

ACET
REFRESHER
COURSE

REVIEW

PROGRAM

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MSA**Math Refresher Test 1**

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

1. Simplify the expression: $\left(\frac{9x^{-6}y^5}{z^{-4}} \right)^2 \left(\frac{2x^{-3}y^2}{z^4} \right)^{-3}$

00000		a	b	c	d	e
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a. $\frac{18y^4 z^4}{6x^3}$ c. $\frac{81y^4 z^{20}}{8x^3}$ e. none of these

b. $\frac{18y^4 z^{20}}{6x^3}$ d. $\frac{81y^4 z^4}{8x^3}$

00000		a	b	c	d	e
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2. Find the sum: $21 + 22 + 23 + \dots + 69 + 70 + 71$

a. 2 346 b. 2 628 c. 2 556 d. 2 370 e. none of these

3. $\frac{ab + 4a - 3b - 12}{ab + 2a - 3b - 6}$ is equivalent to _____.

00000		a	b	c	d	e
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a. $\frac{a - 4}{a + 2}$ b. $\frac{b + 2}{a + 2}$ c. $\frac{b + 4}{b + 2}$ d. $\frac{a + 4}{b + 2}$ e. none of these

4. Simplify: $rs - r(r + s) + r^2 + r(s + 1)$

00000		a	b	c	d	e
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a. $3rs + r$ c. $r^2 + 3rs + 1$ e. none of these
 b. $r(s + 1)$ d. $r(rs + 1)$

5. Evaluate $\sqrt{y - x} + x^2$ for $x = 2.5$ and $y = 2.59$.

00000		a	b	c	d	e
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Round your result to the nearest hundredths.

a. 0.53 b. 0.59 c. 6.28 d. 6.55 e. none of these

Math Refresher Test 1

6. Which of the following is/are non-real?

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a b c d e

I. $(\sqrt{0})^{-1}$ II. $\sqrt[4]{-(-x)^5}$ III. $\sqrt{(-x^{-2})^{-1}}$

- a. I only b. I and II c. I and III d. II and III e. I, II, and III

7. What is the LCD of $\frac{3n^2 - 12n + 9}{n^2 - n - 6}$, $\frac{5n + 4}{3(n^2 + n - 2)}$, and $\frac{6n + 1}{n - 1}$? 00000
a b c d e

- a. $3(n - 3)(n + 2)(n - 1)$ d. $3(n + 2)(n - 3)$
 b. $3(n + 2)(n - 1)$ e. $3(n + 2)$
 c. $3(n - 3)(n + 2)^2(n - 1)^2$

8. Find the value of D in the equation $6y^2 + Dy + 150 = 6(y - 5)^2$

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a b c d e

- a. 60 b. 10 c. -60 d. -10 e. none of these

9. Given the formula $a \otimes b = \frac{a^2 - b^2}{2a - b}$, find the value of $10 \otimes 6$. 00000
a b c d e

- a. $\frac{64}{7}$ b. $\frac{16}{7}$ c. $\frac{32}{7}$ d. 9 e. none of these

10. What is the factored form of $81x^4 - 16y^4$?

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a b c d e

- a. $(9x^2 + 4y^2)(9x^2 - 4y^2)$ d. $(3x + 2y)(3x - 2y)$
 b. $(3x + 2y)^2(3x - 2y)^2$ e. none of these
 c. $(9x^2 + 4y^2)(3x - 2y)(3x + 2y)$

11. The value of $3 + \frac{3}{3 + \frac{3}{3 + \frac{3}{5}}}$ is _____.

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a b c d e

- a. $\frac{54}{69}$ b. $\frac{113}{69}$ c. $\frac{18}{23}$ d. $\frac{87}{23}$ e. none of these

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REV 2

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MSA**Math Refresher Test 2**

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

1. Which of the following is the replacement set of $x^3 - x^2 - 6x = 0$?

a	b	c	d	e
---	---	---	---	---

- a. $\{-1, 0, 2, 3\}$ c. $\{-2, -1, 2\}$ e. $\{-2, 2, 3\}$
 b. $\{-2, 0, 3\}$ d. $\{-2, 0, 1\}$

2. What is the units digit of the product of $2 \times 3 \times 5 \times 7 \times 11 \times 13 \times 17$?

a	b	c	d	e
---	---	---	---	---

- a. 0 b. 1 c. 3 d. 5 e. 7

3. Find the product of: $(z^{n^2})^{n^3} \cdot (z^{4n^3})^{n^2}$

a	b	c	d	e
---	---	---	---	---

- a. Z^{5n^5} b. Z^{2n^6} c. Z^{5n^6} d. Z^{2n^5} e. $Z^{6n^{10}}$

4. Simplify: $\frac{3(2^{n+3} + 8)}{2^n + 1}$

a	b	c	d	e
---	---	---	---	---

- a. 6 b. 12 c. 18 d. 24 e. 36

5. Find the root/s of $\frac{7}{6}x + \frac{2}{3} = \frac{6}{5}x - \frac{1}{2}$

a	b	c	d	e
---	---	---	---	---

- a. 35 b. 30 c. -35 d. -30 e. no solution

6. The solution set of the system $\begin{cases} 3x + 2y - 8 = 0 \\ y = x - 6 \end{cases}$ is the point _____.

a	b	c	d	e
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- a. (10, 4) c. (4, -2) e. (-4, 2)
 b. (2, -4) d. (-2, 4)

7. Which of the following is *not* a possible solution of $9x - 4 \leq 6 + 10x$?

a	b	c	d	e
---	---	---	---	---

- a. -7 b. -8 c. -9 d. -10 e. -11

Math Refresher Test 2

8. Solve for t in the literal equation $7(2t + 5a) - 6(t + 4b) = 3a$

- a. $3b - 4a$ b. $4b - 3a$ c. $4b$ d. $3b + 4a$ e. $3a$

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a b c d e

9. Simplify: $\sqrt{\frac{3y^2}{25} + \frac{6y^2}{49}}$

a. $\frac{2\sqrt{33}y}{35}$

c. $\frac{3y\sqrt{33}}{35}$

e. none of these

b. $\frac{3y^2}{35}$

d. $\frac{y\sqrt{33}}{35}$

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a b c d e

10. Find the value of x in : $|3x - (4x + 5)| + 4 = 0$

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a b c d e

a. -7

c. $1, -7$

e. no solution

b. $-1, -7$

d. all real numbers

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a b c d e

11. $\sqrt{80x^3} - x\sqrt{5x} = ?$

a. $\sqrt{5x}$

c. $x\sqrt{5x}$

e. $x^2\sqrt{5x}$

b. $3x\sqrt{5x}$

d. $\sqrt{80x^3} - x\sqrt{5x}$

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a b c d e

12. Which of the following are equivalent equations?

a. $x = 6$ and $x^2 = 36$

c. $x = 4$ and $x^3 = 64$

e. none of these

b. $x^2 = 1$ and $x^3 = 1$

d. $(4x - 3)^2 = 16x^2 + 24x + 9$

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a b c d e

13. Solve: $(2x + 3)^2 = (2x - 1)(2x + 1)$

a. $-\frac{2}{3}$

b. 4

c. $-\frac{5}{6}$

d. 8

e. $-\frac{5}{6}, -\frac{2}{3}$

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a b c d e

14. Which of the following is the smallest number to be multiplied to $(\sqrt{12} - \sqrt{5})$ to have a rational product?

a. $\sqrt{12} + 5$

c. $\sqrt{5} - \sqrt{12}$

e. $2\sqrt{3} + \sqrt{5}$

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MSA**Math Refresher Test 3**

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

1. Which of the following equation/s has/have complex roots?

0	0	0	0	0
a	b	c	d	e

I. $5x^2 - 2x - 4 = 0$ II. $3x^2 + x + 9 = 0$ III. $5x^2 + 7x - 10 = 0$

- a. I only b. II only c. III only d. I and II e. II and III

2. Solve the equation: $\sqrt[3]{x-1} - 2 = 0$

0	0	0	0	0
a	b	c	d	e

- a. 3 b. 5 c. 7 d. 9 e. 10

3. What is the minimum point of the parabola $y = 2x^2 - 16x + 5$?

0	0	0	0	0
a	b	c	d	e

- a. (4, -27) c. (-2, -15) e. (5, -9)
 b. (6, 12) d. (10, 20)

4. The intersection of the lines $2x + 3y = 1$ and $3x - y = 7$ lies
in what quadrant? *SUBSTITUTION

0	0	0	0	0
a	b	c	d	e

- a. I b. II c. III d. IV e. none of these

5. What is the slope of the line parallel to $2x + 3y - 4 = 0$

0	0	0	0	0
a	b	c	d	e

- a. 2 b. $-\frac{2}{3}$ c. -2 d. 3 e. $\frac{5}{2}$

6. What is equation of the line with a slope -4 and x-intercept 5?

0	0	0	0	0
a	b	c	d	e

- a. $4x + y - 20 = 0$ c. $x - 4y + 10 = 0$ e. $4x + y - 5 = 0$
 b. $4x - y + 20 = 0$ d. $4x - y + 5 = 0$

Math Refresher Test 3

7. The slope of the vertical line that passes through the point (3, -6) is _____
- a. 3 b. 6 c. 0 d. undefined e. none of these
8. Which of the following equation/s is/are functions?
- I. $3x + y^3 = 2$ II. $2x + y^3 = 2$ III. $x^2 + y^2 = 9$
- a. I only c. III only e. I, II, and III
 b. II only d. I and II only
9. The perimeter of a rectangular swimming pool is 180 feet. If the length of the pool is twice the width, how far is it across the diagonal of the pool ?
- a. 10 feet c. $15\sqrt{2}$ feet e. $30\sqrt{5}$ feet
 b. 30 feet d. 25 feet
10. If $A = \{2, 4, 5, 7\}$ and $B = \{1, 4, 6, 7, 10\}$, what is $(A - B)$?
- a. $\{2, 5\}$ c. $\{1, 2, 5, 6, 7, 10\}$ e. $\{\}$
 b. $\{4, 7\}$ d. $\{1, 2, 4, 5, 6, 7, 10\}$
11. The points (5, 6), (7, 4), and (4, 7) are collinear points.
 Which of the following points is also collinear to the given points?
- a. (2, -7) c. (0, 6) e. (5, -3)
 b. (-1, 12) d. (20, -8)
12. Find the value of k so that the parabola $y = 2x^2 - kx + 5$ passes through (2, 3).
- a. 1 b. 3 c. 5 d. 6 e. 7
13. Find the domain of the function $y = \frac{x + 2}{x^4 + 1}$
- a. $\{x | x \neq 1\}$ c. $\{x | x \in \mathbb{R}\}$ e. none of these
 b. $\{x | x = 1\}$ d. $\{\}$
14. Which of the following equations is one-to-one?
- a. $3x^2 + 3y^2 = 63$ c. $y = \pm \sqrt[4]{4x}$ e. $y = 4x^2 + 5$
 b. $y = 3(x - 7)^2 + 8$ d. $y = \sqrt[4]{x}$

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a b c d e

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MSA**Math Refresher Test 4**

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

1. The polynomial $x^4 + 3x^3 - 7x^2 - 27x - 18$ is divisible by the following binomials *except* _____.

- a. $x + 2$ c. $x - 3$ e. $x + 3$
b. $x + 1$ d. $x - 1$

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a b c d e

2. Which of the following equations is symmetric with respect to the x -axis?

- a. $y = x^6 + 2$ c. $3x + 2y + 4 = 0$ e. $x^5 + 4y^5 = 7$
b. $4x^2 + 5y^2 = 1$ d. $x^3 - y^3 + 26 = 0$

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a b c d e

3. What is the length of the line drawn from the origin to the point $(-9, 12)$?

- a. 3 units c. 12 units e. 21 units
b. 9 units d. 15 units

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a b c d e

4. Solve for the value of x : $\frac{2}{3x - 4} = \frac{5}{6x - 7}$.

- a. -3 b. 0 c. 2 d. 3 e. 4

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a b c d e

5. If $f(x) = 2x$ and $g(x) = \frac{x}{4}$, then $\frac{x}{2} =$ _____.

- I. $f^{-1}(x)$ II. $f^{-1}(g(x))$ III. $g(f(x))$
a. I only c. I and II e. I, II, and III
b. II only d. I and III

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a b c d e

6. If $f(x) = x^{2+x} + 2x$, what is the value of $f(-3)$?

- a. $\frac{17}{3}$ b. -3 c. -9 d. 6 e. $-\frac{19}{3}$

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a b c d e

Math Refresher Test 4

7. What is the axis of symmetry of the parabola $y = 3x^2 + 6x - 4$? 00000
a b c d e

- a. $x = -1$ b. $x = 3$ c. $x = -3$ d. $x = 2$ e. $x = 6$

8. Find the remainder when a polynomial $(x^5 - 2x^3 + 4x^2 - 5x + 2)$ is divided by $(x + 2)$. 00000
a b c d e

- a. 24 c. 16 e. 11
b. 12 d. 20

9. Simplify : $4i^{82} + 6i^{154} - 3i^{123}$ 00000
a b c d e

- a. 13 c. $10 + 3i$ e. $-10 + 3i$
b. $-10 - 3i$ d. $10 - 3i$

10. An **asymptote** is a line that the graph of a relation approaches but never reaches. What is the asymptote of the function $y = \frac{3x}{x+4}$? 00000
a b c d e

- a. $x = 3$ c. $x = 2$ e. $x = -3$
b. $x = -4$ d. $x = 0$

12. The following sets of ordered pairs are merely relation *except* _____. 00000
a b c d e

- a. $\{(3,4), (2,2), (3,2)\}$ c. $\{(-1,1), (-3,1), (7,1)\}$ e. none of these
b. $\{(5,6), (5,0), (5,11)\}$ d. $\{(0,0), (-8,0), (0,1)\}$

13. Which of the following could be the quadratic equation if -3 and 4 are solutions of the equation? 00000
a b c d e

- a. $x^2 - x - 12 = 0$ c. $x^2 - 7x + 12 = 0$ e. none of these
b. $x^2 - x - 12 = 0$ d. $x^2 + 7x + 12 = 0$

14. The range of the function $y = |x + 2|$ is _____. 00000
a b c d e

- a. $\{y \mid y = -2\}$ c. $\{y \mid y \geq 2\}$ e. $\{y \mid y \geq 0\}$
b. $\{y \mid y \neq 2\}$ d. $\{y \mid y \leq 0\}$

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MSA**Math Refresher Test 5**

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

1. If three times x is equal to x decreased by 2, then x is _____. 00000
a b c d e
 - a. -2
 - c. $-\frac{2}{3}$
 - e. $\frac{2}{3}$
 - b. -1
 - d. 1

2. If the average of $x-3$, $8-x$, and $3x+1$ is y , then what is the average of y and $\frac{3y}{2}$? 00000
a b c d e
 - a. $\frac{5x+10}{2}$
 - c. $\frac{5x+10}{4}$
 - e. $5x+10$
 - b. $\frac{5x+2}{2}$
 - d. $5x+2$

3. Simplify: $\frac{2x}{2x-4} - \frac{6}{3x-6}$ 00000
a b c d e
 - a. $\frac{x}{x-2}$
 - c. 1
 - e. none of these
 - b. $\frac{2}{x-2}$
 - d. $\frac{3}{2(x-2)}$

4. When $0 < s < 1$, which of these **must** be true about s ? 00000
a b c d e
 - I. $s^3 < s^2$
 - II. $\sqrt{s} > s$
 - III. $s^2 > 1$
 - a. I only
 - c. I and II only
 - e. I, II, and III
 - b. III only
 - d. II and III only

5. If given $p(n) = 2p(n-1) + 3$ and $p(0) = 3$, what is the value of $p(3)$? 00000
a b c d e
 - a. 93
 - b. 64
 - c. 54
 - d. 45
 - e. 21

6. Which of the following illustrates **Multiplication Property of Inequality?** 00000
a b c d e

- I. If $3 < 4$, then $21 < 28$
- II. If $5x + 3 \geq 4$, then $-10x - 6 \geq -8$
- III. If $-2x + 1 > -x$, then $2x - 1 < x$

- a. I only
- b. II only
- c. I and II
- d. I and III
- e. I, II, and III

7. If a , b , and c are consecutive integers, which of the following 00000
a b c d e is necessarily *false*?

- a. $a + c$ is even.
- b. abc is even.
- c. $\frac{abc}{3}$ is an integer.
- d. $b + c$ is odd.
- e. bc is odd.

