



THE MASTER'S SCHOOL

Algebra 2 *Mrs. Jones*

Do not begin this packet until mid-August. One of its purposes is to give you review over the concepts you have forgotten during the summer, so that you are better prepared to begin Algebra 2.

You should expect that it will take you two-three hours.

This packet will be due the 2nd day of class for the new school year.

We will go over the packets the second day of school. You are not being graded on the rightness of your answers, but rather the completeness of your work. The purpose is so that I will know what skills you need to learn at the beginning of Algebra 2.

Supply List

Binder or spiral notebook for taking notes daily

Graphing calculator- must be TI-83 or TI-84

Pencils

Any questions - contact Mrs. Jones at cjones@masterschool.org.

Diagnostic Test*Number and Quantitative Reasoning***Select the best answer.**

1. Which list contains the first four multiples of 19?

A 19, 190, 1900, 19000

B 19, 28, 37, 46

C 19, 20, 21, 22

D 19, 38, 57, 76

2. Which pair of numbers has 13 as its least common multiple?

F 13, 39

G 5, 8

H 26, 52

J 1, 13

3. The number 12 is a factor of which of the following numbers?

A 6

C 60

B 22

D 112

4. What is the greatest common factor of $10x^4$ and $30x$?

F $5x^4$

H $5x$

G $10x$

J $3x^4$

5. Which number is not composite?

A 35

C 41

B 49

D 123

6. Find the value of $\sqrt{64}$.

F 6

H 32

G 8

J 128

7. Which statement is true?

A $9 \cdot 9 \cdot 9 = 3(9)$

B $6 \cdot 6 \cdot 6 = 3^6$

C $3 \cdot 3 \cdot 3 \cdot 3 = 3^3$

D $7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 = 7^5$

8. Evaluate 8^3 .

F 3

H 256

G 24

J 512

9. Round 15.073 to the nearest tenth.

A 15

B 15.1

C 15.07

D 15.7

10. Which fraction is written in simplest form?

F $\frac{169}{13}$

H $\frac{26}{5}$

G $\frac{52}{4}$

J $\frac{81}{9}$

11. Change $\frac{3}{8}$ to a decimal.

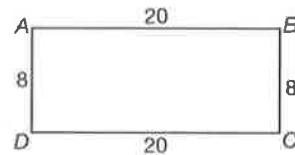
A 0.25

C 0.4

B 0.375

D 0.438

12. What is the ratio of AB to BC ?



F 5 : 3

H 2 : 5

G 5 : 2

J 3 : 5

13. Which of the following has a unit rate of 18 miles per hour?

A 36 miles in 3 hours

B 80 miles in 5 hours

C 90 miles in 6 hours

D 126 miles in 7 hours

14. Which decimal is equivalent to 33%?

F 0.3

G 0.33

H 3.3

J 33

Diagnostic Test

Number and Quantitative Reasoning

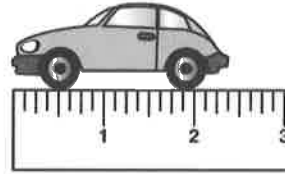
15. Write 0.0000000034 in scientific notation.
- A 34×10^{-9}
 - B 34×10^{10}
 - C 0.34×10^8
 - D 3.4×10^{-9}
16. Which statement is true?
- F $0.55 < 50\%$
 - G $4.37 > 4.34$
 - H $\frac{1}{5} = 50\%$
 - J $\frac{4}{7} < \frac{5}{9}$
17. Which number set(s) best classifies the number 2?
- A natural numbers
 - B rational numbers
 - C integers, natural numbers
 - D natural numbers, integers, rational numbers
18. Identify the point graphed on the number line.



- F -1.5
- G -2.8
- H -3.5
- J -4.8

Measurement

19. Which measurement is the most appropriate for the radius of a bowling ball?
- A 1 inches
 - B 5 inches
 - C 1 foot
 - D 2 feet
20. What is the length of the toy car?



