

MULTIPLICATION OF POLYNOMIALS

NAME: _____

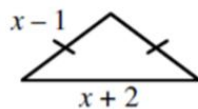
P. 271 - #18, 19

18. Which of the following polynomial expressions, when simplified, is equal to $5x$?

- A. $(3x^2 - 3x) - (2x + 3x^2)$
- B. $5x - (2x^2 - 2x) + (2x^2 + 2x)$
- C. $8 + (4 - 2x) - (12 - 7x)$
- D. $(2x^2 - 2x + 6) - (2x^2 - 2x) + (9x - 6)$

19. The perimeter of the isosceles triangle shown can be represented by

- A. a monomial
- B. a binomial
- C. a trinomial
- D. none of the above



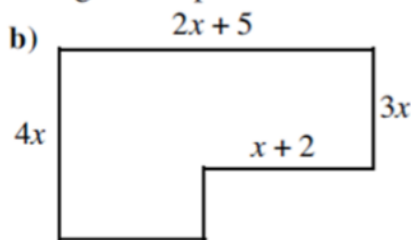
P. 280 - #6ab, 8, 9, 10, 11

6. Identify the errors in the following and provide the correct simplification.

a) $3x(2x + y) = 6x + 3xy$

b) $x^2(x^3 - 2x + 7) = x^6 - 2x^3 + 7x^2$

8. Determine a simplified expression for the area of the given shape.

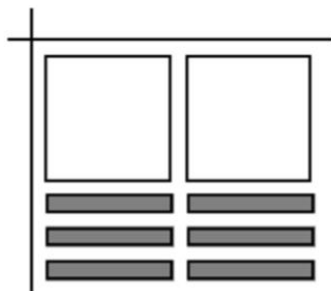


b) Find the area when $x = 3$ cm.

Multiple Choice

9. The algebra tile diagram represents the expansion of:

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



10. Which of the following expansions is incorrect?

- A. $-2x^2(3x + 2) = -6x^3 - 4x^2$
B. $-4x(2 - x) = -8x + 4x^2$
C. $-5x(x^2 - 3) = -5x^3 - 15x$
D. $7x^2(x^2 + 3) = 7x^4 + 21x^2$

Numerical Response

11. The expression $3x(4x - 1) - x(5 - 2x) + 8(3 - x)$ can be written in the form $ax^2 - bx + c$. The value of $a + b + c$ is _____.

(Record your answer in the numerical response box from left to right)

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P. 288 - #2, 7, 8

2. Use an area diagram to determine the product of each of the following binomials.

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

b) $(2x + 3)(2x + 7)$

7. Expand and simplify where possible.

a) $(7x - 2)(3x + 5)$

c) $(3z + 4)(3z + 5)$

d) $(4x - 3)(3x - 4)$

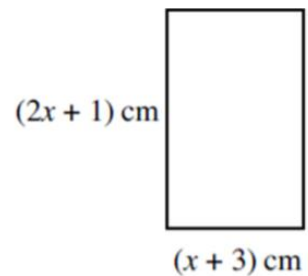
e) $(8x - 3y)(2x + y)$

g) $(x - 2)(6y - 1)$

Numerical Response

8. The area of the rectangle shown can be written in the form $px^2 + qx + r$, where p, q , and r are natural numbers.

Write the value of p in the first box.
Write the value of q in the second box.
Write the value of r in the third box.



(Record your answer in the numerical response box from left to right)

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P. 295 - #1, 2, 3, 6

1. Expand and simplify where possible.

a) $(x - 8)^2$

b) $(x - 9)(x + 9)$

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

g) $(2p + 7)^2$

h) $(4m + 3n)(4m - 3n)$

i) $(5a - 6b)^2$

2. Expand and simplify where possible.

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

c) $-3(a + 8)(2a + 9)$

d) $5(4x + 1)^2$

f) $-4(a + 3b)(2a - 5b)$

3. Expand and simplify where possible.

a) $(x - 3)(x - 6) + (x + 2)(x + 7)$

b) $(x - 5)(x + 4) - (x + 1)(x - 8)$

Use the following information to answer the next question.