8. If $f(x) = 6x + 2$, find $\frac{f(x) - f(a)}{x - a}$. 00000
a b c d e

- a. 3
- b. 4
- c. 5
- d. 6
- e. 7

9. Find the inverse of the function $g(x) = \frac{x - 4}{x - 2}$. 00000
a b c d e

- a. $g^{-1}(x) = \frac{x + 4}{x + 2}$
- b. $g^{-1}(x) = \frac{2x - 4}{x - 1}$
- c. $g^{-1}(x) = \frac{3x + 1}{2x + 1}$
- d. $g^{-1}(x) = \frac{x - 2}{x - 4}$
- e. $g^{-1}(x) = \frac{x - 2}{4}$

10. The domain of the function $y = \frac{x - 4}{3 - x}$ is _____. 00000
a b c d e

- a. $\{x | x = -3\}$
- b. $\{x | x \neq 2\}$
- c. $\{x | x \geq 3\}$
- d. $\{x | x \neq 3\}$
- e. $\{x | x \geq 0\}$

11. A function is called an even function if $f(-x) = f(x)$ for every value of x , and a function is an odd function if $f(-x) = -f(x)$. Which of the following is/are even function? 00000
a b c d e

- I. $f(x) = x^2 - 4$
- II. $f(x) = x^3 + x^2$
- III. $f(x) = x^2 + x^{-2}$
- a. I only
- b. II and III only
- c. I and II only
- d. I and III only
- e. I, II, and III

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Math Refresher Test 6

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

Math Refresher Test 6

7. If $x^2 - 2x - 15 = (x+r)(x+s)$ for all values of x , one possible value for $r - s$ is _____.

a. 8 b. 2 c. -3 d. -4 e. -5

00000
a b c d e

8. What is the value of a in the equation $32^{a+b} = 16^{a+2b}$?

a. $-\frac{3}{4}b$ c. $\frac{4}{3}b$ e. none of these
 b. $-4b+1$ d. $\frac{1}{3}b+2$

00000
a b c d e

9. Find the remainder when $3x^{1000} + x^{123} - 2x^{96} - 3x^{13} + 5x$ is divided by $x+1$.

a. -12 b. -2 c. 3 d. 12 e. cannot be determined

00000
a b c d e

10. A class of 40 students is to be divided into smaller groups. If each group is to contain 3, 4, or 5 people, what is the largest number of groups possible?

a. 14 b. 13 c. 12 d. 10 e. 8

00000
a b c d e

For numbers 11 and 12

Given : $f(x) = \sqrt{x}$ and $g(x) = x^2 - 1$

11. What is $(g \circ f)(x)$?

a. $\sqrt{x^2 - 1}$ c. $x^2 - 1$ e. $x^4 - x^2$
 b. $x - 1$ d. $\sqrt[4]{x}$

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a b c d e

12. What is the domain of the answer in **number 11**?

a. \mathbb{R} c. $\{x \mid x \geq 0\}$ e. $\{\}$
 b. $\{x \mid x \leq 0\}$ d. $\{x \mid x \leq -1 \cup x \geq 1\}$

00000
a b c d e

13. If $g(x) = 2x - 3$ and $f(g(x))$, find the value of $f(1)$.

a. 3 b. $-\frac{1}{5}$ c. 12 d. 23 e. 25

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a b c d e

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MSA**Math Refresher Test 7**

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

1. What is the distance between the points $(4, -1)$ and $(7, 3)$? 00000
a b c d e
- a. 3 units b. 5 units c. 7 units d. 10 units e. 25 units

2. How many sides does a polygon have if the sum of its interior angles is 2340° ? 00000
a b c d e
- a. 12 b. 13 c. 14 d. 15 e. 16

3. Find the equation of the line passing through point $(-2, 3)$ and perpendicular to the line $2x - 3y + 6 = 0$. 00000
a b c d e
- a. $3x + 2y = 0$ c. $3x + 2y = 12$ e. $2x + 3y = 2$
 b. $2x + 3y = 0$ d. $2x - 3y = 12$

4. What is the graph of the equation $3(x-1)^2 + 3(y-2)^2 = 0$? 00000
a b c d e
- a. an ellipse c. a point e. a hyperbola
 b. a circle d. a parabola

5. If x pounds of coffee costs y pesos, how many pounds of coffee can be purchased for $r+10$ pesos? 00000
a b c d e

a. $\frac{xy}{r+10}$ c. $\frac{(r+10)y}{x}$ e. $xy(r+10)$
 b. $\frac{r+10}{xy}$ d. $\frac{x(r+10)}{y}$

BONUS

6. If $a > b$, $c > d$, $e > b$, and $b > c$, which of the following must be true?

- | | | |
|------------|------------------|-------------------|
| I. $a > e$ | II. $e > d$ | III. $a > c$ |
| a. I only | c. III only | e. I, II, and III |
| b. II only | d. I and II only | |

00000
a b c d e

7. If the slope of the line is -2 and a point on the line is $(3, 7)$, what is its y -intercept? 00000
a b c d e
- a. -1 b. 1 c. -13 d. 13 e. 7
8. An exterior angle of a triangle measures 115° . What is the measure of one of its remote interior angles if the other one measures 75° ? 00000
a b c d e
- a. 65° c. 40° e. can't be determined
 b. 60° d. 105°
9. Find the equation of the line that passes through the points $(2, -2)$ and $(2, 5)$. 00000
a b c d e
- a. $x + y = 1$ c. $x = y$ e. $x = 2$
 b. $2x + y = 12$ d. $y = 5$
10. What is the center of the ellipse with an equation 00000
a b c d e
 $x^2 + 36y^2 + 4x - 72y + 4 = 0$?
- a. $(-4, -3)$ c. $(-3, 2)$ e. $(1, 5)$
 b. $(-2, 1)$ d. $(1, 0)$
11. What best describes the graph of $f(x) = (x + 2)^2 + 3$? 00000
a b c d e
- a. The graph is translated 2 units to the right and 3 units down from $f(x) = x^2$.
 b. The graph is translated 2 units to the right and 3 units up from $f(x) = x^2$.
 c. The graph is translated 2 units to the left and 3 units down from $f(x) = x^2$.
 d. The graph is translated 2 units to the left and 3 units up from $f(x) = x^2$.
 e. The graph is wider than $f(x) = x^2$ and it opens upward.
12. If the total length of the legs of a triangle is 6 units, then what lengths for the legs would maximize the square of the hypotenuse? 00000
a b c d e
- a. 4 and 2 units c. 3 units each e. 1.5 and 4.5 units
 b. 1 and 5 units d. 2.5 and 3.5 units
13. In **number 12**, what is the length of the hypotenuse? 00000
a b c d e
- a. $2\sqrt{5}$ units c. 18.5 units e. $3\sqrt{2}$ units
 b. $\sqrt{3}$ units d. $\sqrt{26}$ units

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Math Refresher Test 8

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

1. How many positive factors does $2^3 \cdot 3^2 \cdot 5^2$ have? 00000
a b c d e
 a. 7 b. 12 c. 24 d. 30 e. 36

2. Increasing n by 70 percent and decreasing the result by 50 percent is equivalent to which of the following? 00000
a b c d e
 a. increasing n by 20 % c. increasing n by 85 % e. none of these
 b. increasing n by 15 % d. decreasing n by 15 %

3. What is the units digit of 3^{74} ? 00000
a b c d e
 a. 1 b. 3 c. 5 d. 7 e. 9

4. If $x + y < 10$, and $x - y > 12$, which of the following pairs could be the values of x and y ? 00000
a b c d e
 a. (2, 6) c. (8, -4) e. (10, -2)
 b. (4, -4) d. (8, -6)

5. If $x + y = 15$, $y + z = 10$, and $x + z = 13$, which of the following is necessarily *true*? 00000
a b c d e
 a. $x < y < z$ c. $z < y < x$ e. $y < z < x$
 b. $y < x < z$ d. $x < z < y$

6. Evaluate $(x^{2n} - x^n)(x^{2n} + x^n)$ at $x = 2$ and $n = -\frac{1}{2}$. 00000
a b c d e
 a. $-\frac{1}{2}$ b. $\frac{1}{2}$ c. $-\frac{1}{4}$ d. $\frac{1}{4}$ e. -1

7. Which of the following equation/s has graph wider than $y = -3x^2$?

00000
a b c d e

I. $y = -\frac{1}{2}(x + 6)^2$ II. $y = -(x - 2)^2 + 1$ III. $y = \frac{3}{2}x^2$

- a. I only c. II and III only e. none of these
b. I and II only d. I, II, and III

8. Antonette planted a tree 5 feet tall in her front yard. It grew an average of 3 feet per year. If the tree is now 38 feet tall, which equation can be used to find y , the number of years since Antonette planted the tree?

00000
a b c d e

a. $5 + 3y = 38$ c. $3y = 38 + 5$ e. $5y = 38 + 3$
b. $3(y + 5) = 38$ d. $5 + y = 38$

9. Given sets $A = \{w, r, t\}$ and $B = \{x, w, p\}$, which of the following statements is/are true?

00000
a b c d e

- I. $n(A) + n(B)$ is 6.
II. $A - B$ is equal to $\{r, t, x, p\}$.
III. The union of the two sets has 32 subsets.

- a. I only c. III only e. I, II, and III
b. I and III only d. I and II only

10. What is the measure of an exterior angle of a regular decagon?

00000
a b c d e

- a. 36° b. 72° c. 100° d. 125° e. 144°

11. What number must be added to both numerator and denominator of the

00000
a b c d e

fraction $\frac{3}{7}$ so that the resulting fraction will be equal to $\frac{2}{3}$?

- a. 4 b. 5 c. 10 d. 25 e. 30

12. Expressing each in standard form, which of the following is/are polynomial expression/s?

00000
a b c d e

I. $\sqrt{x} - 2x^7 - x^3 - 1$ II. $\left(\frac{1}{x}\right)^{-4} - 3x^5 - x + 2$ III. $x^4 - 4x^{-2} + 7$

- a. I only c. III only e. I, II, and III
b. II only d. I and II only

Name: _____

Score: _____

%

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MSA**Math Refresher Test 9**

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

1. When Joey was born, his father was 9 times as old as his sister, who had just turned 3. How old was he when his father was 5 times as old as his sister? 00000
a b c d e
 a. 3 b. 4 c. 5 d. 6 e. 7

2. In a personality quiz, point score is assigned to every choice. Choice A is worth 5 points, B is 4 points, C is 3 points, and D is 2 points. Aida got a total of 117 points. If she made 3 more B's than A's, 5 C's more than twice the number of A's and 6 D's less than the number of A's, how many choice C's did she make? 00000
a b c d e
 a. 6 b. 8 c. 10 d. 12 e. 17

3. A lady bought a number of rare plants from a nursery. On her way home, she met 3 friends, one after another. To each friend, she was obliged to give half of the number of plants that she has, plus 2 more. Finally, she arrives home with only 1 plant for her garden. How many plants did she have from the nursery? 00000
a b c d e
 a. 6 b. 12 c. 24 d. 36 e. 48

4. A boat going to Boracay is rented by **MSA** employees at a cost of P1 000. When 10 additional people join the excursion on the day of the trip, the fare per person is decreased by P5. How many people originally signed up to rent the boat? 00000
a b c d e
 a. 30 b. 40 c. 50 d. 60 e. 70

5. Gabriel started smoking 4 cigarettes a day when he is 18 years old. Each year thereafter he increased his consumption by 2 cigarettes a day. When he died of lung cancer, he was smoking 2 packs (40 cigarettes). How old was he when he died? 00000
a b c d e
 a. 36 b. 48 c. 54 d. 60 e. 64

6. At the start of a marathon, Lester, an athlete, ran for 3 hours at a constant speed. After running, a bike was given to him and he rode in the opposite direction for 1 hour, with twice its running speed. He again reversed his direction, walking for another 2 hours at 50% of his initial speed. After 6 hours, Lester was 2 kilometers where the marathon exercise began. Find the athlete's running speed.

o o o o o
a b c d e

7. In number 6, the distance which Lester has travelled walking is how much less than the distance he has traveled biking?

a b c d e

8. An international school has 2 sections for the fourth year. The first section has 30 students, 25% of which are foreigners, and the second section has 35% students who are foreigners. If the administration plans to merge the two sections, the number of foreigners in the new class would comprise 31% of the total number of students. How many students are there in the second section?

a b c d e

- a. 35 b. 40 c. 45 d. 48 e. 50

9. Cake can vary in cholesterol content. Three slices of chocolate cake and 2 slices of cheese cake contain 360 mg of cholesterol. One slice of chocolate cake and 3 slices of cheese cake contain 190 mg of cholesterol. Find the cholesterol content in the chocolate cake.

a b c d e

10. A survey of 150 teens showed that 100 played basketball, 90 played tennis, and 85 played badminton. 30 played basketball and tennis but not badminton. 43 played basketball and badminton, 52 played tennis and badminton, and 25 did all three. How many teens played exactly one of the sports given?

