

Module 17 Review Packet

LESSON
17-1

Understanding Polynomial Expressions

Practice and Problem Solving: A/B

Identify each expression as a monomial, a binomial, a trinomial, or polynomial.

Write the degree of each expression.

1. $6b^2 - 7$

2. $x^2y - 9x^4y^2 + 3xy$

3. $35r^3s$

4. $3p + \frac{2p}{q} - 5q$

5. $4ab^5 + 2ab - 3a^4b^3$

6. $st + t^{0.5}$

Simplify each expression.

7. $6n^3 - n^2 + 3n^4 + 5n^2$

8. $c^3 + c^2 + 2c - 3c^3 - c^2 - 4c$

9. $11b^2 + 3b - 1 - 2b^2 - 2b - 8$

10. $a^4b^3 + 9a^3b^4 - 3a^4b^3 - 4a^3b^4$

11. $9xy + 5x^2 + 15x - 10xy$

12. $3p^2q + 8p^3 - 2p^2q + 2p + 5p^3$

Determine the polynomial that has the greater value for the given value of x .

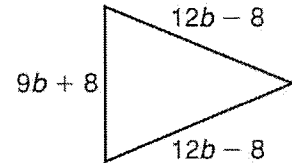
13. $4x^2 - 5x - 2$ or $5x^2 - 2x - 4$ for $x = 6$

14. $6x^3 - 4x^2 + 7$ or $7x^3 - 6x^2 + 4$ for $x = 3$

Solve.

15. A rocket is launched from the top of an 80-foot cliff with an initial velocity of 88 feet per second. The height of the rocket t seconds after launch is given by the equation $h = -16t^2 + 88t + 80$. How high will the rocket be after 2 seconds?
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16. Antoine is making a banner in the shape of a triangle. He wants to line the banner with a decorative border. How long will the border be?
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LESSON
17-2

Adding Polynomial Expressions

Practice and Problem Solving: A/B

Add the polynomial expressions using the vertical format.

1.
$$\begin{array}{r} (10g^2 + 3g - 10) \\ + (2g^2 + g + 9) \\ \hline \end{array}$$

2.
$$\begin{array}{r} (4x^3 + x^2 + 2x) \\ + (3x^3 + x^2 + 4x) \\ \hline \end{array}$$

3.
$$\begin{array}{r} (11b^2 + 3b - 1) \\ + (2b^2 + 2b + 8) \\ \hline \end{array}$$

4.
$$\begin{array}{r} (c^3 + 2c^2 + 2c) \\ + (-3c^3 + c^2 - 4c) \\ \hline \end{array}$$

5.
$$\begin{array}{r} (ab^2 + 13b - 4a) \\ + (3ab^2 + a + 7b) \\ \hline \end{array}$$

6.
$$\begin{array}{r} (-r^2 + 8pr - p) \\ + (-12r^2 - 2pr + 8p) \\ \hline \end{array}$$

Add the polynomial expressions using the horizontal format.

7. $(3y^2 - y + 3) + (2y^2 + 2y + 9)$

8. $(4z^3 + 3z^2 + 8) + (2z^3 + z^2 - 3)$

9. $(6s^3 + 9s + 10) + (3s^3 + 4s - 10)$

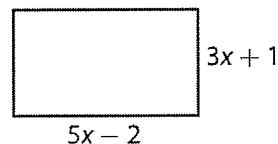
10. $(15a^4 + 6a^2 + a) + (6a^4 - 2a^2 + a)$

11. $(-7a^2b^3 + 3a^3b - 9ab) + (4a^2b^3 - 5a^3b + ab)$

12. $(2p^4q^2 + 5p^3q - 2pq) + (8p^4q^2 - 3p^3q - pq)$

Solve.

13. A rectangular picture frame has the dimensions shown in the figure. Write a polynomial that represents the perimeter of the frame.



LESSON
17-3

Subtracting Polynomial Expressions

Practice and Problem Solving: A/B

Subtract using the vertical form.

