

FINAL REVIEW A CMP 0809

Solutions

1. B
2. D
3. C
4. D
5. D
6. C
7. C
8. B
9. B
10. D
11. C
12. A
13. A
14. B
15. A
16. B
17. C
18. A
19. D
20. A
21. D
22. C
23. D
24. B
25. B
26. A
27. C
28. C
29. D
30. C
31. D
32. B
33. B
34. D

35. B
36. A
37. C
38. A
39. C
40. A
41. D
42. C
43. C
44. C
45. C
46. B
47. B
48. C
49. D
50. D
51. B
52. C
53. D
54. B
55. B
56. B
57. D
58. C
59. D
60. B
61. A
62. A
63. B
64. B
65. C
66. B
67. D

Final Review A

CMP 0809

$$1. \begin{array}{l} -6 - 7(C+10) \\ -6 - 7C - 70 \\ -7C - 76 \end{array} \quad \boxed{B}$$

$$2. \begin{array}{l} 5k^2(-6k^2 - 2k + 6) \\ -30k^4 - 10k^3 + 30k^2 \end{array} \quad \boxed{D}$$

$$3. \begin{array}{l} (x-4)(x+3) \\ x^2 + 3x - 4x - 12 \\ x^2 - x - 12 \end{array} \quad \boxed{C}$$

$$4. \begin{array}{l} \frac{1}{2} (6h+16)(3h-8) \\ \frac{1}{2} (18h^2 - 48h + 48h - 128) \\ 9h^2 - 24h + 24h - 64 \\ 9h^2 - 64 \text{ cm}^2 \end{array} \quad \boxed{d}$$

$$5. \begin{array}{l} k^2 - 16h^2 \text{ diff of squares} \\ (k-4h)(k+4h) \end{array} \quad \boxed{d}$$

$$6. \begin{array}{l} a^2 + ab - 56b^2 \\ (a+8b)(a-7b) \end{array} \quad \boxed{C}$$

$$7. \begin{array}{l} 40p^2 - 13p - 36 \\ (8p-9)(5p+4) \\ 40p^2 + 32p - 45p - 36 \\ 40p^2 - 13p - 36 \end{array} \quad \boxed{C}$$

$$8. \begin{array}{l} y = -2x^2 - 2x - 1 \quad x \text{ value of} \\ \text{vertex or line of sym} \quad -b/2a = \frac{-2}{2(-2)} = \frac{2}{4} = \frac{1}{2} \\ -2\left(\frac{1}{2}\right)^2 - 2\left(\frac{1}{2}\right) - 1 \\ -2\left(\frac{1}{4}\right) + 1 - 1 = -\frac{1}{2} \end{array} \quad \left(-\frac{1}{2}, -\frac{1}{2}\right) \quad \boxed{b}$$

$$9. \begin{array}{l} h = -16t^2 + 36t + 9 \\ x \text{ value of vertex} \\ -b/2a = \frac{-36}{2(-16)} = \frac{-36}{-32} = 1.125 \text{ sec.} \\ h = -16(1.125)^2 + 36(1.125) + 9 \\ h = -16\left(\frac{9}{8}\right)^2 + 36\left(\frac{9}{8}\right) + 9 \\ h = \frac{-16}{1}\left(\frac{81}{64}\right) + 40\frac{1}{2} + 9 \\ h = \frac{-81}{4} + 40\frac{1}{2} + 9 \\ h = -20\frac{1}{4} + 40\frac{1}{2} + 9 \\ h = 29\frac{1}{4} \text{ feet} \end{array} \quad \boxed{b}$$

$$10. 9 \cdot 9 \cdot 9 \cdot 9 \cdot 9 \cdot 9 \cdot 9 = 9^7 \quad \boxed{d}$$

$$11. 2700 \text{ people} \uparrow 4\% \\ \begin{array}{l} y = 2700(1.04)^x \\ y = 2700(1.04)^{12} \\ y = 2700(1.6) \\ y = 4323 \text{ people} \end{array} \quad \boxed{C}$$

12. 400 6% annually 5 yr balance?

$$y = 400(1.06)^5$$
$$y = 400(1.338)$$
$$y \approx \$535.20 \quad \boxed{A!}$$

13. best \$15,500 ↓ 10% / yr worth after 5 yrs?

