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ATHEMATICS TEST - CHAPTER 7: MATHEMATICAL INDUCTION AND BINOMIAL THEORE

Name:		Roll No.		Section:

Total Time: 3:20 Hour
Time Allowed: 200 Minutes

Total Marks: 200

PAPER OBJECTIVE
SECTION-A (MARKS 200)

NOTE: Section-A is compulsory. All parts of this section are to be answered on these pages and handed over to the center superintendent. Deleting / overwriting is not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark.

Questions	A	B	C	D	A B C D
1. The concept of mathematical induction is illustrated by a line of:	dominoes	squares in a plane	triangles	circles	●○○○
2. In the domino illustration, the statement "the nth domino falls backward" is denoted by:	n(P)	P(k) only	Q(n)	P(n)	○○○●
3. In the domino illustration, if the kth domino falls it pushes the:	(k − 1)th domino	(k + 1)th domino	first domino	last domino	○●○○
4. In the domino illustration, it is given that P(1) is true, which means the:	no domino falls	middle domino falls	first domino falls backward	last domino falls	○○●○
5. Mathematical induction is used to prove a statement for all:	positive integers	real numbers	rational numbers	negative integers	●○○○
6. The two steps involved in mathematical induction are the:	assumption step and answer step	first step and last step	basis step and inductive step	proof step and check step	○○●○
7. In the basis step, we verify that the statement is true for:	n = k	n = 1	n = 0 only	n = k + 1	○●○○
8. In the inductive step, we assume that the statement is true for:	n = k	n = 1	n = k + 1	n = 0	●○○○
9. In the inductive step, we prove that the statement is true for:	n = k + 1 whenever it is true for n = k	n = 1	n = k − 1	n = 2k	●○○○
10. The assumption that P(k) is true is called the:	conclusion	contradiction	basis step	inductive hypothesis	○○○●
11. The method of mathematical induction was first used by the Italian scientist:	Francesco Maurolico	Carl Gauss	Euclid	Isaac Newton	●○○○
12. Maurolico used mathematical induction in the year:	1883	1700	1650	1575	○○○●
13. Pierre de Fermat called his technique the method of:	finite induction	direct proof	infinite descent	infinite ascent	○○●○
14. The process of mathematical induction was named and carefully described in 1883 by:	Francesco Maurolico	Augustus De Morgan	Blaise Pascal	Pierre de Fermat	○●○○

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Questions	A	B	C	D	A B C D
15. Augustus De Morgan is also known for:	Pascal's triangle	De Morgan's laws	Euclid's algorithm	Fermat's last theorem	○●○○
16. To prove 1 + 2 + 3 + … + n = n(n + 1)/2 by induction, the basis step checks that for n = 1 both sides equal:	3	2	1	0	○○●○
17. In proving 1 + 2 + … + n = n(n + 1)/2, the inductive step adds which term to both sides of P(k)?	(k + 1)	k	(k + 2)	k^2	●○○○
18. In the induction proof of the sum 1·2 + 2·3 + … + n(n + 1) = n(n + 1)(n + 2)/3, the basis case n = 1 gives:	3	2	1	6	○●○○
19. In the example $n^2 - 3n + 4$, the value for n = 1 is:	−2	2	1	4	○●○○
20. In the example $n^2 - 3n + 4$, the expression is proved to be:	a prime number	an even number for all positive integers n	a perfect square	an odd number for all n	○●○○
21. In the induction proof for $n^2 - 3n + 4$, the expression for P(k + 1) is the sum of two even numbers: $k^2 - 3k + 4$ and:	2(k − 1)	k − 1	2k	2(k + 1)	●○○○
22. The statement $3^n > n^2$ is checked in the basis step for n = 1 as:	3 > 1	9 > 1	3 > 3	1 > 3	●○○○
23. The sum $4 + 4\cdot6 + 4\cdot6^2 + \ldots + 4\cdot6^n$ equals:	$(6^{n+1} - 1)/5$	$4(6^n - 1)/5$	$4(6^{n+1} - 1)/5$	$4(6^{n+1} + 1)/5$	○○●○
24. For the series $4 + 4\cdot6 + \ldots + 4\cdot6^n$, the sum for n = 1 is:	4	10	28	24	○○●○
25. By induction, $n^3 + 2n$ is divisible by:	5	3	2	7	○●○○
26. By induction, 6 is a factor of:	$n^2 + 5$	n(n + 1)	$n(n^2 + 4)$	$n(n^2 + 5)$	○○○●
27. By induction, $4^n + 15n - 1$ is divisible by:	11	5	9	7	○○●○
28. By induction, $7^n - 2^n$ is divisible by:	3	2	7	5	○○○●
29. For n = 1, the value of $7^n - 2^n$ is:	9	14	2	5	○○○●
30. For n = 1, the value of $4^n + 15n - 1$ is:	16	18	20	19	○●○○
31. For n = 1, the value of $n^3 + 2n$ is:	1	5	2	3	○○○●