0 0 0 0 0
a b c d e

- a. 25 b. 40 c. 50 d. 75 e. 100

11. Rocky can do a job in 10 hours. He already worked for two hours when Jake helped him for another 4 hours. After that, Rocky decided to stop and so Jake had to finish the job alone. If Jake finished the remaining portion in 6 more hours, how long can he do the whole job working alone?

a b c d e

Name: _____

Score: _____	%
HPS: _____	

School: _____ Date: _____



Math Refresher Test 10

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

- Which of the following is a possible value of x for the equation $y = 4^{\cos 3x}$ when $y = 1$? 00000
a b c d e
 - a. 0°
 - b. 30°
 - c. 45°
 - d. 60°
 - e. 90°
- In **number 1**, what is the maximum value of the equation? 00000
a b c d e
 - a. 1
 - b. 2
 - c. 4
 - d. 8
 - e. $+\infty$
- Which of the following expression /s/ is are equivalent to $\cos 60^\circ$? 00000
a b c d e
 - I. $2 \sin 30^\circ \cos 30^\circ$
 - II. $1 - 2 \sin^2 30^\circ$
 - III. $2 \cos^2 30^\circ - 1$
 - a. I only
 - b. II only
 - c. I and II only
 - d. II and III only
 - e. I, II, and III
- If $\tan \theta > 0$ and $\sec \theta < 0$, where does $P(\theta)$ lie? 00000
a b c d e
 - a. Q I
 - b. Q II
 - c. Q III
 - d. Q IV
 - e. $+y - \text{axis}$
- What is the value of $\tan \alpha$ if $\sin \alpha = \frac{40}{41}$ and α lies in the first quadrant? 00000
a b c d e
 - a. $\frac{40}{9}$
 - b. $\frac{9}{40}$
 - c. $\frac{9}{41}$
 - d. $\frac{41}{9}$
 - e. $\frac{3}{40}$
- Where $P(-160^\circ)$ lie? 00000
a b c d e
 - a. Q I
 - b. Q II
 - c. Q III
 - d. Q IV
 - e. $-x - \text{axis}$

7. Which of the following is a possible value of x in the equation:

a b c d e

$$\sin^2 x + \frac{1}{2} = 1 ?$$

- a. 30° b. 60° c. 120° d. 135° e. 240°

8. Which of the following equations is/are identity/identities?

a b c d e

$$\text{I. } \frac{1 - \cos^2 x}{\sin x} = \sin x \quad \text{III. } (\csc^2 x - 1)(\sin^2 x) = \cot^2 x \sin^2 x$$

$$\text{II. } \frac{1 - \cos^2 x}{\cos^2 x} = \tan^2 x$$

- a. I only
 - b. I and II only
 - c. I and III only
 - d. II and III only
 - e. I, II, and III

9. $\tan 135^\circ \cos 60^\circ$ is equivalent to which of the following expressions?

a b c d e

- a. $\sin 45^\circ - \cos 45^\circ$ c. $\sin 90^\circ + \cos 120^\circ$ e. $\sin 45^\circ$
b. $\sin 210^\circ$ d. $\tan 180^\circ + \sin 30^\circ$

10. A 90-ft extension ladder on top of a hook and ladder truck with its base 15 ft from the ground is inclined to the top of the building. Find the height of the building, when the ladder is 30° .

00000
a b c d e

- a. 40 ft b. 50 ft c. 60 ft d. 70 ft e. 90 ft

11. A bamboo pole which is 15 meters long is erected vertically. Find the angle of elevation to the top of the bamboo at a point $15\sqrt{3}$ m from its base.

00000
a b c d e

- a. 30° b. 45° c. 60° d. 90° e. 120°

12. How many triangles can be formed given: $\angle A = 120^\circ$, $a = 21$, $b = 32$?

0 0 0 0 0
a b c d e

- a. 1 triangle c. 3 triangles e. no triangle
b. 2 triangles d. infinitely many triangles

Name: _____

Score: _____

%

School: _____ Date: _____

HPS: _____



Math Refresher Test 11

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

1. Find all the possible values of x in $3^{x^2 - 3x} = 81$

- a. 1, 4 b. -1, 4 c. 1, -4 d. -1, -4 e. 0, 3

0	0	0	0	0
a	b	c	d	e

2. Give the range of every exponential function $f(x) = b^x$ where $b > 0$.

- a. all real numbers c. $(b, +\infty)$ e. none of these
 b. $(0, +\infty)$ d. all positive real numbers

0	0	0	0	0
a	b	c	d	e

3. The equivalent of $\ln y^2 = 2x$ in exponential function is _____.

- a. $10^{2x} = y^2$ c. $e^{y^2} = x$ e. $e^x = 2y^2$
 b. $10^{y^2} = 2x$ d. $e^{2x} = y^2$

0	0	0	0	0
a	b	c	d	e

4. Solve for x : $\log(x+6) - \log(x-9) = \log 4$.

- a. 4 b. 10 c. 14 d. 16 e. 18

0	0	0	0	0
a	b	c	d	e

5. Which of the following is true about the graph of $g(x) = -2^{x+3}$?

- a. The graph is a translation of the graph of $y = 2^x$ three units to the left.
 b. The graph is a translation of the graph of $y = 2^x$ three units to the left and reflected through the y -axis.
 c. The graph is a translation of the graph of $y = 2^x$ three units to the left and reflected through the x -axis.
 d. The graph is a translation of the graph of $y = 2^x$ three units to the right and reflected through the x -axis.
 e. The graph is a translation of the graph of $y = 2^x$ three units to the right and reflected through the y -axis.

0	0	0	0	0
a	b	c	d	e

Math Refresher Test 11

6. Simplify: $\left(e^{2 \ln 4^2} \right)^2$

- a. 4^6 b. 4^8 c. 4^{16} d. 2^6 e. 2^{26}

00000
a b c d e

7. Find the value of x : $x = \log_4 16 + \log_{25} 5 + \log_{27} 9$.

- a. $\frac{2}{3}$ b. $\frac{1}{6}$ c. $\frac{4}{5}$ d. 2 e. 3

00000
a b c d e

8. Determine the value of x in the equation: $5^{x+2} 3^x = 375$

- a. 0 b. 1 c. 2 d. 3 e. 5

00000
a b c d e

9. If $x \sqrt[3]{x^4} = 128$, then $x = \underline{\hspace{2cm}}$.

- a. 2 b. 4 c. 6 d. 8 e. 10

00000
a b c d e

10. Give the characteristic of $\log 100y$, if it is r in $\log y$.

- | | | |
|--------------|-------------|-------------|
| a. $r + 2$ | c. $3r$ | e. $4r - 1$ |
| b. $r + 100$ | d. $2r + 1$ | |

00000
a b c d e

11. If $\log_3 2 = a$ and $\log_3 5 = b$, what is the value of $\log_3 150$?

- | | | |
|------------|-----------------|-----------------|
| a. $a + b$ | c. $b - 2a + 2$ | e. $a + 2b + 1$ |
| b. $a + 1$ | d. $2a - b$ | |

00000
a b c d e

12. Solve for x : $\log_4 4^{3x+2} = -1$.

- a. -2 b. -1 c. 0 d. 1 e. 2

00000
a b c d e

13. Which of the following is a *true* statement?

- a. $\log_b x = \frac{\ln x}{\ln b}$ c. $\log x = \ln x$ e. none of these

00000
a b c d e

- b. $\ln 0 = 1$ d. $\log_b xy^2 = 2(\log_b x + \log_b y)$

RD-ACD-049-11

REV 2

8 August 2008

Name: _____

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MSA**Math Refresher Test 12**

Directions: Solve each problem carefully. Shade the letter that corresponds to your answer.

1. What is the value of $\sum_{n=3}^6 (n^2 + 4) + 2$? 00000
a b c d e
 - a. 56
 - b. 74
 - c. 86
 - d. 104
 - e. 110

2. How many numbers between 10 and 200 are exactly divisible by 7? 00000
a b c d e
 - a. 15
 - b. 23
 - c. 27
 - d. 30
 - e. 35

3. What is the sum of the numbers in question **number 2**? 00000
a b c d e
 - a. 5 670
 - c. 1 288
 - e. 1 050
 - b. 2 835
 - d. 1 190

4. What is the probability of obtaining a sum of 5 or 7 if two dice are thrown? 00000
a b c d e
 - a. $\frac{1}{12}$
 - b. $\frac{1}{9}$
 - c. $\frac{5}{18}$
 - d. $\frac{1}{6}$
 - e. $\frac{1}{3}$

5. Find the value of k so that $(8k + 4)$, $(6k - 2)$, and $(2k - 7)$ will form an arithmetic sequence. 00000
a b c d e
 - a. $\frac{1}{4}$
 - b. 1
 - c. $\frac{1}{2}$
 - d. 2
 - e. 4

6. What is the second term of an infinite geometric sequence if its sum is $\frac{9}{2}$ and the common ratio is $\frac{2}{3}$? 00000
a b c d e
 - a. 1
 - b. 2
 - c. $\frac{3}{2}$
 - d. 4
 - e. 5

Math Refresher Test 12

7. A bag contains five red balls, three blue balls and two green balls. If two balls were drawn from the bag, what is the probability that both balls are red?

00000
a b c d e

- a. $\frac{3}{14}$ b. $\frac{1}{5}$ c. $\frac{8}{15}$ d. $\frac{3}{5}$ e. $\frac{2}{9}$

8. If $P(A) = 0.8$, $P(B) = 0.3$, and $P(A \cap B) = 0.4$, what is $P(A \cup B)$?

$$0.8 + 0.3 - 0.4$$

- a. 0.1 b. 0.3 c. 0.4 d. 0.5 e. 0.7

9. Twenty-four persons in a business meeting shook hands with each other. How many handshakes were made?

00000
a b c d e

- a. 552 c. 276 e. 150
b. 600 d. 300

10. If the given equation is $a_n = (-n + 1)^n - 2n$, what is a_3 ?

00000
a b c d e

- a. -6 b. -2 c. 0 d. 2 e. -14

11. Find the fifth term of an arithmetic sequence whose first element is x and whose common difference is $2y$.

00000
a b c d e

- a. $x + 8y$ c. $x - 4y$ e. $5x + 8y$
b. $2x + 3y$ d. $3x + 2y$

12. A Chemistry book, a Physics book, a Biology book, a Genetics book, and an Engineering book are placed at random on a shelf with space for five books. How many possible arrangements are there if the Engineering and Chemistry books will be next to each other?

00000
a b c d e

- a. 120 b. 48 c. 36 d. 24 e. 12

13. Find the number of permutations of the letters in the word ALABAMA.

00000
a b c d e

- a. 5040 c. 340 e. 210
b. 840 d. 240

SOLUTIONS:

math Refresher Test 1

$$\textcircled{1} \quad \left(\frac{9x^6y^5}{z^4} \right)^2 \left(\frac{2x^{-3}y^2}{z^4} \right)^{-3}$$

$$= \left(81x^{-12}y^{10} \right) \left(\frac{-8x^9y^{-6}}{z^{-12}} \right)$$

$$= \frac{81x^{-3}y^4}{8z^{-20}}$$

$$\Rightarrow \frac{81y^4z^{20}}{8x^3}$$

⑥ B/C

I. is undefined

$$\sqrt[4]{0} = 0$$

$$\frac{1}{0} = i \text{ (imaginary no.)}$$



$$\text{II. } 4\sqrt{x^5} = 4\sqrt{x^4 \cdot x}$$

$$= x\sqrt{x}$$

$$\text{III. } \sqrt{-x^2} = i$$

② arithmetic series

$$n = \frac{a_n - a_1}{d} + 1$$

$$= \frac{71 - 21}{1} + 1$$

$$\Rightarrow 51$$

$$S_n = \frac{n}{2} (a_1 + a_n)$$

$$= \frac{51}{2} (21 + 71)$$

$$= \frac{51}{2} (92) 46$$

$$\Rightarrow 2346$$



⑦ LCD = $3(n+2)(n-3)(n-1)$
LCM \rightarrow countn repeating factors
LCD \rightarrow doesn't " " "

⑧ substitute

$$a \otimes b = 10 \otimes 6$$

$$= \frac{10^2 - 6^2}{20 - 4} = \frac{100 - 36}{14}$$

$$= \frac{64}{14}$$

$$\Rightarrow 32/\cancel{4}$$

$$\textcircled{3} \quad \frac{(ab+4a)-(3b-12)}{(ab+2a)-(3b-4)}$$

$$= \frac{a(b+4) - 3(b+4)}{a(b+2) - 3(b+2)}$$

$$= \frac{(a-3)(b+4)}{(a-3)(b+2)}$$

$$\Rightarrow \frac{b+4}{b+2}$$

$$\textcircled{10} \quad 3 + \frac{3}{3 + \frac{3}{3 + \frac{3}{3 + \frac{3}{5}}}} \rightsquigarrow \frac{3}{15/5 + 3/5}$$

$$= 3 + \frac{3}{3 + \frac{3}{1(18)}}$$

$$= 3 + \frac{3}{3 + \frac{5}{6}}$$

$$= 3 + \frac{3}{18/6 + 5/6}$$

$$= 3 + (3)\left(\frac{6}{23}\right)$$

$$= \frac{69}{23} + \frac{18}{23}$$

$$\Rightarrow 87/23$$

$$\textcircled{5} \quad \sqrt{y-x} + x^2$$

$$= \sqrt{0.09} + 6.25$$

$$= 0.30$$

↳ NOT 0.09

$$\Rightarrow 6.55$$

ANSWER KEY:

1. C

11. d

2. a

3. c

4. b

5. d

6. c

7. a

8. c

9. c

10. b



math Refresher Test 2

③ $(z^{n^2})^{n^3} (z^{4n^3})^{n^2}$
 $= z^{n^2(n^3)} \cdot z^{4n^3(n^2)}$
 $= z^{5n^5}$

④ make $n=0$

⑤ $\frac{7}{6}x + \frac{2}{3} = \frac{6}{5}x - \frac{1}{2}$

$$= 35x + 20 = 36x - 15$$

$$-x = -35$$

$$\Rightarrow x = 35$$

⑥ $-x \leq 10$
 $x \geq 10$

⑦ $\sqrt{\frac{3y^2}{25} + \frac{6y^2}{49}}$

$$= \sqrt{\frac{3(49)y^2 + 6(25)y^2}{25(49)}}$$

$$= \sqrt{\frac{147y^2 + 150y^2}{5^2 \cdot 7^2}}$$

$$= \sqrt{\frac{9 \cdot 33y^2}{5^2 \cdot 7^2}}$$

$$\Rightarrow \frac{3y\sqrt{33}}{35}$$

⑧ BC for a, b :

$$x^2 = \pm 6 \text{ or } x^2 = \pm 1$$

but for c :

$$x^3 = 64;$$

$$-x^3 = -64$$

∴ there is only one possible solution.