- F $2\frac{1}{4}$ inches
 - G $2\frac{3}{8}$ inches
 - H $2\frac{3}{4}$ inches
 - J $2\frac{7}{8}$ inches
21. How many liters are in 58,000 milliliters?
- A 580 L
 - B 58 L
 - C 5.8 L
 - D 0.58 L

Diagnostic Test

Geometry

22. Which of the following represents a plane?

F •

H 

G 

J 

23. Classify the angle.



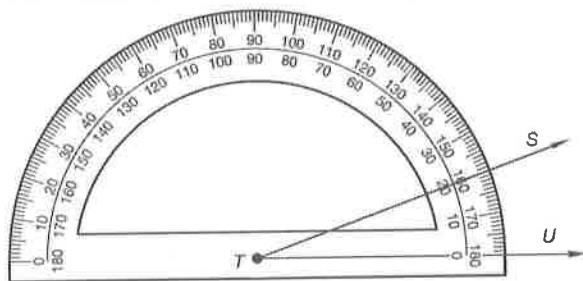
A straight

B obtuse

C right

D acute

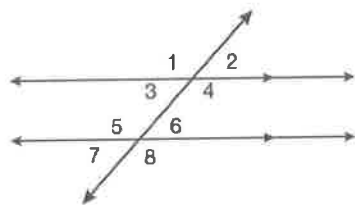
24. What is the measure of angle STU ?



F 15° H 70°

G 20° J 160°

25. Select the best description for angles 1 and 8.



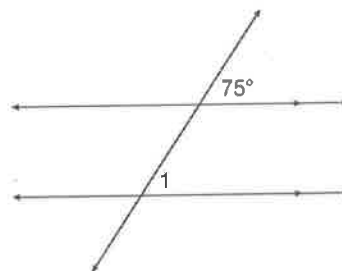
A vertical angles

B corresponding

C alternate exterior angles

D complementary

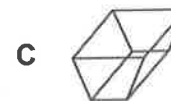
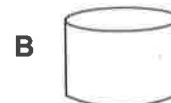
26. Find the measure of angle 1.



F 75° H 105°

G 90° J 180°

27. Which figure is a rectangular prism?



28. What is the sum of the interior angles in a trapezoid?

F 90°

G 180°

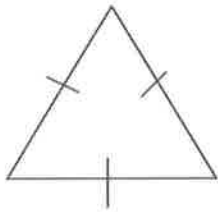
H 240°

J 360°

Diagnostic Test

Geometry

29. Classify the triangle.

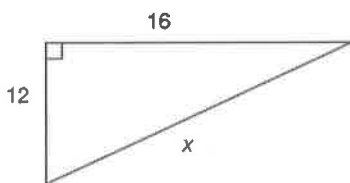


- A right
- B obtuse
- C equilateral
- D isosceles

30. Two angles of a triangle are 44° and 98° . What is the measure of the third angle?

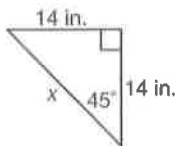
- F 218°
- G 180°
- H 142°
- J 38°

31. Given the right triangle below, what is x ?



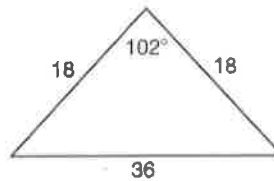
- A 4.5
- B 20
- C 96
- D 400

32. Find the value of x .

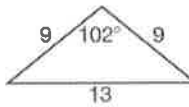


- F $\sqrt{2}$ in.
- G $14\sqrt{2}$ in.
- H 14 in.
- J $2\sqrt{14}$ in.

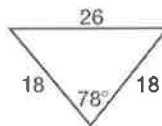
33. Which figure is similar to this triangle?