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Questions	A	B	C	D	A B C D
32. A binomial is an algebraic expression consisting of:	two terms	one term	four terms	three terms	●○○○
33. Which of the following is a binomial?	$x^2 + xy + y^2$	$x^2 + y + 1$	$x + y$	$3x$	○○●○
34. The general form of a binomial expression in the theorem is:	$(ab)^n$	a^b	$a^n + b^n$	$(a + b)^n$	○○○●
35. The triangle of positive integers giving binomial coefficients is called:	Euclid's triangle	Newton's triangle	Fermat's triangle	Pascal's triangle	○○○●
36. The first row of Pascal's triangle is:	1 2 1	1 1	0	1	○○○●
37. The third row of Pascal's triangle is:	1 2 1	1 3 3 1	1 4 6 4 1	1 1	●○○○
38. The fourth row of Pascal's triangle is:	1 3 3 1	1 4 6 4 1	1 2 1	1 5 10 10 5 1	●○○○
39. The fifth row of Pascal's triangle is:	1 3 3 1	1 6 15 20 15 6 1	1 4 6 4 1	1 5 10 10 5 1	○○●○
40. The sixth row of Pascal's triangle is:	1 3 3 1	1 5 10 10 5 1	1 6 15 20 15 6 1	1 4 6 4 1	○●○○
41. The seventh row of Pascal's triangle is:	1 7 21 35 35 21 7 1	1 4 6 4 1	1 6 15 20 15 6 1	1 5 10 10 5 1	○○●○
42. In the expansion of $(a + b)^n$, the binomial coefficients are the numbers in the:	first row only	last column only	nth row of Pascal's triangle	(n + 2)th row of Pascal's triangle	○○●○
43. In an expansion of $(a + b)^n$, from term to term the exponent of a:	increases by 1	remains the same	doubles	decreases by 1	○○○●
44. In an expansion of $(a + b)^n$, from term to term the exponent of b:	doubles	remains the same	increases by 1	decreases by 1	○○●○
45. The expansion of $(a + b)^n$ ends with the term:	n	ab	a^n	b^n	○○○●
46. Expansion by Pascal's triangle is convenient when n is a:	small positive integer	large positive integer	negative integer	fraction	●○○○
47. The expansion of $(a + b)^3$ is:	$a^3 + a^2b + ab^2 + b^3$	$a^3 + 3ab + b^3$	$a^3 + 3a^2b + 3ab^2 + b^3$	$a^3 + 2a^2b + 2ab^2 + b^3$	○○●○
48. The expansion of $(x - y)^4$ is:	$x^4 - 4x^3y + 6x^2y^2 - 4xy^3 + y^4$	$x^4 + 4x^3y + 6x^2y^2 + 4xy^3 + y^4$	$x^4 - 4x^3y - 6x^2y^2 - 4xy^3 + y^4$	$x^4 - y^4$	●○○○

