

### A.APR.A.1: Operations with Polynomials 5a

- 1 What is the product of  $2r^2 - 5$  and  $3r$ ?
  - 1)  $6r^3 - 15r$
  - 2)  $6r^3 - 5$
  - 3)  $6r^2 - 15r$
  - 4)  $6r^2 - 15$
- 2 What is the product of  $-3x^2y$  and  $(5xy^2 + xy)$ ?
  - 1)  $-15x^3y^3 - 3x^3y^2$
  - 2)  $-15x^3y^3 - 3x^3y$
  - 3)  $-15x^2y^2 - 3x^2y$
  - 4)  $-15x^3y^3 + xy$
- 3 What is the product of  $(c + 8)$  and  $(c - 5)$ ?
  - 1)  $c^2 + 3c - 40$
  - 2)  $c^2 - 3c - 40$
  - 3)  $c^2 + 13c - 40$
  - 4)  $c^2 - 40$
- 4 What is the product of  $(3x + 2)$  and  $(x - 7)$ ?
  - 1)  $3x^2 - 14$
  - 2)  $3x^2 - 5x - 14$
  - 3)  $3x^2 - 19x - 14$
  - 4)  $3x^2 - 23x - 14$
- 5 The expression  $(x - 6)^2$  is equivalent to
  - 1)  $x^2 - 36$
  - 2)  $x^2 + 36$
  - 3)  $x^2 - 12x + 36$
  - 4)  $x^2 + 12x + 36$
- 6 The expression  $(a^2 + b^2)^2$  is equivalent to
  - 1)  $a^4 + b^4$
  - 2)  $a^4 + a^2b^2 + b^4$
  - 3)  $a^4 + 2a^2b^2 + b^4$
  - 4)  $a^4 + 4a^2b^2 + b^4$
- 7 The expression  $(2x + 1)^2 - 2(2x^2 - 1)$  is equivalent to
  - 1)  $4x + 3$
  - 2)  $2x + 3$
  - 3)  $3$
  - 4)  $-1$
- 8 What is the product of  $x^2 - 2x + 3$  and  $x + 1$ ?
  - 1)  $x^3 - x^2 + x + 3$
  - 2)  $x^3 - 2x^2 + 3x$
  - 3)  $x^2 - 3x + 2$
  - 4)  $x^2 - x + 4$
- 9 Chad had a garden that was in the shape of a rectangle. Its length was twice its width. He decided to make a new garden that was 2 feet longer and 2 feet wider than his first garden. If  $x$  represents the original width of the garden, which expression represents the difference between the area of his new garden and the area of the original garden?
  - 1)  $6x + 4$
  - 2)  $2x^2$
  - 3)  $x^2 + 3x + 2$
  - 4)  $8$

- 10 The length of a rectangle is represented by  $x^2 + 3x + 2$ , and the width is represented by  $4x$ . Express the perimeter of the rectangle as a trinomial. Express the area of the rectangle as a trinomial.

- 11 What is the product of  $\left(\frac{x}{4} - \frac{1}{3}\right)$  and  $\left(\frac{x}{4} + \frac{1}{3}\right)$ ?

- 1)  $\frac{x^2}{8} - \frac{1}{9}$
- 2)  $\frac{x^2}{16} - \frac{1}{9}$
- 3)  $\frac{x^2}{8} - \frac{x}{6} - \frac{1}{9}$
- 4)  $\frac{x^2}{16} - \frac{x}{6} - \frac{1}{9}$

- 12 What is the product of  $\left(\frac{2}{5}x - \frac{3}{4}y^2\right)$  and

- $\left(\frac{2}{5}x + \frac{3}{4}y^2\right)$ ?
- 1)  $\frac{4}{25}x^2 - \frac{9}{16}y^4$
  - 2)  $\frac{4}{25}x - \frac{9}{16}y^2$
  - 3)  $\frac{2}{5}x^2 - \frac{3}{4}y^4$
  - 4)  $\frac{4}{5}x$

- 13 The expression  $\left(\frac{3}{2}x + 1\right)\left(\frac{3}{2}x - 1\right) - \left(\frac{3}{2}x - 1\right)^2$  is equivalent to
- 1) 0
  - 2)  $-3x$
  - 3)  $\frac{3}{4}x - 2$
  - 4)  $3x - 2$

- 14 Express  $\left(\frac{2}{3}x - 1\right)^2$  as a trinomial.

- 15 Express the product of  $\left(\frac{1}{2}y^2 - \frac{1}{3}y\right)$  and  $\left(12y + \frac{3}{5}\right)$  as a trinomial.

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### Answer Section

1 ANS: 1 REF: 010819a

2 ANS: 1 REF: 060807ia

3 ANS: 1

$$(c + 8)(c - 5) = c^2 - 5c + 8c - 40 = c^2 + 3c - 40$$

REF: 060708a

4 ANS: 3

$$(3x + 2)(x - 7) = 3x^2 - 21x + 2x - 14 = 3x^2 - 19x - 14$$

REF: 061210ia

5 ANS: 3

$$(x - 6)^2 = (x - 6)(x - 6) = x^2 - 6x - 6x + 36 = x^2 - 12x + 36$$

REF: 060015a

6 ANS: 3

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

REF: 010430a

7 ANS: 1 REF: 088917siii

8 ANS: 1

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

REF: 061609a2

9 ANS: 1

$$(x + 2)(2x + 2)$$

The area of the original garden is  $(x)(2x) = 2x^2$ . The area of the new garden is  $2x^2 + 2x + 4x + 4$ .

$$2x^2 + 6x + 4$$

$$2x^2 + 6x + 4 - 2x^2 = 6x + 4$$

REF: 010202b

10 ANS:

$$P = 2(x^2 + 3x + 2) + 2(4x) = 2x^2 + 6x + 4 + 8x = 2x^2 + 14x + 4 \quad A = 4x(x^2 + 3x + 2) = 4x^3 + 12x^2 + 8x$$

REF: 061538ia

11 ANS: 2

The binomials are conjugates, so use FL.

REF: 011206a2

12 ANS: 1

The binomials are conjugates, so use FL.

REF: 061201a2

13 ANS: 4

$$\left(\frac{3}{2}x-1\right)\left[\left(\frac{3}{2}x+1\right)-\left(\frac{3}{2}x-1\right)\right]=\left(\frac{3}{2}x-1\right)(2)=3x-2$$

REF: 011524a2

14 ANS:

$$\frac{4}{9}x^2-\frac{4}{3}x+1.\left(\frac{2}{3}x-1\right)^2=\left(\frac{2}{3}x-1\right)\left(\frac{2}{3}x-1\right)=\frac{4}{9}x^2-\frac{2}{3}x-\frac{2}{3}x+1=\frac{4}{9}x^2-\frac{4}{3}x+1$$

REF: 081034a2

15 ANS:

$$6y^3-\frac{37}{10}y^2-\frac{1}{5}y.\left(\frac{1}{2}y^2-\frac{1}{3}y\right)\left(12y+\frac{3}{5}\right)=6y^3+\frac{3}{10}y^2-4y^2-\frac{1}{5}y=6y^3-\frac{37}{10}y^2-\frac{1}{5}y$$

REF: 061128a2