MATHS

BOOKS - RD SHARMA MATHS (HINGLISH)

ALGEBRAIC EXPRESSIONS AND IDENTITIES

Others

1. We know that the perimeter P of a square of side s is given by $P = 4 \times s$. find the constant and variable part

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2. The perimeter p of a rectangle of sides $l \, and \, b$ is given by $P = 2(l + b)$. evaluate the variable and constant part

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3. $2x^2 - 3xy + 5y^2$ is an algebric expression. find the terms of the expression

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4. The expression $2x^3 - 3x^2 + 4x - 7$ is an algebraic expression.find the terms of the expression

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5. $-5,\ 3y, 7xy, \frac{2}{3}x^2\ yz,\ \frac{5}{3}a^2bc^3$ etc. are all monomials.

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6. The expressions $2x - 3$, $3x + 2y$, $xyz - 5$ etc. are all binomials. Note that $3x + 7x$ is not a binomial, because $3x + 7x = 10x$, which is a monomial.

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7. The expressions $a - b + 2x^2 + y^2 - xy$, $x^3 - 2y^3 - 3x^2\, y^2 z$ etc. are trinomials.

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8. True/False: In $-5xy$, the coefficient of x is $-5y$: the coefficient of y is $-5x$ and the coefficient of $xy\, is\, -5$.

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9. In x, the coefficient of x is -1.

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10. In $3a^2bc$, the coefficient of a^2 is $3bc$, the coefficient of b is $3a^2c$ and the coefficient of c is $3a^2b$.

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11. In the algebraic expression $x^2 - xy + yz - 4$, the constant term is -4

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12. In the algebraic expression $2a^2b + 3ab^2 - 7ab - 4ba^2$, we have $2\,a^2b$ and $-4ba^2$ as like terms, whereas $3ab^2 and\ 7ab$ are unlike

terms.

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13. Identify the terms, their coefficients for each of the following expressions: $7x^2yz - 5xy$ (ii) $x^2 + x + 1$

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14. Identify the terms, their coefficients for each of the following expressions: $3x^2y^2 - 5x^2y^2z^2 + z^2$ (ii) $9 - ab + bc - ca$

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15. Identify the terms, their coefficients for each of the following expressions: $\frac{a}{2} + \frac{b}{2} - ab$ (ii) $0.2x - 0.3xy + 0.5y$

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16. Classify the following polynomials as monomials, binomials, trinomials. Which polynomials do not fit in any category? (i)$x + y$ (ii) 1000 (iii) $x + x^2 + x^3 + x^4$

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17. Classify the following polynomials as monomials, binomials, trinomials. Which polynomials do not fit in any category? $7 + a + 5b$ (ii) $2b - 3b^2$ (iii) $2y - 3y^2 + 4y^3$

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18. Classify the following polynomials as monomials, binomials, trinomials. Which polynomials do not fit in any category? $5x - 4y + 3x$ (ii) $4a - 15a^2\ xy + yz + zt + tx$

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19. Classify the following polynomials as monomials, binomials, trinomials. Which polynomials do not fit in any category? (i)pqr (ii) $p^2q + pq^2$ (iii) $2p + 2q$

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20. Add ; $7x^2 - 4x + 5, \quad -3x^2 + 2x - 1 \; and \; 5x^2 - x + 9.$

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21. Add :

$$5x^2 - \frac{1}{3}x + \frac{5}{2}, \; -\frac{1}{2}x^2 + \frac{1}{2}x - \frac{1}{3} and \; -2x^2 + \frac{1}{5}x - \frac{1}{6}.$$

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22. Add the following algebraic expressions:

$2, \frac{2y}{3} - \frac{5y^2}{3} + \frac{5y^3}{2}, -\frac{4}{3} + \frac{2y^2}{3} - \frac{y}{2}, \frac{5y^3}{3} + 3y^2 + 3y + \frac{6}{5}$

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23. Subtract : $\left(-2y^2 + \frac{1}{2}y - 3\right)$ from $7y^2 - 2y + 10.$

