $x < -2$

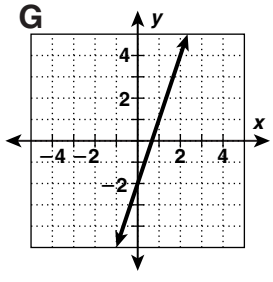
B $x \geq -2$ **D** $x \leq -2$

64. Which graph corresponds to the equation $y = 3x - 2$?

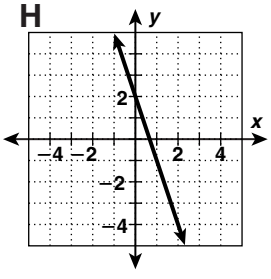
F



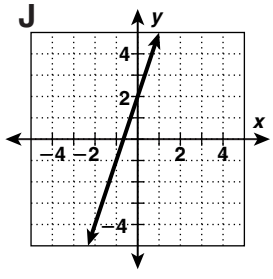
G



H



J



65. Solve. $\frac{8}{w} = \frac{18}{72}$

A $w = 2$ **C** $w = 4$

B $w = 32$ **D** $w = 64$

66. 85 cm = _____ mm

F 850 **H** 85,000

G 8500 **J** 8.5

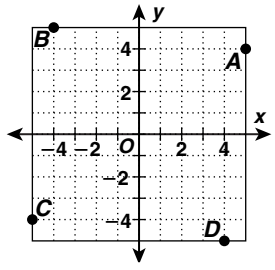
67. Complete the function table.

Input	Algebraic Expression	Output
n	$n - 3.2$	
8.4		5.2
11.7		8.5
15.2		??

A 12 **C** 14.1

B 13.2 **D** 18.4

68. What is the ordered pair for point C?



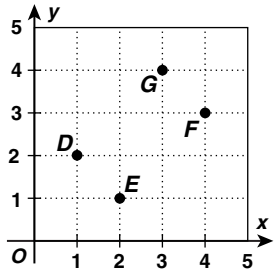
F (5, 4)

G (−4, 5)

H (−5, −4)

J (4, −5)

69. What is the ordered pair for point E?



A (1, 2)

B (2, 1)

C (4, 3)

D (3, 4)

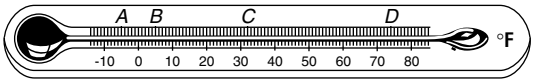
Name _____ Date _____ Class _____

GRADE 8

Diagnostic Assessment

Measuring

70. What temperature is shown by the letter *A*?



F 32°
G 5°
H 74°
J −5°

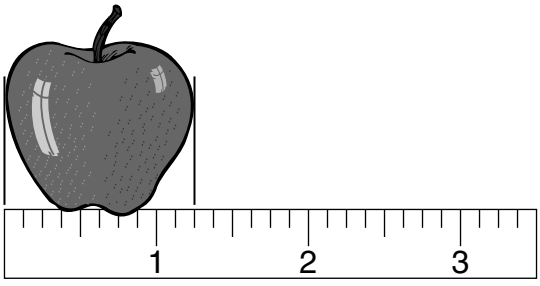
71. Change to the given unit.
34 c = _____ pt

A 17
B 36
C 48
D 68

72. Change to the given unit.
64,000 mL = _____ L

F 6.4
G 64
H 640
J 6400

73. Which is the length of the apple?



A 1 inch
B $1\frac{1}{4}$ inches
C $1\frac{1}{8}$ inches
D $1\frac{1}{2}$ inches

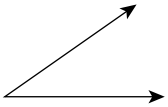
Name _____ Date _____ Class _____

GRADE 8

Diagnostic Assessment

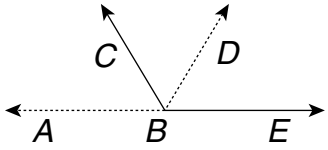
Geometry

74. Classify the angle shown.



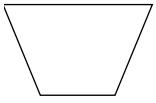
F right
G acute
H obtuse
J straight

75. Name the angle formed by the dashed rays.



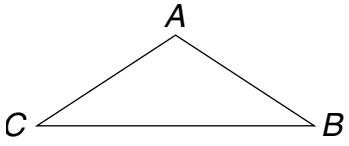
A $\angle ABC$
B $\angle ABD$
C $\angle DBE$
D $\angle EBC$

76. Identify the figure.



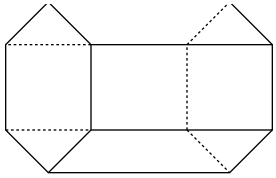
F trapezoid
G rectangle
H rhombus
J square