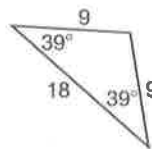
A



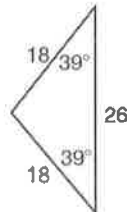
B



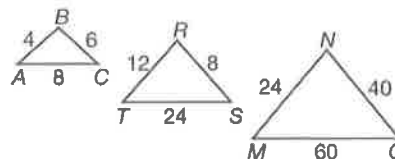
C



D



34. Which similarity statement is true?



- F $\triangle ABC \sim \triangle MNO$
- G $\triangle ABC \sim \triangle TRS$
- H $\triangle TRS \sim \triangle MNO$
- J $\triangle TRS \sim \triangle ONM$

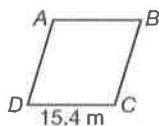
Diagnostic Test

Geometry

35. Triangle EFG and triangle TUV are right triangles. If $\triangle EFG$ is similar to $\triangle TUV$, and $m\angle GEF = 46^\circ$, which of the following angles also has a measure of 46° ?

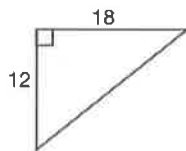
- A $\angle TVU$
- B $\angle TUV$
- C $\angle UTV$
- D $\angle VUT$

36. Find the perimeter of rhombus $ABCD$.



- F 21.77 meters
- G 30.8 meters
- H 61.6 meters
- J 237.16 meters

37. What is the area of a triangle with a height of 18 meters and a base of 12 meters?

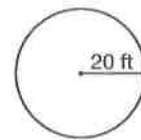


- A 108 square meters
- B 216 square meters
- C 432 square meters
- D 444 square meters

38. A rectangle has vertices at $A(0, 2)$, $B(0, 6)$, $C(7, 6)$, and $D(7, 2)$. What is the area of rectangle $ABCD$?

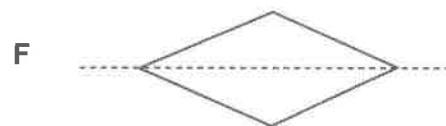
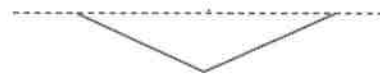
- F 11 square units
- G 22 square units
- H 28 square units
- J 65 square units

39. Find the circumference.



- A 100π feet
- B 40π feet
- C 20π feet
- D 10π feet

40. Which drawing, together with the figure given below, forms a new figure with the given line of symmetry?

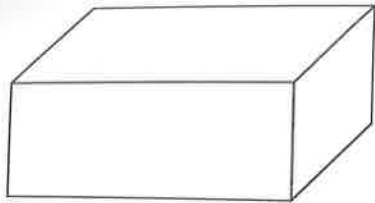


Diagnostic Test

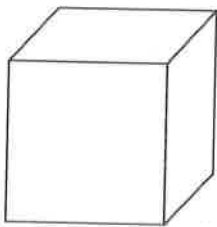
Geometry

Operations

41. Determine the surface area of a rectangular prism with height 3 in., width 8 in., and length 10 in.



- A 21 in^2
B 134 in^2
C 240 in^2
D 268 in^2
42. Determine the volume of a cube with side length 14 ft.



