

Vero Beach High School
 January 24, 2004 Invitational
 Algebra I Individual Solutions

1. **C. 67%**

$$\frac{201}{300} = \frac{x}{100}$$

$$\frac{3}{3}x = \frac{201}{3}$$

$$x = 67$$

2. **D. 7**

$$x^2 - 7x + 12$$

$$(x-3)(x-4)$$

$$x = \{3, 4\}$$

$$3+4$$

$$7$$

3. **A. 2^{7n-2}**

$$2^{n+1} \cdot 2^{n-3} \cdot 2^{5n}$$

$$n+1+n-3+5n$$

$$7n-2$$

4. **D. 72**

$$\begin{array}{r} 625-30 \\ \times 12102 \\ \hline 21772 \end{array}$$

5. **C. $\frac{x^2-3x-10}{x-2}$**

$$\frac{(x-2)(x+2) \cdot (x-5)(x+2)}{(x-3)(x-2) \cdot (x+2)}$$

6. **D. 9**

Teresa = $x = 24$

Chelsea = $x+12 = 36 \Rightarrow 3+6 = 9$

$$25x + 10x + 120 = 960$$

$$35x = 840$$

$$x = 24$$

7. **B. $2x^2y^2$**

$$2x^2y^2(yz)$$

$$2x^2y^2(2x^3)$$

8. **C. $\frac{1}{5}$**

$\frac{1}{5}$ mult. inv.

-5 add. inv.

5 reciprocal

$$\frac{1}{5}$$

9. **B. 6**

Ponyboy = $2G$
 Gasoline Man = G

$$2G - 10 = 4(G - 10)$$

$$2G - 10 = 4G - 40$$

$$30 = 2G$$

$$15 = G$$

$$1+5$$

$$6$$

10. **C. 9**

$$3x^1y^3 + 5x^2y^3 + 4xy^2$$

$$9 \quad 5 \quad 3$$

11. **C. $\frac{2}{3}$**

$$2x - 3y = 1$$

$$\frac{2x-1}{3} = \frac{3}{3}y$$

$$\frac{2}{3}x - \frac{1}{3} = y$$

12. **A. $\frac{104}{7}$**

1, 2, 3, 3, 4, 5, 7

range = $7-1 = 6$

mode = 3

median = 3

mean = $\frac{29}{7}$

$$\frac{1+2+3+3+4+5+7}{7}$$

$$\frac{12+21+14+15+28}{7}$$

13. **C. 8**

$$a+b = 24$$

$$ab = 128$$

$$a = 24 - b$$

$$b(24-b) = 128$$

$$24b - b^2 = 128$$

$$b^2 - 24b + 128 = 0$$

$$(b-16)(b-8) = 0$$

$$a \text{ or } b = \{16, 8\}$$

$$|16-8|$$

$$8$$

14. **B. $53\frac{1}{3}$**

$$\frac{1}{4}(80) = 20 \text{ mL}$$

$$\frac{20}{x} = \frac{15}{100}$$

$$\frac{2000}{15} = \frac{15x}{15}$$

$$133\frac{1}{3} - 80$$

15. **E. NOTA (33)**

$$3 \cdot 8 + 3^2$$

$$24 + 9$$

16. **B. 1**

$$B = KED$$

$$B = 24, E = -2, D = 3$$

$$24 = K \cdot -2 \cdot 3$$

$$24 = -6K$$

$$-4 = K$$

$$B = 4, D = -1$$

$$4 = -4 \cdot -1 \cdot E$$

$$4 = 4E$$

$$1 = E$$

17. **B. Commutative Property**

Properties of Equality of Real Numbers are Reflexive, Symmetric, and Transitive.

18. **D. 6**

$$\frac{2004^{2004}}{4^{2004}}$$

$$4^1 = 4$$

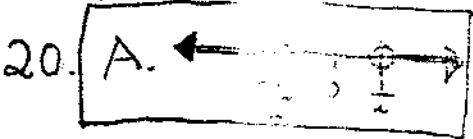
$$4^2 = 16$$

$$4^3 = 64$$

19. **B. $(x+2)(x-7)$**

$$3x^2 - x - 14$$

$$(3x - 7)(x + 2)$$



$$|8m| = 8$$

$$|8m| > 8$$

$$8m > 8 \quad 8m < -8$$

$$m > 1 \quad m < -1$$

21. **C. $\frac{3}{2}$**

$$(2, 3); (1, 4)$$

$$\frac{3-7}{2-4} = \frac{-4}{-2} = 2$$

$$2x - y = 1$$

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

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

22. **C. 11**

$$(6^2 + 2^2 \cdot 9)^{\frac{1}{2}} \cdot (1+2)$$

$$(36 + 4 \cdot 9)^{\frac{1}{2}} \cdot 3$$

$$72^{\frac{1}{2}} \cdot 3$$

$$1 \cdot 3$$

$$3$$

23. **E. NOTA (6)**

$$2(3x + 5y = 10)$$

$$-3(2x + 6y = -4)$$

$$6x + 10y = 20$$

$$-2x - 18y = 12$$

$$-8y = 32$$

$$y = -4$$

$$3x + 5(-4) = 10$$

$$3x - 20 = 10$$

$$3x = 30$$

$$x = 10$$

$$10 + (-4) = 6$$

24. **D. 4:00 PM**

Amit's distance = $(3 \text{ mph})(x + 15) \text{ min.}$ none of the statements are true for the line
Andy's distance = $(4 \text{ mph})(x \text{ min.})$ $x = -2$

$$3(x + 15) = 4x$$

$$3x + 45 = 4x$$

$$x = 45 \text{ minutes}$$

Andy started at 3:15 PM, so after 45 min. the time would be 4:00 PM.

25. **B. 199**

$$\text{Starkey} = z = 3y + 11 = 3 \cdot 47 + 11 = 152$$

$$\text{Bonnie} = y = 4x - 13 = 4 \cdot 15 - 13 = 47$$

$$\text{Shyamango} = x = 15$$

$$152 + 47$$

26. **A. 318762951572**

numbers divisible by 3 have digits that when added together are divisible by 3

$$3 + 1 + 8 + 7 + 6 + 2 + 9 + 5 + 1 + 5 + 7 + 2$$

$$56$$

$$5 + 6$$

$$11$$

$$2$$

$$11 + 2 = 13$$

27. **A. -9**

$$-\frac{1}{10}(4^2 - 2 \cdot 3) + (-2)^3$$

$$-\frac{1}{10}(16 - 6) + (-8)$$

$$-\frac{1}{10} \cdot 10 - 8$$

$$-1 - 8$$

28. **A. $\frac{7x-17}{x^2-4}$**

$$\frac{7(x-2) - 3}{x^2 - 4}$$

$$\frac{7x - 14 - 3}{x^2 - 4}$$

29. **E. NOTA**

30. **C. 30**

$$5 \cdot [4 + 3^2 + (-2)^3] - 6 \div 2 + 8$$

$$5 \cdot [4 + (9 - 8)] - 3 + 8$$

$$5 \cdot 5 + 5$$

$$25 + 5$$

$$30$$

Test written on...
Carry for... and...
30