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24. Subtract : $\frac{3}{2}x^2y + \frac{4}{5}y - \frac{1}{3}x^2yz$ from $\frac{12}{5}x^2yz - \frac{3}{5}xyz + \frac{2}{3}x^2y.$

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25. Take away $\frac{9}{2} + \frac{x}{2} + \frac{3}{5}x^2 + \frac{7}{4}x^3$ from $\frac{7}{2} - \frac{x}{3} - \frac{x^2}{5}.$

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26. Add the algebraic expressions: $3a^2b,\ -4a^2b, 9a^2b$

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27. Add the algebraic expressions: $\frac{2}{3}a, \frac{3}{5}a, -\frac{6}{5}a$

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28. Add the algebraic expressions:

$4xy^2 - 7x^2y,\ 12x^2y - 6xy^2,\ -3x^2y + 5xy^2$

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29. Add the algebraic expressions:

$$\frac{3}{2}a - \frac{5}{4}b + \frac{2}{5}c, \frac{2}{3}a - \frac{7}{2}b + \frac{7}{2}c, \frac{5}{3}a + \frac{5}{2}b - \frac{5}{4}c$$

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30. Add the algebraic expressions:

$$\frac{11}{2}xy + \frac{12}{5}y + \frac{13}{7}x, \quad -\frac{11}{2}y - \frac{12}{5}x - 13\,xy$$

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31. Add the algebraic expressions:

$$\frac{7}{2}x^3 - \frac{1}{2}x^2 + \frac{5}{3}, \frac{3}{2}x^3 + \frac{7}{4}x^2 - x + \frac{1}{3}, \frac{3}{2}x^2 - \frac{5}{2}x - 2$$

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32. Subtract: $-5xy$ from $12xy$

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33. Subtract: $2a^2$ from $-7a^2$

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34. Subtract: $2a - b$ from $3a - 5b$

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35. Subtract: $2x^3 - 4x^2 + 3x + 5$ from $4x^3 + x^2 + x + 6$

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36. Subtract: $\frac{3}{2}x - \frac{5}{4}y - \frac{7}{2}z$ om $\frac{2}{3}x + \frac{3}{2}y - \frac{4}{3}z$

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37. Subtract: $x^2y - \frac{4}{5}xy^2 + \frac{4}{3}xy \text{ om} \frac{2}{3}x^2y + \frac{3}{2}xy^2 - \frac{1}{3}xy$

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38. Subtract: $\frac{ab}{7} - \frac{35}{3}bc + \frac{6}{5}ac \text{ om} \frac{3}{5}bc - \frac{4}{5}ac$

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39. Take away : $\frac{6}{5}x^2 - \frac{4}{5}x^3 + \frac{5}{6} + \frac{3}{2}x$ from $\frac{x^3}{3} - \frac{5}{2}x^2 + \frac{3}{5}x + \frac{1}{4}$

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40. Take away : $\frac{5a^2}{2} + \frac{3a^3}{2} + \frac{a}{3} - \frac{6}{5} \text{ om} \frac{1}{3}a^3 - \frac{3}{4}a^2 - \frac{5}{2}$

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41. Take away : $\frac{7}{4}x^3 + \frac{3}{5}x^2 + \frac{1}{2}x + \frac{9}{2}$ om $\frac{7}{2} - \frac{x}{3} - \frac{x^2}{5}$

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42. Take away : $\frac{y^3}{3} + \frac{7}{3}y^2 + \frac{1}{2}y + \frac{1}{2}$ om $\frac{1}{3} - \frac{5}{3}y^2$

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43. Take away : $\frac{2}{3} + ac - \frac{5}{7}ab + \frac{2}{3}bc$ om $\frac{3}{2}ab - \frac{7}{4}ac - \frac{5}{6}bc$

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44. Subtract $3x - 4y - 7z$ from the sum of $x - 3y + 2z$ and $-4x + 9y - 11z$.

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45. Subtract the sum of $3l - 4m - 7n^2 and\ 2l + 3m - 4n^2$ from the sum of $9l + 2m - 3n^2$ and $-3l + m + 4n^2$.

