

\* Circled Questions

\* Do all work on separate page.

**EXTRA PRACTICE 10**  
**Factoring Polynomials**  
 Use after Sections 5.1 - 5.5

Name KEY

Examples. Factor completely.

- a)  $4x^3 + 12x^2 - 8x = 4x(x^2 + 3x - 2)$
- b)  $5x^3 - 3x^2 + 20x - 12 = x^2(5x - 3) + 4(5x - 3) = (5x - 3)(x^2 + 4)$
- c)  $x^2 + 2x - 35 = (x + 7)(x - 5)$
- d)  $3x^2 - 5x - 2 = (3x + 1)(x - 2)$
- e)  $x^2 - 18x + 81 = (x - 9)^2$
- f)  $4x^2 - 25y^2 = (2x + 5y)(2x - 5y)$

Factor.

- ①  $x^2 - 6x - 16 = \underline{(x - 8)(x + 2)}$
- ②  $4y^2 + 7y - 2 = \underline{(4y - 1)(y + 2)}$   
 $4y^2 + 8y - 1y - 2$   
 $4y(y + 2) - 1(y + 2)$
- ③  $5a^3 - 25a^2 + 15a = \underline{5a(a^2 - 5a + 3)}$
- ④  $9x^2 - 16 = \underline{(3x + 4)(3x - 4)}$
- ⑤  $x^2 - 64 = \underline{(x + 8)(x - 8)}$
- ⑥  $a^2 + 12a + 27 = \underline{(a + 3)(a + 9)}$
- ⑦  $6x^2 + 12x + 6 = \underline{6(x + 1)(x + 1)}$
- 8.  $x^3 + 2x^2 - 5x - 10 = \underline{\hspace{2cm}}$
- ⑨  $x^2 - 10x + 21 = \underline{(x - 7)(x - 3)}$
- 10.  $12x^5 - 6x^3 + 3x^2 = \underline{\hspace{2cm}}$
- ⑪  $6y^2 - 54 = \underline{6(y + 3)(y - 3)}$
- 12.  $4y^2 - 17y - 15 = \underline{\hspace{2cm}}$
- ⑬  $6x^2 - 7x + 2 = \underline{(2x - 1)(3x - 2)}$   
 $6x^2 - 3x - 4x + 2$   
 $3x(2x - 1) - 2(2x - 1)$
- ⑭  $5x^2 - 5 = \underline{5(x + 1)(x - 1)}$
- 15.  $y^5 + 3y^3 + 4y^2 + 12 = \underline{\hspace{2cm}}$
- 16.  $x^2 - 7x - 18 = \underline{\hspace{2cm}}$

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17.  $x^2 - 8x + 16 = (x-4)(x-4)$

18.  $a^2 - 9a + 14 = (a-7)(a-2)$

19.  $49x^2 - 1 = (7x+1)(7x-1)$

20.  $8x^4 - 4x^3 + 12x^2 =$  \_\_\_\_\_

21.  $y^2 + 10y + 25 =$  \_\_\_\_\_

22.  $3a^2 + 12a - 3 =$  \_\_\_\_\_

23.  $x^4 - 81 = (x^2+9)(x+3)(x-3)$

24.  $9y^2 - 12y + 4 = (3y-2)(3y-2)$

25.  $a^2 + 11a + 30 =$  \_\_\_\_\_

26.  $8t^2 + 2t - 3 = (4t+3)(2t-1)$   
 $8t^2 - 4t + 6t - 3$   
 $4t(2t-1) + 3(2t-1)$

27.  $75x^2 - 30x + 3 =$  \_\_\_\_\_

28.  $3t^2 - 8t - 3 =$  \_\_\_\_\_

29.  $x^2 + 3x + 8x + 24 =$  \_\_\_\_\_

30.  $y^2 - 22y + 121 =$  \_\_\_\_\_

31.  $x^2 - 2x - 3 =$  \_\_\_\_\_

32.  $4x^2 - 24x + 36 =$  \_\_\_\_\_

33.  $y^2 - 6y + 5 =$  \_\_\_\_\_

34.  $25t^2 - 4 = (5t+2)(5t-2)$

35.  $14x^3 - 7x^2 + 21x =$  \_\_\_\_\_

36.  $9x^2 + 42x + 49 =$  \_\_\_\_\_

37.  $9x^2 - 81 =$  \_\_\_\_\_

38.  $12x^2 + 4x - 5 =$  \_\_\_\_\_

39.  $49a^2 - 28a + 4 =$  \_\_\_\_\_

40.  $8x^2 - 29x - 12 =$  \_\_\_\_\_

27.  $25 + 10d + d^2$

28.  $9 - y^2$

29.  $12x^2 - 17xy + 15x + 6y^2 - 10y$

30.  $6v^2 - 11vw - 14v - 10w^2 + 35w$   
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31.  $-7c^2 - 37c + 24$

32.  $-4h^2 - 22h + 26hk - 3k - 9k^2 + 6$

Source: [http://www.conceptapplications.com/lem\\_5/](http://www.conceptapplications.com/lem_5/)