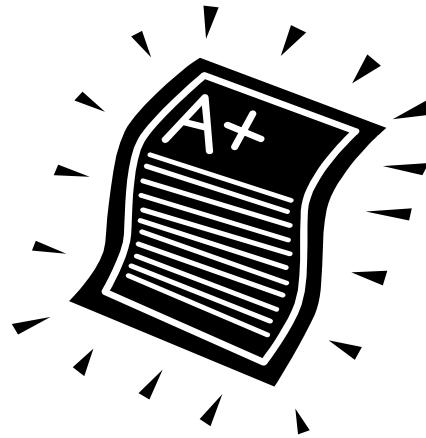


12th Grade Mathematics Assessment

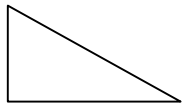
Name : _____
Date : _____
School : _____
District : _____



*Increasing Achievement for Schools,
Teachers, & Students*

Mathematics Reference Sheet

Area



Triangle

$$A = \frac{1}{2}bh$$



Rectangle

$$A = lw$$



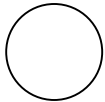
Trapezoid

$$A = \frac{1}{2}h(b_1 + b_2)$$



Parallelogram

$$A = bh$$



Circle

$$A = \pi r^2$$

Key

b = base

h = height

l = length

w = width

ℓ = slant height

$S.A.$ = surface area

d = diameter

r = radius

A = area

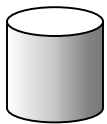
C = circumference

V = volume

Use 3.14 or $\frac{22}{7}$ for π .

Circumference

$$C = \pi d = 2\pi r$$



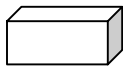
Right Circular Cylinder

Volume

$$V = \pi r^2 h$$

Total Surface Area

$$S.A. = 2\pi r h + 2\pi r^2$$



Rectangular Solid

$$V = lwh$$

$$S.A. = 2(lw) + 2(hw) + 2(lh)$$



Sphere

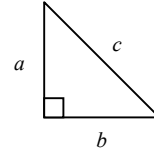
$$V = \frac{4}{3}\pi r^3$$

$$S.A. = 4\pi r^2$$

In a polygon, the sum of the measures of the interior angles is equal to $180(n - 2)$, with n representing the number of sides.

In a regular polygon, the measure of an interior angle is equal to $\frac{180(n - 2)}{n}$.

Pythagorean theorem: $c^2 = a^2 + b^2$



$$y = mx + b$$

Slope-intercept form of an equation of a line, where $m = \text{slope}$ and $b = \text{the } y\text{-intercept}$.

$$d = rt$$

Distance, rate, time formula, where $d = \text{distance}$, $r = \text{rate}$, $t = \text{time}$.

$$I = prt$$

Simple interest formula, where $p = \text{principal}$, $r = \text{rate}$, $t = \text{time}$.

Conversions

1 yard = 3 feet = 36 inches

1 mile = 1,760 yards = 5,280 feet

1 acre = 43,560 square feet

1 hour = 60 minutes

1 minute = 60 seconds

1 cup = 8 fluid ounces

1 pint = 2 cups

1 quart = 2 pints

1 gallon = 4 quarts

1 liter = 1000 milliliters = 1000 cubic centimeters

1 meter = 100 centimeters = 1000 millimeters

1 kilometer = 1000 meters

1 gram = 1000 milligrams

1 kilogram = 1000 grams

1 pound = 16 ounces

1 ton = 2,000 pounds

***Begin with Question #45 on Your
Answer Sheet for the Math Portion of
the Assessment.***

45. If an object travels at five feet per second, how many feet does it travel in one hour?
- A. 30
 - B. 300
 - C. 720
 - D. 18,000