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46. Subtract the sum of $2x - x^2 + 5$ and $-4x - 3 + 7x^2 om5$

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47. Simplify: $x^2 - 3x + 5 - \frac{1}{2}(3x^2 - 5x + 7)$

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48. Simplify: $[5-3x+2y-(2x-y)]-(3x-7y+9)$

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49. Simplify: $\frac{11}{2}x^2y-\frac{9}{4}xy^2+\frac{1}{4}xy-\frac{1}{14}y^2x+\frac{1}{15}yx^2+\frac{1}{2}xy$

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50. Simplify:

$$\left(\frac{1}{3}y^2-\frac{4}{7}y+11\right)-\left(\frac{1}{7}y-3+2y^2\right)-\left(\frac{2}{7}y-\frac{2}{3}y^2+2\right)$$

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51. Simplify:

$$-\frac{1}{2}a^2b^2c+\frac{1}{3}ab^2c-\frac{1}{4}abc^2-\frac{1}{5}cb^2a^2+\frac{1}{6}cb^2a-\frac{1}{7}c^2ab+\frac{1}{8}ca^2b$$

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52. Find the product of the following pairs of polynomials: $4,\ 7x$ (ii) $-4a,\ 7a$ (iii) $4x,\ 7xy\ 4x^3,\ -3xy$ (v) $4x, 0$

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53. Find the areas of rectangles with the following pairs of monomials as their length and breadth respectively: (x, y) (ii) (10, 5y) (iii) $\left(2x^2,\ 5y^2\right)\ \left(4a,\ 3a^2\right)$ (v) $(3mn,\ 4np)$

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54. Multiply : $3ab^2c^3by\ 5a^3b^2c$ (ii) $4x^2yz\ by\ -\frac{3}{2}x^2yz^2$

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55. Multiply : $-\frac{8}{5}x^2yz^3by-\frac{3}{4}xy^2z$ (ii) $\frac{3}{14}x^2yby\frac{7}{2}x^4y$

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56. Find the volume of the rectangular boxes with following length, breadth and height: Length Breadth Height

$2ax$ $3by$ $5cz\ m^2n\ n^2p$

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57. Multiply: $-6a^2bc, 2a^2b\ and\ -\frac{1}{4}$ (ii) $\frac{4}{9}a^5b^2,\ 10a^3b\ and\ 6$

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58. Multiply: $3, 15x\ and\ -23x^2y$ (ii) $x, x^2yz\ and\ -\frac{3}{7}xyz^2$

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59. Find each of the following products:

$(-2x^2) \times (7a^2x^7) \times (6a^5x^5)$ (ii)

$(4s^2t) \times (3s^3t^3) \times (2st^4) \times (-2)$

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60. Multiply each of the monomial : $3xyz, 5x, 0$

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61. Multiply each of the monomial : $\frac{6}{5}ab, \frac{5}{6}bc, \frac{12}{9}abc$

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62. Multiply each of the monomial : $\frac{3}{4}x^2yz^2,\ 0.5xy^2z^2,\ 1.16x^2yz^3,\ 2xyz$

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63. Multiply each of the monomial : $20x^{10}y^{20}z^{30},\ (10xyz)^2$

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64. Multiply each of the monomial : $(-3x^2y),\ (4xy^2z),\ (-xy^2z^2)\ and\ \left(\frac{4}{5}z\right)$

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65. Express the following product as a monomial : $(x^3)\times(7x^5)\times\left(\frac{1}{5}x^2\right)\times(-6x^4)$

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66. Multiply $-\frac{4}{3}x^3$ by $\frac{6}{7}x^2y$ and verify your result for $x = 2 \, and \, y = 1.$

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67. Find the product of $-5x^2y, \, -\frac{2}{3}xy^2z, \, \frac{8}{15}xyz^2 and \, -\frac{1}{4}z.$