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Questions	A	B	C	D	A B C D
49. The coefficients in the expansion of $(1 + x)^5$ are:	1, 5, 10, 10, 5, 1	1, 5, 10, 5, 1	1, 4, 6, 4, 1	1, 6, 15, 20, 15, 6, 1	●○○○
50. In the expansion of $(1 + 2x)^6$, the second term is:	64x	2x	6x	12x	○○○●
51. In the expansion of $(1 + 2x)^6$, the third term is:	$30x^2$	$60x^2$	$120x^2$	$15x^2$	○●○○
52. In the expansion of $(1 + 2x)^6$, the coefficient of x^3 is:	20	240	80	160	○○○●
53. In the expansion of $(1 + 2x)^6$, the last term is:	$12x^6$	$64x^6$	x^6	$2x^6$	○●○○
54. The binomial theorem states that for a positive integer n, $(a + b)^n$ equals:	$\Sigma\ {}^nC_r\ a^{n-r}\ b^r$, r = 0 to n	$a^n + b^n$	$\Sigma\ {}^nC_r\ a^r\ b^r$	$\Sigma\ {}^nP_r\ a^{n-r}\ b^r$, r = 0 to n	●○○○
55. The binomial theorem is proved by:	contradiction only	mathematical induction	Pascal's triangle only	trial and error	○●○○
56. The number of terms in the expansion of $(a + b)^n$ is:	n + 1	2n	n	n − 1	●○○○
57. The number of terms in the expansion of $(a + b)^{12}$ is:	11	24	13	12	○○●○
58. The sum of the exponents of a and b in each term of the expansion of $(a + b)^n$ is:	n	n + 1	2n	n − 1	●○○○
59. The coefficients of the terms equidistant from the beginning and the end in the expansion are:	opposite in sign	equal	different	zero	○●○○
60. If n is even, the number of terms in the expansion of $(a + b)^n$ is:	zero	even	odd	infinite	○○●○
61. If n is even, the middle term of the expansion of $(a + b)^n$ is the:	(n/2)th term	(n + 1)th term	(n/2 + 1)th term	(n/2 − 1)th term	○○●○
62. If n is odd, the number of middle terms in the expansion of $(a + b)^n$ is:	two	none	three	one	●○○○
63. The middle term in the expansion of $(a + b)^{10}$ is the:	10th term	11th term	6th term	5th term	○○●○
64. The middle terms in the expansion of $(a + b)^7$ are the:	3rd and 4th terms	5th and 6th terms	4th and 5th terms	7th and 8th terms	○○●○
65. The general term (the (r + 1)th term) of the expansion of $(a + b)^n$ is:	${}^nC_{r+1}\ a^{n-r}\ b^r$	${}^nP_r\ a^{n-r}\ b^r$	${}^nC_r\ a^{n-r}\ b^r$	${}^nC_r\ a^r\ b^{n-r}$	○○●○

Questions	A	B	C	D	A B C D
66. The term at the rth position from the end in the expansion of $(a + b)^n$ is at which position from the beginning?	(n − r + 2)th	(n − r)th	(n − r + 1)th	(n + r)th	●○○○
67. The fourth term in the expansion of $(x + 2)^6$ is:	$120x^3$	$20x^3$	$160x^3$	$80x^3$	○○●○
68. The coefficient of x^2 in the expansion of $(1 + x)^8$ is:	56	28	64	8	○●○○
69. The coefficient of x^3 in the expansion of $(1 + x)^7$ is:	42	21	7	35	○○○●
70. The constant term in the expansion of $(x + 1/x)^{10}$ is:	45	210	120	252	○○○●
71. In finding the constant term, we set the exponent of x equal to:	zero	r	n	one	●○○○
72. The constant term in the expansion of $(x + 1/x)^4$ is:	24	6	4	1	○●○○
73. In the expansion of $(a + b)^n$, the term involving a^{n-r} b^r is the:	rth term	(r + 1)th term	(n − r)th term	(r − 1)th term	○●○○
74. The sum of all binomial coefficients in the expansion of $(a + b)^n$ is:	n!	n^2	2^n	2n	○○●○
75. The sum of the odd-position binomial coefficients in the expansion of $(a + b)^n$ is:	n^2	2n	2^n	2^{n-1}	○○○●
76. The sum $^nC_0 + {}^nC_1 + {}^nC_2 + \ldots + {}^nC_n$ equals:	2n	n^2	2^n	n!	○○●○
77. The sum of the coefficients in the expansion of $(1 + x)^6$ is:	12	6	36	64	○○○●
78. The largest coefficient in the expansion of $(1 + x)^{10}$ is:	45	210	120	252	○○○●
79. The binomial coefficient $^{10}C_5$ equals:	252	120	126	210	●○○○
80. The coefficient of the 3rd term from the end in the expansion of $(1 + x)^9$ is:	84	126	9	36	○○○●
81. When the same exponent form $(1 + x)^n$ has n as a positive integer, the series is:	divergent	terminating with n + 1 terms	non-terminating	infinite	○●○○
82. The expansion of $(1 + x)^n$ for positive integer n has how many terms?	n + 1	infinite	n − 1	n	●○○○