46. In a class of 78 students, 41 are taking Spanish, 22 are taking French, and 9 students are taking both Spanish and French (these 9 students have been included in both of the totals for the 41 students taking Spanish and the 22 students taking French). How many students are not enrolled in either course? (*Hint: a Venn Diagram may be used to determine your answer*).
- A. 6 students
 - B. 33 students
 - C. 24 students
 - D. 54 students
47. A cubical block of metal weighs 6 pounds. How much will another cube of the same metal weigh if its sides are twice as long?
- A. 48 pounds
 - B. 32 pounds
 - C. 24 pounds
 - D. 18 pounds
48. What is the average (arithmetic mean) of all the multiples of ten from 10 to 190 inclusive?
- A. 90
 - B. 95
 - C. 100
 - D. 105
49. Which number represents the greatest value?
- A. 0.323232
 - B. $\frac{3}{5}$
 - C. $\frac{7}{12}$
 - D. 0.67
50. Which of the following is equivalent to $3^2 - |-2|$?
- A. 3 squared minus the absolute value of negative 2
 - B. radical 3 minus the absolute value of negative 2
 - C. square root of 3 minus radical negative 2
 - D. 3 squared minus the square root of negative 2

51. $\sqrt{125} = ?$

- A. $5\sqrt{5}$
- B. $10\sqrt{5}$
- C. $5\sqrt{10}$
- D. $5\sqrt{25}$

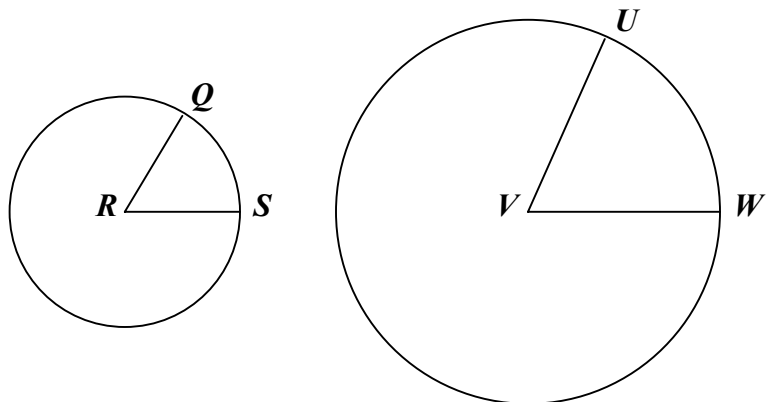
52. $2^{30} + 2^{30} + 2^{30} + 2^{30} =$

- A. 8^{120}
- B. 8^{30}
- C. 2^{32}
- D. 2^{30}

53. What is the first step to use when rearranging these numbers to make the computation easier?

$$\left(\frac{7}{8} \times 24\right) \times \left(10 \times \frac{8}{7}\right)$$

- A. commutative property for addition
 - B. commutative property for multiplication
 - C. associative property for addition
 - D. associative property for division
54. Circle R has a radius of 4.3 units. Circle V has a radius of 8.6 units. Angles QRS and UVW are congruent. If the length of arc QS is 4.5 units, what is the length of arc UW , measured to the nearest tenth of a unit?
- A. 2.3 units
 - B. 4.1 units
 - C. 8.2 units
 - D. 9.0 units



55. The diagonal of a rectangular rug is almost 6 yards. Which pair of dimensions is closest to the length and the width of the rug?
- A. 2 yd and 3 yd
 - B. 2 yd and 4 yd
 - C. 3 yd and 5 yd
 - D. 4 yd and 9 yd

56. Six students are participating in a fitness program. They are required to workout in pairs. How many DIFFERENT combinations of pairs of students are possible?
- A. 3
 - B. 5
 - C. 15
 - D. 30

57. A repair service charges \$25 to send a service person on a call and \$30 per hour for labor. If h stands for the number of hours of labor, which expression below can the company use to compute the charge for the service call?

- A. $25h + 30$
- B. $25 + 30h$
- C. $55h$
- D. $\frac{25}{30h}$



58. A test on a sample of 492 in-line skate wheels identified 3 defective wheels. Based on this rate of defects, approximately how many defective wheels will be found per 10,000 wheels?