Verify the result when $x = 1, y = 2 \, and \, z = 3.$

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68. Find the value of $\left(5a^6\right) \times \left(-10ab^2\right) \times \left(-2.1a^2b^3\right)$ for $a = 1 \, and \, b = \frac{1}{2}.$

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69. Find each of the following products: $5x^2 \times 4x^3$ (2) $-3a^2 \times 4b^4$

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70. Find each of the following products: $(-5xy) \times \left(-3x^2yz\right)$ (2) $\frac{1}{2}xy \times \frac{2}{3}x^2yz^2$

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71. Find each of the following products: $\left(-\frac{7}{5}xy^2z\right) \times \left(\frac{13}{3}x^2yz^2\right)$ (ii) $\left(-\frac{24}{25}x^3z\right) \times \left(-\frac{15}{16}xz^2y\right)$

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72. Find each of the following products: $\left(-\frac{1}{27}a^2b^2\right) \times \left(\frac{9}{2}a^3b^2c^2\right)$ (ii) $(-7xy) \times \left(\frac{1}{4}x^2yz\right)$

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73. Find each of the products: $(7ab) \times \left(-5ab^2c\right) \times \left(6abc^2\right)$

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74. Find each of the products: $(-5a) \times \left(-10a^2\right) \times \left(-2a^3\right)$

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75. Find each of the products: $\left(-4x^2\right) \times \left(-6xy^2\right) \times \left(-3yz^2\right)$

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76. Find each of the products:

$$\left(-\frac{2}{7}a^4\right) \times \left(-\frac{3}{4}a^2b\right) \times \left(-\frac{14}{5}b^2\right)$$

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77. Find each of the products:

$$\left(\frac{7}{9}ab^2\right) \times \left(\frac{15}{7}ac^2b\right) \times \left(-\frac{3}{5}a^2c\right)$$

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78. Find each of the products:

$$\left(\frac{4}{3}u^2vw\right) \times \left(-5uvw^2\right) \times \left(\frac{1}{3}v^2wu\right)$$

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79. Find each of the products: $(0.5x) \times \left(\frac{1}{3}xy^2z^4\right) \times (24x^2yz)$

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80. Find each of the products: $\left(\frac{4}{3}pq^2\right) \times \left(-\frac{1}{4}p^2r\right) \times (16p^2q^2r^2)$

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81. Find each of the products: $(2.2xy) \times (0.1x) \times (0.16)$

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82. Express each of the products as a monomials and verify the result in each case for $x = 1$: $(3x) \times (4x) \times (-5x)$

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83. Express each of the products as a monomials and verify the result in each case for $x = 1$: $\left(4x^2\right) \times (-3x) \times \left(\frac{4}{5}x^3\right)$

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84. Express each of the products as a monomials and verify the result in each case for $x = 1$: $\left(5x^4\right) \times \left(x^2\right)^3 \times (2x)^2$

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85. Express each of the products as a monomials and verify the result in each case for $x = 1$: $\left(x^2\right)^3 \times (2x) \times (-4x) \times (5)$

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86. Write down the product of $8x^2y^6 and -20xy$. Verify the product for $x = 2.5, y = 1$.

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87. *Evaluate* $(3.2x^6y^3) \times (2.1x^2y^2)$ *when* $x = 1$ *and* $y = 0.5$

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88. Find the value of $(5x^6) \times (-1.5x^2y^3) \times (-12xy^2)$ when $x = 1, y = 0.5$.

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89. *Evaluate* $(2.3a^5b^2) \times (1.2a^2b^2)$ *when* $a = 1$ *and* $b = 0.5$.

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90. Evaluate $\left(-8x^2y^6\right) \times (-20xy) f$ or $x = 2.5$ *and* $y = 1$.

