NOTA denotes "None of These Answers." **No Calculator Allowed**
Note:The person listed in each question will always answer correctly.

1. If Patricia wanted to evaluate $\frac{-X}{Z}(7 - T) - 3R$ when Z = -6, X = -9, T = $(-1)^2$, and R = $\frac{3}{4}$ she would get….

A. $\frac{33}{4}$ B. $\frac{27}{4}$ C. $\frac{-45}{4}$ D. -15 E. NOTA

2. When Emily solved $\sqrt{x}-15 = 1$ for x, her answer was…

A. ± 256 B. 32 C. 256 D. 16 E. NOTA

3. y = -2x + 4, is parallel to a line with y-intercept at –2.
Let M be the number of times the lines intersect, N the sum of the ordinates of the x-intercepts and P the sum of the abscissas of the x-intercepts.
Find $(PN+1)^M$

A. 0 B. 1 C. 2 D. 3 E. NOTA

4. Thierry determined that the sum of the solutions of $15x^2 = 60$ is…

A. 4 B. 2 C. 0 D. -4 E. NOTA

5. Given $\begin{cases} 3m + 5n = -10 \\ 5m - 2n = 4 \end{cases}$, Rahn found the solution point to be (m_1, n_1).
The value of n_1 is…

A. 0 B. -2 C. $\frac{6}{31}$ D. -1 E. NOTA

6. Mr. Bradford's Geometry class has three more boys than girls. There are 27 students in the class. How many boys are in the class?

A. 12 B. 21 C. 18 D. 15 E. NOTA

7. According to William $\frac{p^2}{p - e} + \frac{e^2}{e - p}$, (when p is not equal to e), is equivalent to…

A. p + e B. 1 C. (p + e)(p – e) D. p - e E. NOTA

8. Omar found the distance from A (4, 3) to B$(\frac{7}{5}, y_1)$, which is on the line $5x - 9y = -2$, to be…

A. $\frac{\sqrt{269}}{5}$ B. $\frac{\sqrt{2005}}{9}$ C. $\pm\frac{\sqrt{2005}}{9}$ D. $\pm\frac{\sqrt{269}}{5}$ E. NOTA

9. Stephen formed a right triangle with a hypotenuse length 10 and a leg length of 6. What is the area of the triangle?

A. 6 B. 48 C. 24 D. 12 E. NOTA

10. When given ax + b = cx + dz, Petya concluded that x is equal to …

A. dz - b B. $\frac{dz-b}{c-a}$ C. $\frac{dz+b}{a+c}$ D. $\frac{dz-b}{a-c}$ E. NOTA

11. Rene found that the slope of the line parallel to the line through the points (2, -3) and (-7, -9) is…

A. $\frac{2}{3}$ B. $-\frac{3}{4}$ C. $\frac{4}{3}$ D. $-\frac{3}{2}$ E. NOTA

12. Sadique asked Jason to find the number of integers that satisfy $-3x - 9 > 18$ and $-2x - 3 \le 33$. Jason answered….

A. 8 B. 9 C. 10 D. ∞ E. NOTA

13. Ms. Biebel asked Megan to find all possible values for a number x, given that the square of the sum of three and the number is equal to four. Megan answered…

A. –5 B. -1 C. ± 1 D. {1 , -5} E. NOTA

14. Patrick, who is a little bizarre, factored $6x^2 - 21 + x^2 - 7x$ into…

A. $7(x - 3)(x + 2)$ B. $-7(x^2 + x + 3)$ C. $-7(x + 3 - x^2)$ D. $7(x^2 + x - 3)$ E. NOTA

15. When Thomas rationalized the denominator of $\left(\frac{3\sqrt{49}}{\sqrt{5}-2}\right)$ and simplified the result he obtained was…

A. $21\sqrt{5}-42$ B. -21 C. $21\sqrt{5}+42$ D. $-21\sqrt{5}-42$ E. NOTA

16. If Nico was told that y = $\frac{x+3}{x+2}$, then he would say that the distance from the x-intercept to the y-intercept is…

A. $\frac{9}{2}$ B. $\frac{3\sqrt{5}}{2}$ C. $\frac{4\sqrt{5}}{3}$ D. $2\sqrt{5}$ E. NOTA

17. $20ab - 12b^2 + 15ac - 9bc$ factors into (Pa - Eb)(Db + Rc), P>0. Find P + E + D + R.

