

NAME: _____

Study Island

1. Simplify the following expression.

$$(-7x^3 + 20x^2 - 5x - 4) + (8x^3 + 17x^2 - 14x - 21)$$

- ☐ A. $x^3 + 37x^2 - 19x - 25$
☐ B. $8x^3 + 37x^2 - 19x + 25$
☐ C. $-15x^3 + 20x^2 + 19x + 25$
☐ D. $x^3 + 37x^2 - 5x + 17$
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2. Simplify: $(8x^2 + 6x + 3)(2x + 6)$

- ☐ A. $16x^3 + 36x^2 + 42x + 18$
☐ B. $16x^3 + 60x^2 + 30x + 18$
☐ C. $16x^3 + 60x^2 + 42x + 18$
☐ D. $16x^3 + 36x^2 - 30x + 18$
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3. Simplify the following expression.

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

- ☐ A. $8x^2 + 10x$
☐ B. $8x^2 + 2x$
☐ C. $8x^2 - 6x$
☐ D. $8x^2 - 2x$
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4. Simplify: $(4x^2 + 3x + 5)(5x - 5)$

- ☐ A. $20x^3 + 35x^2 + 40x + 25$
☐ B. $20x^3 - 5x^2 + 10x - 25$
☐ C. $20x^3 - 35x^2 + 40x - 25$
☐ D. $20x^3 - 5x^2 + 10x + 25$
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5. Simplify the expression given below.

$$(10x^3 - 2) - (5x^2 + 5x - 9)$$

- ☐ A. $10x^3 - 4x^2 - 4x + 7$
☐ B. $5x^3 - 5x + 7$
☐ C. $10x^3 - 5x^2 - 5x + 7$
☐ D. $10x^3 + 5x^2 + 5x + 11$

6. Simplify the following expression.

$$(6x^3 - 9x^2 - 3) - (3x^3 - 7x - 7)$$

- ☐ A. $3x^3 - 9x^2 + 7x - 10$
☐ B. $3x^3 - 9x^2 + 7x + 4$
☐ C. $9x^3 - 9x^2 - 7x - 10$
☐ D. $3x^3 - 9x^2 - 7x + 4$
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7. Simplify the expression given below.

$$(5x^2 - 8x + 24) + (8x^3 - 14x^2 + 14x + 18)$$

- ☐ A. $8x^3 - 19x^2 + 22x + 42$
☐ B. $-8x^3 - 9x^2 + 6x + 6$
☐ C. $8x^3 - 9x^2 + 22x + 6$
☐ D. $8x^3 - 9x^2 + 6x + 42$
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8. Simplify the following expression.

$$(10m - 2n)(4m + 11n)$$

- ☐ A. $40m^2 + 118mn - 22n^2$
☐ B. $40m^2 - 22n^2$
☐ C. $40m^2 + 102mn - 22n^2$
☐ D. $14m + 13n$
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9. A polynomial expression is shown below.

$$(6x^4 - 3x^2) + (x^2 - 5)(qx^2 + 5)$$

The expression is simplified to $32x^2 - 25$.

What is the value of q ?

- ☐ A. 12
☐ B. -12
☐ C. 6
☐ D. -6

10. Simplify: $(6x^2 + 9x - 12)(3x - 6)$

- ☐ A. $18x^3 - 9x^2 - 90x - 72$
- ☐ B. $18x^3 - 63x^2 + 18x + 72$
- ☐ C. $18x^3 + 63x^2 + 18x - 72$
- ☐ D. $18x^3 - 9x^2 - 90x + 72$

11. Simplify the following expression.

$$(8x^3 + 3x^2 - 6) + (-3x^3 + 7x - 3)$$

- ☐ A. $5x^3 + 3x^2 + 7x - 9$
- ☐ B. $11x^3 + 3x^2 + 7x + 9$
- ☐ C. $5x^3 + 7x + 9$
- ☐ D. $11x^3 + 3x^2 + 7x - 3$

12. A polynomial expression is shown below.

$$ex(2x^3 + 4x^2 - 6) - (x^2 + 5)(x^2 + 6)$$

The expression is simplified to $15x^4 + 32x^3 - 11x^2 - 48x - 30$.

What is the value of e ?

- ☐ A. 8
- ☐ B. -7
- ☐ C. -8
- ☐ D. 7

13. Simplify the following expression.

$$(3x^4 - 6x^3 + 9x^2 + 2x - 4) - (-6x^4 - 5x^3 - 3x^2 - 3x + 2)$$

- ☐ A. $3x^4 + 11x^3 - 6x^2 + x + 2$
- ☐ B. $9x^4 - x^3 + 12x^2 + 5x - 6$
- ☐ C. $-3x^4 - 11x^3 + 6x^2 - x - 2$
- ☐ D. $9x^4 - 11x^3 + 6x^2 - x - 2$

14. Simplify: $(2x - 6)(7x^2 + 3x - 10)$

- ☐ A. $14x^3 - 36x^2 - 38x + 60$
- ☐ B. $14x^3 - 48x^2 - 2x + 60$
- ☐ C. $14x^3 - 36x^2 - 38x - 60$
- ☐ D. $14x^3 + 48x^2 - 2x - 60$

15. Simplify the following expression.
 $(4x - 1)^2$

- ☐ A. $16x^2 - 8x + 1$
- ☐ B. $16x^2 - 4x + 1$
- ☐ C. $16x^2 + 8x + 1$
- ☐ D. $16x^2 - 1$

16. Simplify the following expression.
 $(9m - 3n)(4m + 7n)$

- ☐ A. $36m^2 + 51mn - 21n^2$
- ☐ B. $13m + 10n$
- ☐ C. $36m^2 + 75mn - 21n^2$
- ☐ D. $36m^2 - 21n^2$

17. Simplify the following expression.

$$(8x^6 + 11x^4 - 23x^3 - 8x^2 - 14) - (7x^6 - 17x^4 + 10x^3 - 2x + 25)$$

- ☐ A. $15x^6 + 28x^4 - 33x^3 - 8x^2 + 2x + 39$
- ☐ B. $x^6 + 28x^4 - 33x^3 - 8x^2 + 2x - 39$
- ☐ C. $15x^6 + 28x^4 - 33x^3 - 6x - 39$
- ☐ D. $x^6 - 6x^4 - 13x^3 - 8x^2 - 2x + 11$

18.

A wall with an area of $(3x^2 + 4x + 1)$ square units has a rectangular window that has a width of $(x + 2)$ units and a length of $(x + 1)$ units. The wall also has a built-in shelving unit that occupies an area of $(x^2 + 5x + 6)$ square units of wall space. If the wall is to be covered with wallpaper, how much wallpaper will be required?

(x^2 - x -) square units