1.
$$\begin{array}{r} (5g^2 + 6g - 10) \\ - (2g^2 + 2g + 9) \\ \hline \end{array}$$

2.
$$\begin{array}{r} (8x^3 + 4x^2 + x) \\ - (2x^3 + x^2 + x) \\ \hline \end{array}$$

$$3. \quad \begin{array}{r} (10b^2 + 5b - 2) \\ - (2b^2 + b + 1) \\ \hline \end{array}$$

$$4. \quad \begin{array}{r} (7c^3 - 5c^2 + 2c) \\ - (-3c^3 + 2c^2 - 2c) \\ \hline \end{array}$$

$$5. \quad \begin{array}{r} (14ab^2 + 9b - 2a) \\ - (4ab^2 + 2a + 5b) \\ \hline \end{array}$$

$$6. \quad \begin{array}{r} (6x^3 + 2x^2 + 3x) \\ - (3x^3 - 2x^2 - 3x) \\ \hline \end{array}$$

Subtract using the horizontal form.

$$7. (7y^2 - 7y + 7) - (4y^2 + 2y + 3)$$

$$8. (11z^3 + 6z^2 + 3) - (9z^3 + 2z^2 - 8)$$

$$9. (9s^3 + 10s + 8) - (2s^3 + 9s - 11)$$

$$10. (25a^4 + 9a^2 + 3a) - (24a^4 - 5a^2 + 3a)$$

$$11. (-a^2b^3 + a^3b - ab) - (a^2b^3 - a^3b + ab)$$

$$12. (3p^4q^2 + 8p^3q - 2) - (5p^4q^2 - 2p^3q - 8)$$

Solve.

13. Darnell and Stephanie have competing refreshment stand businesses. Darnell's profit can be modeled with the polynomial $c^2 + 8c - 100$, where c is the number of items sold. Stephanie's profit can be modeled with the polynomial $2c^2 - 7c - 200$. Write a polynomial that represents the difference between Stephanie's profit and Darnell's profit.
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14. There are two boxes in a storage unit. The volume of the first box is $4x^3 + 4x^2$ cubic units. The volume of the second box is $6x^3 - 18x^2$ cubic units. Write a polynomial to show the difference between the two volumes.
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UNIT 7 Polynomial Operations

MODULE 17 Adding and Subtracting Polynomials

LESSON 17-1

Practice and Problem Solving: A/B

1. binomial; degree 2
2. trinomial; degree 6
3. monomial; degree 4
4. none of the above
5. trinomial; degree 7
6. none of the above
7. $3n^4 + 6n^3 + 4n^2$
8. $-2c^3 - 2c$
9. $9b^2 + b - 9$
10. $-2a^4b^3 + 5a^3b^4$
11. $5x^2 + 15x - xy$
12. $p^2q + 13p^3 + 2p$
13. $5x^2 - 2x - 4$
14. $7x^3 - 6x^2 + 4$
15. 192 ft
16. $33b - 8$

LESSON 17-2

Practice and Problem Solving: A/B

1. $12g^2 + 4g - 1$
2. $7x^3 + 2x^2 + 6x$
3. $13b^2 + 5b + 7$
4. $-2c^3 + 3c^2 - 2c$
5. $4ab^2 + 20b - 3a$
6. $-13r^2 + 6pr + 7p$
7. $5y^2 + y + 12$
8. $6z^3 + 4z^2 + 5$
9. $9s^3 + 13s$
10. $21a^4 + 4a^2 + 2a$
11. $-3a^2b^3 - 2a^3b - 8ab$
12. $10p^4q^2 + 2p^3q - 3pq$
13. $16x - 2$