- A. 60
- B. 20
- C. 100
- D. 300

59. Which could be the next step in solving the equation below?

$$3(x + 2) = 3 - (x + 1)$$

- A. $3x + 6 = 3 - x - 1$
- B. $3x + 2 = 3 - x - 1$
- C. $3x + 6 = 3 - x + 1$
- D. $3x + 5 = 3 - x + 1$

The function table below reflects the number of different handshakes (**H**) for groups of (**n**) relatives.

n	7	8	12	20
H	21	28	66	190

60. For any size gathering of people, which formula gives the correct number of handshakes for n people?

A. $H = \frac{n(n+1)}{2}$

B. $H = \frac{(n-1)}{2}$

C. $H = \frac{n(n-1)}{2}$

D. $H = \frac{n+1}{2}$



61. One man and two women are seated randomly in a row. What is the mathematical probability that the two women are seated together?

A. $\frac{1}{3}$

B. $\frac{1}{2}$

C. $\frac{5}{6}$

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



62. The lengths of three sides of a triangle are in the ratio of 3:4:5, and the perimeter of the triangle is 48 inches. The length of the longest side of the triangle is:

- A. 15 inches
- B. 20 inches
- C. 25 inches
- D. 28 inches

	A	B	C	D	E
1	2	-3	7	1	
2	4	-4	8	2	
3	6	-5	9	3	
4	8	-6	10	4	

63. Look at the spreadsheet above. Each cell is identified by its column and row. For example, cell C4 contains the number 10. Using the formula $E1 = B3 + 2(C1 + D4)$, what value should be placed in cell E1?
- A. -33
 - B. -17
 - C. 13
 - D. 17
64. How many numbers between **200** and **400** begin or end with **3**?
- A. 110
 - B. 120
 - C. 130
 - D. 100
65. If the area of a rectangle is $8x^2 - 12x$, the dimensions of the rectangle could be:
- A. $2x$ and $(x - 3)$
 - B. $4x$ and x
 - C. $4x$ and $(2x - 3)$
 - D. $4x$ and $(x - 3)$

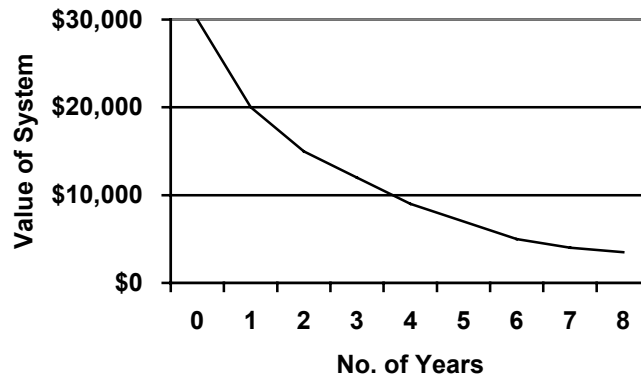
	A	B	C
1	1	2	3
2	4	5	6
3	7	8	9
4	10	11	12
5	13	-	-

66. Ms. Schwendimann grouped students together to work on a project in her 3rd period math class. **Group A** created a spreadsheet to arrange natural numbers. **Group A's** spreadsheet appears above. What numbers will be in the 50th row of **Group A's** spreadsheet?
- A. 16, 17, 18
 - B. 148, 149, 150
 - C. 150, 151, 152
 - D. 223, 224, 225

The hours Donald worked at the Arts Center last week are shown in the chart below.

Monday	8 hours
Tuesday	6 hours
Wednesday	7 hours
Thursday	4 hours
Friday	6 hours

67. Which measure of this data would change if Donald worked 2 hours less on Wednesday?
- the mean
 - the median
 - the mode
 - the range
68. If the surface area of a ball is approximately 76 in.^2 , what is the approximate radius of this ball?
- 9.84 in.
 - 8.72 in.
 - 4.36 in.
 - 2.46 in.

