

# SL / Binomial theorem (2021)

[23 marks]

The values in the fourth row of Pascal’s triangle are shown in the following table.

1	4	6	4	1
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1a. Write down the values in the fifth row of Pascal’s triangle. [2 marks]

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1b. Hence or otherwise, find the term in  $x^3$  in the expansion of  $(2x + 3)^5$ . [5 marks]

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Consider the expansion of  $\left(x^2 + \frac{2}{x}\right)^{10}$ .

2a. Write down the number of terms of this expansion. [1 mark]

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2b. Find the coefficient of  $x^8$ .

[5 marks]

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Consider the expansion of  $(2x + 3)^8$ .

3a. Write down the number of terms in this expansion.

[1 mark]

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3b. Find the term in  $x^3$ .

[4 marks]

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4. The third term in the expansion of  $(x + k)^8$  is  $63x^6$ . Find the possible values of  $k$ . [5 marks]

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