Test #2 – BINOMIAL THEOREM

Name	Date
Answer all questions in the space provided. Steps must be shown for part marks. Non-programmable calculators are permitted.	Mark /35

1. Evaluate without a calculator. Show your work to justify your solution.

$$\binom{5}{0}\left(\frac{2}{3}\right)^5 - \binom{5}{1}\left(\frac{2}{3}\right)^4\left(\frac{1}{6}\right) + \binom{5}{2}\left(\frac{2}{3}\right)^3\left(\frac{1}{6}\right)^2 - \binom{5}{3}\left(\frac{2}{3}\right)^2\left(\frac{1}{6}\right)^3 + \binom{5}{4}\left(\frac{2}{3}\right)\left(\frac{1}{6}\right)^4 - \binom{5}{5}\left(\frac{1}{6}\right)^5$$

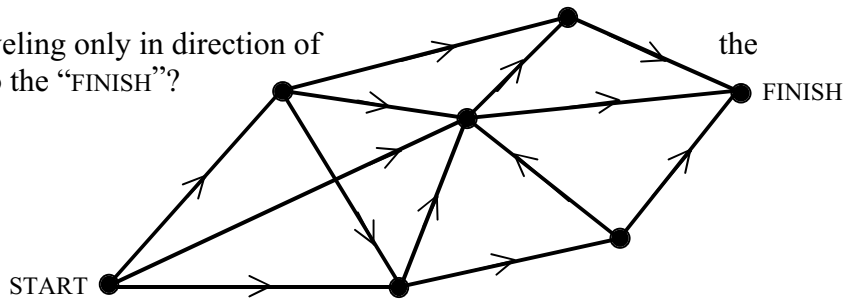
(2)

2. If $\binom{n}{0} + \binom{n}{1} + \ldots + \binom{n}{n} = 8192$, Find n.

(2)

3. Starting at the "START" and traveling only in direction of the arrows, how many paths lead to the "FINISH"?

(2)



4. A portion of Pascal's Triangle is shown below. Find the missing numbers.

(2)

	165			
		495	**792**	
			1716	

5. In a binomial expansion of $(a+b)^n$, a term including a^7b^{11} occurs.

   a) What is the value of *n*?

   (1)

   b) What is the coefficient of a^7b^{11}?

   (1)

   c) How many terms are there in the expansion of $(a+b)^n$?

   (1)

6. Given $\left(2x^3 - \frac{1}{x^2}\right)^5$

   a) Find the general term, in simplified form.

   (3)

   b) Find t_5.

   (2)

   c) Find the coefficient of the term containing x^7.

   (2)

   d) Find the constant term.

   (3)

7. Given $(3-x)(1+4x)^5$, find the first three terms in the expansion with ascending powers of x.

(4)

8. The first three terms in the expansion of $(1+x)^n$ are $1-9+\frac{297}{8}$.

   Find the values of x and n.

(4)

9. For $(1-2x)^4(2+x)^5$
   Find the coefficient of the term containing x^8.

(6)