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Questions	A	B	C	D	A B C D
83. When n is a negative integer or a fraction, the expansion of $(1 + x)^n$ is:	terminating	equal to 1	undefined for all x	non-terminating	○○○●
84. The binomial series of $(1 + x)^n$ for non-positive-integer n converges when:	$\|x\| > 1$	$\|x\| < 1$	x is any real number	x = 1 only	○●○○
85. A convergent series is one which has a:	negative sum only	zero sum only	infinite sum	finite sum	○○○●
86. The series $(1 + x)^{-1}$ expands as:	$1 - x - x^2 - \ldots$	$1 + x + x^2 + x^3 + \ldots$	$1 + 2x + 3x^2 + \ldots$	$1 - x + x^2 - x^3 + \ldots$	○○○●
87. The series $(1 - x)^{-1}$ expands as:	$1 + x + x^2 + x^3 + \ldots$	$1 + 2x + 3x^2 + \ldots$	$1 - x - x^2 - \ldots$	$1 - x + x^2 - x^3 + \ldots$	●○○○
88. The series $(1 + x)^{-2}$ expands as:	$1 - x + x^2 - \ldots$	$1 - 2x + 3x^2 - 4x^3 + \ldots$	$1 + 2x + 3x^2 + \ldots$	$1 - 2x + 4x^2 - \ldots$	○●○○
89. The series $(1 - x)^{-2}$ expands as:	$1 + x + x^2 + \ldots$	$1 - 2x + 3x^2 - \ldots$	$1 + 2x + 4x^2 + \ldots$	$1 + 2x + 3x^2 + 4x^3 + \ldots$	○○○●
90. In the expansion of $(1 + x)^{1/2}$, the coefficient of x^2 is:	1/4	−1/8	1/8	−1/4	○●○○
91. In the expansion of $(1 + x)^{1/2}$, the coefficient of x is:	1/2	1	2	−1/2	●○○○
92. The general term of the binomial series $(1 + x)^n$ is:	$n^r x^r / r$	$n!/(r!\, x^r)$	$n(n-1)\ldots(n-r+1)/r! \cdot x^r$	${}^nP_r\, x^r$	○○●○
93. The binomial series $(2 + 3x)^{-1/2}$ is valid when:	$\|x\| < 3/2$	$\|x\| < 1$	$\|x\| < 2/3$	$\|x\| > 2/3$	○○●○
94. If x is so small that x^2 and higher powers can be neglected, then $(1 + x)^n \approx$:	$1 + nx$	$1 + n + x$	$1 - nx$	$1 + x^n$	●○○○
95. If x is so small that x^2 and higher powers can be neglected, then $(1 - x)^4 \approx$:	$1 - x$	$1 + 4x$	$1 - 6x$	$1 - 4x$	○○○●
96. Using the first three terms, $(1.01)^{10}$ is approximately:	1.1100	1.1000	1.1500	1.1045	○○○●
97. Using the first three terms, $(0.99)^5$ is approximately:	0.95	0.951	0.950	0.949	○●○○
98. Using the first three terms, $(1.02)^4$ is approximately:	1.0800	1.0824	1.0750	1.0900	○●○○
99. $(1.1)^{10000}$ is greater than 1000 because by the binomial theorem it is at least:	1.1	$1 + 10000 \times 0.1 = 1001$	10000	1 + 1000	○●○○

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Questions	A	B	C	D	A B C D
100. The binomial theorem is applied to find:	only areas	only volumes	remainders, unit digits and divisibility	only angles	○○●○
101. The cyclicity of the unit digit of the powers of 2 is:	5	4	2	10	○●○○
102. The cyclicity of the unit digits of the powers of 3, 7 and 8 is:	2	5	10	4	○○○●
103. The unit digit of the powers of 1, 5 and 6 always:	remains the same	becomes zero	changes in a cycle of 4	changes in a cycle of 2	●○○○
104. The unit digit of the powers of 4 is either:	2 or 8	4 or 2	6 or 8	4 or 6	○○○●
105. The unit digit of the powers of 9 is either:	1 or 3	9 or 1	9 or 3	9 or 7	○●○○
106. The unit digits of 2^1, 2^2, 2^3, 2^4, 2^5 are respectively:	2, 4, 8, 6, 2	2, 8, 4, 6, 2	2, 4, 8, 16, 32	2, 4, 6, 8, 2	●○○○
107. If the exponent is of the form 4n + 1, the unit digit of 2^{4n+1} is:	4	6	2	8	○○●○
108. The unit digit of 7^{23} is:	3	1	9	7	●○○○
109. The unit digit of 9^{26} is:	9	3	1	7	○○●○
110. The unit digit of 36^{307} is:	6	7	1	3	●○○○
111. The unit digit of 2^{25} is:	2	6	8	4	●○○○
112. The unit digit of 3^{24} is:	3	1	7	9	○●○○
113. The unit digit of 8^9 is:	2	4	8	6	○○●○
114. The unit digit of $12^{15} + 8^{15}$ is:	8	2	6	0	○○○●
115. The unit digit of 5^{100} is:	25	1	0	5	○○○●
116. The remainder when $6^n - 5^n$ is divided by 5 is:	4	1	5	0	○●○○