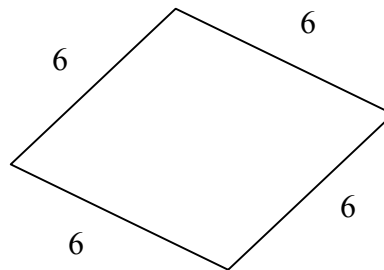
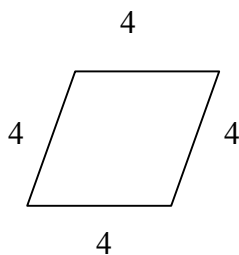
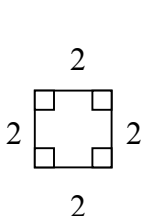


69. William's Appliance Center purchased a communications system. The original price was \$30,000, but the system depreciated. The graph above shows the value of the system during a period of several years. Which is a reasonable conclusion about the value of the system?
- The system depreciated the same amount each year.
 - The system depreciated more rapidly the first year than it did after the seventh year.
 - The system depreciated more slowly the first year than it did after the eighth year.
 - The system lost half of its value each year after it was purchased.

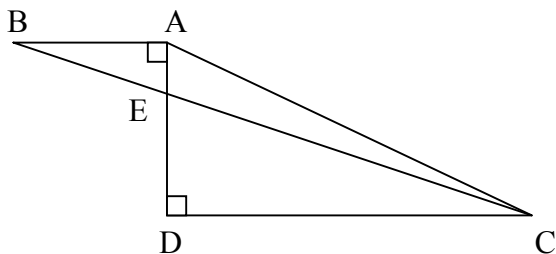
Marathon Results

Bill	4 hrs. 10 min.
Kerry	3 hrs. 50 min.
Bryce	4 hrs. 15 min.
Daniel	3 hrs. 55 min.
Kyle	4 hrs. 30 min.

70. Look at the table above. If Joel runs the marathon in 4 hours and 20 minutes, by how many minutes will the average time in the box increase?
- A. 2 minutes
 - B. 5 minutes
 - C. 10 minutes
 - D. 250 minutes



71. Which statement about the figures above is true?
- A. These three figures are similar to one another.
 - B. Each of the three figures is a rhombus.
 - C. Each of these figures has four congruent angles.
 - D. These three figures are rectangles.
72. Tony participated in a 5-kilometer race, and he completed $\frac{1}{4}$ of the race. How many centimeters did Tony run in the race?
- A. 1.25 centimeters
 - B. 50000 centimeters
 - C. 125000 centimeters
 - D. 25000 centimeters



73. In the figure above, $AD = 4$, $AB = 3$, and $CD = 9$. What is the area of triangle AEC?

- A. 18
- B. 13.5
- C. 5.9
- D. 4.5

74. Simplify: $(-4x^3 y^2 z)^3 (4x^5 y^4 z^3)$

- A. $-16x^{11}y^9z^7$
- B. $-16x^{14}y^{10}z^6$
- C. $-256x^{11}y^9z^7$
- D. $-256x^{14}y^{10}z^6$

75. 60% of the cars owned by Best Value Car Rental are white, and 30% have a standard transmission. If you randomly choose a rental car, what is the probability that you will get a white car with a standard transmission?

- A. $\frac{9}{10}$
- B. $\frac{30}{60}$
- C. $\frac{9}{50}$
- D. $\frac{90}{100}$



