Factoring Polynomials Practice

Choose one answer per question. Circle A, B, C, or D.

1. For $18x^5$ and $30x^3$, what is the greatest common monomial factor over the integers, written with a positive coefficient?
   A. $6x^3$
   B. $6x^5$
   C. $3x^3$
   D. $12x^3$

2. What polynomial remains after factoring $4y^2$ out of $12y^4 - 20y^3 + 8y^2$?
   A. $3y - 5 + 2y^2$
   B. $3y^2 - 5y + 8$
   C. $3y^2 - 5y + 2$
   D. $3y^4 - 5y^3 + 2y^2$

3. Which product equals $49x^2 - 121$?
   A. $(7x - 11)^2$
   B. $(7x - 11)(7x + 11)$
   C. $(7x + 11)^2$
   D. $(49x - 11)(x + 11)$

4. Which product equals $x^2 - 13x + 36$?
   A. $(x - 3)(x - 12)$
   B. $(x + 4)(x + 9)$
   C. $(x - 6)^2$
   D. $(x - 4)(x - 9)$

5. Which product equals $x^2 - 5x - 24$?
   A. $(x + 8)(x - 3)$
   B. $(x - 8)(x + 3)$
   C. $(x - 6)(x + 4)$
   D. $(x - 8)(x - 3)$

6. Which product equals $16x^2 - 56x + 49$?
   A. $(4x - 7)^2$
   B. $(4x + 7)^2$
   C. $(4x - 7)(4x + 7)$
   D. $(8x - 7)^2$

7. Which factored form matches $6x^3 - 9x^2 + 4x - 6$?

A. $(2x^2 + 3)(3x - 2)$
B. $(3x^2 + 2)(2x + 3)$
C. $(3x^2 - 2)(2x - 3)$
D. $(3x^2 + 2)(2x - 3)$

8. Which product equals $6x^2 + x - 12$?

A. $(6x - 4)(x + 3)$
B. $(3x + 4)(2x - 3)$
C. $(3x - 4)(2x + 3)$
D. $(3x - 3)(2x + 4)$

9. A learner proposes $(4x - 3)(2x + 5)$ as a factorization of $8x^2 + 16x - 15$. What does expanding the proposed product show?

A. Its middle term is 14x, so the proposal is incorrect.
B. Its middle term is 16x, so every term matches.
C. Its leading term is $6x^2$, so the proposal is incorrect.
D. Its constant term is +15, so the proposal is incorrect.

10. For $x > 0$, a rectangle has area $6x^2 + 19x + 10$ square units. One side is $3x + 2$ units. Which expression gives the length of the other side?

A. $2x - 5$
B. $2x + 2$
C. $3x + 5$
D. $2x + 5$

11. Which gives the complete factorization of $18x^3 - 50x$ over the integers?

A. $2x(3x - 5)^2$
B. $2x(9x^2 - 25)$
C. $2x(3x - 5)(3x + 5)$
D. $x(3x - 5)(3x + 5)$

12. Which rewrite of $10x^3 - 15x^2 - 4x + 6$ preserves the expression and exposes the same binomial in both groups?

A. $5x^2(2x - 3) + 2(2x - 3)$
B. $5x^2(2x - 3) - 2(2x - 3)$
C. $5x^2(2x - 3) - 2(2x + 3)$
D. $5x^2(2x + 3) - 2(2x - 3)$

13. Which gives the complete factorization of $81x^4 - 16$ over the integers?

A. $(3x - 2)^2(9x^2 + 4)$
B. $(9x^2 - 4)(9x^2 + 4)$
C. $(3x - 2)(3x + 2)(9x^2 - 4)$
D. $(3x - 2)(3x + 2)(9x^2 + 4)$

14. For each integer $n \geq 1$, a school plans $15n^2 - 8n + 1$ seats. Every row has the same number of seats, and there must be more rows than seats per row. Which pair gives a matching layout?

A. $5n - 1$ rows and $3n - 1$ seats per row
B. $3n - 1$ rows and $5n - 1$ seats per row
C. $5n + 1$ rows and $3n + 1$ seats per row
D. $15n - 1$ rows and $n - 1$ seats per row

15. Which gives the complete factorization of $30x^4 + 22x^3 - 24x^2$ over the integers?

A. $2x^2(5x + 3)(3x - 4)$
B. $2x^2(15x^2 + 11x - 12)$
C. $2x^2(5x - 3)(3x + 4)$
D. $x^2(5x - 3)(3x + 4)$