

Imię i nazwisko:

Klasa:

Grupa 1

Wynik:

**Question 1 (1 pt)**

Consider the numbers: 1, 5, 1, 4, 6, 9, 11, 12, 2, 3, 7. The median of these numbers is:

- A. 4.5    B. 5    C. 5.5    D. 9

**Question 2 (1 pt)**

$$\frac{8! \times 6!}{5! \times 7!} =$$

- A. 48    B.  $\frac{48}{35}$     C. 56    D.  $\frac{8}{30}$

**Question 3 (1 pt)**

$$\binom{100}{99} - \binom{99}{1} - \binom{5}{5} =$$

- A. 2    B. 1    C. 0    D. 100

**Question 4 (1 pt)**

The coefficient of  $x^3$  in the expansion of  $(2x - 3)^6$  is equal to:

- A. 4320    B. -4320    C. 20    D. -20

**Question 5 (1 pt)**

If the mean of the numbers 1, 5,  $x$ , 6, 3, 2, 11, 5 is 5, then:

- A.  $x = 5$     B.  $x = 6$     C.  $x = 7$     D.  $x = 8$

**Question 6 (4 pts)**

Given four integers  $a, b, c, d$  with  $a < b < c < d$ , we know that the range is 16, the lower quartile is 5, the median is 8 and the upper quartile is 15. Write down the four equations that show the above information and hence find  $a, b, c$  and  $d$ .

**Question 7 (4 pts)**

Find the coefficient of  $x^3$  in the expansion of  $\left(2x + \frac{3}{x}\right)\left(x - 1\right)^7$ .

**Question 8 (4 pts)**

Consider the following table of scores at an IB school:

IB score	frequency
25	2
26	1
30	5
31	6
32	8
33	3
34	2
36	7
37	8
38	4
40	1
42	2
45	1

Find the (i) range of scores (ii) median score (iii) interquartile range.

**Question 9 (3 pts)**

Find the term containing  $x$  in the expansion of  $(x + 1)^4(x - 2)^5$ .

**Extra question**

Prove that if  $n$  is even, then:

$$\binom{n}{0} + \binom{n}{2} + \binom{n}{4} + \dots + \binom{n}{n} = 2^{n-1}$$