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91. Express each of the products as a monomials and verify the result for $x = 1, y = 2$: $\left(xy^3\right) \times \left(yx^3\right) \times (xy)$

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92. find the product of following

$$\left(\frac{2}{5}a^2b\right) \times (-15b^2ac) \times \left(-\frac{1}{2}c^2\right)$$

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93. Express each of the products as a monomials

$$\left(-\frac{4}{7}a^2b\right)\times\left(-\frac{2}{3}b^2c\right)\times\left(-\frac{7}{6}c^2a\right)$$

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94. Express each of the products as a monomials

$$\left(\frac{4}{9}abc^3\right)\times\left(-\frac{27}{5}a^3b^2\right)\times\left(-8b^3c\right)$$

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95. Evaluate each of the that when $x=2, y=-1.$

$$(2xy)\times\left(\frac{x^2y}{4}\right)\times\left(x^2\right)\times\left(y^2\right)$$

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96. Evaluate each of the that when $x = 2, y = -1$.

$$\left(\frac{3}{5}x^2y\right) \times \left(-\frac{15}{4}xy^2\right) \times \left(\frac{7}{9}x^2y^2\right)$$

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97. Multiply: $2x$ by $(3x + 5y)$

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98. Multiply: $(7xy + 5y)$ by $3xy$

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99. Multiply: $-\frac{3ab^2}{5}$ by $\left(\frac{2a}{3} - b\right)$

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100. Find the product of $\frac{7}{2}s^2t \; and \; s+t$. Verify the result for $s=\frac{1}{2} and \; t=5$.

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101. Multiply: $\left(3x-\frac{4}{5}y^2x\right) by \frac{1}{2}xy$.

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102. Find the following products: (i) $100x\left(0.01x^4-0.01x^2\right)$ (ii) $121.5ab\left(ac+\frac{b}{10}\right)$

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103. Determine each of the products and find the value of each for

$x = 2,\ y = 1.15, z = 0.01.\ xz\left(x^2 + y^2\right)$

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104. Determine each of the products and find the value of each for

$x = 2,\ y = 1.15, z = 0.01.$

$z^2(x - y)$

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105. Determine each of the products and find the value of each for

$x = 2,\ y = 1.15, z = 0.01.\ (2z - 3x) \times (-4y)$

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106. Add : (i) $5m\ (3-m) and\ 6m^2-13m$

(ii) $4y\left(3y^2+5y-7\right) and\ 2\left(y^3-4y^2+5\right)$

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107. Subtract $3pq\ (p-q)$ from $2pq\ (p+q)$

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108. Add: (i) $p\ (p-q), q(q-r)$ and $r\ (r-p)$

(ii) $2x\ (z-x-y)$ and $2y\ (z-y-x)$

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109. Subtract: $3l\ (l-4m+5n)$ from $4l(10n-3m+2l)$

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110. Subtract: $3a\ (a+b+c)-2b(a-b+c)$ from $4c(-a+b+c)$

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111. Simplify each of the expressions: $15a^2-6a(a-2)+a(3+7a)$

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112. Simplify each of the following expressions: $x^2\left(1-3y^2\right)+x\left(xy^2-2x\right)-3y\left(y-4x^2y\right)$

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113. Simplify each of the following expressions:

$4st\,(s-t)-6s^2\left(t-t^2\right)-3t^2\left(2s^2-s\right)+2st(s-t)$

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114. Find the following products: (i)$2a^3(3a+5b)$ (ii) $-11a(3a+2b)$ (iii)$-5a(7a-2b)$

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115. Find the following products: (i)$\frac{6x}{5}\left(x^3+y^3\right)$

(ii)$xy\left(x^3-y^3\right)$

(iii)$0.\,1y\left(0.\,1x^5+0.\,1y\right)$

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116. Find the following products: (i) $\frac{4}{27}xyz\left(\frac{9}{2}x^2yz - \frac{3}{4}xyz^2\right)$ (ii) $1.\ 5x\left(10x^2y - 100xy^2\right)$ (iii)$4.\ 1xy\ (1.\ 1x - y)$

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117. Find the following products: $\frac{7}{5}x^2y\left(\frac{3}{5}xy^2 + \frac{2}{5}x\right)$ $\frac{4}{3}a\left(a^2 + b^2 - 3c^2\right)$

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118. Find the product $24x^2(1 - 2x)$ and evaluate its value for x =3.

