A.APR.A.1: Operations with Polynomials 4

1 Which expression is equivalent to $(x+4)^2(x+4)^3$?
   1) $(x+4)^6$
   2) $(x+4)^5$
   3) $(x^2+16)^6$
   4) $(x^2+16)^5$

2 The expression $\frac{1}{3}x(6x^2-3x+9)$ is equivalent to
   1) $2x^2-x+3$
   2) $2x^2+3x+3$
   3) $2x^3-x^2+3x$
   4) $2x^3+3x^2+3x$

3 The expression $(m-3)^2$ is equivalent to
   1) m^2+9
   2) m^2-9
   3) m^2-6m+9
   4) m^2-6m-9

4 What is the product of $(2x+7)$ and $(x-3)$?
   1) $2x^2-21$
   2) $2x^2+x-21$
   3) $2x^2+4x-21$
   4) $2x^2+13x-21$

5 When written in standard form, the product of $(3+x)$ and $(2x-5)$ is
   1) $3x-2$
   2) $2x^2+x-15$
   3) $2x^2-11x-15$
   4) $6x-15+2x^2-5x$

6 Which expression is equivalent to $(x-5)(2x+7)-(x+5)$?
   1) $2x^2-2x-30$
   2) $2x^2-2x-40$
   3) $2x^2-4x-30$
   4) $2x^2-4x-40$

7 Which trinomial is equivalent to $3(x-2)^2-2(x-1)$?
   1) $3x^2-2x-10$
   2) $3x^2-2x-14$
   3) $3x^2-14x+10$
   4) $3x^2-14x+14$

8 The product of (x^2+3x+9) and $(x-3)$ is
   1) x^3-27
   2) x^2+4x+6
   3) $x^3-6x^2-18x-27$
   4) $-6x^4+x^3-18x^2-27$

9   What is the product of $2x + 3$ and $4x^2 - 5x + 6$?
1) $8x^3 - 2x^2 + 3x + 18$
2) $8x^3 - 2x^2 - 3x + 18$
3) $8x^3 + 2x^2 - 3x + 18$
4) $8x^3 + 2x^2 + 3x + 18$

10   When $(2x - 3)^2$ is subtracted from $5x^2$, the result is
1) $x^2 - 12x - 9$
2) $x^2 - 12x + 9$
3) $x^2 + 12x - 9$
4) $x^2 + 12x + 9$

11   Which expression is *not* equivalent to
$-4x^3 + x^2 - 6x + 8$?
1) $x^2(-4x + 1) - 2(3x - 4)$
2) $x(-4x^2 - x + 6) + 8$
3) $-4x^3 + (x - 2)(x - 4)$
4) $-4(x^3 - 2) + x(x - 6)$

12   Fred is given a rectangular piece of paper. If the length of Fred's piece of paper is represented by $2x - 6$ and the width is represented by $3x - 5$, then the paper has a total area represented by
1) $5x - 11$
2) $6x^2 - 28x + 30$
3) $10x - 22$
4) $6x^2 - 6x - 11$

13   The length, width, and height of a rectangular box are represented by $2x$, $3x + 1$, and $5x - 6$, respectively. When the volume is expressed as a polynomial in standard form, what is the coefficient of the 2nd term?
1) -13
2) 13
3) -26
4) 26

14   Given:
$$A = x + 5$$
$$B = x^2 - 18$$
Express $A^2 + B$ in standard form.

15   Express the product of $2x^2 + 7x - 10$ and $x + 5$ in standard form.

16   Write the expression $5x + 4x^2(2x + 7) - 6x^2 - 9x$ as a polynomial in standard form.

17   If the difference $(3x^2 - 2x + 5) - (x^2 + 3x - 2)$ is multiplied by $\frac{1}{2}x^2$, what is the result, written in standard form?

18   Express $(3x - 4)(x + 7) - \frac{1}{4}x^2$ as a trinomial in standard form.

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Answer Section

  1 ANS: 2   REF: 012309ai
  2 ANS: 3   REF: 082206ai
  3 ANS: 3   REF: 062217ai
  4 ANS: 2

$$(2x + 7)(x - 3) = 2x^2 - 6x + 7x - 21 = 2x^2 + x - 21$$

REF: 082308ai

  5 ANS: 2

(d) is the product, but not written in standard form.

REF: 062108ai

  6 ANS: 4

$$2x^2 + 7x - 10x - 35 - x - 5 = 2x^2 - 4x - 40$$

REF: 062419ai

  7 ANS: 4

$$3(x^2 - 4x + 4) - 2x + 2 = 3x^2 - 12x + 12 - 2x + 2 = 3x^2 - 14x + 14$$

REF: 081524ai

  8 ANS: 1

$$(x^2 + 3x + 9)(x - 3) = x^3 - 3x^2 + 3x^2 - 9x + 9x - 27 = x^3 - 27$$

REF: 012415ai

  9 ANS: 3

$$(2x + 3)(4x^2 - 5x + 6) = 8x^3 - 10x^2 + 12x + 12x^2 - 15x + 18 = 8x^3 + 2x^2 - 3x + 18$$

REF: 081612ai

10 ANS: 3

$$5x^2 - (4x^2 - 12x + 9) = x^2 + 12x - 9$$

REF: 011610ai

11 ANS: 2

$$x(-4x^2 - x + 6) + 8 = -4x^3 - x^2 + 6x + 8$$

REF: 012016ai

12 ANS: 2   REF: 011510ai
13 ANS: 3

$$\left(6x^2 + 2x\right)(5x - 6) = 30x^3 - 36x^2 + 10x^2 - 12x = 30x^3 - 26x^2 - 12x$$

REF: 081824ai

14 ANS:

$(x+5)^2 + x^2 - 18 = x^2 + 10x + 25 + x^2 - 18 = 2x^2 + 10x + 7$

REF: 062329ai

15 ANS:

$(2x^2 + 7x - 10)(x + 5)$

$2x^3 + 7x^2 - 10x + 10x^2 + 35x - 50$

$2x^3 + 17x^2 + 25x - 50$

REF: 081428ai

16 ANS:

$5x + 4x^2(2x + 7) - 6x^2 - 9x = -4x + 8x^3 + 28x^2 - 6x^2 = 8x^3 + 22x^2 - 4x$

REF: 081731ai

17 ANS:

$(3x^2 - 2x + 5) - (x^2 + 3x - 2) = 2x^2 - 5x + 7$

$\frac{1}{2}x^2(2x^2 - 5x + 7) = x^4 - \frac{5}{2}x^3 + \frac{7}{2}x^2$

REF: 061528ai

18 ANS:

$3x^2 + 21x - 4x - 28 - \frac{1}{4}x^2 = 2.75x^2 + 17x - 28$

REF: 012028ai