ANSWER KEY:

- | | |
|------|-------|
| 1. b | 9. C |
| 2. a | 10. c |
| 3. a | 11. b |
| 4. d | 12. c |
| 5. a | 13. c |
| 6. c | 14. c |
| 7. e | |
| 8. a | |



⑨ absolute values
 are always a positive value

math Refresher Test 3

① $ax^2 + bx + c = d$

$$d = b^2 - 4ac$$

$a < 0$; complex

② $(x-1)^{\frac{1}{3}} - 2 = 0$

③ $y = a(x-h) + k$; $y = ax^2 + bx + c$

vertex = $\left(\frac{-b}{2a}, \frac{4ac-b^2}{4a} \right)$

(minimum point) = $\frac{16}{2(2)} = 4$

$\Rightarrow (4, -27)$

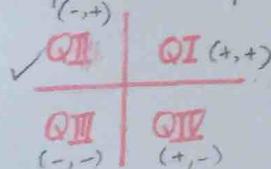
④ $2x+3y-1 = 3x-y+7$

$$= 2y - 4 = x$$

$$= 2(2y-4) + 3y = 1$$

$$= 4y - 12 + 3y = 1$$

$$y = 13y$$



⑤ $y = mx+b$

$$3y = -2x + 4$$

$$y = -\frac{2}{3}x + 4$$

$$m = -\frac{2}{3}$$

⑥ $y - y_1 = m(x - x_1)$

$$y - y_1 = -4(x - 5)$$

$$4x + y - 20 = 0$$

ANSWER KEY:

1. b

2. d

3. a

4. b

5. b

6. a

7. d

8. d

math Refresher Test 4

⑤ I. $f^{-1}(x)$

$$y = 2x$$

$$x = 2y$$

$$y = \frac{x}{2}$$

II. $f^{-1}(g(x))$

$$= \frac{x}{4} = \frac{x}{4} \left(\frac{1}{2}\right) = \frac{x}{8} \quad \times$$

⑦ $-\frac{b}{2a}$

⑧ $x + 2 = 0$

$$x = -2$$

replace x in the eq.

$$y/-2 = 12$$

⑨ $4i^{82} + 6i^{154} - 3i^{123}$

divide your exponent
by 4; the remainder
will be your i's exp.

$$i^1 = i$$

$$i^2 = -1$$

$$i^3 = -i$$

$$i^4 = 1$$

$$4i^2 + 6i^0 - 3i^3$$

$$4(-1) + 6(-1) + 3(-i) = -10 + 3i \quad \times$$

ANSWER KEY:

1. d

2. b

3. d

4. c

5. d

6. e

7. a

8. b

9. c

10. b

11. x

12. c

13. q

14. e

main Refresher Test 5

① $3x = x - 2$
 $\Rightarrow x = -1$

② $\frac{(x-3) + (8-x) + (3x-1)}{3}$

$$\begin{aligned} \frac{3x+6}{3} &= y \\ x+2 &= y \end{aligned}$$

$$\rightarrow \left(\frac{2y}{2} + \frac{3y}{2} \right) \frac{1}{2}$$

$$\Rightarrow \frac{5y}{4}$$

③ $\frac{2x}{2x-4} - \frac{6}{3x-6}$

$$= \frac{2(x)}{2(x-2)} - \frac{3(2)}{3(x-2)}$$

$$\Rightarrow \frac{x-2}{x-2} = 1$$

④ $0 < s < 1$

$$0 < 0.25 < 1$$

$$\left(\frac{1}{4}\right)$$

I. $\left(\frac{1}{4}\right)^3 < \left(\frac{1}{4}\right)^2$ ✓

II. $\sqrt{\frac{1}{4}} > \frac{1}{4}$ ✗

III. $\left(\frac{1}{4}\right)^2 > 1$ ✗

⑤ $P(n) = 2P(n-1) + 3$

$$P(0) = 3$$

$$P(1) = 2P(0) + 3$$

$$= 9$$

$$P(2) = 2(P(1)) + 3$$

$$\begin{cases} P(0) = 3 \\ P(1) = 2P(0) + 3 \\ P(2) = 2P(1) + 3 \\ \vdots \\ P(n) = 2P(n-1) + 3 \end{cases}$$

$$= 2(21) + 3$$

$$= 45$$

$$\text{⑥ MPI:}$$

IF $a \geq b, c > 0$, then $ac \geq bc$
 $a \leq b, c < 0$, then $ac \leq bc$

⑦ a, b, c are consecutive #'s

$$\begin{aligned} \text{ex. } 1, 2, 3 \\ 2, 3, 4 \end{aligned}$$

⑧ substitute $f(a) = 6a - 2$

$$= \frac{6x-6}{x-a} = \frac{6(x-1)}{x-a}$$

$$\Rightarrow 6$$

⑨ $g(x) = \frac{x-4}{x-2}; y = \frac{x-4}{x-2}$

$$x = \frac{y-4}{y-2}$$

$$x(y-2) = y-4$$

$$xy - 2x = y - 4$$

$$y = \frac{2x-4}{x-1}$$

$$\Rightarrow g^{-1}(x) = \frac{2x-4}{x-1}$$

⑩ I. $f(x) = x^2 - 4$

$$f(-1) = -(x^2) - 4$$

$$= x^2 - 4$$

∴ EVEN

II. $f(x) = x^3 + x^2$

$$f(x) = (-x)^3 + (-x)^2$$

$$= -x^3 + x^2$$

∴ NEITHER

III. $f(x) = x^2 + x^{-2}$

$$= (-x)^2 + (-x)^{-2}$$

$$= x^2 + \frac{1}{x^2}$$

$$= x^2 + x^{-2}$$

∴ EVEN

ANSWER KEY:

1. b 7. c

2. c 8. d

3. c 9. b

4. c 10. d

5. d 11. b

6. c

math Refresher Test 6

①  $2^2 + 3^2 = x^2$
 $x = \sqrt{13}$

$$\ell^2 = (\sqrt{13})^2 + 6^2 \\ = 13 + 36 = 49$$

$$\sqrt{\ell^2} = 7$$

② $a^2 + b^2 = c^2$



④ d: no. of diagonals
of a pentagon

$$d = \frac{n(n-3)}{2}; n: \# \text{ of sides}$$

⑥ $x+y > 20$

$$xy < 50$$

$$y < \frac{50}{x}$$

$$x + \frac{50}{x} > 20$$

⑦ $x^2 - 2x - 15 = (x+r)(x+s)$

$$(x-3)(x+5);$$

$$r = +3; -5$$

If $r = 3$ and $s = -5$

$$r - s = 3 - (-5)$$

$$\Rightarrow 8$$

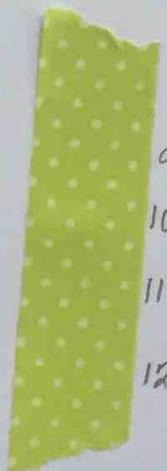
⑨ $3(-1)^{1000} - 1(-1)^{123} - 2(-1)^{96} = 3(-1)^3 + 5(-1)$
 $= 3 - 1 - 2 + 5 - 5$
 $= 0 - 8$
 $\Rightarrow -2$

⑩ $(g \circ f)(x) \Rightarrow gf(x) \Rightarrow g(x) = f(x^2) \cdot -1$
 $= \sqrt{x^2} = 1$
 $\Rightarrow x = 1$

⑫ $g(x) = x^2 - 1$
 $(-\infty, \infty) \setminus (x \neq 0)$
OR IR
 $\Rightarrow \{x/x \neq 0\}$

ANSWER KEY:

- | | |
|------|-------|
| 1. a | 7. a |
| 2. c | 8. c |
| 3. a | 9. b |
| 4. c | 10. d |
| 5. c | 11. b |
| 6. d | 12. c |



math Refresher Test 7

$$\textcircled{1} \quad d = \sqrt{(7-4)^2 - (3+1)^2} \\ = \sqrt{25} \\ \Rightarrow 5 //$$

\textcircled{11} + (to the left) ↘ + (move up)
 - (to the right) ↙ - (move down)

$$\textcircled{2} \quad (n-2)(180^\circ) = 2340^\circ$$

$$n-2 = 13$$

$$n = 15 //$$

$$\textcircled{3} \quad \begin{array}{l} 2x+3y = -6 \\ 3x+2y = 0 // \end{array}$$

$$3(-2)+2(3) = 0$$

$$\textcircled{4} \quad 3(x-1)^2 + 3(y-2)^2 = 0 \\ (x-h)^2 + (y-k)^2 = r^2 \\ (1, 2), r=0$$

ANSWER KEY:

1. b
2. d
3. a
4. c
5. d
6. e
7. d
8. c
9. e
10. b



$$\textcircled{5} \quad r + p10 = \frac{x \text{ pounds}}{y \text{ pesos}}$$

$$\Rightarrow \frac{x(r+10)}{y} //$$



$$x + 75 = 115^\circ$$

$$\Rightarrow x = 40^\circ //$$

\textcircled{10} complete the square

$$\begin{aligned} x^2 + 4x + \underline{\quad} + 36y^2 - 72y = -4 \quad & \rightarrow (x+2)^2 + 36(y-1)^2 = 36 \\ x^2 + 4x + 4 + 36(y^2 - 2y) = -4 + 4 + 36 \\ \downarrow & \\ \frac{4}{2} = 2 | 2^2 = 4 & \left\{ \begin{array}{l} -\frac{2}{2} = -1 \\ -1^2 = 1 \end{array} \right. \end{aligned}$$

$$\Rightarrow (-2, 1)$$

math Refresher Test 8

① $(3+1)(2+1)(2+1) = 36$ //

③ $3^1 = 3$ $3^5 = 243$
 ~~$3^2 = 9$~~ $3^6 = 729$
 ~~$3^3 = 27$~~ $3^7 = 2187$
 $3^4 = 81$ $3^8 = \dots$ 1

4 $\underline{74}$
18r2

⑤ $x+y=15$ //
 $y+z=10$ $x-z=5$
 $x+z=13$ $x+z=13$
 $x=9$ $2x=18$
 $x=9$

$x=9$
 $y=6$ $x < y < z$
 $z=4$ //

⑦ $y = -3x^2$ **smaller*
 $|y| = 3$ *= wider*
 I. $|- \frac{1}{2}| = \frac{1}{2}$ ✓
 II. $| -1 | = 1$ ✓
 III. $| 3/2 | = 3/2$ ✓

⑧ $5+3y=38$

$A = \{w, r, t\}$,

$B = \{x, w, p\}$

I. $n(A) + n(B)$ is 6 ✓
 $\hookrightarrow 3$ $\hookrightarrow 3$

II. $A - B = \{r, t, x, p\}$ ✗

III. $(A \cup B) = 32$ subsets ✓

$\{w, r, t, x, p\} = 2^5 = 32$

⑩ $360^\circ \div 10 = 36^\circ$ //

⑪ $3(3+x) = 2(7+x)$
 $9+3x = 14+2x$
 $x = 5$ //

⑫ In polynomials,
 exponents must be
 a whole number
 and positive!

ANSWER KEY:



- 1. c
- 2. d
- 3. e
- 4. d
- 5. c
- 6. c
- 7. d
- 8. a
- 9. b
- 10. a
- 11. b
- 12. b

math Refresher Test 9

$$\begin{array}{l} \textcircled{1} \quad F = 3a = 27 \\ \quad S = 3 \\ \quad J = x \end{array} \quad \left| \begin{array}{l} 27 + x \\ 3 + x \end{array} \right.$$

$$\begin{aligned} 5(3+x) &= 27+x \\ 15 + 5x &= 27+x \\ \Rightarrow x &= 3 \end{aligned}$$

$$\begin{array}{l} \textcircled{2} \quad 5x + 4x + 12 + 6x + 15 + 2x - 12 = 117 \\ \quad 17x + 15 = 117 \\ \quad 17x = 102 \\ \Rightarrow x = 6 \end{array}$$

$$\textcircled{4} \quad \frac{1000}{x} \times 5 = \frac{1000}{x+10}$$

$$\left(\frac{1000}{x} - 5 = \frac{1000}{x+10} \right) (x-5)(x+10)$$

$$1000(x+10) = 1000(x-5)$$

$$1000x + 10,000 = 1000x - 5000$$

$$\begin{aligned} 2x + 2 &= \frac{1}{5}x - 1 \\ 10x + 10 &= x - 5 \\ 9x + 15 &= 0 \end{aligned} \quad \left| \begin{array}{l} x^2 + 10x - 2000 = 0 \\ (x+50)(x-40) = 0 \\ \Rightarrow x = 40 \end{array} \right.$$

$$\textcircled{5} \quad n = \frac{a_n - a_1}{d} + 1$$

$$= \frac{40-6}{2} + 1$$

= 18 years after

$$18 + 18 = 36 \text{ yrs.}$$

	rate	Time	Distance
RUNNING ⊕ direction	x	3	3x
BIKING ⊖ direction	-2x	1	-2
WALKING ⊕ direction	$\frac{1}{2}x$	2	x

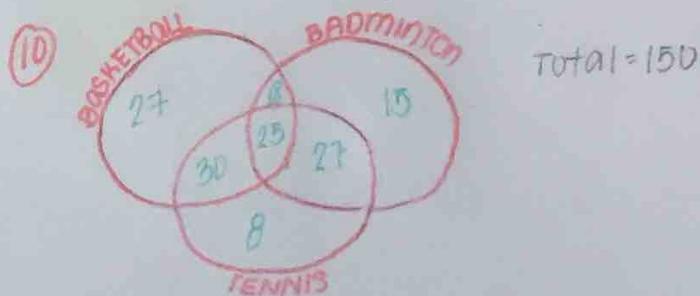
$$3x + (-2x) + x = 2$$

$$\Rightarrow x = 1$$

$$\textcircled{7} \quad |-2x| - |x| = 2 - 1 \approx 1 \text{ km}$$

$$\begin{array}{l} \textcircled{8} \quad \text{cheese-CS} \\ \text{chocolate-CC} \end{array} \quad \begin{array}{l} 3CC + 2CS = 360 \\ (1CC + 3CS = 190)3 \end{array}$$

$$\begin{array}{r} 3CC + 2CS = 360 \\ - 3CC + 9CS = 570 \\ \hline -7CS = 210 \end{array} \quad \begin{array}{l} 1 \text{ cheese} = 30 \\ 1 \text{ chocolate} = 180 \end{array}$$



$$\Rightarrow 27 + 8 + 15 = 50 \text{ teens}$$

$$\textcircled{11} \quad \text{ROCKY} - \frac{1}{10} \quad \frac{1}{10}(2) + \left(\frac{1}{10} + \frac{1}{x}\right)4 + \left(\frac{1}{x}\right)6 = 1$$

$$\text{JAKE} - \frac{1}{x}$$

$$= \frac{2}{10} + \frac{4}{10} + \frac{4}{x} + \frac{6}{x} = 1$$

$$= \frac{6}{10} + \frac{10}{x} = 1$$

$$= \frac{10}{x} = \frac{10}{10} - \frac{6}{10}$$

$$= \frac{10}{x} = \frac{2}{5}$$

$$\Rightarrow x = 25$$

ANSWER KEY:

- 1. a
- 2. a
- 3. c
- 4. b
- 5. a
- 6. b



- 7. a
- 8. d
- 9. c
- 10. c
- 11. d

math Refresher Test 10

① $\cos 3(30^\circ) = 0$

② max. value

$$4 \cos 3x^{\circ} = 4$$

③ I. $2\left(\frac{\sqrt{3}}{2}\right)\left(\frac{1}{2}\right) = \frac{\sqrt{3}}{2}$
 II. $1 - 2\left(\frac{1}{2}\right)^2 = 1 - 2\left(\frac{1}{4}\right) = \frac{1}{2}$
 III. $2\left(\frac{\sqrt{3}}{2}\right)^{-1} = \frac{\sqrt{3}}{2} - 1 = \frac{1}{2}$

⑥ $-1160 + 1080 = -80$
 $360 - 80 = 280$ (QIII)

⑦ $\sin^2 x + \frac{1}{2} = 1$

$$\frac{\sqrt{2}}{2} + \frac{1}{2} = 1$$

$$\hookrightarrow 45^\circ = 135^\circ$$

$$\Rightarrow \frac{3}{4} + \frac{1}{2} = 1$$

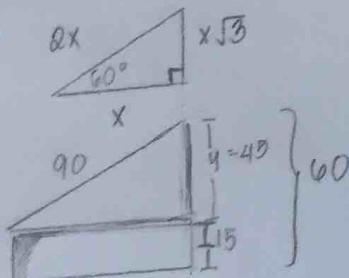
⑧ $(\tan 135^\circ)(\cos 60^\circ)$

$$(-1)\left(\frac{1}{2}\right) = -\frac{1}{2}$$

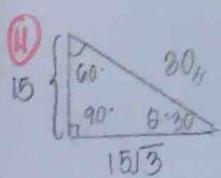
$$\sin 210^\circ = \sin 30^\circ = -\frac{1}{2}$$

negative
b/c in QIII

⑩



⑪



⑫ $\angle A = 120^\circ$

$$a = 21, b = 32$$

If a is obtuse, and $a < b$, therefore it's a triangle.

