# Binomial Expansion: 10-minute Pack

AQA 8365 · Calculators not allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

**Answer ALL questions. Show all your working.**

**1** State the constant term in the expansion of $(3-x)^4$.

**(Total for Question 1 is 1 mark)**

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**2** The coefficient of $x^2$ in $(1+ax)^4$ is 54, where a is positive. Form an equation for a and solve it. Then show the calculation for the coefficient of $x^3$.

**(Total for Question 2 is 4 marks)**

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**3** State whether the coefficient of $x^3$ in $(2-x)^5$ is positive or negative.

**(Total for Question 3 is 1 mark)**


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**4** Expand $(x+4)^2$ and collect like terms.

**(Total for Question 4 is 2 marks)**

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**5** Expand $(1-3x)^3$ in ascending powers of x. Show how you obtain the coefficient of $x^2$.

**(Total for Question 5 is 2 marks)**


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# Mark scheme · Binomial Expansion: 10-minute Pack

## Question 1

81 stated as the constant term. Accept equivalent forms and valid alternative methods for the corresponding marks. **B1**

**Answer: 81**

## Question 2

Forms $6a^2=54$. **M1**

a=3, using the condition a is positive to reject -3. **A1**

Uses $4*3^3$ for the $x^3$ coefficient. **M1**

Coefficient of $x^3$ is 108. Accept equivalent forms and valid alternative methods for the corresponding marks. **A1**

**Answer: a = 3; coefficient of $x^3$ is 108.**

## Question 3

Negative stated. Accept equivalent forms and valid alternative methods for the corresponding marks. **B1**

**Answer: Negative**

## Question 4

$x^2$ and constant term 16 correct. **A1**

The two cross products collected to give 8x. Accept equivalent forms and valid alternative methods for the corresponding marks. **A1**

**Answer: $16 + 8x + x^2$**

## Question 5

Shows the $x^2$ coefficient as $3*(-3)^2$ or the sum of three products of two -3 factors. **M1**

Complete expansion $1 - 9x + 27x^2 - 27x^3$. Accept equivalent forms and valid alternative methods for the corresponding marks. **A1**

**Answer: $1 - 9x + 27x^2 - 27x^3$**


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