A. 9 B. 3 C. 14 D. 15 E. NOTA

18. Phillip would classify the set $\{3,5,7,9\}$, as a subset of all of the following except…

A. Odds B. Integers C. Primes D. Reals E. NOTA

19. What percent of .25p is 5p?

A. 20% B. 2000% C.20000% D. 2% E. NOTA

20. Find the sum of the digits of the y-intercept given that
$y = -3x^3 + 8x^2 - 5x^4 + 5x + 2006$.

A. 24 B. 8 C. 3 D. 7 E. NOTA

21. Malyssa evaluated
$(2006-2005)^{2005-a} - (2005-2004)^{2004-a} + \ldots - (3-2)^{2-a} + (2-1)^{1-a}$ when a = 2001.
her result was…

A. 0 B. 1 C. –1 D.0^0 E. NOTA

22. Andrew was given $0.1\overline{75}$ to express as a fractional percent. His answer was…

A. $\frac{7}{40}$% B. $\frac{87}{495}$% C. $\frac{580}{33}$% D.$\frac{703}{40}$% E. NOTA

23. Ms. Allison asked Evan to find the range of the relation y = $-2x^2-7$ if the domain is {0,1, -1}. Evan answered…

A. {-7, -5} B. {-9, -7, -5} C. {-9} D. {-9, -7} E. NOTA

24. If a fair coin is tossed in the air 5 times by Kia and all five times she gets heads, what is the probability that tails will show up on his 6^{th} flip?

A. $\frac{1}{3}$ B. $\frac{1}{32}$ C. $\frac{1}{2}$ D. $\frac{31}{32}$ E. NOTA

25. What is the degree of the monomial x^2yz^4?

A. 4 B. 5 C. 2 D. 7 E. NOTA

26. When Todd solved $(x - 1)^2 + 2x = 4$ for x, his answer was…

A. No solution B. $\pm\sqrt{3}$ C. 1 D. 3 E. NOTA

27. Jorge has 38 coins in nickels and dimes; the total value is $2.70. What is the absolute value of the difference between the number of dimes and the number of nickels?

A. 8 B. ± 6 C. 3 D. 6 E. NOTA

28. Let P be the sum of the exponents in the prime factorization of 2000 and G be the product of the bases in the prime factorization of 2000.
Find the quotient of P and G.

A. $\frac{3}{5}$ B. $\frac{4}{5}$ C. $\frac{7}{10}$ D. $\frac{1}{4}$ E. NOTA

29. Which equation has an x-intercept of 5 and a y- intercept of -1?

A. $y - 1 = -\frac{1}{5}(x - 5)$ B. $y = \frac{1}{5}x - 1$

C. $25x - 5y = -25$ D. $\frac{x}{5} + \frac{y}{1} - 1 = 0$ E. NOTA

30. When James was asked, "How many liters of a 40% alcohol solution must be added to a 13 L 13% alcohol solution, in order to create a 20% alcohol solution?" He answered…

A. $\frac{20}{91}$ B. $\frac{2}{91}$ C. $\frac{91}{20}$ D. $\frac{1}{2}$ E. NOTA

Solutions

1. $\frac{-(-9)}{-6}(7\text{-}1)\text{-}(3*\frac{3}{4}) = \frac{9*6}{-6}\text{-}\frac{9}{4} = \frac{-36\text{-}9}{4} = \frac{-45}{4}$ ***C.***

2. $\sqrt{x}=16$ So square both sides and get $x = 16^2$ or 256 ***C.***

3. First line, y = -2x+4, Second line, y = -2x-2. M=0 since parallel lines never intercept. The sum of the abscissas, or x-values, of the x-intercepts is zero. NP = 0*(a number) = 0.
$(0+1)^0 = 1$ ***B.***

