MATHS

BOOKS - MBD

FACTORISATION

Example

1. Factorise:

$12x + 36$

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2. Factirse:

$22Y - 33Z$

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3. Factirse:

14PQ +35 PQR.

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4. Find the common factors of the given terms : $12x, 36$

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

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6. Find the common factors of the given terms : $14pq, 28p^2q^2$

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7. Find the common factors of the given terms : $2x, 3x^2, 4$

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8. Find the common factors of the given terms : $6abc, 24ab^2, 12a^2b$

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9. Find the common factors of the given terms : $16x^3, -4x^2, 32x$

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

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11. Find the common factors of the given terms : $3x^2y^3, 10x^3y^2, 6x^2y^2z$

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12. Factorise the following expressions : 7x – 42

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

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

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

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

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

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18. Factorise the following expressions : $10a^2 - 15b^2 + 20c^2$

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19. Factorise the following expressions : $-4a^2 + 4ab - 4ca$

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20. Factorise the following expressions : $x^2yz + xy^2z + xyz^2$

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21. Factorise the following expressions :

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

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

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23. Factorise:

$15xy - 6x + 5y - 2$

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

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25. Factorise : z – 7 + 7 x y – x y z

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26. Factorise the following expressions : $a^2 + 8a + 16$

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27. Factorise the following expressions : $p^2 - 10p + 25$

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28. Factorise the following expressions : $25m^2 + 30m + 9$

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29. Factorise the following expressions : $49y^2 + 84yz + 36z^2$

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

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31. Factorise the following expressions : $121b^2 - 88bc + 16c^2$

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32. Factorise the following expressions : $(l + m)^2 - 4lm$

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33. Factorise the following expressions : $a^4 + 2a^2b^2 + b^4$

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

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

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

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

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

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

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40. Factorise : $\left(x^2-2xy+y^2\right)-z^2$

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

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

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

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

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45. Factorise the expressions : $am^2 + bm^2 + bn^2 + an^2$

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

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

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

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

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

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

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52. Factorise : $p^4 - 81$

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

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

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

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

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

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

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59. Carry out the following divisions:

$28x^4 \div 56x$

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60. Carry out the following divisions:

$-36y^3 \div 9y^2$

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61. Carry out the following divisions : $66pq^2r^3 \div 11qr^2$

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62. Carry out the following divisions : $34x^3y^3z^3 \div 51xy^2z^3$

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63. Carry out the following divisions : $12a^8b^8 \div \left(-6a^6b^4\right)$

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

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

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66. 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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67. Divide the given polynomial by the given monomial :

$\left(x^3+2x^2+3x\right)\div 2x$

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68. Divide the given polynomial by the given monomial :

$\left(p^3q^6-p^6q^3\right)\div p^3q^3$

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

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70. Work out the following divisions : $(10x-25) \div (2x-5)$

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71. Work out the following divisions : $10y(6y+21) \div 5(2y+7)$

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72. Work out the following divisions :

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

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73. Work out the following divisions :

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

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74. Divide as directed : $5(2x+1)(3x+5) \div (2x+1)$

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75. Divide as directed : $26xy(x+5)(y-4) \div 13x(y-4)$

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76. Divide as directed :

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

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77. Divide as directed : $20(y+4)\left(y^2+5y+3\right) \div 5(y+4)$

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78. Divide as directed :

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

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79. Factorise the expressionsand divide them as directed:

$\left(y^2+7y+10\right) \div (y+5)$

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80. $\left(m^2-14m-32\right) \div (m+2)$

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81. $\left(5p^2 - 25p + 20\right) \div (p - 1)$

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82. $4yz\left(z^2 + 6z - 16\right) \div 2y(z + 8)$

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83. $5pq\left(p^2 - q^2\right) \div 2p(p + q)$

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84. $12xy\left(9x^2 - 16y^2\right) \div 4xy(3x + 4y).$

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85. $39y^3(50y^2 - 98) \div 26y^2(5y + 7).$

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86. Find and correct the error.

$4(x - 5) = 4x - 5.$

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87. Find and correct the error.

$x(3x + 2) = 3x^2 + 2.$

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88. Find and correct the error.

$2x + 3y = 5xy$

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89. Find and correct the error: $x + 2x + 3x = 5x$

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90. Find and correct the error : $5y + 2y + y = 0.$

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91. Find and correct the error :

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

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92. Find and correct the error :$3x + 2x = 5x^2$

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93. Find and correct the error :

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

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94. Find and correct the error : $(3x+2)^2 = 3x^2 + 6x + 4.$

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95. Substituting $x = -3$ in $x^2 + 5x + 4$ gives, $(-3)^2 + 5(-3) + 4 = 9 + 2 + 4 = 15$ Find and correct the error.

