ALGEBRAIC EXPRESSIONS
FACTORIZATION

EX 1 Factorize each of the following algebraic expressions:

1. $6x + 6y$
2. $9x + 9y$
3. $mx + my$
4. $qx + qy$
5. $zx + zy$
6. $5x - 5y$
7. $7x - 7y$
8. $8x - 8y$
9. $mx - my$
10. $rx - ry$
11. $-3x + 3y$
12. $-7x + 7y$
13. $-8x + 8y$
14. $-px + py$
15. $-qx + qy$
16. $-5x - 5y$
17. $-6x - 6y$
18. $-7x - 7y$
19. $-px - py$
20. $-rx - ry$
21. $25a^2 + 5a$
22. $36p^2 + 6p$
23. $49r^2 + 7r$
24. $64x^2 + 8x$
25. $144a^2 + 12a$
26. $9p^2 - 3p$
27. $16r^2 - 4r$
28. $81x^2 - 9x$
29. $144y^2 - 12y$
30. $169x^2 - 13x$
31. $-25r^2 - 5r$
32. $-49y^2 - 7y$
33. $-64s^2 - 8s$
34. $-81x^2 - 9x$
35. $-121p^2 - 11p$
36. $-4x^2 + 2x$
37. $-9y^2 + 3y$
38. $-16r^2 + 4r$
39. $-25p^2 + 5p$
40. $-64s^2 + 8s$
41. $25x + 10$
42. $36x + 12$
43. $49x + 14$
44. $64x + 16$
45. $81y + 18$
46. $4x - 2$
47. $9x - 6$
48. $16x - 8$
49. $25y - 10$
50. $36p - 18$
51. $-49x - 21$
52. $-81x - 27$
53. $-100x - 30$
54. $-121x - 55$
55. $-144x - 36$
56. $-25x + 10$
57. $-36x + 18$
58. $-49x + 21$
59. $-64y + 24$
60. $-81p + 36$
61. $16x + 4$
62. $25y + 5$
63. $36p + 6$
64. $64q + 8$
65. $100r + 10$
66. $25x - 5$
67. $36y - 6$
68. $49p - 7$
69. $81y - 9$
70. $121r - 11$
71. $-25x - 5$
72. $-49y - 7$
73. $-64p - 8$
74. $-100r - 10$
75. $-144s - 12$
76. $-4x - 2$
77. $-9y - 3$
78. $-25p - 5$
79. $-36r - 6$
80. $-64s - 8$
81. $5wp + 15wq + 20wr$
82. $3rs + 9rt + 18ru$
83. $8pq + 16pr + 24ps$
84. $81ab + 27ac + 36ad$
85. $36pa + 72pb + 144pc$
86. $-5lx + 15ly + 25lz$
87. $-8pq + 24pr + 32ps$
88. $-9ab + 36ac + 45ad$
89. $-10ra + 25rb + 35rc$
90. $-12rt + 24ru + 36rv$
91. $-5ra - 10rb + 15rc$
92. $-6rx - 36ry + 18rz$
93. $-7px - 21py + 28pz$
94. $-8lx - 24ly + 32lz$
95. $-9kg - 27lg + 18mg$
96. $-3pa - 9pb - 18pc$
97. $-5lg - 25mg - 10ng$
98. $-7ra - 21sa - 14ta$
99. $-8xt - 16yt - 24zt$
100. $-81la - 36lb - 45lc$

Factorize each of the following:

101. $9x - 27y^3$
102. $5x + 5$
103. $18x - 6$
104. $3x^2 - 27x$
105. $4x^4 + 16x^2$
106. $20abc - 8bcd$
107. $4gh_1 - 4gh_2$
108. $\dfrac{4}{3}\pi r^3 - \dfrac{1}{3}\pi r^2 h$
109. $5\pi R^2 + 10\pi r^2$
110. $6x - 18y^2$
111. $7ac - 14ad$
112. $9y^2 - 6y + 3$
113. $\dfrac{1}{3}\pi r^2 h - \dfrac{4}{3}\pi r^3$
114. $49x^2 - 7x$
115. $18x^3y^2 - 6x^2y^2 + 3xy^5$

EX 2 Factorize each of the following algebraic expressions:

1. $15x^2y - 10xy^3$
2. $18r^2s^3 + 12r^3s^4$
3. $7p^3r^2 - 14pr^3$
4. $8l^2m^3 + 16lm^2$
5. $81x^4y^3 - 27x^3y^2$
6. $4a^2b + 2ab^2 - 8ab$
7. $2x^2 - 10x^2y + 8x^2y^2$
8. $10x^3y^2 - 5x^2y^3 + 15x^4y^5$
9. $18p^3q^2 + 27p^2q^3 - 36p^4q^3$
10. $21x^4y^5 - 7x^3y^2 + 14x^3y^4$
11. $\dfrac{p^3m^2}{7} + \dfrac{p^2m^3}{21} - \dfrac{p^4m}{14}$
12. $\dfrac{l^2m^2}{15} + \dfrac{l^2m}{10} - \dfrac{l^3m^2}{20}$
13. $\dfrac{9l^2m}{n} + \dfrac{3lm^2}{n^2} + \dfrac{6l^2m^2}{n^3}$
14. $\dfrac{l^2m^2}{25pn^2} - \dfrac{2l^3m^2}{5p^2n^3} + \dfrac{3l^2m^3}{10p^3n^2}$
15. $\dfrac{3m^4}{5p^2n^3} + \dfrac{9m^3}{10p^3n^2} - \dfrac{6m^2}{25p^4n^5}$