$$y = 15500(.9)^5$$
$$y = 15500(.59)$$
$$y \approx \$9153 \quad \boxed{A!}$$

14. $2^2 \cdot 2^8 = 2^{10} \quad \boxed{B!}$

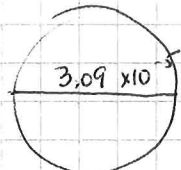
15. $6^a \cdot 6^v = 6^{a+v} \quad \boxed{A!}$

16. $\frac{144^{14}}{144^2} = 144^{12} \quad \boxed{B!}$

17. $\frac{x^{13}}{x^2} = x^{11} \quad \boxed{C!}$

18. $14^{-4} = \frac{1}{14^4} \quad \boxed{A!}$

19. $3.656 \times 10^{-5} = .00003656 \quad \boxed{D!}$

20.  std form .0000309
radius (half) 1.545×10^{-5} or .00001545 $\boxed{A!}$

Review A Solutions

21-45

~~$$\begin{array}{r} 4a+12 \\ 3a+32 \end{array}$$~~

21. $\sqrt{16} = 4$ [d]

22. $-\sqrt{25} = -5$ [c]

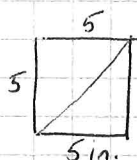
23. 

$$\begin{array}{r} a^2 + b^2 = c^2 \\ 7^2 + b^2 = 14^2 \\ 49 + b^2 = 196 \\ -49 \quad -49 \\ \hline b^2 = 147 \end{array}$$

$$b = \sqrt{147}$$

$$b \approx 12.1 \text{ ft}$$

[d]

25. 

Quilt Square

$$\begin{array}{r} a^2 + b^2 = c^2 \\ 5^2 + 5^2 = c^2 \\ 25 + 25 = c^2 \\ 50 = c^2 \end{array}$$

$$\sqrt{50} = c$$

$$7.1 \text{ in.} \approx c$$

[b]

26. $(-2)^5 = -32$ [A]

* 27. -5^4 ORDER OF OPS ISSUE
HERE !!

-625 since this means $-(5)(5)(5)(5)$

[c]

28. $8d - 4d - 6d - 8 = 2d$

$$-2d - 8 = 2d$$

$$+2d \quad +2d$$

$$\frac{-8}{4} = \frac{4d}{4}$$

[c] $-2 = d$

29. $37 - 18 + 8w = 67$

$$19 + 8w = 67$$

$$-19 \quad -19$$

$$\frac{8w}{8} = \frac{48}{8}$$

[d] $w = 6$

30. opposite angles are equal

$$4a + 12 = 3a + 32$$

$$-3a \quad -3a$$

$$a + 12 = 32$$

$$-12 \quad -12$$

$$a = 20 \quad 4a + 12$$

$$4(20) + 12$$

$$80 + 12 = 92^\circ$$

[c]

31. $78 = -2(M + 3) + M$

$$78 = -2M - 6 + M$$

$$78 = -M - 6$$

$$+6 \quad +6$$

$$(-1)84 = -M(-1)$$

$$-84 = M$$

[d]

32. $\left(\frac{3}{1}\right)\left(\frac{y-5}{3}\right) = 1(3)$

$$\frac{y-5}{1} = \frac{3}{1}$$

$$y = 8$$

[b]

33. $\frac{w}{4} - 4 = 3$

$$+4 \quad +4$$

$$\left(\frac{4}{1}\right)\frac{w}{4} = 7(4)$$

$$w = 28$$

[b]

34. $\frac{d}{3} + 10 = 7$

$$-10 \quad -10$$

$$(3)\frac{d}{3} = -3(3)$$

$$d = -9$$

[d]

35. $-4n + 7 + 2n = 1$

$$-2n + 7 = 1$$

$$-7 \quad -7$$

$$\frac{-2n}{-2} = \frac{-6}{-2}$$

$$n = 3$$

[b]

36. $24w^{12} + 64w^8$ Find GCF! \boxed{a}
 $8w^8(3w^4 + 8)$

37. $z^2 - 6z - 27 = 0$ $(z - 9)(z + 3) = 0$
 $z = 9$ $z = -3$ \boxed{c}

38. $3z^2 + 3z - 6 = 0$ GCF first!!
 $3(z^2 + z - 2) = 0$
 $3(z + 2)(z - 1) = 0$
 $z = -2$ \boxed{a}
 $z = 1$

