Name Semester Review Key
Period Alg. 2 Hon.

MULTIPLE CHOICE MATCHING

101 B	1 F
102 D	2 C
103 C	3 A
104 D	4 D
105 A	5 C
106 D	6 F
107 B	7 B
108 B	8 G
109 D	9 H
110 B	10 A
111 A	11 B
	12 G
	13 D

MULTIPLE RESPON:

1 C, E
2 A, D, F
3 A, C, D, E
4 A, C
5 A, E

SHORT ANSWER

1 $p(x)=(x-5)(x+2)(x-4)$
2 16
3 $64x^{12}-576x^{10}+2160x^{8}-4320x^{6}+4860x^{4}-2916x^{2}+729$
4 -3
5 $(2x+11)/(x^2+7x+12)$
6 $(x+6)(x-6)$
7 no; 30 is not a perfect square
8 $(3a+2)(7a^2-3)$
9 yes, $(8x^3+y)(8x^3-y)$
10 $(x+3)(x^2-3x+9)(x-3)(x^2+3x+9)$
11 $5-5i$
12 $1/25$
13 $c^{15/2}/d^{10}$

Algebra 2 Semester Exam Review
Answer Section

MULTIPLE CHOICE

1. C
2. A
3. D
4. B
5. C
6. A
7. A
8. C
9. B
10. B
11. A
12. A
13. A
14. B
15. C
16. C
17. B
18. B
19. B
20. D
21. B
22. C
23. D
24. B
25. B
26. D
27. A
28. C
29. A
30. D
31. D
32. C
33. C
34. B
35. B
36. B
37. A
38. D
39. C
40. B
41. D
42. B
43. B
44. A
45. D
46. A
47. B
48. D
49. C
50. A
51. C
52. C
53. C
54. B
55. A
56. A
57. D
58. C
59. B
60. C
61. C
62. D
63. C
64. A
65. B
66. B
67. C
68. D
69. A
70. D
71. C
72. B
73. D
74. D
75. C
76. A
77. B
78. A
79. C
80. C
81. C
82. B
83. B
84. C
85. A
86. D
87. D
88. A
89. A
90. B
91. A
92. C
93. C
94. ~~D~~ B
95. B
96. B
97. D
98. B
99. A
100. B
101. B
102. D
103. C
104. D
105. A
106. D
107. B
108. B
109. D
110. B
111. A

MULTIPLE RESPONSE

1. C, E
2. A, D, F
3. A, C, D, E
4. A, C
5. A, E

MATCHING

1. F
2. C
3. A
4. D
5. C
6. F
7. B
8. G
9. H
10. A
11. B
12. G
13. D

SHORT ANSWER

1. Use synthetic substitution to find $p(5)$:

$$\begin{array}{r|rrr} 5 & 1 & -7 & 2 & 40 \\ & & 5 & -10 & -40 \\ \hline & 1 & -2 & -8 & 0 \end{array}$$

The last number in the bottom row of the synthetic substitution array is $p(5)$. Since $p(5) = 0$, $x - 5$ is a factor of $p(x)$. The coefficients of the quotient when $p(x)$ is divided by $x - 5$ are the first three numbers in the bottom row of the synthetic substitution array. So, $p(x) = (x-5)\left(x^2 - 2x - 8\right)$. Factoring the quadratic factor by inspection gives $p(x) = (x-5)(x+2)(x-4)$, the complete factorization of $p(x)$.

Rubric

1 point for showing $x - 5$ is a factor of $p(x) = x^3 - 7x^2 + 2x + 40$;
1 point for finding $x + 2$ as a factor;
1 point for finding $x - 4$ as a factor

2. $p(4) = 4^4 - 4(4)^3 - 11(4)^2 + 66(4) - 72$
$= 256 - 256 - 176 + 264 - 72$
$= 16$
So, the remainder is 16.

$$\begin{array}{r} x^3 \qquad -11x+22 \\ x-4\overline{)\ x^4-4x^3-11x^2+66x-72} \\ \underline{-\left(x^4-4x^3\right)} \\ 0-11x^2+66x \\ \underline{-\left(-11x^2+44x\right)} \\ 22x-72 \\ \underline{-\ (22x-88)} \\ 16 \end{array}$$

Rubric
1 point for correct application of remainder theorem; 1 point for correct remainder; 1 point for correct long division

3. $64x^{12} - 576x^{10} + 2160x^8 - 4320x^6 + 4860x^4 - 2916x^2 + 729$

4. First, find the quotient $\dfrac{2x^2+11x-23}{x+7}$.

$$\begin{array}{r} 2x \ -3 \\ x+7\overline{)\ 2x^2+11x-23} \\ \underline{-\left(2x^2+14x\right)} \\ -3x-23 \\ \underline{-(-3x-21)} \\ -2 \end{array}$$

$$\frac{2x^2+11x-23}{x+7} = 2x-3-\frac{2}{x+7}$$

Now, compare $2x-3-\dfrac{2}{x+7}$ to $2x+a-\dfrac{2}{x+7}$. The value of a is -3.

Rubric
1 point for dividing correctly;
1 point for the correct value of a

5. $\frac{2x+11}{x^2+7x+12}$

6. $\frac{x+6}{x-6}$

7. no; 30 is not a perfect square.

8. $(3a+2)\left(7a^2-3\right)$

9. yes; $\left(8x^3+y\right)\left(8x^3-y\right)$

10. $x^6-729=\left(x^3\right)^2-27^2$

$=\left(x^3+27\right)\left(x^3-27\right)$

$=\left(x^3+3^3\right)\left(x^3-3^3\right)$

$=(x+3)\left(x^2-3x+9\right)(x-3)\left(x^3+3x+9\right)$

Rubric

2 points for accurate work; 1 point for correct answer

11. $5-5i$

12. $\frac{1}{25}$

13. $\left(c^{-9}d^{12}\right)^{-\frac{5}{6}}=\left(c^{-9}\right)^{-\frac{5}{6}}\left(d^{12}\right)^{-\frac{5}{6}}$

$=c^{-9\left(-\frac{5}{6}\right)}d^{12\left(-\frac{5}{6}\right)}$

$=c^{\frac{15}{2}}\cdot d^{-10}$

$=\frac{c^{\frac{15}{2}}}{d^{10}}$

Rubric

1 point for the correct answer; 2 points for showing appropriate work