ANSWER KEY:

- 1. b
- 2. c
- 3. d
- 4. c
- 5. a
- 6. d
- 7. d
- 8. e
- 9. b
- 10. c
- 11. a
- 12. e

math Refresher Test 11

ANSWER KEY:

- 1. b
- 2. b, d
- 3. d
- 4. c
- 5. d
- 6. b
- 7. x
- 8. b
- 9. d
- 10. a
- 11. e
- 12. b
- 13. b

math Refresher Test 12

ANSWER KEY:

① $(3^2+4) + (4^2+4) + (5^2+4) + (6^2+4) + 2 = 104$

② $\frac{196-14}{7} + 1 = 27$

④ 5 OR 7

$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$$= \frac{46}{36} + \frac{16}{36} - \frac{12}{36} = \frac{10}{36} = \frac{5}{18}$$

\nwarrow \downarrow
 1,4 1,6
 4,1 6,1
 3,2 5,2
 2,3 2,5
 3,4 3,4
 4,3

⑤ $6k-2 - (3k+4) = 2k-7 - (6k-2)$

$k = \frac{1}{2}$

⑥ $P(A) + P(B) - P(A \cap B)$

⑦ $\frac{24(24-1)}{24(23)}$

⑧ $a_n = a_1 + (n-1)r$
 $= \frac{x + (5-1) + 2y}{x + 8y}$

⑨ $\frac{7!}{4!1!1!} = 5 \times 6 \times 7$
 $= 210$

1. d	9. a
2. c	10. e
3. o	11. a
4. c	12. b
5. c	13. e
6. a	
7. b	
8. e	

Name: _____

Score: _____

%

School: _____

Date: _____

HPS: _____

MSA
General Information:
Science 1*allotrope - some compounds
diff. chemical,
physical
properties***Directions:** Choose the letter of the correct answer.

1. Who was the famous Greek philosopher that coined the term "atomos," the basic unit of matter? 0000
a. Aristotle b. Plato c. Democritus d. Socrates
2. What do you call the icicle-like structures of hardened limestone in ceilings of caves? 0000
a. columns b. stalagmites c. dunes d. stalactites
3. Who was the scientist that was featured in the movie "Ever After"? 0000
a. Isaac Newton c. Galileo Galilei
b. Leonardo da Vinci d. Nicolaus Copernicus
4. What was the creature dreamed by Kekule that made him create the ringed-structure of benzene? 0000
a. dragon b. snake c. centipede d. armadillo
5. What is a black diamond? 0000
a. graphite b. coal c. gold d. titanium
6. What is the element called "quick silver"? 0000
a. iron b. copper c. silver d. mercury
7. Who discovered vulcanization, the process of treating rubber to its brittleness and tackiness? 0000
a. Benjamin Goodrich c. Charles Goodyear
b. John Boyd Dunlop d. Joseph Priestly
8. Aristotle is the "Father of Science", who was his famous student? 0000
a. Alexander the Great c. Genghis Khan
b. Napoleon Bonaparte d. Plato

9. Why is saffron expensive? 0000
a b c d
a. Because it is made from crocodile tears.
b. Because it is made from the stigmas of crocus.
c. Because it is made from the wings of hummingbirds.
d. Because it is made from pollen of wild orchids.
10. What household appliance follows the principle of Boyle's Law? 0000
a b c d
a. pressure cooker c. insecticide spray
b. thermostatic pot d. LPG tank
11. What is the third to the hardest mineral? 0000
a b c d
a. quartz b. gypsum c. corundum d. topaz
12. Which is the biggest lake in the world? 0000
a b c d
a. Lake Baikal c. Lake Superior
b. Caspian Sea d. Lake Tahoe
13. Which of the following plants was the first one to be genetically mapped-out? 0000
a b c d
a. banana b. mustard c. rice d. corn
14. What kind of volcano is Mount Taal? 0000
a b c d
a. cinder b. composite c. shield d. strato
15. In which era did the mountain ranges like Himalayas, Alps and Andes appear? 0000
a b c d
a. Mesozoic b. Paleozoic c. Cenozoic d. Precambrian
16. What is the largest known volcano in the solar system? 0000
a b c d
a. Deimos b. Krakatoa c. St. Helens d. Olympus Mons
17. The nearest star from earth is the sun, what is the second nearest star from earth? 0000
a b c d
a. Sirius b. Castor c. Pollux d. Proxima Centauri
18. What wristwatch brand became famous because it was worn by the first men on the moon? 0000
a b c d
a. Tag Heuer b. Tissot c. Rolex d. Omega

Name: _____ Score: _____ %

School: _____ Date: _____ HPS: _____

MSA**General Information:**
Science 2**Directions:** Choose the letter of the correct answer.

1. Mercury is the nearest planet to the sun but strangely enough, it is not the hottest planet. Which one is considered the hottest planet in the Solar System?

0000
a b c d

- a. Mars b. Earth c. Venus d. Jupiter

2. When you combine red and green light, what resulting color would be formed?

0000
a b c d

- a. cyan b. blue c. yellow d. magenta

3. A doorknob is an example of what kind of simple machine?

0000
a b c d

- a. lever b. pulley c. wedge d. wheel and axle

b, has are

4. Almost all elements exist as metals. Approximately what percent of elements are metals?

0000
a b c d

- a. 25% b. 50% c. 75% d. 100%

5. In our solar system, there exists a volcano almost 3x as tall as Mt. Everest. We call it Olympus Mons. Where is it located?

0000
a b c d

- a. Venus b. Jupiter c. Mars d. Mercury

6. How long does it take for the light of the sun to reach us?

0000
a b c d

- a. 2 mins b. 4 mins c. 6 mins d. 8 mins

7. What does the color of a star indicate?

0000
a b c d

- a. size b. mass c. brightness d. temperature

8. All of the following are sources of CFCs except _____.

0000
a b c d

- a. coolants c. plastics
b. aerosol sprays d. styrofoam packaging

9. Which constellation contains the Big Dipper?
a. Andromeda c. Perseus b. Ursa Major d. Ursa Minor

0000
a b c d

Little Dipper

8. The Assyrian goddess of love was _____. *Ishtar* 0000
 a. Venus b. Nina c. Helene d. Seneca a b c d
9. The greatest literary classic of ancient Babylon was the Sumerian _____, a forerunner of the "Great Flood" in the Old Testament. 0000
 a. Epic of Gilgamesh c. Book of the Dead
 b. Hymn of the Sun d. Epic of Babylon a b c d
10. The greatest architectural achievement of Babylonia was the _____. It was an edifice of several storeys on a huge platform, each storey being smaller than the one below it; on top of the last storey was a small shrine for the God, to whom religious rites were offered. 0000
 a. Hanging Gardens c. Sphinx
 b. Pyramids d. ziggurat a b c d
11. Who were the first builders of civilization? 0000
 a. Assyrian Empire c. Sumerian Empire
 b. Babylonian Empire d. Greek Empire a b c d
12. What was the crowning glory of Babylon and is one of the Wonders of the Ancient World? It was built by Nebuchadnezzar to please his favorite wife. 0000
 a. Hanging Gardens c. Sphinx
 b. Pantheon d. Ziggurat a b c d
13. What is the longest river in the world? 0000
 a. Euphrates b. Nile River c. Tigris d. Tiber River a b c d
14. What was ancient Egypt's form of government? 0000
 a. Democracy b. Monocracy c. Paleocracy d. Theocracy a b c d
15. The ancient Egyptian writing was known as _____. 0000
 a. cuneiform b. oligraphy c. calligraphy d. hieroglyphics a b c d
16. King David, who killed Goliath made _____ the capital of Israel. 0000
 a. Palestine b. Crete c. Jerusalem d. Jordan a b c d

Name: _____

Score: _____

%

School: _____ Date: _____

HPS: _____

MSA**General Information:
World History 2****Directions:** Choose the letter of the correct answer.

1. What religion is based on the belief that life is a constant struggle between good and evil? 0000
a b c d
- a. Zoroastrianism c. Christianity
b. Shintoism d. Taoism
2. The "Prophet of Iran" was _____. 0000
a b c d
- a. Hammurabi c. Cyrus the Great
b. Zoroaster d. Nebuchadnezzar
3. What was known as "The Promised Land"? 0000
a b c d
- a. Jerusalem b. Palestine c. Jordan d. Egypt
↳ Canaan
4. The chief god of Hinduism is _____, the "World Soul." 0000
a b c d
- a. Brahma b. Allah c. Vishnu d. Indra
5. The Hindus believe that man can attain true happiness if his soul merges with that of Brahma through _____. 0000
a b c d
- a. Enlightenment c. Nirvana
b. Sikhism d. Reincarnation
6. According to _____, the soul of a good man is reborn in a person of higher status, while an evil person is reborn in a lower creature, like a dog, pig, or a tiger. 0000
a b c d
- a. Buddhism b. Shintoism c. Hinduism d. Jainism
7. According to _____, man can end his suffering by conquering his selfish desires. 0000
a b c d
- a. Buddhism b. Hinduism c. Shintoism d. Confucianism

8. He was a Hindu prince who felt deeply moved by the poverty of the masses. He especially did not like the Hindu beliefs on caste or karma that condemned a man to a certain class for life. He was a founder of Buddhism. Who is he? 0000
 a. Mohammed Gandhi c. Gautama Buddha
 b. Confucius d. Lao Tzu
 a b c d
9. The name "Buddha" means _____. 0000
 a. the Untouchable c. the Noble One
 b. the Perfect One d. the Enlightened One
 a b c d
10. What religion believes in the sanctity of all life, including plants and animals? 0000
 a. Hinduism b. Jainism c. Buddhism d. Shintoism
 a b c d
11. India has enriched world literature by giving mankind the first fable that is _____. 0000
 a. Panchantantra c. The Clay Cart
 b. Sakuntala d. Ramayana
 a b c d
12. Who was the founder of the Shang Dynasty? 0000
 a. Emperor Yu b. Xia Yu c. Mencius d. Ch'eng T'ang
 a b c d
13. What was the longest and the greatest dynasty to rule China? 0000
 a. Xia Dynasty c. Qin Dynasty
 b. Zhou Dynasty d. Shang Dynasty
 a b c d
14. The first dynasty that ruled China was _____. 0000
 a. Xia Dynasty c. Qin Dynasty
 b. Zhou Dynasty d. Shang Dynasty
 a b c d
15. Who was known as the founder of the Chinese Empire and was known as the builder of the famous Great Wall? 0000
 a. Confucius b. Zhon Hsin c. Mencius d. Shih Huang Ti
 a b c d
16. Who said the famous saying "*What you do not want done to you, do not do to others*"? 0000
 a. Confucius b. Mencius c. Lao Tzu d. Mao Zedong
 a b c d

Name: _____

Score: _____

%

School: _____ Date: _____

HPS: _____

MSA**General Information:
World History 3****Directions:** Choose the letter of the correct answer.

1. "To the good, I am good; to the bad, I am good, for virtue is goodness." Who said this? 0000
a. Confucius b. Mencius c. Lao Tzu d. Mao Zedong

2. "He who gains the hearts of the people gains the throne, and he who loses the people's hearts loses the throne." Who popularized this saying? 0000
a. Confucius b. Mencius c. Lao Tzu d. Mao Zedong

3. Ancient Sparta's form of government was _____. 0000
a. dictatorship b. oligarchy c. aristocracy d. democracy

4. Athens' form of government was _____. 0000
a. monarchy b. oligarchy c. aristocracy d. democracy

5. What is a form of government ruled by a king or queen? 0000
a. monarchy b. oligarchy c. republic d. dictatorship

6. What is a form of government ruled by noble families? 0000
a. monarchy b. oligarchy c. aristocracy d. dictatorship

7. For the Greeks, who was considered the chief god and lord of heaven? 0000
a. Phoebus b. Artemis c. Zeus d. Hermes

8. The Greeks believed that the deities lived on _____ and behaved like mortals. 0000
a. Mt. Dodona b. Mt. Olympus c. Mt. Helene d. Mt. Versuvius

9. Who was considered the Father of History? 0000
a. Plato b. Aristotle c. Herodotus d. Sophocles

Name: _____

Score: _____ %
HPS: _____

MSA

General Information: World History 4

Directions: Choose the letter of the correct answer.

1. What was the reason behind the assassination of Julius Caesar? 0000
a. People were tired of his cruelty as a dictator. a b c d.
b. His rivals became jealous of his political strategy.
c. Senators feared that he was planning to establish a monarchy.
d. Senators feared that he was plotting a system of political allegiance against them.

