

Name: \_\_\_\_\_

## Binomial Expansion

**Exercise 1:** Using the binomial theorem, find:

- 1) the first three terms of  $(3x-4)^{13}$
- 2) the first three terms of  $(2-x)^7$ .
- 3) the first three terms of  $(a+b)^{16}$
- 4) the first three terms of  $(1+4x)^9$
- 5) the first four terms of  $(1-x)^{11}$

**Exercise 2:** Find the term specified in the following expansions:

- 1)  $(a+b)^{13}$        $b^7$  term
- 2)  $(1+x)^{20}$        $x^6$  term
- 3)  $(x-y)^9$        $y^3$  term
- 4)  $(a+b)^8$        $b^7$  term
- 5)  $(1+5x)^{25}$        $x^2$  term

**Exercise 3:** Write down the next line in Pascal's Triangle.

1      6      15      20      15      6      1

**Exercise 4:** In the expansion of  $(1-x)^8$  find the coefficient of  $x^7$ .**Exercise 5:** Find the constant term in the expansion of

$$\left(4x^2 + \frac{3}{x}\right)^{12}$$

**Exercise 6:** Use the binomial theorem to find the first three terms in ascending powers of  $x$  of

$$\left(1 - \frac{x}{2}\right)^9$$

**Exercise 7:** Find the coefficient of  $x^5$  in the expansion of  $(1+4x)^9$