MATHS

BOOKS - PSEB

FACTORISATION

Example

1. Factorise $12a^2b + 15ab^2$

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2. Factorise $10x^2 - 18x^3 + 14x^4$

3. Factorise 6xy – 4y + 6 – 9x.

4. Factorise $x^2 + 8x + 16$

5. Factorise $4y^2 - 12y + 9$

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6. Factorise $49p^2 - 36$

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7. Factorise $a^2 - 2ab + b^2 - c^2$

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8. Factorise $m^4 - 256$

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9. Factorise $x^2 + 5x + 6$

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10. Find the factors of $y^2 - 7y + 12$.

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11. Obtain the factors of $z^2 - 4z - 12$.

12. Find the factors of $3m^2 + 9m + 6$.

13. Do the following divisions : $-20x^4 \div 10x^2$

14. Do the following divisions : $7x^2y^2z^2 \div 14xyz$

15. Divide $24\left(x^2yz + xy^2z + xyz^2\right)$ by 8xyz using both the methods.

16. Divide $44\left(x^4 - 5x^3 - 24x^2\right) by 11x(x - 8)$

17. Divide z(5z^2 – 80) by 5z(z + 4)`

Exercise

1. Find the common factors of the given terms :

$12x$, 36

2. Find the common factors of the given terms : 2y, 22xy

3. Find the common factors of the given terms :

$$14pq, \ 28p^2q^2$$

4. Find the common factors of the given terms :

$$2x, \ 3x^2, \ 4$$

5. Find the common factors of the given terms :

$6abc, 24ab^2, 12a^2b$

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6. Find the common factors of the given terms :

$16x^3, -4x^2, 32x$

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7. Find the common factors of the given terms : 10 pq, 20qr, 30rp

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8. Find the common factors of the given terms :

$$3x^2y^3, \; 10x^3y^2, \; 6x^2y^2z$$

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9. Factorise the following expressions : 7x – 42

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10. Factorise the following expressions : 6p – 12q

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11. Factorise the following expressions : $7a^2 + 14a$

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12. Factorise the following expressions : $-16z + 20z^3$

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13. Factorise the following expressions : $20l^2m + 30alm$

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14. Factorise the following expressions : $5x^2y - 15xy^2$

15. Factorise the following expressions :

$10a^2 - 15b^2 + 20c^2$

16. Factorise the following expressions :

$-4a^2 + 4ab - 4ca$

17. Factorise the following expressions :

$$x^2yz + xy^2z + xyz^2$$

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18. Factorise the following expressions :

$$ax^2y + bxy^2 + cxyz$$

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19. Factorise : $x^2 + xy + 8x + 8y$

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20. Factorise : 15 xy – 6x + 5y – 2

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21. Factorise : ax + bx – ay – by

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22. Factorise : 15 pq + 15 + 9q + 25p

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23. Factorise : z – 7 + 7 x y – x y z

24. Factorise the following expressions :

$a^2 + 8a + 16$

25. Factorise the following expressions :

$p^2 - 10p + 25$

26. Factorise the following expressions :

$25m^2 + 30m + 9$

27. Factorise the following expressions :

$49y^2 + 84yz + 36z^2$

28. Factorise the following expressions : $4x^2 - 8x + 4$

29. Factorise the following expressions :

$$121b^2 - 88bc + 16c^2$$

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30. Factorise the following expressions :

$$(l + m)^2 - 4lm$$

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31. Factorise the following expressions :

$$a^4 + 2a^2b^2 + b^4$$

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32. Factorise : $4p^2 - 9q^2$

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33. Factorise : $63a^2 - 112b^2$

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34. Factorise : $49x^2 - 36$

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35. Factorise : $16x^5 - 144x^3$

36. Factorise : $(l + m)^2 - (l - m)^2$

37. Factorise : $9x^2 y^2 - 16$

38. Factorise : $(x^2 - 2xy + y^2) - z^2$

39. Factorise : $25a^2 - 4b^2 + 28bc - 49c^2$

40. Factorise the expressions : $ax^2 + bx$

41. Factorise the expressions : $7p^2 + 21q^2$

42. Factorise the expressions : $2x^3 + 2xy^2 + 2xz^2$

43. Factorise the expressions :

$am^2 + bm^2 + bn^2 + an^2$

44. Factorise the expressions : (lm + l) + m + 1

45. Factorise the expressions : y (y + z) + 9 (y + z)

46. Factorise the expressions : $5y^2 - 20y - 8z + 2yz$

47. Factorise the expressions : 10ab + 4a + 5b + 2

48. Factorise the expressions : 6xy – 4y + 6 – 9x

49. Factorise : $a^4 - b^4$

50. Factorise : $p^4 - 81$

51. Factorise : $x^4 - (y+z)^4$

52. Factorise : $x^4 - (x-z)^4$

53. Factorise : $a^4 - 2a^2b^2 + b^4$

54. Factorise the following expressions : $p^2 + 6p + 8$

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55. Factorise the following expressions : $q^2 - 10q + 21$

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56. Factorise the following expressions : $p^2 + 6p - 16$