4. $x^2 = \frac{60}{15} = 4$, $x = \pm 2$. The sum is 0. ***C***

5. $\begin{cases}(3m+5n=-10)\bullet 5 \\ (5m-2n=4)\bullet -3\end{cases} \Rightarrow \begin{cases}15m+25n=-50 \\ -15m+6n=-12\end{cases}$... add... 31n = -62, n = -2 ***B.***

6. $\begin{cases}g+3=b \\ g+b=27\end{cases}$... substitute...$g+(g+3)=27,\ 2g=24,\ g=12.$ b=15. ***D.***

7.Get a common denominator (p – e). $\frac{p^2}{p\text{-}e}+\frac{-e^2}{p\text{-}e} = \frac{p^2\text{-}e^2}{p\text{-}e} = \frac{(p\text{-}e)(p+e)}{p\text{-}e}$. Cancel and get (p +e) ***A.***

8. $5(\frac{7}{5})-9y=-2,\ y=1.\ \sqrt{\left(\frac{7}{5}-4\right)^2+(1-3)^2} = \sqrt{\left(\frac{13}{5}\right)^2+(-2)^2} = \sqrt{\frac{169}{25}+\frac{100}{25}} = \sqrt{\frac{269}{25}} \Rightarrow \frac{\sqrt{269}}{5}$
A.

9. $a^2 + b^2 = c^2$. This is the triple 3, 4, 5 with an scalar of 2. The legs are 6 and 8. A = $\frac{1}{2}(6)(8) = 24$
C.

10. ax + b = cx + dz , ax - cx = dz - b , x(a - c) = dz - b , x = $\frac{dz - b}{a - c}$ ***D.***

11. Since the perpendicular line contains the points use the slope formula, but do not do the negative reciprocal. $\frac{-9 - (-3)}{-7 - 2} = \frac{-6}{-9} = \frac{2}{3}$ ***A.***

12. $\{-3x-9>18 \Rightarrow x<-9.\quad \{-2x-3\le 33 \Rightarrow x\ge -18.\quad 18-9=9$ ***B.***

13. The word sum implies that the addition must be done first.
$\sqrt{(3+x)^2} = \sqrt{4},\quad 3+x=\pm 2, x=-5$ *or* x= -1 ***E.***

14. $7x^2 - 7x - 21 = 7(x^2 - x - 3)$ or $-7(x + 3 - x^2)$ ***C.***

15. $\left(\frac{3\sqrt{49}}{\sqrt{5}\text{-}2}\right) = \left(\frac{21}{\sqrt{5}\text{-}2}*\frac{\sqrt{5}+2}{\sqrt{5}+2}\right) = \left(\frac{21(\sqrt{5}+2)}{5\text{-}4}\right) = 21\sqrt{5} + 42$ ***C.***

16. The x-intercept is when y=0. 0 = x + 3, x = -3. The y-intercept is when x=0. y = $\frac{3}{2}$.
Using the distance formula $d = \sqrt{(0 - (-3))^2 + (\frac{3}{2} - 0)^2} = \sqrt{9 + \frac{9}{4}} = \sqrt{\frac{45}{4}} = \frac{3\sqrt{5}}{2}$. ***B.***

SOLUTIONS

17. $4b(5a-3b)+3c(5a-3b) \Rightarrow (5a-3b)(4b+3c)$. $5-3+4+3=9$ ***A.***

18. Primes. ***C.***

19. $\frac{5p}{.25p}$ the p's cancel and we get $\frac{500}{25} = 20$, but since the question asked for a percentage Move the decimal to the right two places to get 2000% ***B.***

20.2006 is the y-intercept. 2+0+0+6=8 ***B.***

21. The exponents do not affect any of the results, since 1 to any power is 1. There are 2005 terms, all of which are 1's, 1002 are negative and 1003 are positive. 1 + 1 - 1 + 1 - 1 + 1 - … - 1 + 1 - 1 = 1 ***B.***

22. The infinite repeating decimal .1757575757575… can be expressed as $\frac{87}{495} = \frac{29}{165}$, but since the question asked for a fractional **percent** multiply by 100 and simplify to $\frac{580}{33}$ ***C.***