A student provides the following expansions for four binomial products.

$$(x - 3)^2 = x^2 - 9$$

$$(4x + 3)(4x + 3) = 8x^2 + 24x + 9$$

$$(2a + b)(2a - b) = 4a^2 - b^2$$

$$(3r - 5s)^2 = 9r^2 - 30rs + 25s^2$$

Multiple Choice

6. How many of the student's expansions are incorrect?
- A. One
B. Two
C. Three
D. Four

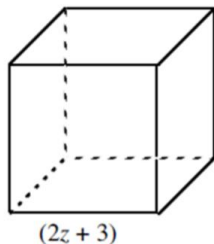
P. 302 - #4, 5, 8, 9

4. Expand and simplify.

a) $(x + 1)(x + 2)(3x + 5)$

b) $(h - 4)(2h - 3)(3h - 1)$

5. Calculate the volume of the cube shown below.



Use the following information to answer the next question.

A student attempts to expand $(x - 2)^3$.
His work is shown below.

$$(x - 2)^3$$

$$= (x - 2)(x - 2)(x - 2) \quad \text{Line 1}$$

$$= (x - 2)(x^2 - 4x + 4) \quad \text{Line 2}$$

$$= x^3 - 6x^2 + 12x + 8 \quad \text{Line 3}$$

Multiple Choice

8. Which of the following statements is true?
- A. The student made an error in Line 1.
B. The student made an error in Line 2.
C. The student made an error in Line 3.
D. The student's expansion is correct.

Numerical Response

9. Subtracting the product of $(3x - 1)$ and $(2x^2 - 4x + 3)$ from the sum of $(2x^3 - 7x^2 - 6)$ and $(x^2 + 6x - 3)$ results in a polynomial of the form $ax^3 + bx^2 + cx + d$. The value of $b - 2c$ is _____.

(Record your answer in the numerical response box from left to right)

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KEY:

P. 271 - #9, 10, 18, 19

9. a) true b) false c) false d) true e) false f) true g) false h) true

10. a) $-2x + 1$ b) $2x^2 - x + 3$ c) $-x - 2$ 11. a) $2x^2 - 3$

12. a) $-x^2 - 4x - 4$ b) $1 + x - 2x^2$

13. a) $4p - 10q$ b) $-11x^2 + 7x$ c) $2x + 15$ d) $-3a^2 + a$ e) $-4x$

14. a) $2a - 16b - c$ b) $3a^2 - 5a + 12$ c) $-3x^2 + 3x - 3$ d) $-$
e) $2x^2 - 5x + 4$ f) $12x^2 + 5x$ g) $-2x^2 - x - 12$

15. a) $3x^2 - 3x - 9$ b) $4x^3 + 2x^2 + 2x$

16. a) $(2m + n)$ cm b) 11 cm, 5cm, and 7 cm

17. D

18. C

19. A

20.

1	5		
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P. 280 - #6, 8, 9, 10, 11

6. a) $3x(2x) = 6x^2$, not $6x$. $3x(2x + y) = 6x^2 + 3xy$
b) $x^2(x^3) = x^5$ not x^6 . $x^2(x^3 - 2x + 7) = x^5 - 2x^3 + 7x^2$
c) $-2(-3) = 6$, not -6 . $4(x - 2) - 2(x - 3) = 4x - 8 - 2x + 6 = 2x - 2$
d) The monomials 2 and -4 multiply both terms in the binomials.
 $2(2t - 3) - 4(t + 5) = 4t - 6 - 4t - 20 = -26$.
e) The negative multiplies both a and b . $5(a + b) - (a + b) = 5a + 5b - a - b = 4a + 4b$.

7. a) $-6a^2 + 10a$ b) $2x^2 + 13$ c) $x + 5$ d) $z^4 - 7$
e) $42x - 7y$ f) $-16x^5 + x^4$ g) $-3a^2b - 15ab^2 + 30b^3$ h) $3x^2 - 9x$
i) $14p^3 - 6p^2$ j) 0 k) $-12x^4y^2 + 4x^4y^3$

8. a) $14a^2 + 2a$

b) $7x^2 + 18x$

9. D

10. C

11.