LESSON 17-3

Practice and Problem Solving: A/B

1. $3g^2 + 4g - 19$
2. $6x^3 + 3x^2$
3. $8b^2 + 4b - 3$
4. $10c^3 - 7c^2 + 4c$
5. $10ab^2 + 4b - 4a$
6. $3x^3 + 4x^2 + 6x$
7. $3y^2 - 9y + 4$
8. $2z^3 + 4z^2 + 11$
9. $7s^3 + s + 19$
10. $a^4 + 14a^2$
11. $-2(a^2)(b^3) + 2(a^3)b - 2ab$
12. $-2p^4q^2 + 10p^3q + 6$
13. $c^2 - 15c - 100$
14. $2x^3 - 22x^2$

Module 18 Review Packet

LESSON
18-1

Multiplying Polynomial Expressions by Monomials

Practice and Problem Solving: A/B

Find the product.

1. $5x(2x^4y^3)$

2. $0.5p(-30p^3r^2)$

3. $11ab^2(2a^5b^4)$

4. $-6c^3d^5(-3c^2d)$

5. $4(3a^2 + 2a - 7)$

6. $9x^2(x^3 - 4x^2 - 3x)$

7. $6s^3(-2s^2 + 4s - 10)$

8. $5a^4(6a^4 - 2a^2 - a)$

9. $8pr(-7r^2 - 2pr + 8p)$

10. $2mn^3(3mn^3 + n^2 + 4mn)$

11. $-3x^4y^2(2x^2 + 5xy + 9y^2)$

12. $0.75v^2w^3(12v^3 + 16v^2w - 8w^2)$

13. $-7a^2b^3(4a^2b^3 + ab - 5a^3b)$

14. $2p^4q^2(8p^4q^2 - 3p^3q + 5p^2q)$

Solve.

15. The length of a rectangle is 3 inches greater than the width.

a. Write a polynomial expression that represents

the area of the rectangle.

b. Find the area of the rectangle when the

width is 4 inches.

16. The length of a rectangle is 8 centimeters less than 3 times the width.

a. Write a polynomial expression that represents

the area of the rectangle. _____

b. Find the area of the rectangle when the

width is 10 centimeters. _____

LESSON
18-2

Multiplying Polynomial Expressions

Practice and Problem Solving: A/B

Multiply.

1. $(x + 5)(x + 6)$

2. $(a - 7)(a - 3)$

3. $(d + 8)(d - 4)$

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

5. $(5b + 1)(b - 2)$

6. $(3p - 2)(2p + 3)$

7. $(5k - 9)(2k - 4)$

8. $(2m - 5)(3m + 8)$

9. $(4 + 7g)(5 - 8g)$

10. $(r + 2s)(r - 6s)$

11. $(3 - 2v)(2 - 5v)$

12. $(5 + h)(5 - h)$

13. $(y + 3)(y - 3)$

14. $(z - 5)^2$

15. $(3q + 7)(3q - 7)$

16. $(4w + 9)^2$

17. $(3a - 4)^2$

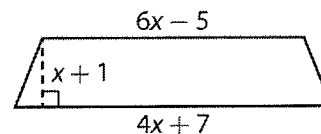
18. $(5q - 8r)(5q + 8r)$

19. $(x + 4)(x^2 + 3x + 5)$ 20. $(3m + 4)(m^2 - 3m + 5)$ 21. $(2x - 5)(4x^2 - 3x + 1)$

Solve.

22. Write a polynomial expression that represents the area of the

trapezoid. $\left(A = \frac{1}{2} h(b_1 + b_2) \right)$



23. If $x = 4$ in., find the area of the trapezoid in problem 22.

24. Kayla worked $3x + 6$ hours this week. She earns $x - 2$ dollars per hour.

Write a polynomial expression that represents the amount Kayla earned this week. Then calculate her pay for the week if $x = 11$.

LESSON
18-3

Special Products of Binomials

Practice and Problem Solving: A/B

Find the product.