23. Range is 'y', so plug-in each domain value to get the range. {-7, -9} ***D.***

$y = -2(0)^2 - 7 = -7$

$y = -2(1)^2 - 7 = -2 - 7 = -9$

$y = -2(-1)^2 - 7 = -2 - 7 = -9$

24. The probability of getting heads or tails is independent, so one out two possible outcomes. $\frac{1}{2}$. ***C.***

25. Add the powers. 2 + 1 + 4 = 7 ***D.***

26. $(x - 1)^2 + 2x = 4, x^2 + 1 = 4, x = \pm\sqrt{3}$ ***B.***

27. There are 22 nickels and 16 dimes. $|22-16| = 6$ ***D.***

28. $2000 = 2^4 * 5^3$. $\frac{P}{G} = \frac{4+3}{2*5} = \frac{7}{10}$ ***C.***

29. $\frac{-1-0}{0-5} = \frac{1}{5}$. $y = \frac{1}{5}x - 1$ ***B.***

30. $.4x + (13 * .13) = .20(x + 13)$, $.4x + 1.69 = .20x + 2.6$, $x = \frac{.91}{.2}$ or $\frac{91}{20}$ ***C.***

Middleton Invitational	February 18, 2006
Algebra I Team (no calculator)	**Question # 1**

A = $.\overline{2}$

B = $.0\overline{2}$

C = $.00\overline{2}$

(**A** + **B** + **C**) = $\frac{x}{y}$ (in simplest terms)

Find $x + y$

Middleton Invitational	February 18, 2006
Algebra I Team (no calculator)	**Question # 2**

P = the unit digit of 2009^{2007}

E = the unit digit of 2002^{2006}

G = the value of *a* given that 5(*a* + 1) = 3(*a* + 2)

Find $P \bullet E^{G}$

Middleton Invitational Algebra I Team (no calculator)	February 18, 2006 Question # 3

A = $\dfrac{4\sqrt{75}+3\sqrt{147}+2\sqrt{27}}{2\sqrt{48}+5\sqrt{3}-4\sqrt{108}}$

B = the greatest integral factor of 2222, which is less than one hundred and prime

Let **C**x + **D**y = **E** be the standard form of the line through $(1,1),\left(0,-\dfrac{6}{7}\right)$

Find $\dfrac{(A \bullet B)}{C+D-E-1}$

Middleton Invitational Algebra I Team (no calculator)	February 18, 2006 Question # 4

A = $\dfrac{\left[3\left(5^2 - 4^2\right)\right] + \left[7 + 5\left(1^{2005} - 2006^0\right)\right]+1}{\left(2^3 \div 1^{2007}\right) - \left[3^2 - 16\right]}$

B = 3 @ (2 @ 1) given that x @ y = $x^3 - 3y$

C = the least value of x that satisfies $9x^2=25$

Find $B^{-1}\left(\dfrac{C-\frac{4}{3}}{A}\right)$

Middleton Invitational	February 18, 2006
Algebra I Team (no calculator)	**Question # 5**

A = $E + F + G + H$, If $\dfrac{(x + 3) - x}{(x - 3)(x + 3)} = \dfrac{-E}{Gx^F - H}$

2.006 is .1% of **B**

A stock-broker recommends that Mr. Bradford Invest in bonds and stocks at a ratio of 23 : 14, respectively. If Mr. Bradford has $ 37,000 to invest, then let **C** be the amount of money that Mr. Bradford expends in bonds. (Assume that Mr. Bradford follows the broker's advice)

Find $\dfrac{C}{(B - 6)A}$

Middleton Invitational	February 18, 2006
Algebra I Team (no calculator)	**Question # 6**

A = $\left(\dfrac{x^2 + 5x + 6}{x^2 + 5x + 7}\right)\left(\dfrac{x + 1}{x - 1}\right)\left(\dfrac{x^2 + x - 6}{x^2 + 3x - 4}\right)$ when $x = 2$

B = x, given that $\left(2^{2x + 3}\right)(4^{3x}) = 256$

Find $A - B$

Middleton Invitational **February 18, 2006**

Algebra I Team (no calculator) **Question # 7**

(Enjoy "finding Pedro!")