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119. Find the product $3y\left(xy + y^2\right)$ and find its value for $x = 4\ and\ y = 5.$

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120. Multiply $-\frac{3}{2}x^2y^2$ by $(2x - y)$ and verify the answer for $x = 1$ and $y = 2$.

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121. Multiply the monomial by the binomial and find the value of each for $x = -1, y = 0.25$ *and* $z = 0.05$: (i)$15y^2(2 - 3x)$ (ii) $-3x\left(y^2 + z^2\right)$ (iii)$z^2(x - y)$

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122. Simplify: $2x^2\left(x^3 - x\right) - 3x\left(x^4 + 2x\right) - 2\left(x^4 - 3x^2\right)$

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123. Simplify: $x^3y(x^2 - 2x) + 2xy(x^3 - x^4)$

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124. Simplify: $3a^2 + 2(a + 2) - 3a(2a + 1)$

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125. Simplify: $x(x + 4) + 3x(2x^2 - 1) + 4x^2 + 4$

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126. Simplify: $a(b - c) - b(c - a) - c(a - b)$

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127. Simplify: $a(b-c)+b(c-a)+c(a-b)$

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128. Simplify:

$4ab(a-b)-6a^2\left(b-b^2\right)-3b^2\left(2a^2-a\right)+2ab(b-a)$

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129. Simplify: $x^2\left(x^2+1\right)-x^3(x+1)-x\left(x^3-x\right)$

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130. Simplify: $2a^2+3a\left(1-2a^3\right)+a(a+1)$

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131. Simplify: $a^2(2a-1)+3a+a^3-8$

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132. Simplify: $\frac{3}{2}x^2(x^2-1)+\frac{1}{4}x^2(x^2+x)-\frac{3}{4}x(x^3-1)$

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133. Simplify: $a^2b(a-b^2)+ab^2(4ab-2a^2)-a^3b(1-2b)$

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134. Simplify:

$a^2b(a^3-a+1)-ab(a^4-2a^2+2a)-b(a^3-a^2-1)$

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135. Multiply $(3x + 2y) and\ (5x + 3y)$

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136. Multiply $(2x + 3y) and\ (4x - 5y)$

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137. Multiply $\left(\frac{1}{5}x - \frac{1}{4}y\right) and\ \left(5x^2 - 4y^2\right).$

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138. Multiply $(7a + 3b) and\ (2a + 3b)$ by column method.

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139. Multiply $(7x - 3y)$ by $(4x - 5y)$ by column method.

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140. Multiply $\left(3x^2 + y^2\right)$ by $\left(x^2 + 2y^2\right)$.

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141. Multiply $(0.5x - y)$ by $(0.5x + y)$

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142. Multiply $\left(4x + \frac{3y}{5}\right) and \left(3x - \frac{4y}{5}\right)$

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143. Multiply: $\{2m + (- n)\} by \{ - 3m + (- 5\}$

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144. Find the product of $\left(y + \frac{2}{7}y^2\right) and \left(7y - y^2\right)$ and verify the result for $y = 3$.

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145. Find the value of the products: $(x + 2y)(x - 2y) at\ x = 1,\ y = 0$

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146. Find the value of the products: $(3m - 2n)(2m - 3n) at\ m = 1,\ n = -1$

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147. Find the value of the products: $(4a^2 + 3b)(4a^2 + 3b)$ at $a = 1,\ b = 2.$

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148. Simplify: $\frac{1}{3}(6x^2 + 15y^2)(6x^2 - 15y^2)$

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149. Simplify: $9x^4(2x^3 - 5x^4) \times 5x^6(x^4 - 3x^2)$

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150. Simplify : $(2x + 5)(3x - 2) + (x + 2)(2x - 3)$

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151. Simplify: $(3x+2)(2x+3)-(4x-3)(2x-1)$

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152. Simplify: $(2x+3y)(3x+4y)-(7x+3y)(x+2y)$

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153. Multiply: $\left(2x^2-3x+5\right)by(5x+2)$.

