

PLANT CITY HIGH SCHOOL

ALGEBRA I

MARCH 13, 1999

WRITTEN BY SUNIL DEVARAKONDA

ANSWERS

1. A

2. B

3. C

4. B

5. E

6. D

7. C

8. D

9. C

10. B

11. C

12. C

13. C

14. D

15. C

16. A

17. D

18. D

19. A

20. C

21. B

22. B

23. A

24. B

25. D

26. A

27. D

28. C

29. A

30. D

①  $a^2b + ab = 12$

Ⓐ  $b(a^2 + a) = 12$

$b = \frac{12}{a^2 + a}$

② Ⓑ  $(A \cup C) \cap B$

$(\{2, 4, 6\} \cup \{4, 5, 6, 7\}) \cap B$

$(\{2, 4, 5, 6, 7\} \cap \{1, 3, 5, 7\})$

$\{5, 7\}$

③ Ⓒ  $(3+7)+5 = 5+(3+7)$

COMMUTATIVE

④ Ⓑ  $\sqrt{144x^{64}} = 12x^{32}$

⑤ Ⓔ  $x^2 = 16$   
 $x = \pm 4$

⑥ Ⓓ  $(a^2b^{-3})^{-2} =$   
 $(a^{-4}b^6) =$   
 $\frac{b^6}{a^4}$

⑦ Ⓒ  $y = kx + 4 \parallel 3y = (k+3)x + 5$   
 $y = \frac{k+3}{3}x + \frac{5}{3}$

$k = \frac{k+3}{3}$

$3k = k+3$

$2k = 3$

$k = 3/2$

⑧ Ⓓ  ${}_4C_a = \frac{4!}{a!a!} = \frac{4 \cdot 3 \cdot 2 \cdot 1}{2 \cdot 1 \cdot 2 \cdot 1} = 6$

$\{a, b\} \{a, c\} \{a, d\} \{b, c\} \{b, d\} \{c, d\}$

⑨  $104 = 2^3 \cdot 13$

Ⓒ  $156 = 2^2 \cdot 3 \cdot 13$

$676 = 2^2 \cdot 13^2$

$LCM = 2^3 \cdot 3 \cdot 13^2$

$= 4056$

$GCF = 2^2 \cdot 13$

$= 52$

$LCM + GCF = 4056 + 52 = 4108$

⑩

Ⓑ

|          |                 |           |     |
|----------|-----------------|-----------|-----|
|          | $D = r \cdot t$ |           |     |
| AIRPLANE | 2050            | $r + 358$ | $t$ |
| CAR      | 260             | $r$       | $t$ |

$\frac{2050}{r+358} = \frac{260}{r}$

$2050r = 260(r+358)$

$2050r = 260r + 93080$

$1790r = 93080$

$r = 52$

$r + 358 = 52 + 358 = 410$

⑪

Ⓒ

$$\begin{array}{r|l} 6 & 41 \\ 85 & 2 \\ +97 & 3 \\ \hline 24 & 156 \end{array}$$

change 7 to 6

Largest digit  
 answer is 7

⑫  $x + 2(x+1) = 23$

Ⓒ  $x + 2x + 2 = 23$

$3x = 21$

$x = 7$

$x + 1 = 8$

$x = 7$

Ch:  $7 + 2(8) = 7 + 16 = 23$

⑬  $d + 9 = 46$

$d + 10 = 46$

$10d + 25q = 610$

$-10d - 10q = -460$

$15q = 150$

$q = 10$

$d = 36$

Ⓒ

⑭  $15x + 31 = 7$

Ⓓ  $5x + 3 = 7$

$5x = 4$

$x = 4/5$

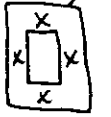
$5x + 3 = -7$

$5x = -10$

$x = -2$

$\{-2, 4/5\}$

15) C  $\rightarrow (8-2x)(11-2x)=40$   
 $88-22x-16x+4x^2=40$   
 $4x^2-38x+48=0$   
 $2x^2-19x+24=0$   
 $(2x-3)(x-8)=0$   
 $x = 3/2$  or ~~8~~



16) A  $\frac{d}{8c}$   
 1 cup = 8 oz.  
 d makes 8oz  
 1oz makes c cups  
 Cost  $\div$  # of cups  
 $d \div (8c)$

17) D  $\frac{8}{x^2} + \frac{6}{3x-6} =$   
 $\frac{8}{x^2} + \frac{2}{x-2} =$   
 $\frac{8(x-2) + 2(x)^2}{x^2(x-2)} =$   
 $\frac{2x^2 + 8x - 16}{x^3 - 2x^2}$

18) D  $.05(x) + .30(30) = .15(x+30)$   
 $.05x + 9 = .15x + 4.5$   
 $4.5 = .10x$   
 $45 = x$

19) A  $\frac{\frac{1}{2} + \frac{3}{4}}{\frac{5}{6} - \frac{3}{8}} = \frac{4+6}{8} = \frac{10}{8}$   
 $\frac{10}{8} \cdot \frac{48}{48} = \frac{30}{11}$

20) m = 2l  
 C  $m-10 = 4(l-10) + 2$   
 $2l-10 = 4l-40+2$   
 $-2l = -28$   
 $l = 14$   
 $m = 28$   
 Sum = 42

21) B  $\frac{x}{6.3} + \frac{x}{13.3} + \frac{x}{2.1} = 1$   
 $27.93x + 13.23x + 83.79x = 175.959$   
 $124.95x = 175.959$   
 $x \approx 1.4$

22) B  $2\sqrt{2}(4\sqrt{3} - 5\sqrt{6}) =$   
 $8\sqrt{6} - 10\sqrt{12} =$   
 $8\sqrt{6} - 20\sqrt{3}$

23) A  $f(x) = x^2 - 1$   
 $f(x+1) = (x+1)^2 - 1$   
 $= x^2 + 2x + 1 - 1$   
 $f(x+1) = x^2 + 2x$

24) B  $x^2 - 10x + 16 = 0$   
 $(x-8)(x+2) = 0$   
 $x = 8$  or  $2$   
 $(8)(2) = 16$

25) D  $l = \#$  of lost (s)  
 $w = \#$  of win (s)  
 $l + w = 26$   
 $3w - l = -10$   


---

 $4w = 16$   
 $w = 4$   $l = 22$

26) A  $\frac{12}{34} \cdot \frac{1}{5} = \frac{1}{15}$

$$\textcircled{27} * C = 2\pi r \quad A = \pi r^2$$

$$\textcircled{D} \quad 20\pi = 2\pi r \quad = \pi(10)^2$$
$$10 = r \quad A = 100\pi$$

$$\textcircled{28} \textcircled{C} \quad .08x + .09(x + 200) = 86$$

$$.17x + 18 = 86$$

$$.17x = 68$$

$$x = 400$$

$$x + 200 = 600$$

$$\text{Total} = 1000$$

$$\textcircled{29} \textcircled{A} \quad 3^{x+y} = 81 = 3^4$$

$$3^{x-y} = 243 = 3^5$$

$$x + y = 4$$

$$x - y = 5$$

$$\hline 2x = 9$$

$$x = 9/2$$

$$y = -1/2$$

$$\frac{x}{y} = \frac{9}{-1/2} = -18$$

$$\textcircled{30} \textcircled{D} \quad (\text{The day before})$$

One day back would be half if it doubles everyday; common sense

29 days