EXERCISE 8.2

1. 1512

2. -101376

3. $(-1)^r \ ^6C_r . x^{12-2r} . y^r$

4. $(-1)^r \ ^{12}C_r . x^{24-r} . y^r$

5. $-1760 \ x^9 y^3$

6. 18564

7. $\dfrac{-105}{8} x^9 ; \dfrac{35}{48} x^{12}$

8. $61236 \ x^5 y^5$

10. $n = 7 ; r = 3$

12. $m = 4$

Miscellaneous Exercise on Chapter 8

1. $a = 3 ; b = 5 ; n = 6$

2. $a = \dfrac{9}{7}$

3. 171

5. $396 \sqrt{6}$

6. $2a^8 + 12a^6 - 10a^4 - 4a^2 + 2$

7. 0.9510

8. $n = 10$

9. $\dfrac{16}{x} + \dfrac{8}{x^2} - \dfrac{32}{x^3} + \dfrac{16}{x^4} - 4x + \dfrac{x^2}{2} + \dfrac{x^3}{2} + \dfrac{x^4}{16} - 5$

10. $27x^6 - 54ax^5 + 117a^2x^4 - 116a^3x^3 + 117a^4x^2 - 54a^5x + 27a^6$

EXERCISE 9.1

1. 3, 8, 15, 24, 35

2. $\dfrac{1}{2}, \dfrac{2}{3}, \dfrac{3}{4}, \dfrac{4}{5}, \dfrac{5}{6}$

3. 2, 4, 8, 16 and 32

4. $-\dfrac{1}{6}, \dfrac{1}{6}, \dfrac{1}{2}, \dfrac{5}{6}$ and $\dfrac{7}{6}$

5. 25, –125, 625, –3125, 15625

6. $\dfrac{3}{2}, \dfrac{9}{2}, \dfrac{21}{2}, 21$ and $\dfrac{75}{2}$

7. 65, 93

8. $\dfrac{49}{128}$

9. 729

10. $\dfrac{360}{23}$

11. 3, 11, 35, 107, 323; $3 + 11 + 35 + 107 + 323 + ...$

12. $-1, \dfrac{-1}{2}, \dfrac{-1}{6}, \dfrac{-1}{24}, \dfrac{-1}{120} ; -1 + \left(\dfrac{-1}{2}\right) + \left(\dfrac{-1}{6}\right) + \left(\dfrac{-1}{24}\right) + \left(\dfrac{-1}{120}\right) + ...$

13. 2, 2, 1, 0, –1;   2 + 2 + 1 + 0 + (–1) + ...   **14.** $1, 2, \dfrac{3}{2}, \dfrac{5}{3}$ and $\dfrac{8}{5}$

EXERCISE 9.2

1. 1002001   **2.** 98450   **4.** 5 or 20   **6.** 4

7. $\dfrac{n}{2}(5n+7)$ **8.** $2q$ **9.** $\dfrac{179}{321}$ **10.** 0

13. 27   **14.** 11, 14, 17, 20 and 23   **15.** 1

16. 14   **17.** Rs 245   **18.** 9

EXERCISE 9.3

1. $\dfrac{5}{2^{20}}, \dfrac{5}{2^n}$ **2.** 3072   **4.** – 2187

5. (a) 13th,   (b) 12th,   (c) 9th **6.** ± 1 **7.** $\dfrac{1}{6}\left[1-(0.1)^{20}\right]$

8. $\dfrac{\sqrt{7}}{2}\left(\sqrt{3}+1\right)\left(3^{\frac{n}{2}}-1\right)$ **9.** $\dfrac{\left[1-(-a)^n\right]}{1+a}$ **10.** $\dfrac{x^3\left(1-x^{2n}\right)}{1-x^2}$

11. $22+\dfrac{3}{2}\left(3^{11}-1\right)$ **12.** $r=\dfrac{5}{2}$ or $\dfrac{2}{5}$; Terms are $\dfrac{2}{5},1,\dfrac{5}{2}$ or $\dfrac{5}{2},1,\dfrac{2}{5}$

13. 4   **14.** $\dfrac{16}{7}; 2; \dfrac{16}{7}\left(2^n-1\right)$ **15.** 2059 or 463

16. $\dfrac{-4}{3}, \dfrac{-8}{3}, \dfrac{-16}{3},...$ or $4,-8,16,-32,64,..$ **18.** $\dfrac{80}{81}\left(10^n-1\right)-\dfrac{8}{9}n$

19. 496   **20.** rR   **21.** 3, –6, 12, –24   **26.** 9 and 27

27. $n=\dfrac{-1}{2}$ **30.** 120, 480, 30 (2^n)   **31.** Rs 500 $(1.1)^{10}$

32. $x^2-16x+25=0$

EXERCISE 9.4

1. $\dfrac{n}{3}(n+1)(n+2)$ **2.** $\dfrac{n(n+1)(n+2)(n+3)}{4}$

3. $\dfrac{n}{6}(n+1)(3n^2+5n+1)$ **4.** $\dfrac{n}{n+1}$ **5.** 2840

6. $3n(n+1)(n+3)$ **7.** $\dfrac{n(n+1)^2(n+2)}{12}$

8. $\dfrac{n(n+1)}{12}(3n^2+23n+34)$

9. $\dfrac{n}{6}(n+1)(2n+1)+2(2^n-1)$ **10.** $\dfrac{n}{3}(2n+1)(2n-1)$

Miscellaneous Exercise on Chapter 9

2. 5, 8, 11 **4.** 8729 **5.** 3050 **6.** 1210
7. 4 **8.** 160; 6 **9.** ± 3 **10.** 8, 16, 32
11. 4 **12.** 11

21. (i) $\dfrac{50}{81}(10^n-1)-\dfrac{5n}{9}$, (ii) $\dfrac{2n}{3}-\dfrac{2}{27}(1-10^{-n})$ **22.** 1680

23. $\dfrac{n}{3}(n^2+3n+5)$ **25.** $\dfrac{n}{24}(2n^2+9n+13)$

27. Rs 16680 **28.** Rs 39100 **29.** Rs 43690 **30.** Rs 17000; 20,000
31. Rs 5120 **32.** 25 days

EXERCISE 10.1

1. $\dfrac{121}{2}$ square unit.

2. $(0, a)$, $(0, -a)$ and $\left(-\sqrt{3}a, 0\right)$ or $(0, a)$, $(0, -a)$, and $\left(\sqrt{3}a, 0\right)$

3. (i) $|y_2 - y_1|$, (ii) $|x_2 - x_1|$ **4.** $\left(\dfrac{15}{2}, 0\right)$ **5.** $-\dfrac{1}{2}$

7. $-\sqrt{3}$ **8.** $x=1$ **10.** $135°$

11. 1 and 2, or $\dfrac{1}{2}$ and 1, or -1 and -2, or $-\dfrac{1}{2}$ and -1 **14.** $\dfrac{1}{2}$, 104.5 Crores