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57. Carry out the following divisions : $28x^4 \div 56x$

58. Carry out the following divisions : $-36y^3 \div 9y^2$

59. Carry out the following divisions :

$66pq^2r^3 \div 11qr^2$

60. Carry out the following divisions :

$$34x^3y^3z^3 \div 51xy^2z^3$$

61. Carry out the following divisions :

$$12a^8b^8 \div \left(-6a^6b^4\right)$$

62. Divide the given polynomial by the given monomial : $\left(5x^2-6x\right) \div 3x$

63. Divide the given polynomial by the given monomial : $\left(3y^8 - 4y^6 + 5y^4\right) \div y4$

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64. Divide the given polynomial by the given monomial :

$8\left(x^3y^2z^2 + x^2y^3z^2 + x^2y^2z^3\right) \div 4x^2y^2z^2$

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65. Divide the given polynomial by the given monomial : $\left(x^3 + 2x^2 + 3x\right) \div 2x$

66. Divide the given polynomial by the given monomial : $\left(p^3q^6 - p^6q^3\right) \div p^3q^3$

67. Work out the following divisions : $(10x - 25) \div 5$

68. Work out the following divisions :

$(10x - 25) \div (2x - 5)$

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69. Work out the following divisions :

$10y(6y + 21) \div 5(2y + 7)$

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70. Work out the following divisions :

$9x^2y^2(3z - 24) \div 27xy(z - 8)$

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71. Work out the following divisions :

$$96abc(3a-12)(5b-30) \div 144(a-4)(b-6)$$

72. Divide as directed :

$$5(2x+1)(3x+5) \div (2x+1)$$

73. Divide as directed :

$$26xy(x+5)(y-4) \div 13x(y-4)$$

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74. Divide as directed :

$$52pqr(p+q)(q+r)(r+p) \div 104pq(q+r)(r+p)$$

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75. Divide as directed :

$$20(y+4)(y^2+5y+3) \div 5(y+4)$$

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76. Divide as directed :

$$x(x+1)(x+2)(x+3) \div x(x+1)$$

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77. Factorise the expressions and divide them as directed : $\left(y^2 + 7y + 10\right) \div (y + 5)$

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78. Factorise the expressions and divide them as directed : $(m^2 - 14m - 32) \div (m + 2)$

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79. Factorise the expressions and divide them as directed : $(5p^2 - 25p + 20) \div (p - 1)$

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80. Factorise the expressions and divide them as directed : $4yz(z^2 + 6z - 16) \div 2y(z + 8)$

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81. Factorise the expressions and divide them as directed : $5pq(p^2 - q^2) \div 2p(p + q)$

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82. Factorise the expressions and divide them as directed : $12xy(9x^2 - 16y^2) \div 4xy(3x + 4y)$

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83. Factorise the expressions and divide them as directed : $39y^3 \left(50y^2 - 98\right) \div 26y^2 \left(5y + 7\right)$

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84. Find and correct the errors in the following mathematical statements: $4(x - 5) = 4x - 5$

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85. Find and correct the errors in the following mathematical statements: $x(3x + 2) = 3x^2 + 2$

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86. Find and correct the errors in the following mathematical statements: $2x + 3y = 5xy$

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87. Find and correct the errors in the following mathematical statements: $x + 2x + 3x = 5x$

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88. Find and correct the errors in the following mathematical statements: $5y + 2y + y - 7y = 0$

89. Find and correct the errors in the following mathematical statements: $3x + 2x = 5x^2$

90. Find and correct the errors in the following mathematical statements:

$$(2x)^2 + 4(2x) + 7 = 2x^2 + 8x + 7$$

91. Find and correct the errors in the following mathematical statements:

$$(2x)^2 + 5x = 4x + 5x = 9x$$

92. Find and correct the errors in the following mathematical statements:

$$(3x + 2)^2 = 3x^2 + 6x + 4$$

93. Substituting x = − 3 in :

$$x^2 + 5x + 4 \, gives \, (-3)^2 + 5(-3) + 4 = 9 + 2 + 4 = 15$$

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94. Substituting x = − 3 in :

$$x^2 - 5x + 4 \, gives \, (-3)^2 - 5(-3) + 4 = 9 - 15 + 4 = -2$$

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95. Substituting x = − 3 in :

$$x^2 + 5x \, gives \, (-3)^2 + 5(-3) = -9 - 15 = -24$$

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96. $(y-3)^2 = y^2-9$

97. $(z+5)^2 = z^2+25$

98. $(2a+3b)(a-b) = 2a^2-3b^2$

99. $(a + 4)(a + 2) = a^2 + 8$

100. $(a - 4)(a - 2) = a^2 - 8$

101. $\dfrac{3x^2}{3x^2} = 0$

102. $\dfrac{3x^2 + 1}{3x^2} = 1 + 1 = 2$

103. Flind x : $\dfrac{3x}{3x + 2} = \dfrac{1}{2}$

104. $\dfrac{3}{4x + 3} = \dfrac{1}{4x}$

105. $\dfrac{4x + 5}{4x} = 5$

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106. $\dfrac{7x + 5}{5} = 7x$

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