$$\begin{array}{r} P\ \ 2\ \ 3 \\ 4\ \ E\ \ 5 \\ +\ 4\ \ 3\ \ D \\ \hline 9\ \ 7\ \ 5 \end{array}$$

R $= x$, given that $8^{3x} \bullet 4^{4x} = 16$

O = the abscissa of the vertex of the parabola $y = x^2 + 3$

Find the product of $PEDRO$

Middleton Invitational **February 18, 2006**

Algebra I Team (no calculator) **Question # 8**

A = the greatest common factor of 36, 56 and 72

B = x , when x + 1 = 0

C = $\dfrac{k}{m - \dfrac{(i+8)}{k}}$, when 3(2x – 5)(1 – x) + (1 – x)(2 – 3x) is simplified into $kx^2 + ix - m$.

Find $A + B + C$

Middleton Invitational	February 18, 2006
Algebra I Team (no calculator)	**Question # 9**

True statements = -1   False statements = 3

1. π is a real number
2. $\sqrt{\frac{4}{25}}$ is an irrational number
3. If Andy subtracts two integers the result will be negative. (Assume that Andy performs the subtraction correctly)
4. All rational numbers are natural.
5. The square root of a rational number is rational.
6. For any real number p, $p \bullet \frac{1}{p}$ = 1 by the identity property of equality.
7. For all real numbers e, d & r, (ed)r = r(ed) by the associative property of multiplication.

Find the sum of the TRUE and FALSE statements

Middleton Invitational	February 18, 2006
Algebra I Team (no calculator)	**Question # 10**

A train one mile long goes through a tunnel one mile long. If the train is traveling 5 mph, let **A** be the number of minutes that it takes for the train to go through the tunnel.

If it takes six minutes to cut a log in three pieces, let **B** be the number of minutes that it takes to cut the same log into four pieces.

If x is a real number, then the value of $x^2 - 2x$ can never be less than **C**.

Find $A + B + C$

Middleton Invitational	**February 18, 2006**
Algebra I Team (no calculator)	**Question # 11**

A = The slope of the line parallel to 2x - y = 17 through the point (1, 1).

B = The y-intercept of the following equation $y = 7x^2 + 18x + 5$.

C = The number of problems a student would do if they were to complete Chapter One and Two. Given that chapter One has 63 problems and Chapter Two has 47 problems.

Find $\frac{C}{AB}$

Middleton Invitational	**February 18, 2006**
Algebra I Team (no calculator)	**Question # 12**

A = (2000+2006)(1999+2006)(1998+2006)…(-2998+2006)(-2999+2006)(-3000+2006)

B = the perimeter of an isosceles right triangle, given that the hypotenuse is 10 units.

C = the sum of the abscissa and the ordinate at the intersection point of $\begin{cases} x + 2y = 4 \\ -3x + y = 2 \end{cases}$

Find $\frac{BC}{A}$

Middleton Invitational	February 18, 2006
Algebra I Team (no calculator)	**Question # 13**

A = the perimeter of the figure created when 1 unit by 1 unit squares are cut out of a 11 unit by 8.5 unit sheet of paper.

B = the greatest negative integer that satisfies $5(x+2) \geq 7x+2$.

Let $Cx+Dy=E$ be the line that has a slope of $-\frac{3}{2}$ and goes through the origin.

Find $A+B+C+D+E$

Middleton Invitational	February 18, 2006
Algebra I Team (no calculator)	**Question # 14**

A = $|x|$, given that $\left(.\overline{3}\right)^{2x+5} = \frac{1}{81}$

For Parts B and C: $f(x)=3x+2$ and $g(x)=2x^2-1$

B = $f(g(1))$

C = $f(g(f(2)))$

Find $A+B+C$

Middleton Invitational	February 18, 2006
Algebra I Team (no calculator)	Question # 15

A = the distance between $(3,6)$ and $(1,4)$.

Let $\sqrt{882}$ be $B\sqrt{C}$, when the expression is in simplest radical form.