1. $(x + 2)^2$

2. $(m + 4)^2$

3. $(3 + a)^2$

4. $(2x + 5)^2$

5. $(8 - y)^2$

6. $(a - 10)^2$

7. $(b - 3)^2$

8. $(3x - 7)^2$

9. $(6 - 3n)^2$

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10. $(x + 3)(x - 3)$

11. $(8 + y)(8 - y)$

12. $(x + 6)(x - 6)$

13. $(5x + 2)(5x - 2)$

14. $(4 + 2y)(4 - 2y)$

15. $(10x + 7y)(10x - 7y)$

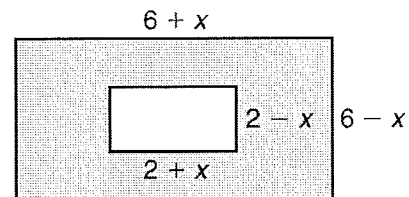
Solve.

16. Write a simplified expression for each of the following.

a. area of the large rectangle

b. area of the small rectangle

c. area of the shaded area



17. The small rectangle is made larger by adding 2 units to the length and 2 units to the width.

a. What is the new area of the smaller rectangle?

b. What is the area of the new shaded area?

MODULE 18 Multiplying Polynomials**LESSON 18-1****Practice and Problem Solving: A/B**

1. $10x^5y^3$
2. $-15p^4r^2$
3. $22a^6b^6$
4. $18c^5d^6$
5. $12a^2 + 8a - 28$
6. $9x^5 - 36x^4 - 27x^3$
7. $-12s^5 + 24s^4 - 60s^3$
8. $30a^8 - 10a^6 - 5a^5$
9. $-56p^3 - 16p^2r^2 + 64p^2r$
10. $6m^2n^6 + 2mn^5 + 8m^2n^4$
11. $-6x^6y^2 - 15x^5y^3 - 27x^4y^4$
12. $9v^5w^3 + 12v^4w^4 - 6v^2w^5$
13. $-28a^4b^6 - 7a^3b^4 + 35a^5b^4$
14. $16p^8q^4 - 6p^7q^3 + 10p^6q^3$
15. a. $w(w + 3)$ or $w^2 + 3w$
b. 28 in.²
16. a. $w(3w - 8)$ or $3w^2 - 8w$
b. 220 cm²

LESSON 18-2**Practice and Problem Solving: A/B**

1. $x^2 + 11x + 30$
2. $a^2 - 10a + 21$
3. $d^2 + 4d - 32$
4. $2x^2 + 5x - 12$
5. $5b^2 - 9b - 2$
6. $6p^2 + 5p - 6$
7. $10k^2 - 38k + 36$
8. $6m^2 + m - 40$
9. $20 + 3g - 56g^2$
10. $r^2 - 4rs - 12s^2$
11. $6 - 19v + 10v^2$
12. $25 - h^2$
13. $y^2 - 9$
14. $z^2 - 10z + 25$

15. $9q^2 - 49$
16. $16w^2 + 72w + 81$
17. $9a^2 - 24a + 16$
18. $25q^2 - 64r^2$
19. $x^3 + 7x^2 + 17x + 20$
20. $3m^3 - 5m^2 + 3m + 20$
21. $8x^3 - 26x^2 + 17x - 5$
22. $5x^2 + 6x + 1$
23. 105 in.²
24. $3x^2 - 12$; \$351

LESSON 18-3**Practice and Problem Solving: A/B**

1. $x^2 + 4x + 4$
2. $m^2 + 8m + 16$
3. $9 + 6a + a^2$
4. $4x^2 + 20x + 25$
5. $64 - 16y + y^2$
6. $a^2 - 20a + 100$
7. $b^2 - 6b + 9$
8. $9x^2 - 42x + 49$
9. $36 - 36n + 9n^2$
10. $x^2 - 9$
11. $64 - y^2$
12. $x^2 - 36$
13. $25x^2 - 4$
14. $16 - 4y^2$
15. $100x^2 - 49y^2$
16. a. $36 - x^2$
b. $4 - x^2$
c. 32
17. a. $16 - x^2$
b. 20