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96. Substituting $x = -3$ in $x^2 - 5x + 4$ gives: $(-3)^2 - 5(-3) + 4 = 9 - 15 + 4 = -2.$ Find and correct the error.

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97. Substituting $x = -3$ in: $x^2 + 5x$ gives: $(-3)^2 + 5(-3) = -9 - 15 = -24$. Find and correct the error

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98. Incorrect: $(y-3)^2 = y^2 - 9$

Correct: $(y-3)^2 = y^2 - 6y + 9.$

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99. Incorrect: $(z+5)^2 = z^2 + 25$

Correct : $(z+5)^2 = z^2 + 10z + 25.$

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100. Incorrect: $(2a + 3b)(a - b) = 2a^2 + ab - 3b^2$

Correct:

$(2a + 3b)(a - b) = 2a^2 + 3ab - 2ab - 3b^2 = 2a^2 + ab - 3b^2$

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101. Find and correct the error: $(a + 4)(a + 2) = a^2 + 8$

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102. Incorrect: $(a-4)(a-2)=a^2-8$

Correct:

$(a-4)(a-2)=a^2-4a-2a+8=a^2+6a+8.$

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103. Incorrect: $\frac{3x^2}{3x^2}=0$

Correct : $\frac{3x^2}{3x^2}=1.$

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104. Find and correct the error: $\frac{3x^2+1}{3x^2}=1+1=2$

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105. Find and correct the error: $\frac{3x}{3x+2} = \frac{1}{2}$

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106. Find and correct the error : $\frac{3}{4x+3} = \frac{1}{4x}$

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107. Find and correct the error: $\frac{4x+5}{4x} = 5$

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108. Find and correct the error : $\frac{7x+5}{5} = 7x.$

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Exercise

1. Find the H.C.F. of the following :

$2xy, 6x^2y^3, 8x^3y^2.$

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2. Find the H.C.F. of the following :

$-9a^3b^3, 6ab^2, 12a^3b^2.$

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3. Find the H.C.F. of the following :

$14x^2, 24x, 20.$

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4. Factorize by taking out the common factors:

$4x + 8$

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5. Factorize by taking out the common factors:

$6x^2 + 3x$

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6. Factorize by taking out the common factors:

$5x^2 + 15y^2$.

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7. Factorize by taking out the common factors:

$4a^2 + a$

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8. Factorize by taking out the common factors:

$10x^2yz + 15xy^2z$.

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9. Factorize by suitable grouping:

$xyz - xy - z + 1$

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10. Factorize by suitable grouping:

$x^2 - 3x - ax + 3a.$

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11. Factorize by suitable grouping:

$4(a+b)(3x-y) + 6(a+b)(2y-3x)$

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12. Factorize by suitable grouping:

$a^2b - ac^2 - ab + c^2.$

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13. Factorize by suitable grouping:

$xy - yz - xz + x^2.$

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

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

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16. Factorise the following expressions : $a^2 + 8a + 16$

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17. Factorize the following Expressions:

$4y^2 - 12y + 9$

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18. Factorize the following Expressions:

$l^2 + 10l + 25.$

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19. Factorize the following Expressions:

$16m^2 + 24m + 9$

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20. Factorise the following expressions :

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

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21. Factorize the following Expressions:

$121x^2 - 88xy + 16y^2$.

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22. Factorise:

$2x^3 - 16y^3$

Watch Video Solution

23. Factorise:

$16x^2 - 25y^2$

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24. Factorise:

$45a^2 - 125b^2$

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25. Factorise:

$3x^2 - 48y^2$

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26. Factorise:

$81x^4 - 121x^2.$

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27. Factorise:

$2x - 32x^3$

Watch Video Solution

28. Factorise:

$(9a + b)^2 - 9$

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29. Factorise:

$x - 64x^3.$

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30. Factorise:

$x^2 - 32xy - 105y^2$

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31. Factorise:

$x^2 + 21x + 108$

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32. Factorise:

$6x^2 + 7x - 3$

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33. Factorise:

$42x^2 + 10x - 12$

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34. Factorise:

$12y^2y - 6$

Watch Video Solution

35. Factorise:

$x^2 - 10x + 21.$

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36. Carry out the following divisions:

$6x^3 \div 2x.$

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37. Carry out the following divisions:

$-20x^4 \div 10x^2.$

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

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39. Carry out the following divisions:

$40p^2q^2 \div 8pq.$

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40. Carry out the following divisions:

$15p^2q^2 \div 8pq.$

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41. Carry out the following divisions:

$22x^3y^4z^5 \div 11x^3y^3z^3.$

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42. Divide the given polynomial by the given monomial:

$\left(8x^2 - 5x\right) \div 4x.$

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43. Divide the given polynomial by the given monomial:

$\left(10x^2 + 25x\right) \div 5x.$

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44. Divide the given polynomial by the given monomial:

$\left(4y^3 + 8y^2 + 6y\right) \div 2y.$

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45. Divide the given polynomial by the given monomial:

$24\left(x^2yz + xy^2z + xyz^2\right) \div 8xyz.$

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46. Work out the following divisions:

$\left(7x^2 + 14x\right) \div (x + 2)$

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47. Work out the following divisions:

$44\left(x^4 - 5x^3 - 24x^2\right) \div 11x(x - 8)$

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48. Work out the following divisions:

$z\left(5z^2 - 80\right) \div 5z(z + 4)$

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49. Divide as directed:

$4(3p + 1)(2p + 5) \div (3p + 1)$

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50. Divide as directed:

$15xy(x + 2)(y - 3) \div 5x(y - 3)$

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51. Divide as directed:

$48mnp(m+n)(n+p)(p+m) \div 16mn(n+p)(m+p)$

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52. Divide as directed:

$-(p+1)(p+2)(p+3) \div p(p+1).$

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53. Factorise the expressions and divide them as directed:

$\left(y^2+6y+5\right) \div (y+5)$

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54. Factorise the expressions and divide them as directed:

$(3m^2 - 27n^2) \div (m + 3n)$

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55. Factorise the expressions and divide them as directed:

$(4x^2 - 10x + 4) \div (2x - 1)$

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56. Factorise the expressions and divide them as directed:

$(4x^2 - 4x + 1) \div (2x - 1).$

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57. Find and correct errors in the following mathematical statements.

$3(x-4)=3x-4.$

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58. Find and correct errors in the following mathematical statements.

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

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59. Find and correct errors in the following mathematical statements.

$x + 3x + 2x = 8x$

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60. Find and correct the errors in the following mathematical statements.

$2m + 3n = 6mn$

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61. Find the correct errors in the following mathematical statements.

$4x + 3x = 12x^2$

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62. Find and correct the errors in the following mathematical statements.

Substituting $x = -2$ in

$x^2 + 6x - 9$ gives

$(-2)^2 + 6(-2) - 9 = 4 + 3 - 9 = -2.$

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63. Find and correct the errors in the following mathematical statements.

$(2a - 3)(a + 2) = 2a^2 - 6.$

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64. Find and correct the errors in the following mathematical statements.

$(x+8)^2 = x^2 + 64.$

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65. Find the correct errors in the following mathematical statements.

$(x-5)^2 = x^2 - 25$

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66. Find and correct the errors in the following mathematical statements.

$$\frac{a+5}{5} = a + 1.$$

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67. Common factors of 12x and 36 will be

A. 12

B. 12x

C. 36

D. 36x.

Answer:

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68. Find the common factors of the given terms : $6abc, 24ab^2, 12a^2b$

A. 6a

B. 6ab

C. 6abc

D. abc.

Answer:

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

A. (x+y)(x+8y)

B. (x+y)(8x+y)

C. (x+y)(x+8)

D. (x+y)(y+x)

Answer:

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70. The factors of $25m^2 + 30m + 9$ will be :

A. $(5m + 3)^2$

B. $(5m - 3)^2$

C. $(5m^2 + 3)^2$

D. $(5m^2 - 3)^2$.

Answer:

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

A. (4p+9q)(4p-9q)

B. (2p+3q)(2p-3q)

C. (p+q)(p-q)

D. (2p+3q)(2p-3q).

Answer:

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72. Factorise : $\left(x^2-2xy+y^2\right)-z^2$

A. `(x+y+z)(x-y-z)

B. (x-y-z)(x+y-z)

C. (x-y+z)(x-y-z)

D. (x+y-z)(x-y+z)

Answer:

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73. The factors of P^2+6p+8 will be:

A. (p+4)(p+2)

B. (p+1)(p+8)

C. (p+4)(p-2)

D. (p-4)(p-2).

Answer:

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74. Carry out the following divisions:

$28x^4 \div 56x$

A. $2x^3$

B. $2x^4$

C. $\frac{1}{2}x^3$

D. $\frac{1}{2}x^2$.

Answer:

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75. On dividing $\left(5x^2 - 6x\right) \div 3x$ we obtain:

A. 5x-2

B. $\frac{1}{3}(5x - 6)$

C. `1/3(5x^2-6)

D. $\frac{1}{3}\left(5x^2 - 2\right).$

Answer:

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

A. 2x-5

B. 2x+5

C. 2x-25

D. 2x+25.

Answer:

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77. On substituting $x = -2$ in $x^2 + 5x + 4$ we get :

A. 15

B. -2

C. 24

D. 28

Answer:

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