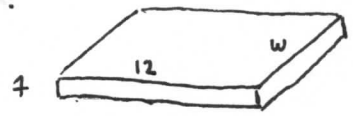
Chiles Mini Mu
12/12/2009
Algebra I- Willy Wonka and the Chocolate Factory Solutions

1. D

2.



$(7)(12)(w) = 42$

$84w = 42$

$w = \frac{42}{84} = \boxed{\frac{1}{2}\text{ cm}}$ C

3. $3 + (-2) - 9 + 6 - 7 + 1 + (+6) - 18$

$1 - 3 - 6 - 12$

$\boxed{-20}$ ← in thousands B

4. 1 bar = 1000 calories

560 bars = $\boxed{560{,}000 \text{ cals}}$

70 days = 10 weeks

560 bars = 10 weeks D

5. $|(-2)^2 + (-3)^3 + 1|$

$|4 + (-27) + 1|$

$|-23 + 1|$

$|-22| = 22$ B

6. C

7. $3x - 5y = -16$

$2x + 5y = 31$

$5x = 15$

$x = 3$

$2(3) + 5y = 31$

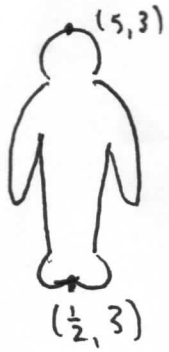
$6 + 5y = 31$

$5y = 25$

$y = 5$

$(3, 5)$ D

8.

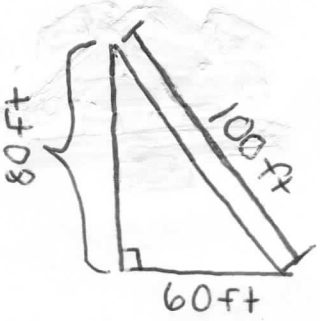


$d = \sqrt{(3-3)^2 + (5 - \frac{1}{2})^2}$

$= \sqrt{0 + 4.5^2}$

$= 4.5$ units E

9.



$60^2 + x^2 = 100^2$

$3600 + x^2 = 10,000$

$x^2 = 6400$

$x = \sqrt{6400}$

$= 80$ B

12. $\frac{x^2 - 5x - 6}{x^2 - 5x + 6}$

$x^2 - 5x + 6$

$(x - 3)(x - 2)$

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

$x = 3$ $x = 2$

$\{2, 3\}$ D

10. D

11. C

15. $i\sqrt{5} = \sqrt{-5}$ C

16. slope: $\frac{y_2 - y_1}{x_2 - x_1}$ $(7,1), (1,9)$

$$\frac{9-1}{1-7} = -\frac{8}{6} = \boxed{-\frac{4}{3}}$$ D

17. $(\sqrt{14} + \sqrt{3})(\sqrt{6} - \sqrt{7})$

$84 = 2 \cdot 42 = 2 \cdot 2 \cdot 21$ $98 = 49 \cdot 2 = 7 \cdot 7 \cdot 2$ $18 = 2 \cdot 9 = 2 \cdot 3 \cdot 3$

$\sqrt{84} - \sqrt{98} + \sqrt{18} - \sqrt{21}$

$2\sqrt{21} - 7\sqrt{2} + 3\sqrt{2} - \sqrt{21}$

$\boxed{\sqrt{21} - 4\sqrt{2}}$ B

18. $\{1, 2, 3, \ldots\}$ C

19. slope: $\frac{10-6}{-8-(-4)} = \frac{4}{-4} = -1$ $(-4,6), (-8,10)$

$y - 6 = -1(x + 4)$

$y - 6 = -x - 4$

$\boxed{y + x = 2}$ A

20. $(4x+9)(2x^2 - 5x + 3)$

$8x^3 - 20x^2 + 12x + 18x^2 - 45x + 27$

$\boxed{8x^3 - 2x^2 - 33x + 27}$ B

21. $5\sqrt{3} \cdot 2\sqrt{22}$

$\boxed{10\sqrt{66}}$

E

$66 = 2 \cdot 33 = 2 \cdot 3 \cdot 11$

22. $17t + 9 + \left(\frac{192}{16}\right) > 3(8t + 7)$

$17t + 9 + \left(\frac{192}{16}\right) > 24t + 21$

$-7t > 12 - \frac{192}{16}$

$-112t > 192 - 192$

$t > \frac{0}{-112}$

$\boxed{t > 0}$ A

23. $y = kx$

$124 = k4$

$\boxed{31 = k}$ E

24 $(7, 6), (2, -3)$

slope: $\frac{6+3}{7-2} = \frac{9}{5}$ - perp. $\rightarrow -\frac{5}{9}$ B

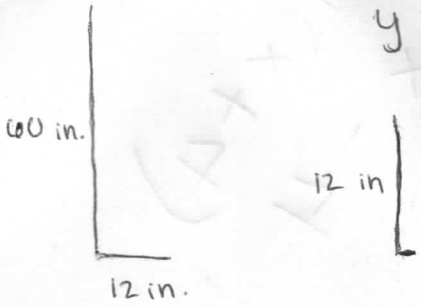
25. $5x + 2y = 6$
$9x + 2y = 22$

$5x + 2y = 6$
$-9x - 2y = -22$
$-4x = -16$
$x = 4$

$5(4) + 2y = 6$
$20 + 2y = 6$
$2y = -14$
$y = -7$

chocolate bar = $\boxed{x - 4}$ D

26.



$\frac{60}{12} = \frac{12}{x}$

$144 = 60x$

$\frac{144}{60} = x = 2.4$ in. = $\boxed{2\frac{2}{5} \text{ in.}}$ B

27. $r^2 + 5r - 24$

$\boxed{(r + 8)(r - 3)}$ A

28. $\sqrt{x^5} = \sqrt{x^2 \cdot x^2 \cdot x}$
$= \boxed{x^2\sqrt{x}}$ A

29. $(2^2 5)(2^3 5^4 6)$
$\boxed{2^5 5^5 6}$ $\boxed{B}$

#14. check:
$(\sqrt{7+2})^2 = (7-4)^2$
$9 = 9$ ✓
$(\sqrt{2+2})^2 = (2-4)^2$
$4 = 4$ ✓

14. $(\sqrt{x+2})^2 = (x-4)^2$
$x + 2 = (x - 4)(x - 4)$
$x + 2 = x^2 - 8x + 16$
$= x^2 - 9x + 14$
$(x - 7)(x - 2)$
$x - 7 = 0$ $x - 2 = 0$
$x = 7$ $x = 2$
$\{2, 7\}$ B