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154. Multiply: $\left(2x^2-4x+5\right)\ by\ \left(x^2+3x-7\right)$

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155. Simplify: $(3x-2)(x-1)(3x+5)$

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156. Simplify: $(5-x)(3-2x)(4-3x)$

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157. Multiply: $(5x+3)by(7x+2)$ (ii) $(2x+8)by\,(x-3)$

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158. Multiply: $(7x+y)by(x+5y)$ (ii) $(a-1)by\,\left(0.\,1a^2+3\right)$

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159. Multiply: $(3x^2 + y^2)$ by $(2x^2 + 3y^2)$

$\left(\frac{3}{5}x + \frac{1}{2}y\right)$ by $\left(\frac{5}{6}x + 4y\right)$

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160. Multiply: $(x^6 - y^6)$ by $(x^2 + y^2)$ $(x^2 + y^2)$ by $(3a + 2b)$

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161. Multiply: $(-3d + (-7f)]$ by $(5d + f)$

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162. Multiply: $(2x^2y^2 - 5xy^2)$ by $(x^2 - y^2)$

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163. Multiply: $\left(\frac{a}{7}+\frac{a^2}{9}\right) by \left(\frac{b}{2}-\frac{b^2}{3}\right)$

$\left(3x^2y-5xy^2\right) by \left(\frac{1}{5}x^2+\frac{1}{3}y^2\right)$

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164. Multiply: $\left(2x^2-1\right) by \left(4x^3+5x^2\right)\left(2xy+3y^2\right)\left(3y^2-2\right)$

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165. Find the following products and verify the result for x $=-1, y=-2$: $(3x-5y)(x+y)$

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166. Simplify: $x^2(x+2y)(x-3y)$

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167. Simplify: $\left(x^2-2y^2\right)(x+4y)x^2y^2$

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168. Simplify: $a^2b^2(a+2b)(3a+b)$

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169. Simplify: $x^2(x-y)y^2(x+2y)$

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170. Simplify: $\left(x^3 - 3x^2 + 5x - 7\right)(2x - 3)$

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171. Simplify: $(5x + 3)(x - 1)(3x - 2)$

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172. Simplify: $(5 - x)(6 - 5x)(2 - x)$

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173. Simplify: $\left(2x^2 + 3x - 5\right)\left(3x^2 - 5x + 4\right)$

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174. Simplify: $(3x-2)(2x-3)+(5x-3)(x+1)$

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175. Simplify: $(5x-3)(x+2)-(2x+5)(4x-3)$

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176. Simplify: $(3x+2y)(4x+3y)-(2x-y)(7x-3y)$

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177. Simplify: $\left(x^2-3x+2\right)(5x-2)-\left(3x^2+4x-5\right)(2x-1)$

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178. Simplify:

$$(x^3 - 2x^2 + 3x - 4)(x - 1) - (2x - 3)(x^2 - x + 1)$$

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179. Evaluate: $(2x + 3y)^2$ (ii) $(2x - 3y)^2$ $(2x + 3y)2x - 3y)$.

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180. Write down the squares of each of the following binomials:

$\left(x + \frac{a}{2}\right)$ (ii) $\left(5b - \frac{1}{2}\right)$ (iii) $\left(y + \frac{y^2}{2}\right)$

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181. Find the product of the binomials: $\left(\frac{4}{3}x^2 + 3\right)\left(\frac{4}{3}x^2 + 3\right)$

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182. Find the product of the following binomials: $\left(\frac{2}{3}x^2 + 5y^2\right)\left(\frac{2}{3}x^2 + 5y^2\right)$

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183. Find the product of the binomials: $\left(6x^2 - 7y^2\right)\left(6x^2 - 7y^2\right)$

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184. Find the product of the binomials: $\left(\frac{1}{2}x - \frac{1}{5}y\right)\left(\frac{1}{2}x - \frac{1}{5}y\right)$

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185. Find the product of the following binomials: (i) $\left(\frac{3}{4}x+\frac{5}{6}y\right)\left(\frac{3}{4}x-\frac{5}{6}y\right)$ (ii) $\left(2a+\frac{3}{b}\right)\left(2a-\frac{3}{b}\right)$

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186. Find the product of the following binomials:

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

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187. If $x+\frac{1}{x}=4$, find the values of $x^2+\frac{1}{x^2}$

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188. If $x+\frac{1}{x}=4$ then prove that the value of $x^4+\frac{1}{x^4}=194$

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189. If $x - \frac{1}{x} = 9$, find the value of $x^2 + \frac{1}{x^2}$

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190. If $x - \frac{1}{x} = 9$, find $x + \frac{1}{x}$.

