

**A.A.20: Factoring Polynomials 1: Factor algebraic expressions completely, including trinomials with a lead coefficient of one (after factoring a GCF)**

- 1 What are the factors of  $x^2 - 10x - 24$ ?
  - 1)  $(x - 4)(x + 6)$
  - 2)  $(x - 4)(x - 6)$
  - 3)  $(x - 12)(x + 2)$
  - 4)  $(x + 12)(x - 2)$
- 2 What are the factors of  $x^2 - 5x + 6$ ?
  - 1)  $(x + 2)$  and  $(x + 3)$
  - 2)  $(x - 2)$  and  $(x - 3)$
  - 3)  $(x + 6)$  and  $(x - 1)$
  - 4)  $(x - 6)$  and  $(x + 1)$
- 3 What are the factors of the expression  $x^2 + x - 20$ ?
  - 1)  $(x + 5)$  and  $(x + 4)$
  - 2)  $(x + 5)$  and  $(x - 4)$
  - 3)  $(x - 5)$  and  $(x + 4)$
  - 4)  $(x - 5)$  and  $(x - 4)$
- 4 Factored completely, the expression  $2x^2 + 10x - 12$  is equivalent to
  - 1)  $2(x - 6)(x + 1)$
  - 2)  $2(x + 6)(x - 1)$
  - 3)  $2(x + 2)(x + 3)$
  - 4)  $2(x - 2)(x - 3)$
- 5 Factored completely, the expression  $2y^2 + 12y - 54$  is equivalent to
  - 1)  $2(y + 9)(y - 3)$
  - 2)  $2(y - 3)(y - 9)$
  - 3)  $(y + 6)(2y - 9)$
  - 4)  $(2y + 6)(y - 9)$
- 6 Factored completely, the expression  $3x^2 - 3x - 18$  is equivalent to
  - 1)  $3(x^2 - x - 6)$
  - 2)  $3(x - 3)(x + 2)$
  - 3)  $(3x - 9)(x + 2)$
  - 4)  $(3x + 6)(x - 3)$
- 7 When factored completely, the expression  $3x^2 - 9x + 6$  is equivalent to
  - 1)  $(3x - 3)(x - 2)$
  - 2)  $(3x + 3)(x - 2)$
  - 3)  $3(x + 1)(x - 2)$
  - 4)  $3(x - 1)(x - 2)$
- 8 Factored completely, the expression  $3x^3 - 33x^2 + 90x$  is equivalent to
  - 1)  $3x(x^2 - 33x + 90)$
  - 2)  $3x(x^2 - 11x + 30)$
  - 3)  $3x(x + 5)(x + 6)$
  - 4)  $3x(x - 5)(x - 6)$
- 9 Factor completely:  $3x^2 + 15x - 42$

10 Factor completely:  $x^3 - x^2 - 6x$

11 Factor completely:  $5x^3 - 20x^2 - 60x$

12 If  $x + 2$  is a factor of  $x^2 + bx + 10$ , what is the value of  $b$ ?

13 Which expression is a factor of  $x^2 + 2x - 15$ ?

- 1)  $(x - 3)$
- 2)  $(x + 3)$
- 3)  $(x + 15)$
- 4)  $(x - 5)$

14 Which expression is a factor of  $n^2 + 3n - 54$ ?

- 1)  $n + 6$
- 2)  $n^2 + 9$
- 3)  $n - 9$
- 4)  $n + 9$

15 Which is a factor of  $x^2 + 5x - 24$ ?

- 1)  $(x + 4)$
- 2)  $(x - 4)$
- 3)  $(x + 3)$
- 4)  $(x - 3)$

16 If  $3x$  is one factor of  $3x^2 - 9x$ , what is the other factor?

- 1)  $3x$
- 2)  $x^2 - 6x$
- 3)  $x - 3$
- 4)  $x + 3$

17 If one factor of  $56x^4y^3 - 42x^2y^6$  is  $14x^2y^3$ , what is the other factor?

- 1)  $4x^2 - 3y^3$
- 2)  $4x^2 - 3y^2$
- 3)  $4x^2y - 3xy^3$
- 4)  $4x^2y - 3xy^2$

18 The greatest common factor of  $3m^2n + 12mn^2$  is?

- 1)  $3n$
- 2)  $3m$
- 3)  $3mn$
- 4)  $3mn^2$

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## **Answer Section**

1 ANS: 3

$$x^2 - 10x - 24 = (x - 12)(x + 2)$$

REF: 010318a

2 ANS: 2

$$x^2 - 5x + 6 = (x - 2)(x - 3)$$

REF: 010814a

3 ANS: 2 REF: 061105ia

4 ANS: 2

$$2x^2 + 10x - 12 = 2(x^2 + 5x - 6) = 2(x + 6)(x - 1)$$

REF: 080806ia

5 ANS: 1

$$2y^2 + 12y - 54 = 2(y^2 + 6y - 27) = 2(y + 9)(y - 3)$$

REF: 060623a

6 ANS: 2 REF: 061027ia

7 ANS: 4

$$3x^2 - 9x + 6 = 3(x^2 - 3x + 2) = 3(x - 1)(x - 2)$$

REF: 061421ia

8 ANS: 4

$$3x^3 - 33x^2 + 90x = 3x(x^2 - 11x + 30) = 3x(x - 5)(x - 6)$$

REF: 061227ia

9 ANS:

$$3(x + 7)(x - 2). \quad 3x^2 + 15x - 42 = 3(x^2 + 5x - 14) = 3(x + 7)(x - 2)$$

REF: 060535a

10 ANS:

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

REF: 018912siii

11 ANS:

$$5x^3 - 20x^2 - 60x$$

$$5x(x^2 - 4x - 12)$$

$$5x(x + 2)(x - 6)$$

REF: 011332ia

12 ANS:  
7

REF: 010007siii

13 ANS: 1  
 $x^2 + 2x - 15 = (x + 5)(x - 3)$

REF: 010004a

14 ANS: 4  
 $x^2 + 3x - 54 = (x + 9)(x - 6)$

REF: 060206a

15 ANS: 4  
 $x^2 + 5x - 24 = (x + 8)(x - 3)$

REF: spring9806a

16 ANS: 3  
 $3x^2 - 9x = 3x(x - 3)$

REF: 060421a

17 ANS: 1  
 $56x^4y^3 - 42x^2y^6 = 14x^2y^3(4x^2 - 3y^3)$

REF: 060318a

18 ANS: 3  
 $3mn(m + 4n)$

REF: 011402ia