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Questions	A	B	C	D	A B C D
117. The statement "a − b is a factor of $a^n - b^n$" holds for:	distinct integers a, b and positive integer n	only a = b	only even n	only n = 2	● ○ ○ ○
118. The expression $9^{n+1} - 8n - 9$ is divisible by:	8	64	9	81	○ ● ○ ○
119. The number $11^9 + 9^{11}$ is divisible by:	10	9	11	7	● ○ ○ ○
120. The remainder when 7^2 is divided by 5 is:	2	4	0	1	○ ● ○ ○
121. The remainder when 8^2 is divided by 7 is:	1	2	0	4	● ○ ○ ○
122. The remainder when 10^3 is divided by 9 is:	3	0	1	9	○ ○ ● ○
123. The method of finding the remainder of a large power uses the expansion of:	a matrix	a quadratic equation	$(1 + k)^n$ type binomial with a convenient base	a complex number	○ ○ ● ○
124. In $7^2 = 49 = 50 - 1$, expressing the number as a binomial helps to find the:	remainder when divided by 25	root	unit digit only	degree	● ○ ○ ○
125. Pascal's triangle and the binomial theorem are used in real-world problems such as:	map reading	cryptography	painting	cooking	○ ● ○ ○
126. Pascal's triangle can be used to count the number of possible heads when:	dice are rolled only	numbers are added only	coins are tossed	cards are drawn only	○ ○ ● ○
127. When three coins are tossed together, the numbers of outcomes with 0, 1, 2, 3 heads are:	1, 3, 3	1, 4, 6, 4	1, 2, 1	1, 3, 3, 1	○ ○ ○ ●
128. When three coins are tossed, the total number of possible results is:	6	3	8	9	○ ○ ● ○
129. When six coins are tossed, the number of outcomes having exactly 3 heads is:	10	6	15	20	○ ○ ○ ●
130. When six coins are tossed, the number of ways of getting 2 heads is:	20	12	15	6	○ ○ ● ○
131. When seven coins are tossed, the number of ways 5 heads appear is:	42	7	35	21	○ ○ ○ ●
132. When a coin is tossed 8 times, the number of ways in which 3 tails appear is:	70	28	56	8	○ ○ ● ○
133. When a coin is tossed 4 times, the number of outcomes with exactly 2 heads is:	4	6	8	2	○ ● ○ ○

