

NAME _____ INDEX NUMBER _____

SCHOOL _____ DATE _____

BINOMIAL EXPANSIONS

<i>KCSE 1989 – 2012 Form 3 Mathematics</i>	Working Space
<p>1. 1989 Q13 P2</p> <p>Expand $\left[1 + \frac{1}{2}x\right]^8$ up to term in x^3</p> <p>By putting $x = 0.1$, find the approximate value of $(1.05)^8$ to 2 decimal places. (5marks)</p>	
<p>2. 1990 Q16 P2</p> <p>Write down the first four terms of $(p + q)^8$ using binomial expansion. Use your expansion to evaluate $(9.99)^8$ the nearest 100 (4marks)</p>	
<p>3. 1991 Q16 P2</p> <p>Obtain the binomial expansion for $(1-2x)^5$. Use your expansion to evaluate $(0.98)^5$ to five places of decimal (3marks)</p>	

		Working Space
4.	<p>1992 Q3 P2 Use binomial theorem to expand</p> $\left[1 - \frac{1}{2}x\right]^8$ <p>up to the fourth term. Use your expansion to evaluate $(0.98)^8$ by taking $x = 0.04$ (3marks)</p>	
5.	<p>1993 Q7 P1 By making use of binomial expansion, determine the value of $(2.002)^4$ to four decimal places (3marks)</p>	
6.	<p>1994 Q5 P2 Expand $(1 + 2x)^{10}$ up to the term in x^3. Hence use our expansion to estimate $(0.95)^{10}$ correct to three decimal places (4marks)</p>	
7.	<p>1996 Q12 P2 Expand $(1+a)^5$ use your expansion to estimate $(0.8)^5$ correct to four decimal places (3marks)</p>	

		Working Space
8.	<p>1997 Q9 P2</p> <p>Expand and simplify $(1 - 3x)^5$, up to the term in x^3</p> <p>Hence use your expansion to estimate $(0.97)^5$ correct to 4 decimal places</p>	
9.	<p>1998 Q13</p> <p>(a) Write down the simplest expansion $(1 + x)^6$</p> <p>(b) Use the expansion up to the fourth term to find the value of $(1.03)^6$ to the nearest one thousandth.</p>	
10	<p>1999 Q10</p> <p>Use binomial expression to evaluate $(0.96)^5$ correct to 4 significant figures</p>	

		Working Space
11	<p>2000 Q13 Expand $(1 + x)^5$, hence, use the expansion to estimate $(1.04)^5$ correct to 4 decimal Places</p>	
12	<p>2001 Q10 P2 Expand $(2 + x)^5$ in ascending powers of x up to the term in x^3. Hence, approximate the value of $(2.03)^5$ to 4s.f.</p>	
13	<p>2002 Q9 P2 a) Expand $(a - b)^6$ b) Use the first three term of the expansion in a (a) to</p>	

	find the approximate value of $(1.98)^6$	
		Working Space
14	<p>2003 Q11 P2</p> <p>a) Expand and simplify the binomial expression $(2 - x)^6$ (2marks)</p> <p>b) Use the expansion up to the term in x^2 to estimate 1.99^6 (2marks)</p>	
15	<p>2004 Q8 P2</p> <p>(a) Expand $(1 + x)^5$</p> <p>(b) Use the first three terms of the expansion in (a) to find the approximate value of $(0.98)^5$</p>	
16	<p>2005 Q13 P2</p> <p>Expand and simplify $(3x - y)^4$</p> <p>Hence use the first three terms of the expansion to</p>	

	approximate the value of $(6-0.2)^4$ (4 marks)	Working Space
17	<p>2006 Q11 P2 Use binomial expression to evaluate (4 marks)</p> $\left(2 + \frac{1}{\sqrt{2}}\right)^5 + \left(2 - \frac{1}{\sqrt{2}}\right)^5$	
18	<p>2007 Q4 P2</p> $\left(1 + \frac{1}{2}x\right)^5$ <p>(a) Expand the expression in ascending powers of x, leaving the coefficients as fractions in their simplest form (2 marks)</p> <p>(b) Use the first three terms of the expansion in (a)</p> $\left(1 \frac{1}{20}\right)^5$ <p>above to estimate the value of (2 marks)</p>	

19	<p>2008 Q8 P2</p> $\left(10 + \frac{2}{x}\right)^5$ <p>a) Expand and simplify the expression (2marks)</p> <p>b) Use the expansion in (a) above to find the value of 14^5 (2marks)</p>	Working Space
20	<p>2009 Q8 P2</p> <p>(a) Expand and simplify the binomial expression $(2 - x)^7$ in ascending powers of x (2 marks)</p> <p>(b) Use the expansion up to the fourth term to evaluate $(1.97)^7$ correct to 4 decimal places (2 marks)</p>	
21	<p>2010 Q12 P2</p> <p>a) Expand and simplify $(2 - x)^5$ (2 marks)</p> <p>b) Use the first 4 terms of the expression in part (a) above to find the approximate value of $(1.8)^5$ to 2 decimal places.</p>	

		Working Space
22	<p>2011 Q11 P2 Expand and simplify the expression. $(a + \frac{1}{2})^4 + (a - \frac{1}{2})^4$ (3marks)</p>	
23	<p>2012 Q12 P2</p> <p>(a) Expand $(1 + x)^7$ up to the 4th term. (1 mark) (b) Use the expansion in part (a) above to find the appropriate value of $(0.94)^7$. (2 marks)</p>	

--	--	--