39. $c^2 - 4c = 0$ GCF factoring!
 $c(c - 4) = 0$
 $c = 0$ \boxed{c}
 $c = 4$

40. $y = 4^x$ ← repeated mult by 4
 Sample Solutions \boxed{a} Expon Growth!

x	y
-1	$\frac{1}{4}$
0	1
1	4
2	16
3	64

41. $m = 1$
 $b = 4$ $y = x + 4$ \boxed{d}

42. $y = \frac{1}{6}x + 8$ $-2x + 12y = -11$
 $+2x$ $+2x$
 \boxed{c} Yes parallel
 - same slopes
 - diff y-int.
 $\frac{12y}{12} = \frac{2x - 11}{12}$
 $y = \frac{x}{6} - \frac{11}{12}$

Review A Solutions

43 - 67

43. Parallel to $y = \frac{3}{4}x - 9$ + thru $(-8, 18)$
So line has same slope $m = \frac{3}{4}$

$$y = mx + b$$

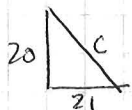
$$-18 = \frac{3}{4}(-8) + b$$

$$-18 = -6 + b$$

$$\frac{+6}{-12} = \frac{+6}{b}$$

$$y = \frac{3}{4}x - 12 \quad [C]$$

44. Perim of right triangle, legs 20, 21



$$20^2 + 21^2 = c^2$$

$$400 + 441 = c^2$$

$$841 = c^2$$

$$29 = c$$

Perim is $20 + 21 + 29 = 70 \text{ cm}$ [C]

45. $y < x + 3$



[C]

46. $x \leq -2$



[B]

47. $-7p - 16 > 82$

$$\frac{-7p}{-7} > \frac{98}{-7}$$

$$p < -14$$

← dividing by neg!

[B]

48. $\frac{w}{-15} - 13 \geq 8$

$$(-15) \frac{w}{-15} \geq 21(-15)$$

$$w \leq -315$$

← mult by a neg!

[C]

49. Typo in this: should be .50/mile

Renting a car \$21 + .50/mile
MAXIMUM of \$96 ← inequality problem!

$M = \# \text{ miles}$

(she can spend \$96 or less)
rental cost ≤ 96

$$21 + .50m \leq 96$$

$$-21 \quad -21$$

$$.50m \leq 75$$

50. \$6.25/hr. Need at least
\$143.75 for a stereo
 $h = \text{hours worked}$

$$\text{Pay} \geq 143.75$$

$$\frac{6.25h}{6.25} \geq \frac{143.75}{6.25}$$

$$h \geq 23 \quad [D]$$

Must work 23 hrs (or more!)

51. $y = -4x + 7$ ^{subst} $y = -x + 4$

$$-x + 4 = -4x + 7$$

$$+4x \quad +4x$$

$$\frac{3x + 4}{-4} = \frac{7}{-4}$$

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

$$x = 1$$

$$y = -x + 4$$

$$y = -1 + 4$$

$$y = 3$$

(1, 3)

[B]

52. $-3x + 9y = 18$

x-int (where $y = 0$)

$$-3x + 9(0) = 18$$

$$\frac{-3x}{-3} = \frac{18}{-3}$$

$$x = -6$$

(-6, 0)

y-int (where $x = 0$)

$$-3x + 9y = 18$$

$$-3(0) + 9y = 18$$

$$\frac{9y}{9} = \frac{18}{9}$$

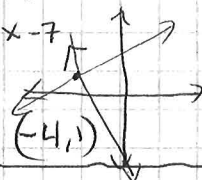
$$y = 2$$

(0, 2)

[C]

53. $y = \frac{1}{2}x + 3$

$$y = -2x - 7$$



[D]

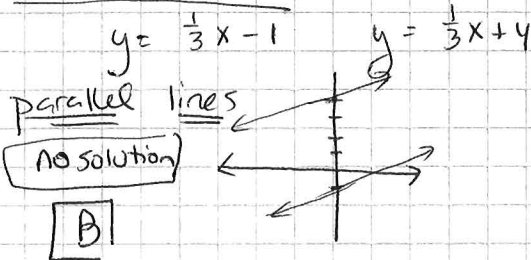
$$\frac{.50M}{.50} \leq \frac{75}{.50}$$

$$M \leq 150$$

150 miles or less

[D]

$$54. \begin{array}{r} -\frac{1}{3}x + y = -1 \\ + \frac{1}{3}x \quad + \frac{1}{3}x \end{array}$$



$$55. \begin{array}{r} 3x + y = 11 \\ 4x - y = 17 \\ \hline 7x = 28 \\ x = 4 \end{array}$$