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P. 288 - #2, 7, 8

2. a) $x^2 + 4x - 12$ b) $4x^2 + 20x + 21$ c) $4y^2 - 11y - 3$
d) $18d^2 - 57d + 45$ e) $8x^2 - 2xy - y^2$ f) $3p^2 - 23pq + 40q^2$
g) $a^4 - 64$ h) $t^6 + 4st^3 + 4s^2$ i) $a^2 + ab + ac + bc$
3. a) 483 b) 408 c) 2368 d) 4745 e) 2695 f) 7396
4. a) $x^2 + 11x + 28$ b) $3a^2 + 16a - 35$ c) $p^2 - 10p + 16$
d) $x^2 + 4xy - 12y^2$ e) $8a^2 + 30ab + 27b^2$ f) $6 + 23y - 4y^2$
g) $12ab - 2a - 6b + 1$ h) $49x^4 - 42x^2 + 9$ i) $10y^7 - 15y^5 + 2y^2 - 3$

5. a) $x^2 + 9x + 18$ b) $y^2 + 13y + 36$ c) $x^2 - 7x - 8$
 d) $a^2 - 14a + 49$ e) $5x^2 + 14x + 8$ f) $6y^2 + 17y - 45$
 g) $6x^2 - 35x - 6$ h) $36 - 60b + 25b^2$ i) $x^2 + 7xy + 12y^2$
 j) $3a^2 - 17ab - 28b^2$ k) $25x^2 - z^2$ l) $45 - 14a^2 + a^4$

6. Area = $(2a + 5)(a + 4) = 2a^2 + 13a + 20$

7. a) $21x^2 + 29x - 10$ b) $4h^2 - 8h + 3$ c) $9z^2 + 27z + 20$
 d) $12x^2 - 25x + 12$ e) $16x^2 + 2xy - 3y^2$ f) $1 + 6b + 9b^2$
 g) $6xy - x - 12y + 2$ h) $1 - 9y^4$ i) $2x^4 + 9x^2y^2 - 35y^4$

8.

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 9.

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P. 295 - #1, 2, 3, 6

1. a) $x^2 - 16x + 64$ b) $x^2 - 81$ c) $9x^2 - 6xy + y^2$
 d) $25x^2 + 20xy + 4y^2$ e) $9x^2 - 4$ f) $4y^2 - 4y + 1$
 g) $4p^2 + 28p + 49$ h) $16m^2 - 9n^2$ i) $25a^2 - 60ab + 36b^2$
 j) $81 - 25x^4$ k) $36a^2 - 84ab + 49b^2$ l) $4a^6 - 49$
2. a) $24x^2 - 50x + 24$ b) $210x^2 - 49x - 14$ c) $-6a^2 - 75a - 216$
 d) $80x^2 + 40x + 5$ e) $96x^2 + 12xy - 18y^2$ f) $-8a^2 - 4ab + 60b^2$
3. a) $2x^2 + 32$ b) $6x - 12$ c) $2x^2 + 18$ d) $-5xy + 5y^2$
4. a) $x^2 - 8x + 3$ b) $2x^2 + 43x - 32$ c) $-37x + 5$
 d) $77 + 146x - 123x^2$ e) $23x^2 + 47x - 33$ f) $-19p^2 + 47q^2$
5. a) $2x^2 + 12x + 20$ b) $5a^2 - 26ab - 24b^2$ c) $-5y^2 + 2y + 1$
 d) $-23x + 38$ e) $-18y^2 + 54y + 2$

6. D 7.

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P. 302 - #4, 5, 8, 9

4. a) $3x^3 + 14x^2 + 21x + 10$ b) $6h^3 - 35h^2 + 47h - 12$
 c) $4a^3 + 12a^2b - 25ab^2 - 75b^3$ d) $12x^3 - 29x^2y - 97xy^2 + 84y^3$
5. $8z^3 + 36z^2 + 54z + 27$
6. $4x^3 - 8x^2 - 11x - 3$
7. a) $-9a^4 + 3a^3 - 15a^2 + 6a + 6$ b) $-2x^4 - x^3 + 10x^2 + 8x - 3$
 c) $-27x^3 + 86x^2 - 52x + 10$

8. C 9.

2	2		
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P. 308 - #3

3. a) $30 - y - 2y^2$ b) 24 units²