

[Home](#) [Gameboard](#) [Maths](#) [Algebra](#) [Series](#) [Expand and Simplify Binomials](#)

Expand and Simplify Binomials

Pre-Uni Maths for Sciences 3.3.1

A Level Further A
     

Part A $(x + 1)^4$

Expand and simplify $(x + 1)^4$.

The following symbols may be useful: x

Part B $(z + 2a)^3$

Expand and simplify $(z + 2a)^3$.

The following symbols may be useful: a , z

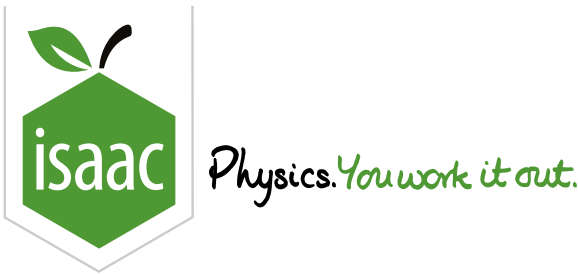
Part C $(a - b)^5$

Expand and simplify $(a - b)^5$.

The following symbols may be useful: a , b

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Binomial Expansion 3

Pre-Uni Maths for Sciences 3.3.6

A Level

C

C

C

Further A

P

P

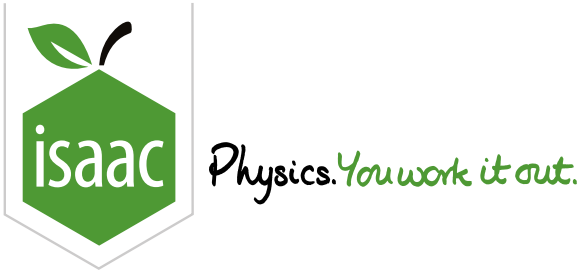
P

Expand $(3 - a)^4$ in ascending powers of a up to and including the term in a^3 . Hence, without using a calculator, evaluate $(2.9)^4$ correct to 2 decimal places

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STEM SMART Single Maths 27 - Binomial Expansion - Natural n

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Binomial Expansion 5

A Level

P

P

P

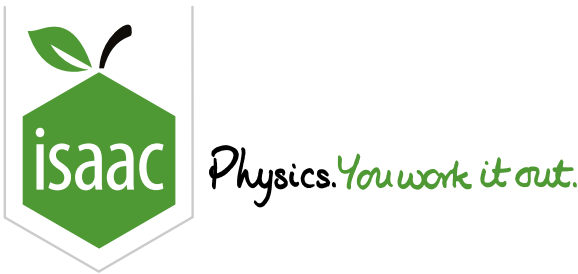
Use binomial expansion to expand and simplify the expression $\left(ax^2 + \frac{2}{x}\right)^5$.

The following symbols may be useful: x

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Find Coefficients 1

Pre-Uni Maths for Sciences 3.3.2

A Level

Further A

P

P

P

P

P

P

Find the coefficient of x^3 in the expansion of:

Part A $(x - 10)^5$

$(x - 10)^5$

Part B $(2x - \frac{1}{2})^6$

$\left(2x - \frac{1}{2}\right)^6$

Part C $(x - y)^{10}$

$(x - y)^{10}$

The following symbols may be useful: x , y

Part D $\left(x - \frac{1}{x}\right)^7$

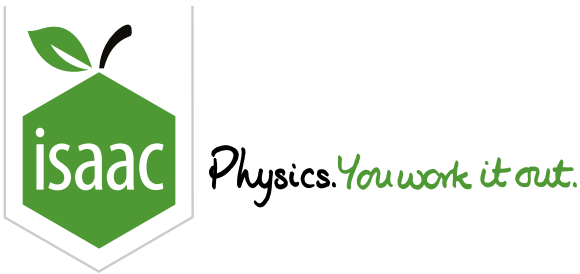
$$\left(x - \frac{1}{x}\right)^7$$

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Find Coefficients 2

Pre-Uni Maths for Sciences 3.3.3

A Level

Further A

P

P

P

P

P

P

Without expanding the binomials, find:

Part A Coefficient of x^4y^6

The coefficient of x^4y^6 in the expansion of $(x^2 + 3y^2)^5$.

Part B Coefficient of x^{20}

The coefficient of x^{20} in the expansion of $(x^2 + 3x)^{12}$.

Part C The coefficient of ab^7

The coefficient of ab^7 in the expansion of $(a + \frac{1}{4}b)^8$.

Part D Constant term

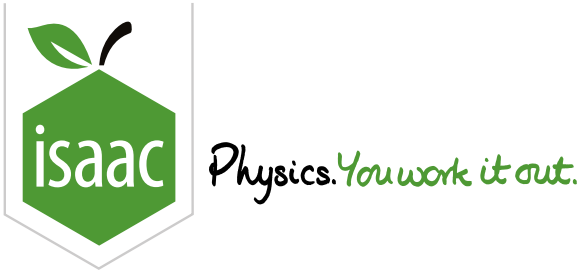
The constant term in the expansion of $\left(\frac{x^2}{2} - \frac{8}{x}\right)^9$.

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[Home](#) [Gameboard](#) Maths Algebra Series Group and Expand

Group and Expand

Pre-Uni Maths for Sciences 3.3.8

A Level Further A
     

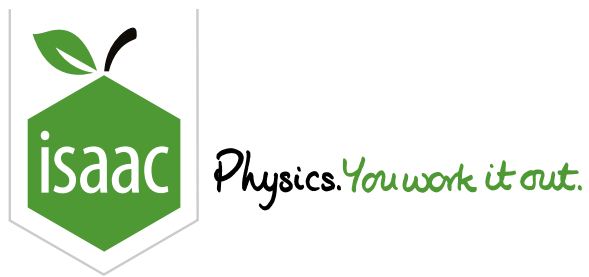
Expand $(1 - 2x + 3x^2)^7$ in ascending powers of x as far as x^3 .

The following symbols may be useful: x

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[Home](#) [Gameboard](#) [Maths](#) [Algebra](#) [Series](#) [Binomial Theorem Applied to Variable Acceleration](#)

Binomial Theorem Applied to Variable Acceleration



The force $F(t)$ N on a particle of mass 4 kg at time t s is given by

$$F(t) = (\sqrt{t} + 2)^5 - (\sqrt{t} - 2)^5$$

for $t \geq 0$.

At $t = 0$ the particle is at rest at the origin. Find an expression for its displacement from the origin, x m, in terms of t .

The following symbols may be useful: t , x

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