2. "Pax Romana" means _____. 0000
a. Roman Peace c. Roman Power
b. Roman Culture d. Roman Emperors a b c d

3. One of the causes of the decline of the Roman Empire was _____. 0000
a. weakening of the government due to a lack of able and dedicated emperors and rampage of graft and corruption
b. decadence of Roman character that was caused by luxuries, immorality, drunkenness and other depravities
c. deterioration of Roman military power because the army became composed of Roman soldiers who were corrupt and not dedicated to fight for the empire
d. cultural progress due to moralizing spirit of the times and of incentives for growth a b c d

4. Who was the most famous of the Greek philosophers whose favorite maxim was "Know Thyself"? 0000
a. Plato b. Socrates c. Aristotle d. Hippocrates a b c d

5. What is the best known sports contest in the world? 0000
a. ASEAN Games c. Olympic Games
b. World Games d. Federal Games a b c d

Name: _____

Score: _____

%

School: _____

Date: _____

HPS: _____

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MSA
General Information Test**Directions:** Choose the letter of the correct answer.

1. Which precious metal is used in photography ?
a. bronze b. gold c. silver d. titanium
a b c d
2. What is the largest island in Europe ?
a. Great Britain b. Italy c. France d. Spain
a b c d
3. Who was the first American president to resign ?
a. Abraham Lincoln c. Thomas Jefferson
b. John F. Kennedy d. Richard Nixon
a b c d
4. Which is the largest gland in the human body ?
a. the heart b. the skin c. the brain d. the liver
a b c d
5. What is the name of King Arthur's sword ?
a. Excalibur b. Excavalier c. Exculiber d. Execalibur
a b c d
6. What is the smallest unit of length measurement ?
a. millimeter b. femtometer c. hectometer d. fathometer
a b c d
7. Which country is formerly known as East Pakistan ?
a. Persia b. Saudi Arabia c. Bangladesh d. Iraq
a b c d
8. Which type of government is formed by a small group after a coup d' etat ?
a. jandal b. junta c. jaundice d. iota
a b c d

9. Who invented the rocking chair?

- a. Michael de Montaigne
- b. Guglielmo Marconi
- c. James Harrison
- d. Benjamin Franklin

a b c d

10. What name is given to a word or sentence that reads the same forwards and backwards?

- a. palindrome
- b. mnemonic
- c. palinode
- d. palilalia

a b c d

BONUS
11. Who was responsible for the calendar we now use?

- a. Pope Gregory VIII
- b. Alexander the Great
- c. Julius Caesar
- d. King Richard III

0000
a b c d

12. For how many months was Noah's Ark afloat?

- a. ten
- b. seven
- c. eight
- d. five

a b c d

13. What does a hygrometer measure?

- a. velocity
- b. pressure
- c. moisture
- d. humidity

a b c d

14. Who was the Greek equivalent of Venus?

- a. Athena
- b. Helen
- c. Aphrodite
- d. Andromeda

a b c d

15. Who was the oldest candidate to become Philippine president?

- a. Manuel Roxas
- b. Ramon Magsaysay
- c. Sergio Osmeña Jr.
- d. Diosdado Macapagal

a b c d

16. What is the most expensive substance?

- a. gold
- b. mercury
- c. californium
- d. lithium

a b c d

17) What Philippine city has the biggest area ?

- a. Manila
- b. Quezon City
- c. Cebu
- d. Davao



a b c d

18. Who is the oldest person in the Bible ?

- a. Abraham
- b. Metuselah
- c. Moses
- d. Jacob



a b c d

19. Who is known as the "*Father of Astronomy*" ?

- a. Nicolas Copernicus
- b. Michael Faraday
- c. Sir Isaac Newton
- d. Charles Darwin



a b c d

20. Who invented the electric battery ?

- a. James Watt
- b. Alessandro Volta
- c. Thomas Edison
- d. Sir Humphrey Davy



a b c d

21. Who were credited for the invention of the wheel ?

- a. Egyptians
- b. Greeks
- c. Persians
- d. Sumerians



a b c d

22. Which country was formerly called "*Mesopotamia*" ?

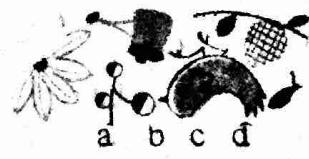
- a. Iraq
- b. Israel
- c. Iran
- d. Palestine



a b c d

23. Who is known as the "*Father of Modern Physics*" ?

- a. Jean Piaget
- b. Alfred Wegener
- c. Sigmund Freud *psychology*
- d. Max Planck



a b c d

24. Who was credited for the invention of the compact disc ?

- a. Jerome Lemelson
- b. Douglas Engelbart
- c. James Russell
- d. Martin Cooper



a b c d

25. A polytheist believes in many _____.

- a. superstitions
- b. saints
- c. gods
- d. spirits

(26). Who were known for their contribution of the use of iron ?

- a. Hittites
- b. Phoenicians
- c. Lydians
- d. Palestinians

27. What is the source for much of early Hebrew history ?

- a. Book of the Sun
- b. New Testament
- c. Old Testament
- d. Book of the Dead

28. Who was known as the Hebrew people's chief law-giver and interpreter ?

- a. Jesus
- b. King David
- c. Abraham
- d. Moses

29. Who introduced the use of coin in trade ?

- a. Hittites
- b. Phoenicians
- c. Lydians
- d. Hebrews

30. Who was the first Israelite King ?

- a. Saul
- b. Solomon
- c. David
- d. Judah

31. In Macbeth we see a man whose downfall was caused by _____.

- a. an unfair plot against his life
- b. supernatural intervention
- c. overwhelming ambition for power
- d. a naturally blood-thirsty disposition

32. Who is considered as the greatest English writer and as the bard of Avon ?

- a. Geoffrey Chaucer
- b. Charles Dickens
- c. William Shakespeare
- d. Francis Bacon



33. Gothic architecture is known for its _____.

- a. height
- b. round domes
- c. ornamented ceilings
- d. pointed arches



34. The *Nibelungenlied* is a _____.

- a. Medieval German epic
- b. Latin Myth
- c. Russian folk song
- d. Chinese legend



35. In the Count of Monte Cristo, Edmond Dante was wrongfully imprisoned in _____.

- a. the castle of Chillon
- b. Devil's Island
- c. the Bastille
- d. the Conciergerie



36. Who is known as the father of horror stories?

- a. William Faulkner
- b. Mark Twain
- c. Edgar Allan Poe
- d. Charles Dickens



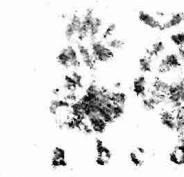
37. Don Quixote, hero of Cervantes' immortal novel, rode forth _____.

- a. in quest of the holy grail
- b. to see his king and country
- c. to see the world and seek a fortune
- d. to defend the oppressed and right the wrong



38. Who was the first Filipino who was declared as a national scientist and who has contributed much in discovering local plants that can be used as medicine?

- a. Dr. Eliseo Kintanar
- b. Dr. Alfredo C. Santos
- c. Dr. Pacifico Marcos
- d. Dr. Henry Moseley



science General information 122

ANSWER KEY (SCIENCE 1)

- 1. c
- 2. d
- 3. b
- 4. d
- 5. a
- 6. d
- 7. c
- 8. a
- 9. b
- 10. c
- 11. a
- 12. b
- 13. b
- 14. a
- 15. a
- 16. d
- 17. d
- 18. d

History General
information 122

ANSWER KEY (HISTORY 1)

- 1. d
- 2. d
- 3. b
- 4. b
- 5. c
- 6. c
- 7. d
- 8. p
- 9. a
- 10. d
- 11. c
- 12. a
- 13. b
- 14. d
- 15. d
- 16. c

ANSWER KEY (SCIENCE 2)

- 1. c
- 2. c
- 3. d
- 4. c
- 5. c
- 6. d
- 7. d
- 8. c
- 9. c
- 10. b
- 11. a
- 12. b
- 13. c
- 14. c
- 15. a
- 16. c
- 17. c
- 18. d
- 19. d
- 20. b

ANSWER KEY (HISTORY 2)

- 1. d
- 2. b
- 3. b
- 4. d
- 5. a
- 6. d
- 7. a
- 8. c
- 9. d
- 10. b
- 11. a
- 12. d
- 13. b
- 14. a
- 15. d
- 16. a

ANSWER KEY (HISTORY 3)

- 1. c
- 2. d
- 3. a
- 4. d
- 5. a
- 6. c
- 7. c
- 8. b
- 9. c
- 10. a
- 11. b
- 12. d
- 13. c
- 14. a
- 15. b
- 16. b
- 17. a

ANSWER KEY (HISTORY 4)

- 1. c
- 2. a
- 3. c
- 4. b
- 5. c
- 6. b
- 7. a
- 8. c
- 9. d
- 10. c
- 11. d
- 12. d

2007 - 0284



MSA

ACADEMIC ADVANCEMENT INSTITUTE



English 1

Vocabulary

If you care for quality ...

look for an ISO or a SUPERBRANDS seal,

MSA *has them both!*



ISO 9001 2000
CIP32480208307

MSA



English 1 - Vocabulary

L. Sentence Context

Directions: On your Answer Sheet, shade the oval that corresponds to the letter of the word that is closest in meaning to the underlined word.

1. The crowd became obstreperous and shouted their disapproval of the proposals made by the speaker.

a. sneaky c. boisterous e. impolite
b. candid d. frustrated

2. Baffled by the abstruse philosophical texts assigned in class, Cyril asked Michelle to explain Kant's Critique of Pure Reason.

a. theoretical c. synoptic e. obscure
b. limited d. generalized

3. Lanie stared, agape, at the many strange animals in the zoo.

a. open-mouthed c. fearful e. single-minded
b. enervated d. inquisitive

4. She took offense at John's bawdy remarks.

a. averse c. parsimonious e. strong-willed
b. imprudent d. obscene

5. His bellicose disposition alienated his friends.

a. quarrelsome c. intimidating e. genial
b. conceited d. complaining

6. Constantly complaining about his treatment and refusing to cooperate with the hospital staff, Ryan was a cantankerous patient.

a. shrewd c. callous e. carefree
b. ill-humored d. miserable

7. The fecundity of his mind is illustrated by the many vivid images in his poems.

a. fanaticism c. practicality e. fruitfulness
b. flexibility

8. The president was frustrated by his shift from enormous power to relative impuissance.

- a. belligerence c. ambiguity e. impotence
b. impiety d. capability

9. Do not obfuscate the issues by dragging in irrelevant arguments.

- a. confuse c. avoid e. strengthen
b. comment d. close

10. As soon as we realized that you had won our support by a subterfuge, we withdrew our endorsement of your candidacy.

- a. influence c. resolution e. improvidence
b. pretense d. similitude

II. Sentence Completion

Directions: Choose the word or set of words that best fits the meaning of the sentence as a whole.

11. This island is a colony; however, in most matters, it is _____ and receives no orders from the mother country.

- a. autonomous c. distant
b. submissive d. amorphous

12. His listeners enjoyed his _____ wit but his victims often _____ at its satire.

- a. lugubrious...suffered c. kindly...smarted
b. caustic...laughed d. trenchant...winced

13. Although the critics denounced the film as silly and inane, people flocked to the theater to see it, guaranteeing its _____ success.

- a. scholarly c. hypothetical
b. financial d. occasional

14. The committee's report is not valuable as it might have been because it addresses only the symptoms and not the _____ causes of the problem.

- a. transitory c. underlying
b. incipient d. superficial

15. Although there are more female students at the college than male students, the women seem to have a(n) _____ influence on the student government.
- a. enormous
 - b. negligible
 - c. provocative
 - d. active
16. The star of the show is a _____ performer who acts, sings, and dances with equal facility.
- a. versatile
 - b. capricious
 - c. brilliant
 - d. entralling
17. The delicate aroma and _____ flavor of this fine wine need a sensitive nose and _____ palate to be appreciated.
- a. insipid...cautious
 - b. savory...untutored
 - c. pungent...adulterated
 - d. subtle...discriminating
18. Although his work was often _____ and _____, he was promoted anyway, simply because he had been with the company longer than anyone else.
- a. forceful...extraneous
 - b. negligent...innovatory
 - c. incomplete...imprecise
 - d. expeditious...concise
19. Since the doctor could not find anything physically wrong with his patient, he decided to administer a _____ as a way to _____ him.
- a. warning...mortify
 - b. placebo...placate
 - c. remedy...controvert
 - d. malady...relieve
20. Although some evidence _____ that *Iliad* and *The Odyssey* were not written by a single person, the unity of artistic vision and general _____ of the epics prove otherwise.
- a. indicates...magnitude
 - b. proclaims...demeanor
 - c. suggests...coherence
 - d. hints...lassitude

III. Synonyms (15 items)

Directions: On your Answer Sheet, shade the letter that corresponds to the word that is closest in meaning to the given word.

21. a credulous woman

- a. gullible
- b. grossly stupid
- c. disapproving
- d. slightly confused
- e. intricate

22. the most recalcitrant of all animals

- a. dangerous c. obstinate e. steadfast
- b. enormous d. amazing

23. my diffident classmate

- a. quixotic c. noisy e. magisterial
- b. timid d. secretive

24. concerned only with mundane matters

- a. worldly c. spiritual e. inapplicable
- b. complicated d. futile

25. lugubrious howling of the dogs

- a. imminent c. averse e. sedulous
- b. awkward d. mournful

26. a complacent look on his face

- a. self-satisfied c. compromising e. symptomatic
- b. disgusting d. sympathetic

27. can debauch public ideals

- a. enhance c. corrupt e. incriminate
- b. enfeeble d. threat

28. definitive means _____

- a. credible c. reliable e. unfathomable
- b. cryptic d. adequate

29. equable

- a. eminent c. jovial e. inadvertent
- b. tranquil d. parallel

30. exiguous

- a. minute c. genuine e. incongruous
- b. extravagant d. clandestine

31. impeccable

- a. exaggerated c. irrevocable e. ineffable
- b. indistinct d. flawless

32. *retrospect*

- | | | |
|------------------|-----------------|--------------|
| a. infamy | c. looking back | e. absurdity |
| b. consciousness | d. forewarning | |

33. *acrimonious*

- | | | |
|---------------|-------------|---------------|
| a. altruistic | c. bitter | e. prejudiced |
| b. alienated | d. critical | |

34. *amicable*

- | | | |
|-------------|------------------|----------|
| a. affable | c. suitable | e. lucid |
| b. egoistic | d. philanthropic | |

35. *fortuitous*

- | | | |
|---------------|--------------|--------------|
| a. fragile | c. perpetual | e. plentiful |
| b. accidental | d. sporadic | |

IV. Antonyms (15 items)

Directions: Select the correct antonym for each of the words below.