77. Which is the name of the obtuse angle in the polygon?



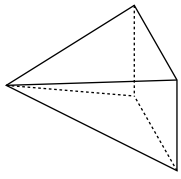
A $\angle ABC$
B $\angle CAB$
C $\angle BCA$
D $\angle CBA$

78. Identify the solid figure.



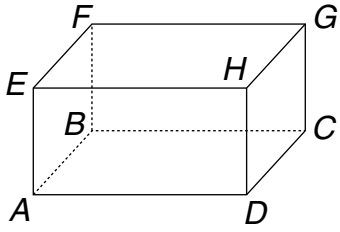
F hexagonal prism
G hexagonal pyramid
H cone
J pentagonal prism

79. Identify the number of faces, edges and vertices.



A faces = 4, edges = 12, vertices = 8
B faces = 5, edges = 8, vertices = 5
C faces = 4, edges = 8, vertices = 5
D faces = 5, edges = 12, vertices = 8

80. Which sets of lines are parallel to $\overleftrightarrow{AB}$?



F $\overleftrightarrow{AD}$ and $\overleftrightarrow{BC}$
G $\overleftrightarrow{AD}$ and $\overleftrightarrow{CD}$
H $\overleftrightarrow{GH}$ and $\overleftrightarrow{BC}$
J $\overleftrightarrow{EF}$ and $\overleftrightarrow{CD}$

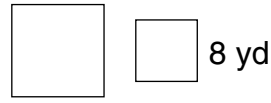
Name _____ Date _____ Class _____

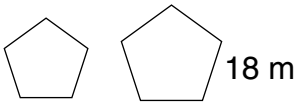
GRADE 8

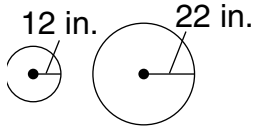
Diagnostic Assessment

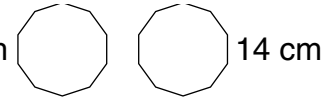
Geometry, continued

81. Identify the set of figures that are congruent.

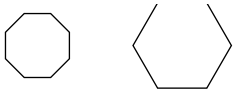
A 

B 

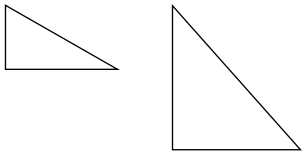
C 

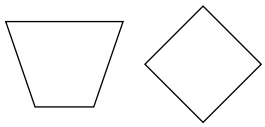
D 

82. Identify the pair of figures that appear to be similar.

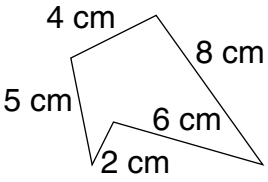
F 

G 

H 

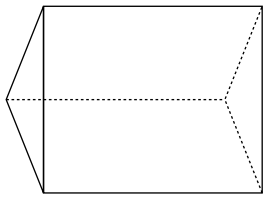
J 

83. Find the perimeter of the figure.



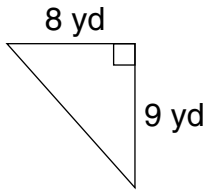
A 25 cm
B 21 cm
C 20 cm
D 19 cm

84. Identify the figure shown.



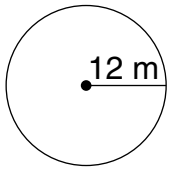
F triangular prism
G triangular pyramid
H rectangular prism
J rectangular pyramid