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Questions	A	B	C	D	A B C D
134. In the expansion of $(a + b)^n$, if the 11th term is at a certain position, its position from the end is:	$n - 9$	$n - 8$	$n - 11$	$n - 10$	●○○○
135. A mathematical statement proved for all positive integers by induction is also true for all:	irrational numbers	rational numbers	negative integers	natural numbers	○○○●
136. The first step in mathematical induction is also called the:	basis (base) step	inductive step	concluding step	final step	●○○○
137. In the example of the sum of the first n odd numbers, the formula proved by induction is:	n^2	$2n$	n^3	$n(n + 1)$	●○○○
138. The binomial expansion of $(1 + x)^n$ for positive integer n contains the term with the highest power:	x^n	x^{2n}	x^{n-1}	x^{n+1}	●○○○
139. The coefficient of the term x^n in the expansion of $(1 + x)^n$ is:	n	n!	1	2^n	○○●○
140. The coefficient of the first term in the expansion of $(1 + x)^n$ is:	n	1	${}^nC_2$	0	○●○○
141. The symbol ${}^nC_r$ in the binomial theorem is called the:	binomial coefficient	binomial degree	binomial exponent	binomial mean	●○○○
142. The binomial coefficients ${}^nC_r$ and ${}^nC_{n-r}$ are:	opposite in sign	unrelated	reciprocals	equal	○○○●
143. The binomial theorem for a positive integral index n was proved using the identity:	${}^nC_r + {}^nC_{r-1} = {}^{n+1}C_r$	${}^nC_r = {}^nP_r$	${}^nP_r = r!$	$n! = n(n - 1)$	●○○○
144. To prove $1 + 3 + 5 + \ldots + (2n - 1) = n^2$ by induction, the basis step for n = 1 shows that both sides equal:	0	1	3	2	○●○○
145. To prove $2 + 4 + \ldots + 2n = n(n + 1)$ by induction, the value of the left side for n = 1 is:	0	1	2	4	○○●○
146. To prove $1^2 + 2^2 + \ldots + n^2 = n(n + 1)(2n + 1)/6$, the right side for n = 1 is:	2	6	1	3	○○●○
147. To prove $1^3 + 2^3 + \ldots + n^3 = [n(n + 1)/2]^2$, the right side for n = 1 is:	4	8	2	1	○○○●
148. The basis step of the statement $2^n > n$ for n = 1 reads:	$2 > 1$	$2 > 2$	$1 > 2$	$4 > 1$	●○○○
149. The basis step of the statement "$n^2 + n$ is even" gives for n = 1 the value:	1	2	3	0	○●○○
150. The basis step of the statement "$n(n + 1)(n + 2)$ is divisible by 6" gives for n = 1 the value:	3	12	6	2	○○●○

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Questions	A	B	C	D	A B C D
151. The basis step of the statement "$3^{2n} - 1$ is divisible by 8" gives for n = 1 the value:	0	8	6	9	○●○○
152. The basis step of the statement "$5^n - 1$ is divisible by 4" gives for n = 1 the value:	6	4	5	1	○●○○
153. The value of $n^3 - n$ at n = 2 is:	6	8	4	2	●○○○
154. In the inductive step for a sum, we add which term to both sides of the assumption P(k)?	The last term of P(k + 1)	The kth term	The first term	The (k + 1)th term	○○○●
155. The inductive step actually proves the implication:	P(n) ⇒ P(0)	P(k + 1) ⇒ P(k)	P(1) ⇒ P(2) only	P(k) ⇒ P(k + 1)	○○○●
156. If the basis step fails, the method of mathematical induction:	gives the answer zero	proves the converse	cannot establish the statement for all n	still proves the statement	○○●○
157. The inductive hypothesis is used in the inductive step to:	disprove P(k)	prove P(1)	prove P(k + 1)	find the basis	○○●○
158. Checking a statement for a large number of values of n:	is the basis step only	is the inductive step	proves it for all n	does not prove it for all n	○○○●
159. After completing the basis and inductive steps, the conclusion is that the statement is true for:	n = 1 only	negative integers	n = k only	all positive integers n	○○○●
160. The expansion of $(x + 2)^4$ is:	$x^4 + 2x^3 + 4x^2 + 8x + 16$	$x^4 + 8x^3 + 24x^2 + 32x + 16$	$x^4 + 8x^3 + 12x^2 + 16x + 16$	$x^4 + 4x^3 + 6x^2 + 4x + 2$	○●○○
161. The expansion of $(2x - 1)^3$ is:	$8x^3 - 6x^2 + 12x - 1$	$8x^3 - 12x^2 + 6x - 1$	$8x^3 + 12x^2 + 6x + 1$	$2x^3 - 6x^2 + 6x - 1$	○●○○
162. The expansion of $(a - b)^5$ is:	$a^5 - 5a^4b + 10a^3b^2 - 10a^2b^3 + 5ab^4 - b^5$	$a^5 + 5a^4b + 10a^3b^2 + 10a^2b^3 + 5ab^4 + b^5$	$a^5 - 5a^4b - 10a^3b^2 + 10a^2b^3 - 5ab^4 + b^5$	$a^5 - b^5$	●○○○
163. The coefficients in the expansion of $(1 - x)^4$ are:	1, −4, −6, −4, 1	1, 4, 6, 4, 1	−1, 4, −6, 4, −1	1, −4, 6, −4, 1	○○○●
164. The expansion of $(x + 1/x)^2$ is:	$x^2 + 2x + 1/x^2$	$x^2 + 1 + 1/x^2$	$x^2 + 2 + 1/x^2$	$x^2 + 1/x^2$	○○●○
165. The coefficient of x^4 in the expansion of $(1 + x)^6$ is:	30	6	15	20	○○●○
166. The coefficient of x^3 in the expansion of $(2 + x)^5$ is:	20	10	40	80	○○●○
167. The coefficient of x^2 in the expansion of $(1 - 2x)^5$ is:	40	−40	10	20	●○○○