36. highly resilient workers

- | | | |
|---------------|----------------|----------------|
| a. insolent | c. foolish | e. perfunctory |
| b. unyielding | d. hardworking | |

37. was tremulous more from excitement

- | | | |
|-----------------|------------|------------|
| a. unmanageable | c. unkempt | e. zealous |
| b. certain | d. steady | |

38. was a vainglorious individual

- | | | |
|-------------|---------------|-------------|
| a. vacuous | c. humble | e. wrathful |
| b. unharmed | d. insightful | |

39. an ungainly young man

- | | | |
|---------------|-------------|----------------|
| a. haughty | c. flexible | e. exasperated |
| b. disheveled | d. refined | |

40. highly virulent attack

- | | | |
|------------------|----------------|------------|
| a. sophisticated | c. fascinating | e. puerile |
| b. unbreakable | d. harmless | |

41. had always been a vivacious friend

- a. highly skilled
- b. lethargic
- c. apathetic
- d. visionary
- e. gratuitous

42. by her winsome manner

- a. engaging
- b. pertinent
- c. suspecting
- d. complaining
- e. speculative

43. An old man's whimsical gesture

- a. steadfast
- b. cautious
- c. sentimental
- d. agreeable
- e. contemplative

44. craven

- a. bold
- b. amusing
- c. controlled
- d. civilized
- e. plausible

45. alleviate

- a. endure
- b. worsen
- c. enlighten
- d. maneuver
- e. designate

46. boorish

- a. courageous
- b. stimulating
- c. urbane
- d. thrifty
- e. condescending

47. pugilistic

- a. aggressive
- b. alluring
- c. physically fit
- d. cordial
- e. productive

48. obsequious

- a. attentive
- b. assertive
- c. difficult
- d. oblivious
- e. ostentatious

49. cacophonous

- a. raucous
- b. unresponsive
- c. conciliatory
- d. harmonious
- e. piercing

50. superfluous

- a. necessary
- b. unjustified
- c. persistent
- d. incessant
- e. staunch

english 1 - vocabulary

- | | |
|---|---|
| 1. obstreperous ~ noisy
↳ c. boisterous | II.
11. a. |
| 2. abstruse ~ hard to understand
↳ e. obscure | 12. d. |
| 3. agape
↳ a. open-mouthed | 13. d. |
| 4. bawdy
↳ d. obscene | 14. c. Note: superficial : obvious/ apparent |
| 5. bellicose
↳ a. quarrelsome | 15. b. |
| 6. cantankerous ~ often angry & annoyed
↳ b. ill-humored | 16. a. Note: capricious : fluctuating/ unsteady |
| 7. fecundity
↳ e. fruitfulness | 17. d. |
| 8. impuissance ~
↳ e. impotence | 18. c. |
| 9. obfuscate ~ to make — confusing
↳ a. confuse | 19. b. |
| 10. subterfuge ~ trickery
↳ b. pretense | 20. c. |

Note: pretense : looks real, but is false
imprudence : short-sighted

	IV.
21. a	36. b
22. c	37. d
23. b	38. c.
24. a	39. d.
25. d	40. d.
26. a	41. b.
27. c	42. c.
28. a	43. a.
29. b	44. a. Note: craven = bold
30. a	45. b. Note: exiguous = small
31. d	46. c. Note: boorish = not polished/ not sophisticated
32. c	47. d. Note: pugilistic = tend to always fight
33. c	48. c. Note: obsequious = obvious
34. a	49. d. Note: cacophonous = harsh sound
35. b	50. a. Note: fortuitous = happening by chance

2006 – 0027

Name: _____

Score: 9 75 %

Program: _____ Date: _____

HPS: 12

VERBAL ABILITY
Vocabulary - Sentence Completion V

Directions: Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath the sentence are five lettered words or sets of words. Choose the word or set of words for each blank that best fits the meaning of the sentence as a whole.

1. The unmitigated truth is that the author of the essays was _____ in his writing; their publication _____ the teacher's chances for a promotion.
a. abusive...enhanced c. profound...diminished e. obtuse...obviated
b. laconic...obliterated d. prolific...necessitated

2. The sales associate tried to _____ trade by distributing business cards.
a. elicit d. illicit e. conciliate
b. solicit e. elliptic

3. Many doctors now believe that a pregnant woman's _____ for odd foods supplements some lack in her regular diet.
a. quirk c. penchant e. stipend
b. profusion d. pittance

4. The chairman complained that the committee was wasting too much time on _____ issues, instead of concentrating on the _____ one.
a. peripheral...essential c. trenchant...superfluous e. munificent...desultory
b. scurrilous...tedious d. superficial...whimsical

5. The biophysicist's lecture on molecular dynamics was too _____ for many of the students in the audience.
a. erudite c. abstruse e. amorphous
b. equitable d. eccentric

2006 – 0027

6. The family left their country to _____ to Canada and escape _____ because of their beliefs.
- a. emigrate...immigration c. immigrate...persecution e. roam...censure
b. peregrinate...extortion d. wander...arraignment
7. The frightened mother _____ her young daughter for dating in front of the car.
- a. implored c. exhorted e. abolished
b. extorted d. admonished
8. A mentally deficient person who has special talents or gifts is correctly referred to as _____; an extraordinary child is referred to as _____.
- a. proselyte...a progeny c. a stapes...a progenitor e. tainted...prodigious
b. an idiot savant...a prodigy d. a lithographer...portentous
9. The domineering male gorilla usually appears _____ in its mating rituals in the wild.
- a. subjugated c. subdued e. imperious
b. vanquished d. surmounted
10. The accused appeared _____ since she made certain the male witness would _____ her alibi.
- a. sanguine...corroborate c. meddlesome...substantiate e. conjugal...revoke
b. garbled...authenticate d. concupiscent...abolish
11. The weekly program on public radio is the most _____ means of educating the public about pollution.
- a. proficient c. effectual e. agreeable
b. effusive d. capable
12. Although the economy suffers downturns, it also has a strong _____ and self-correcting tendencies.
- a. unstable c. inauspicious e. self-destructive
b. recidivist d. recuperative

Name: _____	Score: _____ / ¹⁰⁰ %
School: _____	Date: _____ HPS: _____

Acids and Bases

You have no doubt heard the expression "Let's give it the acid test." An acid test is a crucial, severe test. Acids are well known as burning, caustic chemicals. Less well known, however, are the chemicals called bases. Bases are the opposites of acids. Acids and bases counteract each other on contact and are the key substances in many important chemical reactions that take place every day.

If you are like most people, the word acid makes you think of dangerous liquids that burn clothing and skin, but this is not always the case. To assuage your fears, consider the fact that many acids are beneficial. For example, your stomach contains very concentrated amounts of hydrochloric acid— an acid so vital that you could not digest your food without it. Our diet itself would be very bland without acids, because the characteristic taste of many fruits, like the lemon and grapefruit, is the result of citric acid. Vinegar, another common acid, is a prime ingredient in many salad dressings. In fact, the word acid comes from the Latin word acidus, which means "sour".

However, some very dangerous acids contain hydronium ions, which can rip electrons off of other compounds in a process called oxidation. Chemically, this oxidation process is very similar to combustion. Body parts touched by a strong acid are literally burned, a process that can denude them of hair and layers of skin.

While the word base does not conjure up the fear that acid does, the names of common bases sometimes do. Lye, known by the chemical name sodium hydroxide, is one of the premier bases in household use. It is used as a drain cleaner. The exterior of its container is labeled with dire warnings and poison symbols. Lye is very caustic and can severely damage your skin if you touch it. However, to allay your concern, you should know that other bases are quite harmless, and we use them every day with impunity. A weak solution of ammonia, used to clean windows, is one common example.

When acids and bases meet, they react, sometimes violently, and neutralize each other. Take heartburn, for instance. After someone engages in **gastronomic** excess at the pizza house, it is not uncommon for a surplus of acid to form in the stomach. Heartburn is that burning sensation in the stomach caused by too much acid. The most common therapeutic treatment for this "acid stomach" is to swallow some form of bicarbonate of soda, or baking soda. This base neutralizes some of the acid, and the burning sensation in the stomach is relieved. When the base sodium hydroxide reacts with hydrochloric acid, they neutralize each other and form sodium chloride. Sodium chloride is the common household condiment more commonly called table salt.

Think about how the vocabulary word is used in the selection, then choose the letter for the best answer in each question.

1. Which word could best replace *assuage* in line 7?
a) ease b) strengthen c) magnify d) publish
2. Which word could best replace *bland* in line 10?
a) spicy b) pungent c) tasteless d) exotic
3. In line 17, the word *combustion* means _____.
a) process of wetting c) observation
b) method of slicing d) process of burning
4. Which word could best replace *denude* in line 18?
a) cover b) strip c) clothe d) cultivate
5. Which word could best replace *premier* in line 21?
a) average b) foremost c) forbidden d) safest
6. Which word could best replace *allay* in line 23?
a) arouse b) excite c) relieve d) measure
7. If you do something with *impunity*, (line 25), you do it _____.
a) at great risk c) under threat of force
b) only in an emergency d) without harm or penalty
8. In line 28, the word *gastronomic* means _____.
a) sensible c) financial
b) pertaining to eating d) pertaining to time
9. In line 31 the word *therapeutic* means _____.
a) harmful c) expensive
b) magical d) having healing powers
10. A *condiment* (line 35) can be explained as a _____.
a) cleanser b) nutrient c) seasoning d) liquid

2006 - 0013

Name: _____

Score: _____

%

Program: _____ Date: _____

HPS: 5

PARAGRAPH ORGANIZATION II

The following paragraphs consist of parts that are presented in scrambled order. Read each group and decide what should be the best order in which to put the parts so that they form a well-organized paragraph.

- I. A. The left atrium and ventricle work separately from those on the right.
B. The human heart is divided into four chambers, each of which serves its own function in the cycle of pumping blood.
C. The ventricles are the thick-walled lower chambers that receive blood from the atria and push it into the arteries with each contraction of the heart.
D. The atria are the thin-walled upper chambers that gather blood as it flows from the veins between heartbeats.
E. And the role of the chambers on the right side of the heart is to receive oxygen-depleted blood from the body tissues and send it on to the lungs; the chambers on the left side of the heart then receive the oxygen-enriched blood from the lungs and send it back out to the body tissues.

1. BCDAE 2. BDCAE 3. BAECD 4. BAEDC

- II. A. On another occasion she faked mental illness in order to be admitted to a mental hospital to get the real picture on the treatment of mental patients.
B. On one occasion she pretended to be a thief so that she would get arrested and see for herself how female prisoners were really treated.
C. She felt that the best way to get the real story was from the inside rather than as an outside observer who could be treated to a prettified version of reality.
D. Elizabeth Cochrane Seaman was an American journalist at the turn of the century who wrote for the newspaper New York World under the penname Nellie Bly, a name which was taken from the Stephen Foster song Nelly Bly.
E. She achieved fame for her exposés and in particular for the bold and adventuresome way that she obtained her stories.

1. DCBAE 2. DECBA 3. DCEBA 4. DEABC

2006 – 0013

- III. A. The latter makes it possible for people to record their favorite shows if they are not at home at the time they air, and they can save money by renting the movies they missed at the box office, often only a few weeks after they first came out.
- B. Whether this was said in jest or not, it is a term that has stuck and is now a part of the lexicon of modern American culture.
- C. The term “couch potato”- the slang expression often associated with people who watch a lot of television - is said to refer to the potato because it is a tubular vegetable, with eyes to symbolize someone’s eyes, glued to the tube.
- D. It is estimated that over 98% of American households own a TV set and, in fact, today most own more than one and at least half own a VCR as well.
- E. Though these so-called couch potatoes are often the butt of jokes or regarded as being “unintelligent,” such a characterization is unfair.

1. DABCE 2. CEBDA 3. CBEDA 4. CDAEB

- IV. A. These electrical impulses that have been transformed by the eyes and ears reach the brain and are turned into messages that we can interpret.
- B. For the eye, the process begins as the eye admits light waves, bends them at the cornea and lens, and then focuses them on the retina.
- C. At the back of each eye, nerve fibers bundle together to form optic nerves, which join and then split into two optic tracts.
- D. The process in the ear is carried out through sensory cells that are carried in fluid-filled canals and that are extremely sensitive to vibration and sound that is transformed into electricity which travels along nerve fibers in the auditory nerve.
- E. Our eyes and ears might be called transformers because they sense the light and sound around us and turn them into electrical impulses that the brain can interpret.

1. EABCD 2. DBCAE 3. EADCB 4. EBCDA

- V. A. The earliest evidence of the harp used as a solo or lead instrument in the jug bands was in the late 1920s, as heard in the recordings of George “Bullet” Williams and is still being used by new artists today.
- B. It was played mainly in bands called jug bands that commonly performed on street corners, in saloons, and in country stores.
- C. Jug bands used a variety of instruments, including the banjo, guitar, washboard, kazzo, fiddle, jugs, and blues harp.
- D. Another common blues instrument that flourished in the rural South during the 1920s and 1930s was the blues harp, or harmonica.
- E. In these bands, the blues harp was used primarily for melodic and rhythmic support.

1. ADBCE 2. DBCEA 3. ABECD 4. DABCE

Verbal ability

1. e.

Note: laconic : few words
prolific : productive

2. b.

elicit : to get illicit : not permitted
solicit : to ask

3. c.

pinchant : desire/fondness

4. a.

peripheral : not related to the most impt. part
superfluous : unnecessary
scurrilous : biased

5. c.

6. c.

7. c/d.

8. b.

9. e. imperious : authoritarian

10. a.

sanguine : be optimistic
corroborate : support

11. c.

12. d.

Acids & Bases

1. a

7. d

2. c

8. b

3. d

9. d

4. b

10. c.

5. b

6. c

ENGLISH 2 : READING COMPREHENSION

Passage 1

1. question type: detail ; (d)
2. question type: inference ; (b)
3. question type: tone ; (d)
4. question type: vocab/detail ; (c)

Passage 2

5. inference; (a)
6. detail; (b)

Passage 3

7. main idea; (a)
8. purpose/main idea; (c)
9. inference; (d)

Passage 4

10. (c)
11. (c)
12. (d)
13. specific → general ; (c) ↗
14. (c)

Passage 5

15. (d)
16. (a)
17. (c)
18. (a)
19. (d)
20. (a)

Passage 6

21. (c)
 22. (b)
 23. (b)
 24. (a)
- * journals would be written in first person POV

Passage 7

25. (c)
26. (c)
27. (c)
28. (a)
29. (d)

Passage 8

30. (d)
31. (d)
32. (a)

Passage 9

33. (b)

Passage 10

34. (c)

35. (c)

PARAGRAPH ORGANIZATION

I. 36. (e)

II. 38. (a)

37. (c)

39. (c)

III. 40. (a)

41. (d)

IV. 42. (d)

43. (c)

44. (c)

2007 - 0288



MSA

ACADEMIC ADVANCEMENT INSTITUTE



English 3

Grammar

If you care for quality ...

look for an ISO or a SUPERBRANDS seal,

MSA *has them both!*



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English 3 - Grammar

I. Error Identification

Directions: On your Answer Sheet, shade the oval that corresponds to the letter of the underlined word or phrase that would not be accepted in standard written formal English. Choose letter d if no error is found.