[B] (4, -1)

$$56. y = 2x - 10$$

$$y = 4x - 8$$

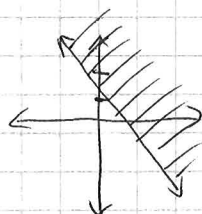
$$\begin{array}{r} 4x - 8 = 2x - 10 \\ -2x \quad -2x \\ \hline 2x - 8 = -10 \\ +8 \quad +8 \\ \hline 2x = -2 \\ x = -1 \end{array}$$

[B] (-1, -12)

$$\begin{array}{l} y = 2x - 10 \\ y = 2(-1) - 10 \\ y = -2 - 10 \\ y = -12 \end{array}$$

$$57. \begin{array}{r} 4x + 6y \geq 10 \\ -4x \quad -4x \end{array}$$

$$\begin{array}{r} 6y \geq -4x + 10 \\ \div 6 \quad \div 6 \\ y \geq -\frac{2}{3}x + \frac{5}{3} \end{array}$$



[D]

$$58. \begin{array}{r} 5x - 5y \geq 70 \\ -5x \quad -5x \end{array}$$

$$\begin{array}{r} -5y \geq -5x + 70 \\ \div -5 \quad \div -5 \end{array}$$

[C]

$$y \leq x - 14$$

dividing by a neg.

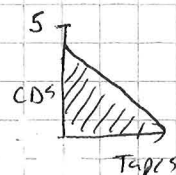
$$59. \begin{array}{l} x = \# \text{ tapes } \$5 \text{ each} \\ y = \# \text{ CDs } \$10 \text{ each} \end{array}$$

$$\text{Cost Tapes} + \text{Cost CDs} \leq 47$$

$$5x + 10y \leq 47$$

$$\begin{array}{r} -5x \quad -5x \\ \hline 10y \leq -5x + 47 \end{array}$$

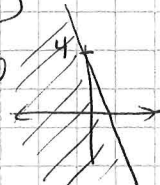
$$\begin{array}{r} \div 10 \quad \div 10 \\ y \leq -\frac{1}{2}x + 4.7 \\ y \leq .5x + 4.7 \end{array}$$



[D]

y-int (no tapes) (0, 4.7)
 x-int (no CDs) (9.4, 0)

$$60. \text{ Inequal}$$



y-int (0, 4)
 slope -3

[B] $y \leq -3x + 4$

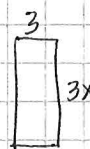
$$61. w = \# \text{ weeks } \$5 \text{ week sketch } \$65$$

$$5w = 65$$

$$w = 13 \text{ weeks}$$

[A]

$$62.$$



Perim is 24

$$3 + 3x + 3 + 3x = 24$$

$$6x + 6 = 24$$

$$\begin{array}{r} -6 \quad -6 \\ \hline 6x = 18 \end{array}$$

$$\begin{array}{r} \div 6 \quad \div 6 \\ x = 3 \end{array}$$

[A]

$$63. \text{ Banquet } \$90 \text{ room rental}$$

$$\$14 \text{ per person}$$

$$p = \# \text{ people}$$

$$70 \text{ people:}$$

$$\text{Cost} = 90 + 14p$$

$$\text{Cost} = 90 + 14(70)$$

$$= 90 + 980$$

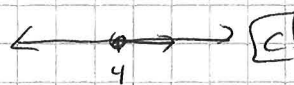
$$= \$1070$$

[B]

$$64. \text{ Speed limit } 30 \text{ mph } r \leq 30$$

[B]

$$65. \begin{array}{r} a + 4 \geq 8 \\ -4 \quad -4 \\ \hline a \geq 4 \end{array}$$



[C]

$$66. y = -4x + 7 \quad y = -x + 4$$

(1, 3)

[B]

$$67. \text{ Inverse variation } y = 6 \quad x = 8$$

$$xy = \text{constant } 48$$

$$\text{or } y = 48/x$$

[D]