Find $A+B+C$

Middleton Invitational 2006 Algebra I Team Round Solutions

1. **A** = $\frac{2}{9}$

   B = $\frac{2}{90}$

   C = $\frac{2}{900}$

(A + B + C)

$= \frac{222}{900}$

$= \frac{111}{450} = \frac{37}{150}$.

37 + 150 = 187

2. **P** = divide 2007 by 2 and if the remainder is .5 then the unit digit is1, and if the remainder is 0 then the unit digit is 9.

   E = divide 2005 by 4 and if the remainder is 0, .25, .5, .75; then the unit digit is 2, 4, 8, 6, respectively. Remainder is .25 therefore the digit is 4.

   G = 5a+5 = 3a+6, 2a = 1, a = $\frac{1}{2}$

$P \bullet E^{G}$

$= 9(4)^{\frac{1}{2}}$

= 9(2) = 18

3. **A =** $\frac{4\sqrt{75}+3\sqrt{147}+2\sqrt{27}}{2\sqrt{48}+5\sqrt{3}-4\sqrt{108}} = \frac{4\sqrt{25*3}+3\sqrt{3*49}+2\sqrt{3*9}}{2\sqrt{3*16}+5\sqrt{3}-4\sqrt{3*36}}$

   $= \frac{20\sqrt{3}+21\sqrt{3}+6\sqrt{3}}{8\sqrt{3}+5\sqrt{3}-24\sqrt{3}} = \frac{47\sqrt{3}}{-11\sqrt{3}} = \frac{-47}{11}$

   B = 2222 factors into 2*11*101. So the answer is 11.

   $\frac{-\frac{6}{7}-1}{0-1} = \frac{-\frac{13}{7}}{-1} = \frac{13}{7}$, $y = \frac{13}{7}x - \frac{6}{7}$, 13x – 7y – 6 = 0

$\frac{(A \bullet B)}{C + D - E - 1}$

$= \frac{\left(-\frac{47}{11} \bullet 11\right)}{(13+(-7)-6)-1}$

$= \frac{-47}{-1} = 47$

4. **A** = $\frac{\left[3\left(5^2 - 4^2\right)\right] + \left[7 + 5\left(1^{2005} - 2006^0\right)\right] + 1}{\left(2^3 \div 1^{2007}\right) - \left[3^2 - 16\right]}$

   $= \frac{\left[3\left(3^2\right)\right] + \left[7 + 5(0)\right] + 1}{\left(2^3 \div 1\right) - [-7]} = \frac{27 + 7 + 1}{8 + 7} = \frac{35}{15} = \frac{7}{3}$

   B = $3\left(2^3 - 3(1)\right) = 3 @ 5 = 3^3 - 3(5) = 12$

   C = $x = \pm\sqrt{\frac{25}{9}}, x = -\frac{5}{3}$ lowest number

$B^{-1}\left(\frac{C - \frac{3}{4}}{A}\right) = \frac{1}{12}\left(\frac{-\frac{5}{3} - \frac{4}{3}}{\frac{7}{3}}\right)$

$= \frac{1}{12}\left(\frac{-5-4}{7}\right)$

$= \frac{-9}{12*7} = \frac{-3}{28}$

Middleton Invitational 2006 Algebra I Team Round Solutions

$$\frac{C}{(B-6)A} = \frac{23000}{(2000)9} = \frac{23}{2*9} = \frac{23}{18}$$

5. **A** = $\frac{(x+3) - x}{(x-3)(x+3)} = \frac{-E}{Gx^F - H} = \frac{3}{x^2-9}$
E = -3, G = 1, F = 2, H = 9.
E + F + G + H = 9.

