

(C2-5.1a) Name:

Homework Questions 1 – Using Pascal’s Triangle to Expand Brackets

1. Complete Pascal’s triangle for the first 6 rows

$$\begin{array}{ccccccc} & & & & & & 1 \\ & & & & & & 1 & 1 \\ & & & & & 1 & 2 & 1 \\ & & & 1 & 3 & 3 & 1 \\ & 1 & 4 & 6 & 4 & 1 \\ 1 & 5 & 10 & 10 & 5 & 1 \end{array}$$

2. Use pascal’s triangle to find the expansions of the following

a) $(x + y)^3$

$$x^3 + 3x^2y + 3xy^2 + y^3$$

b) $(a - b)^4$

$$a^4 - 4a^3b + 6a^2b^2 - 4ab^3 + b^4$$

c) $(1 + x)^5$

$$1 + 5x + 10x^2 + 10x^3 + 5x^4 + x^5$$

3. Find the coefficient of x^2 in the following expansions

a) $(2 - x)^5$

80

b) $(3 + 2x)^4$

216

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

24

4. The coefficient of x^2 in the following expansion is 24. Find the value of y

$$(x + 2y)^3$$

4

5. Fully expand the following

$$(2 + x)(1 + x)^4$$

$$x^5 + 6x^4 + 14x^3 + 16x^2 + 9x + 2$$