- F 42 ft^3
G 196 ft^3
H 2744 ft^3
J 5488 ft^3

43. What is $176 \div 16$?

A 15
B 13
C 11
D 7

44. Find the difference. $16 - 5.8$

F 11.2
G 10.2
H 2.8
J 1.8

45. Find the product. 0.7×1.6

A 11.2
B 1.12
C 0.12
D 120

46. Divide. $12.96 \div 4$

F 3.24
G 8.96
H 16.96
J 51.84

47. Find the product in simplest form.

$$\frac{5}{6} \times \frac{3}{8}$$

A $\frac{5}{16}$

B $\frac{4}{7}$

C $\frac{4}{5}$

D $\frac{20}{9}$

Diagnostic Test

Operations

Algebra

48. Subtract. $\frac{7}{10} - \frac{3}{5}$
- F $\frac{1}{10}$ H $\frac{4}{5}$
- G $\frac{2}{5}$ J $1\frac{3}{10}$
49. What is 5% of 80?
- A 120 C 5
- B 40 D 4
50. What is the simple interest on an investment of \$1800 at 4% for 5 years? The simple interest formula is $I = Prt$.
- F \$72
- G \$360
- H \$9000
- J \$36,000
51. Subtract. $-16 - 7$
- A -23
- B -9
- C 9
- D 23
52. Multiply. $17(-6)$
- F -102
- G -11
- H 11
- J 102
53. Simplify. $\sqrt{\frac{25}{100}}$
- A $\sqrt{\frac{1}{4}}$ C $\frac{1}{4}$
- B $\sqrt{\frac{1}{2}}$ D $\frac{1}{2}$
54. Evaluate. $|14 - 11 - 5|$
- F -30 H 2
- G -2 J 30
55. Simplify the expression.
 $4 \times (10 - 6) - 7$
- A 27
- B 14
- C 9
- D -12
56. Which expression is equivalent to the expression $8(x - 8)$?
- F $8x - 8$
- G $x - 8$
- H $x - 64$
- J $8x - 64$
57. Simplify. $15 - k + 3k + 10$
- A $25 - 2k^2$
- B $27k$
- C $25 + 2k$
- D $-14k + 13k$
58. Which equation corresponds to the statement "the height h of the prism is three times the width w "?
- F $h = 3 + w$
- G $h = \frac{3}{w}$
- H $h = 3w$
- J $w = 3 + h$
59. Simplify. $3r \cdot 7r^2 \cdot r^5$
- A $21r^8$
- B $10r^8$
- C $21r^7$
- D $10r^7$
60. Evaluate $19 - 5k$ for $k = 3$.
- F 15
- G 11
- H 4
- J 3

Diagnostic Test

Algebra

61. Divide. $\frac{7x^5}{4x^2}$
- A $\frac{7x^5}{4x^3}$
B $\frac{4x^5}{7x^2}$
C $\frac{4}{7x^3}$
D $\frac{7x^3}{4}$
62. Simplify. $6k(k - 7m)$
- F $7k^2 - 13km$
G $6k^2 - 42km$
H $6k^2 + 6k - 9m$
J $6k^2 - 7m$
63. Simplify. $10x - 5y + 8x - 3y$
- A $10xy$
B $5x^2 - 8y^2$
C $18x - 2$
D $18x - 8y$
64. What is the product of $(m + 4)(m - 9)$?
- F $m^2 + 5m - 36$
G $m^2 - 5m - 36$
H $m^2 - 5m + 36$
J $m^2 + 5m + 36$
65. What is the product of $(4s - 6)(4s + 6)$?
- A $16s^2 - 36$
B $16s^2 + 36m - 36$
C $16s^2 - 36m + 36$
D $16s^2 + 36$
66. Factor $6x^3 + 18x$ completely.
- F $6x$
G $x(6x^2 + 18)$
H $6x(x^2 + 3)$
J $3x^2(x + 6)$
67. Factor the polynomial $r^2 + 8r + 12$ completely.
- A $(r + 1)(r + 12)$
B $(r + 2)(r + 6)$
C $(r - 2)(r - 6)$
D $(r - 1)(r + 12)$
68. Solve for x . $6x = -42$
- F $x = 48$
G $x = 36$
H $x = -8$
J $x = -7$
69. Solve the equation. $15x - 7 = 38$
- A $x = \frac{5}{9}$
B $x = 3$
C $x = 45$
D $x = 570$
70. What value of x makes this equation true? $5x + 30 = 11x$
- F $x = -5$ H $x = 3.8$
G $x = 1\frac{7}{8}$ J $x = 5$
71. Solve for x . $x - \frac{2}{7} = \frac{7}{14}$
- A $x = \frac{2}{7}$
B $x = \frac{5}{14}$
C $x = \frac{11}{14}$
D $x = \frac{5}{7}$