B = $\frac{2.006}{.001} = 2006$

C = 23 + 14 =37 $\frac{37000}{37} = 1000$, 23*1000=23000

$$A - B = 0 - \frac{5}{8} = -\frac{5}{8}$$

6. **A** = since $x^2 + x - 6$ factors into (x+3)(x-2) the numerator = 0

B = $\left(2^{2x+3}\right)(4^{3x}) = 256$, $2^{8x+3} = 2^8$, 8x + 3 = 8, x = $\frac{5}{8}$

$$P \bullet E \bullet D \bullet R \bullet O = 0$$
$$1 \bullet 1 \bullet 7 \bullet \frac{4}{17} \bullet 0 = 0$$

7. **P** = 1

E = 1

D = 7

R = $\frac{4}{17}$

O = all of the solutions of x are going to be "double-roots"=0

$$A + B + C = 4 - 1 - \frac{1}{7} = \frac{20}{7}$$

8. **A** = 36 = 2*2*3*3, 56= 2*2*27, 72 = 2*2*2*3*3. GCF=4

B = x + 1 = 0, x = -1

C= 3(2x – 5)(1 – x) + (1 – x)(2 – 3x) =
$-3x^2 + 16x - 13$, $k = -3$ $i = 16$ $m = 13$

$$\frac{k}{m - \frac{(i+8)}{k}} = \frac{-3}{13 - \frac{(16+8)}{-3}} = \frac{-3}{13+8} = \frac{-3}{21} = -\frac{1}{7}$$

Middleton Invitational 2006 Algebra I Team Round Solutions

True+ False = -1(1) - (-3)(6) = -1 - (-18) = 17

9. True: 1
False: 2, 3, 4, 5, 6, and 7

10. **A** = $2 \text{ miles} \div 5 \text{ mph} = \frac{2}{5}$ hr. $\frac{2}{5}\text{hr} * 60\ \frac{\text{min}}{\text{hr}} = 24\,\text{min}$

B = 6 ÷ 2 = 3 minutes per cut. 4 pieces requires 3 cuts so
3 * 3 = 9

C = -1

$A+B+C$ $=24+9-1$ $=32$

11. **A** = The slope of the line parallel to 2x – y = 17 is the same. So 2.

B = the y-intercept of equation occurs when x is equal to zero. So 5.

C = just add the number of problems 63 + 47 = 110

$\frac{C}{A \bullet B}$ $=\frac{110}{5*2}=11$

12. **A** = the first term in every quantity is varying (decreasing). Since it is decreasing until the value of the term is –3000, then it must had been –2006 somewhere in between. The product is Zero.

B = the legs are going to have length $5\sqrt{2}$ each making the perimeter $10\sqrt{2}+10$

C = $\begin{cases} x + 2y = 4 \\ -3x + y = 2 \end{cases}$

Substitude for x into te second equation. x = 0. y = 2.

$\frac{BC}{A}=\frac{2(10\sqrt{2}+10)}{0}$. Undefined.

13. **A** = 39

B = $\begin{aligned} &5(x+2) \ge 7x+2 \\ &5x+10 \ge 7x+2 \\ &8 \ge 2x \\ &4 \ge x \end{aligned}$ however, since the question asked for the greatest negative integer the answer would be negative one.

$$Cx+Dy=E$$
$$3x+2y=0$$

$A+B+C+D+E$ $39-1+3+2+0$ 43

Middleton Invitational 2006 Algebra I Team Round Solutions

$$\left(\frac{1}{3}\right)^{2x+5} = \frac{1}{3^4}$$

14. **A** = $2x+5=4$

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

B = $g(1)=2(1)^2-1=2-1=1$

$f(g(1)) = f(1)=3(1)+2=3+2=5$

$f(2)=3(2)+2=6+2=8$

C = $g(f(2)) = g(8)=2(8)^2-1=2(64)-1=128-1=127$

$f(g(f(2))) = f(127)=3(127)+2=381+2=383$

$$-\frac{1}{2}+5+383$$

$$387\frac{1}{2} \; or \; \frac{775}{2}$$

$$\sqrt{(4-6)^2+(1-3)^2}$$

15. **A** = $\sqrt{4+4}$

$$2\sqrt{2}$$

$B\sqrt{C}$ = $\sqrt{882}$ $\quad \sqrt{2*3*3*7*7}$

$3*7\sqrt{2}$ $\quad 21\sqrt{2}$

$B=21$

$C=2$

$$A+B+C$$

$$2\sqrt{2}+21+2$$

$$2\sqrt{2}+23$$