76. Solve and simplify: $\frac{3}{8} + \frac{1}{3} - \frac{1}{4} =$

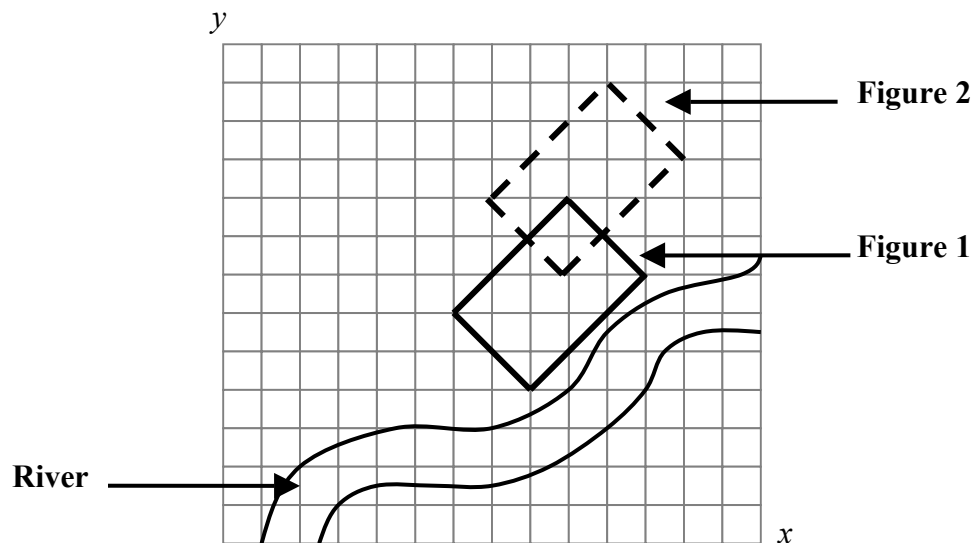
A. $\frac{3}{7}$

B. $\frac{1}{2}$

C. $\frac{5}{12}$

D. $\frac{11}{24}$

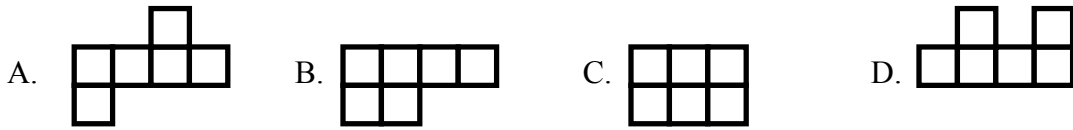
The Arts Center planned a rectangular space represented by Figure 1 for an outdoor garden. The location was too close to a river, so the garden spot was moved as shown by Figure 2.



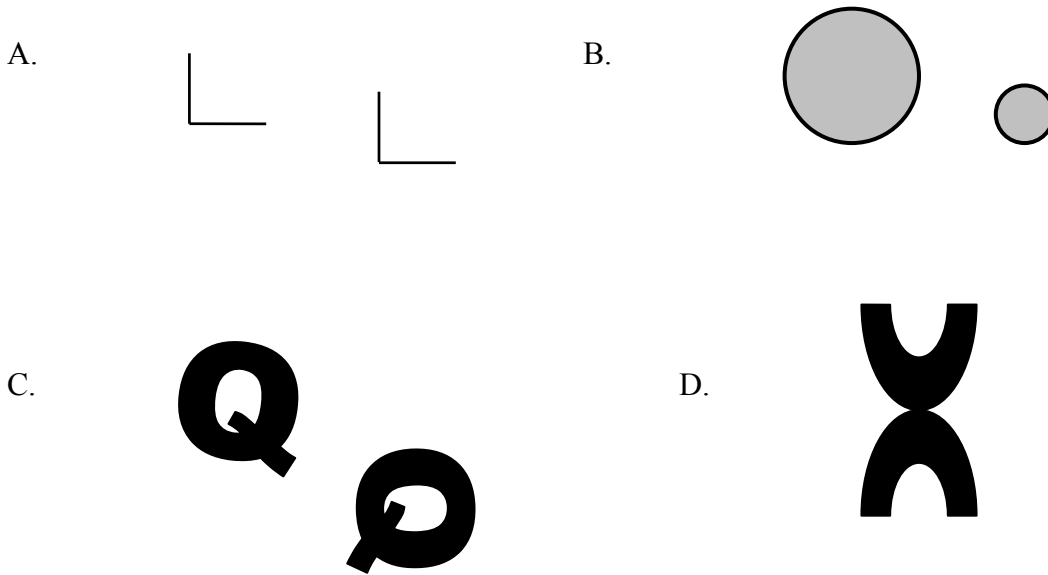
77. What term best describes the transformation of **Figure 1** to **Figure 2**?

- A. translation
- B. rotation
- C. reflection
- D. dilation

78. Which figure can be folded to make a cube?



79. Which of the following is an example of a reflection?



80. Look at **Figure 1** and **Figure 2** below. What term best describes the transformation of **Figure 1** to **Figure 2**?

- A. translation
- B. dilation
- C. rotation
- D. reflection

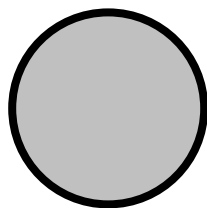


Figure 1

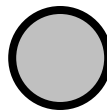


Figure 2