Diagnostic Test

Algebra

72. Solve $V = \frac{1}{3}\pi r^2 h$ for h .

F $h = \frac{\pi V}{3r^2}$

G $3h = \frac{V}{\pi r^2}$

H $\frac{h}{3} = \frac{V}{\pi r^2}$

J $h = \frac{3V}{\pi r^2}$

73. Segment CD has endpoints at $C(-2, 5)$ and $D(1, 7)$. Find the midpoint of segment CD .

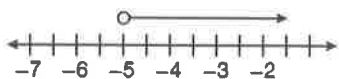
A $(-1, 12)$

B $(1, -3)$

C $(-3, -2)$

D $\left(-\frac{1}{2}, 6\right)$

74. The graph shown is the solution to which of the following inequalities?



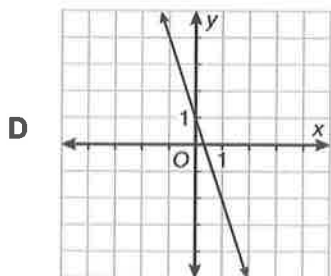
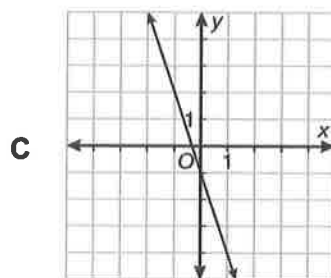
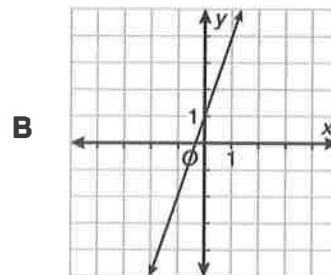
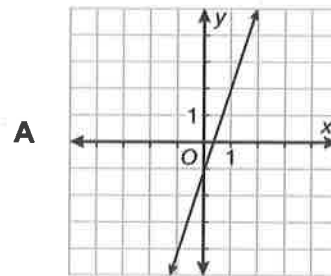
F $d + 9 \geq 4$

