

1. Simplify

$$\frac{3x^2 - 6x^5}{2x}$$

2. Evaluate:

a) $4^{-3/2}$

b) $\left(\frac{27}{125}\right)^{-2/3}$

Prerequisite

Prerequisite

Retrieval

Problem Solving

3. Expand and simplify:

$$(x - y)(x + y - 1)$$

4. Expand and simplify:

$$(2x - 1)^3$$

Fluency and understanding

- a) Expand $(a + b)^0$
- b) Expand $(a + b)^1$
- c) Expand $(a + b)^2$
- d) Expand $(a + b)^3$
- e) Expand $(a + b)^4$

	?
	?
	?
	?
	?

What do you notice about:

The coefficients:

The powers of a and b :

?
?

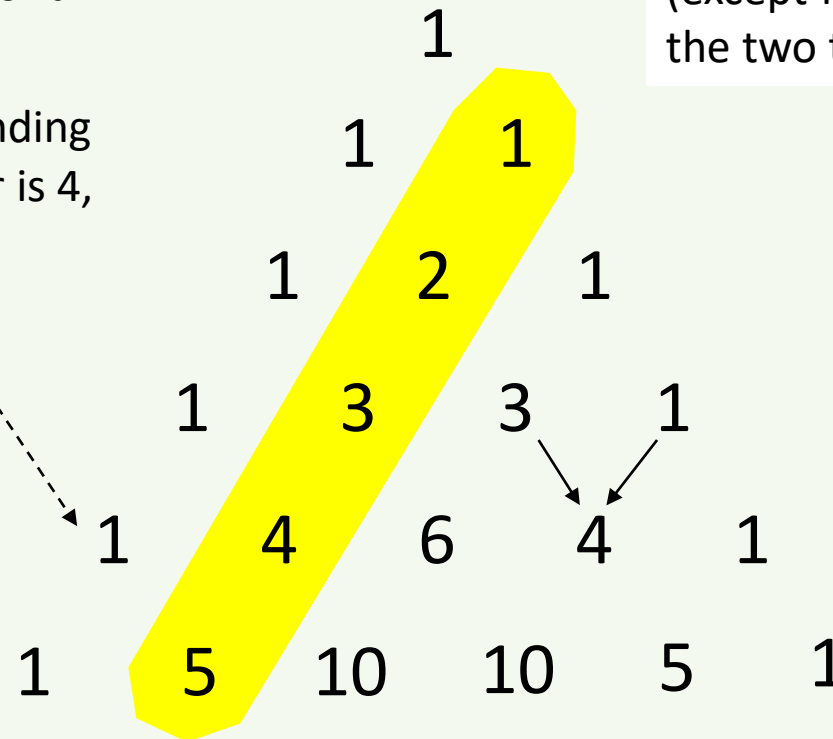
Fluency and understanding

The second number of each row tells us what row we should use for an expansion.

So, if we were expanding $(2 + x)^4$, the power is 4, so we use this row.

In Pascal's Triangle, each term (except for the 1s) is the sum of the two terms above.

I highly recommend memorising each row up to what you see here.



Each row gives us the coefficients in an expansion of $(a + b)^n$

Examples - I do

Find the expansion of $(2 + 3x)^4$

$$\begin{aligned}(2 + 3x)^4 = & 1 (2^4) \\ & + 4 (2^3)(3x)^1 \\ & + 6 (2^2)(3x)^2 \\ & + 4 (2^1)(3x)^3 \\ & + 1 (3x)^4\end{aligned}$$

Next have descending or ascending powers of one of the terms, going between 0 and 4 (note that if the power is 0, the term is 1, so we need not write it).

First fill in the correct row of Pascal's triangle.

And do the same with the second term but with powers going the opposite way, noting again that the 'power of 0' term does not appear.

Simplify each term (ensuring any number in a bracket is raised to the appropriate power)

$$= 16 + 96x + 216x^2 + 216x^3 + 81x^4$$

Examples - I do

$(1 - 2x)$ is the same as $(1 + (-2x))$, so we expand as before, but use $-2x$ for the second term.

$$\begin{aligned}(1 - 2x)^3 &= 1 (1^3) \\ &\quad + 3 (1^2)(-2x)^1 \\ &\quad + 3 (1) (-2x)^2 \\ &\quad + 1 (-2x)^3 \\ &= 1 - 6x + 12x^2 - 8x^3\end{aligned}$$

If one of the terms in the original bracket is negative, the terms in your expansion will oscillate between positive and negative. If they don't (e.g. two consecutive negatives), you've done something wrong!

Independent Practice- You do

Textbook

Page 17

Q1. Odd numbers

Q2. Odd numbers

Examples - I do

The coefficient of x^2 in the expansion of $(2 - cx)^5$ is 720.
Find the possible value(s) of the constant c .

The '5' row in Pascal's triangle is 1 5 10 10 5 1. If we count the 1 as the '0th term', we want the 2nd term, which is 10.

Since we want the x^2 term:

- The power of $(-cx)$ must be
- The power of 2 must be

Therefore term is:

Test Your Understanding

Edexcel C2

(a) Find the first 3 terms, in ascending powers of x , of the binomial expansion of

$$(2 + kx)^7$$

where k is a constant. Give each term in its simplest form.

(4)

Given that the coefficient of x^2 is 6 times the coefficient of x ,

(b) find the value of k .

(2)

(a)

?

(b)

?

Examples - I do

The coefficient of x^4 in the expansion of $(1 + qx)^{10}$ is 3360.
Find the possible value(s) of the constant q .

Term is:

?

Therefore:

?

Test Your Understanding

In the expansion of $(1 + ax)^{10}$, where a is a non-zero constant the coefficient of x^3 is double the coefficient of x^2 . Find the value of a .

?

Independent Practice- You do

Textbook

Page 17

Q9

Q11

Q13

Homework

Textbook

Page 17

Q1. Even numbers

Q2. Even numbers

Q4

Q6

Q10

Q14