Exercise 6N

Use the binomial theorem to expand each expression.

1 $(y + 3)^5$ **2** $(2b - 1)^4$ **3** $(3a + 2)^6$ **4** $\left(x^2 + \dfrac{2}{x}\right)^3$

5 $(x + y)^8$ **6** $(3a - 2b)^4$ **7** $\left(3c + \dfrac{2}{d}\right)^5$ **8** $\left(4x^2 + \dfrac{1}{2y}\right)^3$

Exercise 6O

1 Find the x^5 term in the expansion of $(x - 4)^7$

EXAM-STYLE QUESTIONS

2 Find the y^4 term in the expansion of $(4y - 1)^5$

3 Find the a^2b^4 term in the expansion of $(2a - 3b)^6$

4 Find the constant term in the expansion of $(x - 2)^9$

> The 'constant term'
> is just the numerical
> term with no variables.

5 In the expansion of $(px + 1)^6$, the coefficient of the x^3 term is 160.
Find the value of p.

6 In the expansion of $(3x + q)^7$, the coefficient of the x^5 term is 81 648.
Find the value of q.

EXAM-STYLE QUESTION

7 Find the constant term in the expansion of $\left(4x + \dfrac{1}{x}\right)^8$

8 Find the constant term in the expansion of $\left(2x^4 - \dfrac{3}{x}\right)^n$

EXAM-STYLE QUESTION

9 In the expansion of $(x + 1)^n$, the coefficient of the x^3 term is
two times the coefficient of the x^2 term. Find the value of n.

Exercise 6N Answers

1 $y^5 + 15y^4 + 90y^3 + 270y^2$
   $+ 405y + 243$

2 $16b^4 - 32b^3 + 24b^2 - 8b + 1$

3 $729a^6 + 2916a^5 + 4860a^4$
   $+4320a^3 + 2160a^2 + 576a + 64$

4 $x^6 + 6x^3 + 12 + \dfrac{8}{x^3}$

5 $x^8 + 8x^7 y + 28x^6 y^2 + 56x^5 y^3$
   $+70x^4 y^4 + 56x^3 y^5 + 28x^2 y^6$
   $+8xy^7 + y^8$

6 $81a^4 - 216a^3 b + 216a^2 b^2$
   $-96ab^3 + 16b^4$

7 $243c^5 + \dfrac{810c^4}{d} + \dfrac{1080c^3}{d^2} + \dfrac{720c^2}{d^3}$
   $+ \dfrac{240c}{d^4} + \dfrac{32}{d^5}$

8 $64x^6 + \dfrac{24x^4}{y} + \dfrac{3x^2}{y^2} + \dfrac{1}{8y^3}$

Exercise 6O Answers

1 $336x^5$

2 $-1280y^4$

3 $4860a^2 b^4$

4 -512

5 2

6 ± 4

7 17920

8 4860

9 8