G $5d < -20$

H $6d > -30$

J $\frac{1}{2}d < -10$

75. Which is the graph of the function $y = -3x + 1$?



76. Which pair of linear equations represents perpendicular lines?

F $\begin{cases} y = -2x + \frac{1}{2} \\ y = -2x - 9 \end{cases}$

H $\begin{cases} y = -7x - 2 \\ y = -\frac{1}{7}x + 5 \end{cases}$

G $\begin{cases} y = 8x + 3 \\ y = -\frac{1}{8}x - 4 \end{cases}$

J $\begin{cases} y = -5x + 5 \\ y = -5x + \frac{1}{2} \end{cases}$

Diagnostic Test

Algebra

77. Solve the proportion. $\frac{x}{5} = \frac{10}{2}$

- A $x = 5$
- B $x = 10$
- C $x = 25$
- D $x = 35$

78. What table of ordered pairs corresponds to the function $y = -4x - 5$?

F

x	y
-2	-13
-1	-9
0	-5
1	-1
2	3

G

x	y
-2	13
-1	9
0	5
1	1
2	-3

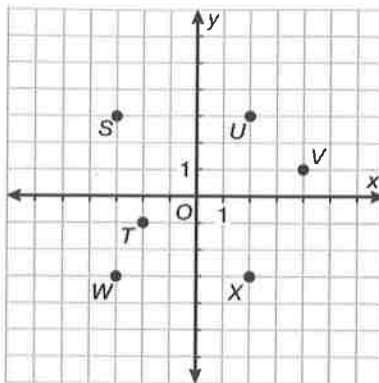
H

x	y
-2	3
-1	-1
0	-5
1	-9
2	-13

J

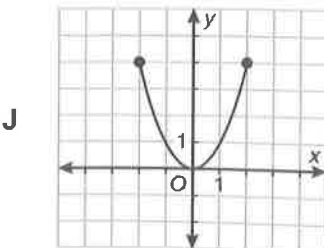
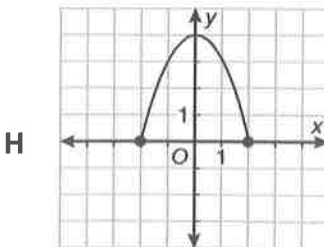
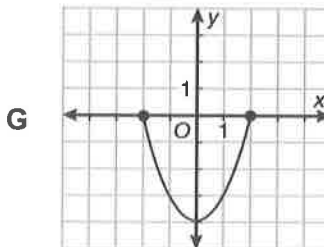
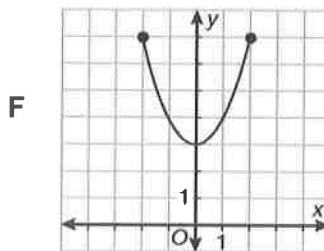
x	y
-2	-3
-1	1
0	5
1	9
2	13

79. Which ordered pair corresponds to point U?



- A $(-3, -2)$
- B $(-2, -1)$
- C $(3, 1)$
- D $(2, 3)$

80. Which graph represents the function $y = -x^2 + 4$ for the domain of $-2 \leq x \leq 2$?



Diagnostic Test

Algebra

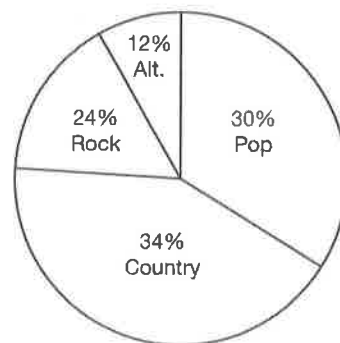
81. Solve for y . $y^2 - 16 = 33$
- A $y = \pm 49$
 B $y = \pm 7$
 C $y = \pm 4$
 D $y = \pm 3$
82. What value completes the square for the expression $x^2 - 8x + \underline{\hspace{1cm}}$?
- F 64
 G 16
 H 12
 J 4

Data

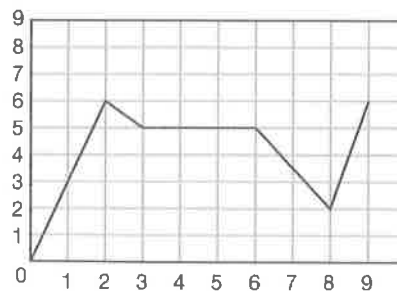
83. The table shows the number and type of paintings displayed in a museum. Find the percentage of paintings that are portraits.

Art	Total
Abstract	17
Impressionistic	153
Portrait	51
Still Life	119

- A 15% C 45%
 B 35% D 340%
84. Which statement does not represent the data set? 10, 12, 7, 9, 5, 10, 7, 10
- F mean = 9 H mode = 10
 G median = 9.5 J range = 7
85. Radio station listeners were asked what genre of music they listen to the most. If 200 listeners were surveyed, how many listeners said that they listen to pop music the most?



- A 6 listeners C 60 listeners
 B 9 listeners D 90 listeners
86. Given the graph below, what is $f(3)$?



- F 1 H 6
 G 5 J 9

Diagnostic Test

Logical Reasoning

87. Which statement can be concluded from the following?
- If two angles are exterior angles of a convex polygon, both angles have measures less than 360° .
 - Angle T and angle U are exterior angles of a convex polygon.

- A** $m\angle T > 360^\circ$
B $m\angle T + m\angle U > 360^\circ$
C $m\angle T > m\angle U$
D $m\angle U < 360^\circ$

88. Which conditional statement is always true?

F If two lines intersect, they are the same line.

G In a right triangle, one of the other angles is obtuse.

H If two lines are parallel, their slopes are inverses of each other.

J If a figure is a quadrilateral, the sum of the measures of its interior angles is 360° .

89. Select the counterexample that makes the statement false.

$$\frac{1}{n^2} > 1, \text{ where } n \text{ is a real number}$$

- A** $n = 0.6$
B $n = 0.5$
C $n = |-6|$
D $n = -\frac{1}{2}$

Probability

90. You are planning a party. You have already chosen a movie to watch during the party, but you can choose between two different dates and three different additional activities. Which tree diagram can you use to help determine all of the different choices of parties?