1. There is, without any doubt, many good reasons to exercise and keep the
a b
body in good condition. No error
c d
2. Five of every eight migrating birds in North America visits the Gulf of Mexico's
a b
winter wetlands. No error
c d
3. Geologists at the Hawaiian Volcano Observatory depends on a number of
a b
instruments in studying the volcanoes in Hawaii. No error
c d
4. More than 80 percent of all households owns passenger cars and each of
a b c
these is driven an average of more than 11,000 miles each year. No error
d
5. Everyone who wants to pursue a career in broadcasting, are expected to do
a b
well in both radio and television production. No error
c d
6. My art professor's paintings of mothers and children are known for its fine
a
linear rhythm, simple modelings, and harmonies of clear color. No error
b c d
7. The first two Math problems of the test are very difficult, but the rest is easy.
a b c
No error
d

8. The young couple would have freezed to death if not for the moutaineers
a b c
who rescued them. No error
d
9. Marilyn Monroe is the most glamorous star in Hollywood until she died at
a b
the age of forty. No error
c d
10. When I opened the hood and saw smoke pouring from the engine, I realized
a b
that I forgot to add oil. No error
c d
11. It was her, Elizabeth I, not her father, King Henry, who became more known
a b
in English history for leading England into its golden age. No error
c d
12. Give my friend Lairlyn and me some time to think about the topic we would
a b
research on and present in class. No error
c d
13. Of those who graduated with Regina and I, only Annie was able to work
a b c
abroad as an accountant. No error
d
14. The competition judges were told to give the prize to whomever ran the
a b
fastest among the players. No error
c d
15. I asked the guidance counselor to give me an advice on what career to
a b c
pursue after college. No error
d
16. My father told me that I should only bring few clothing whenever I travel
a b c
outside the country. No error
d
17. The phenomena of public education is yet another example of democracy at
a b c
work. No error
d

English Grammar Quiz

MSA

18. In human beings, as in other mammal, hairs in the nose and around the eyes
a b
and ears prevent insects, dust, and other matter from entering these organs.
c
- No error
d
19. The dachshund is a resilient, alert dog with a well sense of smell. No error
a b c
d
20. It is impossible to watch the movie *Schindler's List* without feeling badly
a
about the fate of the people portrayed there. No error
c d
21. Of the two students, neither Paul nor Peter was most brilliant, but each
a b c
worked well for the success of the project. No error
d
22. Studies show that employees work most efficient when they are involved in
a b
the whole operation rather than in only one part of it. No error
c d
23. Many who travel to the United States would want to visit the White House
a b
which is on 1700 Pennsylvania Avenue. No error
c d
24. If one plans to take a month away from the country, he should take not only
a b
cash but traveler's checks. No error
c d
25. Many students study very hard so they can pass their exams. No error
a b c d
26. Returning to her room after the concert, several pieces of jewelry and other
a b
valuables were missing. No error
c d
27. She is not and does not intend to run for political office. No error
a b c d

28. Edward Estlin Cummings, famous for his new innovations for punctuation, typography, and language. published his collected poems in 1954. No error
a b
c d
28. The existence of ESP, the perception and communication without the use of sight, hear, taste, touch, or smell, is still disputed despite research which has been ongoing since 1930. No error
a
b c
d
30. My doctor advised me to drink water continuously every day to prevent dehydration. No error
a b c
d

II. Sentence Correction

Directions: This test consists of a number of sentences, in each of which some part or the whole is underlined. Each sentence is followed by five alternative versions of the underlined portion. Select the alternative you consider both most correct and most effective according to the requirements of standard written English. Choice **a** is the same as the original version. If you think the original version is best, select choice **a**. On your Answer Sheet, shade the oval that corresponds to the letter of the correct answer.

31. Zoos in San Diego, Detroit, and New Orleans have become biological parks where animal roams free and people watch from across a moat.
- New Orleans have become biological parks where animal roams free and people watch from across a moat
 - New Orleans has become biological parks where animal roams free and people watch from across a moat
 - New Orleans have become biological parks where animals roam free and people watch from across a moat
 - New Orleans became biological parks where animals roam free and people watched from across a moat
32. Each furniture in this display are on sale for half the price.
- Each furniture in this display are on sale for half the price.
 - Many furnitures in this display are on sale for half the price.
 - Much furniture in this display is on sale for half the price.
 - Each furniture in this display is on sale for half the price.

33. Everyone on both parties except the manager and me were at the convention.
- Everyone on both parties except the manager and me were at
 - Everyone on both parties except the manager and me was at
 - Everyone on both parties except the manager and I am at
 - Every one on both parties except the manager and me were at
34. The teacher gave Cara a high mark on her composition because it was better than her classmates.
- because it was better than her classmates
 - although it was better than her classmates
 - since it was better than those of her classmates
 - because it was better than that of her classmates
35. Many of the names of families in Manila that are adapted from Spanish names because of the influence of early missionaries and settlers from Spain.
- Many of the names of families in Manila that are adapted from
 - Much of the family names in Manila which are adapted from
 - Many of the names of families in Manila are adapted from
 - The names of many families in Manila which are adopted from
36. He was among the few who want to continue working on the project.
- He was among the few who want to continue
 - He is among the few who wants to continue
 - Among the few who want to continue, he was
 - He was among the few who wanted to continue
37. After graduating from the city college, my teacher's studies were continued at the state university, where she received her Ph.D. in English.
- After graduating from the city college, my teacher's studies were continued at the state university
 - After graduating from the city college, my teacher continued her studies at the state university
 - Upon graduation, the studies of my teacher were continued at the state university
 - My teacher, whose studies were continued at the state university

38. I disapprove of you insisting that the book was already returned to the library.
- a. of you insisting
 - b. with you insisting
 - c. of your insisting
 - d. that your insisting
39. The knee is most likely to be damaged than most joints in the body because it cannot twist without injury.
- a. The knee is most likely to be damaged than most joints in the body
 - b. The knee is more likely damaged than most body joints
 - c. The knee is more likely to be damaged than most other joints in the body
 - d. Knees are most likely damaged than any other joints in the body
40. Groups of tissues, each with its own function, makes up the organs in the human body.
- a. Groups of tissues, each with its own function, makes up the organs
 - b. Tissue groups, each with its own function, making up the organs
 - c. Each groups of tissues with its own functions makes up the organs
 - d. Groups of tissues, each with its own function, make up the organs

III. Sentence Completion

Directions: The following are incomplete sentences. Beneath each sentence, you will see four words or phrases marked a, b, c, d. Choose the one word or phrase that best completes the sentence. Then, on your Answer Sheet, shade the oval that corresponds to the letter of the answer you have chosen.

41. He always does what he pleases without _____ the rules and regulations.
- a. regard to
 - b. regard with
 - c. regard of
 - d. irregardless of
42. The hotel management aims that every guest is well _____.
- a. take care of
 - b. take cared of
 - c. taken care of
 - d. taken cared of
43. They are going to the concert this Saturday, and _____.
- a. we are too
 - b. so do we
 - c. so do us
 - d. also we are

English Grammar Quiz

MSA

English 3 - Grammar

I. ERROR IDENTIFICATION

1. (a) There are ... many good reasons 18. (a) or (b)
2. (b) 19. (c)
3. (d) 20. (b)
4. (c) 21. (c)
5. (b.) 22. (b.)
6. (a) My art professor's paintings 23. (c) not only ... but also
... are known for their 24. (c) * Dangling modifier
7. (c.) 25. (b)
8. (b.) 26. (a)
9. (a.) 27. (a)
10. (c.) 28. (b) without the sense of
11. (a.) 29. (b)
12. (a.) 30. (b.)
13. (b.)
14. (b.)
15. (b.)
16. (d.)
17. (a.)

II. SENTENCE CORRECTION

- 31. (c.) 41. (a.)
- 32. (d.) 42. (c.)
- 33. (b.) 43. (a.)
- 34. (c.) 44. (b.)
- 35. (c.) 45. (b.)
- 36. (d.) 46. (a.)
- 37. (b.) 47. (b.)
- 38. (c.) 48. (c.)
- 39. (d.) 49. (b.)
- 40. (d.) 50. (a.)

2007 - 0400

If you care for quality... look for an ISO seal, **MSA** has it!

Name: _____

Score: _____ %

School: _____

Date: _____

HPS: 20

Analogy 4

1) ASSUAGE : PAIN ::

SLAKE : _____

- a) starve
- b) sleep
- c) discomfort
- d) thirst
- e) fire

5) LITER : VOLUME ::

FOOT : _____

- a) depth
- b) hour
- c) highness
- d) appendage
- e) length

2) GROCER : FOOD ::

APOTHECARY : _____

- a) pens
- b) books
- c) bottles
- d) medicines
- e) paper

6) SCALE : FISH ::

_____ : BIRD

- a) wings
- b) orifice
- c) plumage
- d) maw
- e) mast

3) COLLISION : DENT ::

INJURY : _____

- a) blood
- b) illness
- c) decay
- d) scar
- e) venom

7) FLARE : FIRE ::

_____ : ACTION

- a) send
- b) control
- c) do
- d) conserve
- e) incite

4) COHABIT : LIVE ::

COLLABORATE : _____

- a) please
- b) join
- c) watch
- d) chronicle
- e) work

8) DISBAND : GROUP ::

_____ : APPARATUS

- a) distend
- b) dismantle
- c) disarm
- d) distort
- e) dismay

9) RUTHLESS : MERCY ::

UNMARRED : _____

- a) evidence
- b) cycle
- c) blemish
- d) selfishness
- e) wit

10) BONE : BODY ::

_____ : BUILDING

- a) nail
- b) blueprint
- c) engineer
- d) beam
- e) cement

11) PORCUPINE : QUILL ::

_____ : INK

- a) pen
- b) student
- c) skunk
- d) teacher
- e) squid

12) AIRPLANE : PILOT ::

SHIP : _____

- a) passenger
- b) lieutenant
- c) helmsman
- d) general
- e) skip

13) GREEDINESS : POSSESS ::

UNMARRED : _____

- a) evidence
- b) cycle
- c) blemish
- d) selfishness
- e) wit

14) CREATIVITY : INNOVATIVE ::

ATTENTIVENESS : _____

- a) unscrupulous
- b) polite
- c) rapt
- d) indolent
- e) derisive

15) HIBERNATION : GROUNDHOG ::

_____ : SWALLOW

- a) mimicry
- b) predation
- c) migration
- d) diversity
- e) dissection

16) AFFECTIONATE : DOTING ::

INTERESTING : _____

- a) penurious
- b) absorbing
- c) regenerative
- d) mystifying
- e) tortuous

17) ADMIRABLE : PRAISE ::

REPREHENSIBLE : _____

- a) invasion
- b) blame
- c) doubt
- d) information
- e) dodging

18) INTERLOCUTOR : CONVERSATION ::

DISPUTANT : _____

- a) dialogue
- b) refutation
- c) message
- d) altercation
- e) language

19) HILARIOUS : ENTERTAINING ::

_____ : DEAFENING

- a) irritating
- b) odd
- c) piercing
- d) dramatic
- e) penurious

20) REBEL : AUTHORITY :: CONVENTION :

- a) anarchist
- b) rogue
- c) nonconformist
- d) farmer
- e) pacifist

2006 - 0007

Name: _____

Score: _____

%

Program: _____ Date: _____

HPS: 22

major part

1. TENDRIL : VINE ::

- (a) trunk : tree
- (b) pollen : petal
- (c) pseudopod : amoeba
- (d) trellis : honeysuckle
- (e) cobra : snake

2. BATTEN : HATCH ::

- a. shatter : window
- b. unload : cargo
- c. pack : chest
- (d) latch : door
- e. repair : cupboard

3. LIMERICK : POEM ::

- (a) motif : symphony
- b. prologue : play
- c. catch : song
- d. sequence : sonnet
- e. epigraph : novel

*worker : group of
retainers*

4. RETAINER : RETINUE ::

- a. servant : mansion
- (b) witch : coven
- c. director : club
- d. miser : hoard
- e. vassal : homage

VERBAL ABILITY

Analogy I

5. HERO : ACCOLADE :: *deserves*

- a. mentor : advice
- b. suitor : proposal
- c. clodhopper : grace
- (d) laughingstock : ridicule
- e. defendant : indictment

document : act / law

6. RIDER : BILL ::

- a. purchase : receipt
- (b) endorsement : policy
- c. violation : ordinance
- d. consignment : invoice
- e. summons : citation

7. CONFINE : PRISONER ::

- a. impeach : governor
- b. trace : fugitive
- (c) detain : suspect
- d. testify : witness
- e. ambush : sentry

8. SWATCH : FABRIC ::

- a. chip : paint
- b. slag : metal
- c. loaf : bread
- d. mortar : brick
- (e) essence : perfume

9. JUSTICE : SCALES ::

- a. equity : balance
- b. peace : laurel
- (c) liberty : torch
- d. courts : law
- e. measures : weights

10. ANNOTATE : TEXT :: *explains*

- a. censor : film
- b. enact : law
- c. abridge : novel
- d. prescribe : drug
- (e) caption : photograph

11. HOBBLE : WALK ::

- a. gallop : run
- b. sniff : smell
- (c) stammer : speak
- d. stumble : fall
- e. amble : stroll

12. HORSE : CORRAL ::

- a. oyster : reef
- b. dog : muzzle
- c. sheep : flock
- (d) pig : sty
- e. deer : stag

2006 – 0007

13. SIGNATURE : ILLUSTRATION ::

- a. byline : column
- b. alias : charge
- c. credit : purchase
- d. note : scale
- e. reference : recommendation

14. SNICKER : DISRESPECT ::

- a. whimper : impatience
- b. chortle : glee
- c. glower : cheerfulness
- d. frown : indifference
- e. sneer : detachment

15. WITCH : COVEN ::

- a. ogre : castle
- b. seer : prophecy
- c. actor : troupe
- d. fairy : spell
- e. doctor : medicine

16. GLANCE : STARE ::

- a. observe : participate
- b. admire : scorn
- c. stalk : hunt
- d. sip : gulp
- e. tell : confide

17. SKINFLINT : STINGY ::

- a. daredevil : alert
- b. braggart : carefree
- c. blackguard : protective
- d. spendthrift : weak
- e. diehard : stubborn

18. STORE : BUILDING ::

- a. spire : church
- b. foundation : skyscraper
- c. cable : elevator
- d. rung : ladder
- e. plot : outline

19. ROUT : DEFEAT ::

- a. ovation : applause
- b. memory : oblivion
- c. pathway : ruin
- d. grief : loss
- e. triumph : failure

20. METAPHOR : FIGURATIVE ::

- a. fable : contemporary
- b. adage : paradoxical
- c. precept : instructive
- d. irony : dramatic
- e. epic : literal

21. LAST : SHOE ::

- a. cuff : trousers
- b. finale : curtain
- c. pattern : glove
- d. buckle : belt
- e. strap : slip

22. IMPANEL : JUROR ::

- a. involve : bystander
- b. enroll : student
- c. testify : witness
- d. convict : culprit
- e. accuse : defendant