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Questions	A	B	C	D	A B C D
168. The fifth term in the expansion of $(a + b)^8$ is:	$70a^4b^4$	$35a^4b^4$	$56a^4b^4$	$28a^4b^4$	●○○○
169. The third term in the expansion of $(1 + x)^7$ is:	$7x^2$	$35x^2$	$21x^2$	$42x^2$	○○●○
170. The middle term in the expansion of $(x + y)^6$ is:	$10x^3y^3$	$20x^3y^3$	$6x^3y^3$	$15x^3y^3$	○●○○
171. The middle term in the expansion of $(1 + x)^4$ is:	$4x^2$	$12x^2$	x^2	$6x^2$	○○○●
172. The term independent of x in the expansion of $(x^2 + 1/x)^3$ is:	3	1	0	6	●○○○
173. The 7th term from the end in the expansion of $(a + b)^{10}$ is the ___ term from the beginning.	5th	4th	7th	6th	●○○○
174. The number of terms in the expansion of $(2x + 3y)^9$ is:	18	10	9	8	○●○○
175. The sum of the coefficients in the expansion of $(2x + 3)^3$ is:	27	125	35	8	○●○○
176. The sum of the coefficients in the expansion of $(1 + x)^{10}$ is:	100	1024	20	512	○●○○
177. The sum of the odd-numbered binomial coefficients of $(1 + x)^8$ is:	64	8	256	128	○○○●
178. The first three terms of the expansion of $(1 + x)^{-3}$ are:	$1 - 3x + 3x^2$	$1 - 3x + 6x^2$	$1 + 3x + 6x^2$	$1 - 3x - 6x^2$	○●○○
179. The first three terms of the expansion of $(1 - x)^{-3}$ are:	$1 + 3x + 3x^2$	$1 + 3x - 6x^2$	$1 - 3x + 6x^2$	$1 + 3x + 6x^2$	○○○●
180. The coefficient of x^2 in the expansion of $(1 + x)^{-1/2}$ is:	3/8	−3/8	1/8	−1/8	●○○○
181. The coefficient of x in the expansion of $(1 - x)^{1/2}$ is:	1	1/2	−1/2	−1	○○●○
182. The coefficient of x in the expansion of $(1 + x)^{1/3}$ is:	−1/3	1	3	1/3	○○○●
183. Using the binomial series, $\sqrt{1.04} = (1 + 0.04)^{1/2}$ is approximately:	1.0200	1.0198	1.0100	1.0400	○●○○
184. Using the binomial series, $(1.03)^{-1}$ is approximately:	0.9709	1.0300	0.9691	0.9700	●○○○

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Questions	A	B	C	D	A B C D
185. The unit digit of 13^{30} is:	1	7	3	9	○○○●
186. The unit digit of 7^{100} is:	3	1	9	7	○●○○
187. The unit digit of 2^{50} is:	6	2	4	8	○○●○
188. The unit digit of 4^{25} is:	8	6	4	2	○○●○
189. The unit digit of 8^{10} is:	8	2	6	4	○○○●
190. The unit digit of 17^{3} is:	9	7	3	1	○○●○
191. The unit digit of 2^{4n+3} is:	6	4	2	8	○○○●
192. The remainder when 3^{100} is divided by 4 is:	3	1	2	0	○●○○
193. The remainder when 2^{10} is divided by 3 is:	0	2	1	3	○○●○
194. The remainder when 5^{100} is divided by 6 is:	5	4	0	1	○○○●
195. The remainder when 11^{10} is divided by 10 is:	1	10	0	9	●○○○
196. When 5 coins are tossed, the total number of possible outcomes is:	25	5	10	32	○○○●
197. When 5 coins are tossed, the number of ways of getting exactly 2 heads is:	5	10	20	32	○●○○
198. When 4 coins are tossed, the number of ways of getting all heads is:	6	16	1	4	○○●○
199. The number of terms in the expansion of $(x + y)^{20}$ is:	40	21	19	20	○●○○
200. The coefficient of the second term in the expansion of $(1 + x)^{n}$ is:	n^2	n	$n - 1$	1	○●○○