85. Find the area of the figure.



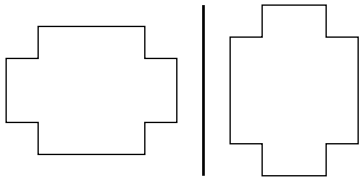
A 72 yd^2
B 36 yd^2
C 22 yd^2
D 17 yd^2

86. Find the area of the figure. Use 3.14 for π.



F 452.16 m^2
G 113.04 m^2
H 75.36 m^2
J 37.68 m^2

87. Identify the transformation.



A translation
B rotation
C reflection
D transdermal

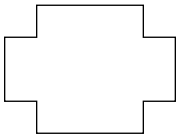
Name _____ Date _____ Class _____

GRADE 8

Diagnostic Assessment

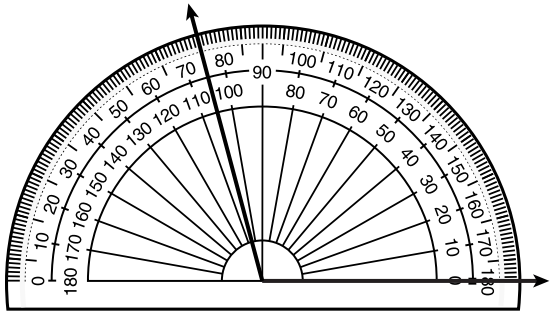
Geometry, continued

88. Identify the number of lines of symmetry in the figure.



F 0
G 1
H 2
J 3

89. What is the measure of the angle?



A 75°
B 85°
C 105°
D 110°

Name _____ Date _____ Class _____

GRADE 8

Diagnostic Assessment

Statistics and Data Analysis

90. Use the data in the table to answer the question.

Employee	Hours	Pay Rate	Total
J. Burns	45	$6.50	$292.50
M. Gwin	45	$9.25	$416.25
N. Rice	35	$8.75	$306.25
C. Walter	44	$9.15	$402.60

Which employee had the greatest total earnings?

F J. Burns **H** N. Rice

G M. Gwin **J** C. Walter

91. What is the range of the data set?
106, 115, 79, 94, 78, 103, 90

A 95 **C** 37

B 78 **D** 16

92. What is the median of the data set?
5.8, 4.6, 5.4, 4.6, 4.8, 5.0

F 5.4 **H** 4.9

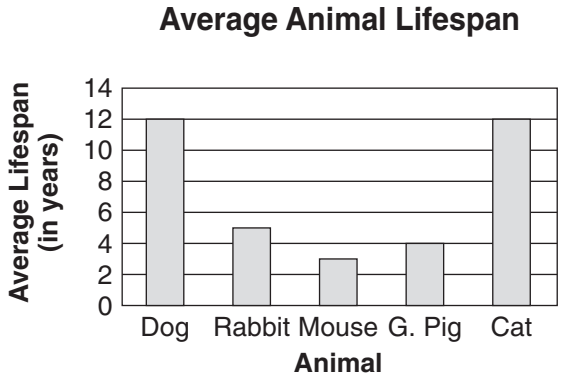
G 5.0 **J** 4.8

93. What is the mean of the data set?
103, 88, 107, 94, 108

A 108 **C** 100

B 107 **D** 93

94. Use the bar graph to answer the question.

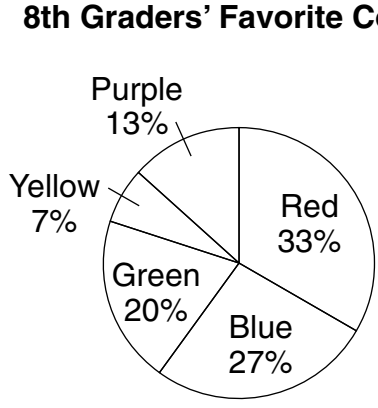


What is the average lifespan of a rabbit?

F 3 years **H** 5 years

G 4 years **J** 12 years

95. Use the circle graph to answer the question.



What is the favorite color of 8th graders?

A blue **C** red

B green **D** purple

Name _____ Date _____ Class _____

GRADE 8

Diagnostic Assessment

Statistics and Data Analysis, continued

96. Use the stem-and-leaf plot to answer the question.

Test Scores

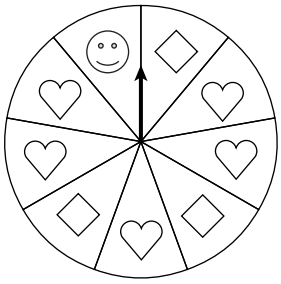
Stem	Leaves
5	0 1 3 5
6	1 1 2 2
7	0 4 5 8 9 9
8	1 3 5 7 7

What is the median of the test scores?

F 75 **H** 70.16

G 74 **J** 37

97. What is the likelihood of spinning a smiley face?

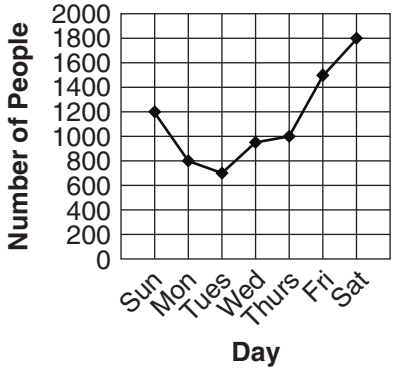


A certain **C** likely

B impossible **D** unlikely

98. Use the graph to answer the question.

Attendance at Water Park



How much greater was the attendance on Saturday than on Monday?

F 800 **H** 1800

G 1000 **J** 2600