A2.A.36: Binomial Expansions 1: Apply the binomial theorem to expand a binomial and determine a specific term of a binomial expansion

1 What is the fourth term in the expansion of $(y-1)^7$?
1) $35y^4$ 2) $35y^3$ 3) $-35y^4$ 4) $-35y^3$

2 What is the fourth term in the binomial expansion $(x-2)^8$?
1) $448x^5$ 2) $448x^4$ 3) $-448x^5$ 4) $-448x^4$

3 What is the fourth term in the expansion of $(3x-2)^5$?
1) $-720x^2$ 2) $-240x$ 3) $720x^2$ 4) $1,080x^3$

4 What is the *last* term in the expansion of $(x+2y)^5$?
1) y^5 2) $2y^5$ 3) $10y^5$ 4) $32y^5$

5 What is the third term in the expansion of $(2x-3)^5$?
1) $720x^3$ 2) $180x^3$ 3) $-540x^2$ 4) $-1080x^2$

6 What is the third term in the expansion of $(3x-2)^5$?
1) $1,080x^2$ 2) $270x^3$ 3) $540x^3$ 4) $1,080x^3$

7 Which expression represents the third term in the expansion of $(2x^4-y)^3$?
1) $-y^3$ 2) $-6x^4y^2$ 3) $6x^4y^2$ 4) $2x^4y^2$

8 The ninth term of the expansion of $(3x+2y)^{15}$ is
1) ${}_{15}C_9(3x)^6(2y)^9$ 2) ${}_{15}C_9(3x)^9(2y)^6$
3) ${}_{15}C_8(3x)^7(2y)^8$ 4) ${}_{15}C_8(3x)^8(2y)^7$

9 What is the middle term in the expansion of $(x+y)^4$?
1) x^2y^2 2) $2x^2y^2$ 3) $6x^2y^2$ 4) $4x^2y^2$

10 What is the middle term in the expansion of $\left(\frac{x}{2}-2y\right)^6$?
1) $20x^3y^3$ 2) $-\frac{15}{4}x^4y^2$ 3) $-20x^3y^3$
4) $\frac{15}{4}x^4y^2$

11 What is the third term in the expansion of $(\cos x+3)^5$?
1) $90\cos^2 x$ 2) $270\cos^2 x$ 3) $60\cos^3 x$
4) $90\cos^3 x$

12 What is the coefficient of the fifth term in the expansion of $(x+1)^8$?
1) 8 2) 28 3) 56 4) 70

13 What is the coefficient of the fourth term in the expansion of $(a-4b)^9$?
1) $-5,376$ 2) -336 3) 336 4) 5,376

14 In the binomial expansion of $(x+y)^8$, what is the coefficient of the term containing x^3y^5?
1) 15 2) 28 3) 56 4) 70

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Answer Section

1 ANS: 3
$${}_7C_3(y)^{7-3}(-1)^3 = -35y^4$$

REF: 060619b

2 ANS: 3
$${}_8C_3 \cdot x^{8-3} \cdot (-2)^3 = 56x^5 \cdot (-8) = -448x^5$$

REF: 011308a2

3 ANS: 1
$${}_5C_3(3x)^2(-2)^3 = 10 \cdot 9x^2 \cdot -8 = -720x^2$$

REF: fall0919a2

4 ANS: 4
$${}_5C_5(x)^{5-5}(2y)^5 = 32y^5$$

REF: 080208b

5 ANS: 1
$${}_5C_2(2x)^{5-2}(-3)^2 = 720x^3$$

REF: 011519a2

6 ANS: 4
$${}_5C_2(3x)^{5-2}(-2)^2 = 1,080x^3$$

REF: 080915b

7 ANS: 3
$${}_3C_2(2x^4)^1(-y)^2 = 6x^4y^2$$

REF: 011215a2

8 ANS: 3 REF: 081525a2

9 ANS: 3
$${}_4C_2(x)^{4-2}(y)^2 = 6x^2y^2$$

REF: 080412b

10 ANS: 3
$${}_6C_3\left(\frac{x}{2}\right)^3(-2y)^3 = 20 \cdot \frac{x^3}{8} \cdot -8y^3 = -20x^3y^3$$

REF: 061215a2

11 ANS: 4

$${}_5C_2(\cos x)^{5-2}(3)^2 = 90\cos^3 x$$

REF: 060517b

12 ANS: 4

$${}_nC_{r-1} = {}_8C_{5-1} = 70$$

REF: 010820b

13 ANS: 1

$${}_9C_3a^6(-4b)^3 = -5376a^6b^3$$

REF: 061126a2

14 ANS: 3 REF: 011016b