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191. If $x^2 + \frac{1}{x^2} = 27$, find the values of each of the: $x + \frac{1}{x}$

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192. If $x^2 + \frac{1}{x^2} = 27$, find the values of each of the: $x - \frac{1}{x}$

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193. If $x + y = 12 \; and \; xy = 14,$ find the value of $x^2 + y^2$.

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194. If $3x + 2y = 12 \; and \; xy = 6,$ find the value of $9x^2 + 4y^2$.

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195. If $4x^2 + y^2 = 40 \; and \; xy = 6,$ find the value of $2x + y$.

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196. Find the continued product: $(x + 2)(x - 2)\left(x^2 + 4\right)$

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197. Find the continued product: $(2x + 3y)(2x - 3y)\left(4x^2 + 9y^2\right)$

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198. Find the continued product: $(x - 1)(x + 1)\left(x^2 + 1\right)\left(x^4 + 1\right)$

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199. Find the continued product:

$$\left(x - \frac{1}{x}\right)\left(x + \frac{1}{x}\right)\left(x^2 + \frac{1}{x^2}\right)\left(x^4 + \frac{1}{x^4}\right)$$

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200. Find the continued product: $\left(x - \frac{y}{5} - 1\right)\left(x + \frac{y}{5} + 1\right)$

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201. Simplify the products: $\left(x^2+x+1\right)\left(x^2-x+1\right)$

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202. Simplify the products: $\left(x^2+2x+2\right)\left(x^2-2x+2\right)$

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203. Prove that:

$$2a^2+2b^2+2c^2-2ab-2bc-2ca=(a-b)^2+(b-c)^2+(c-a)^2$$

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204. If $a^2+b^2+c^2-ab-bc-ca=0$, prove that $a=b=c$

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205. Using the formulae for squaring a binomial, evaluate the following : $(101)^2$ (ii) $(99)^2$ (iii) $(93)^2$

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206. Simplify the following by using $(a+b)(a-b) = a^2 - b^2$

(i) 68×72

(ii) 101×99

(iii) 67×73

(iv) $128^2 - 77^2$

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207. Find the value of x , if $6x = 23^2 - 17^2$

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208. Find the value of x , if $4x = 98^2 - 88^2$

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209. Find the value of x , if $25x = 536^2 - 136^2$

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210. What must be added to $9x^2 - 24x + 10$ to make it a whole square?

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211. Write the following squares of binomials as trinomials:

(i) $(x + 2)^2$

(ii) $(8a + 3b)^2$

(iii) $(2m+1)^2$

(iv) $\left(9a+\frac{1}{6}\right)^2$

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212. Write the following squares of binomials as trinomials:

(i) $\left(x+\frac{x^2}{2}\right)^2$

(ii) $\left(\frac{x}{4}-\frac{y}{3}\right)$

(iii) $\left(3x-\frac{1}{3x}\right)^2$

(iv) $\left(\frac{x}{y}-\frac{y}{x}\right)^2$

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213. Write the following squares of binomials as trinomials:

(i) $\left(\frac{3a}{2}-\frac{5b}{4}\right)^2$

(ii) $\left(a^2b-bc^2\right)^2$

(iii) $\left(\frac{2a}{3b}+\frac{2b}{3a}\right)^2$

(iv) $\left(x^2-ay\right)^2$

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214. Find the product of the following binomials;

(i) $(2x+y)(2x+y)$

(ii) $(a+2b)(a-2b)$

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215. Find the product of the following binomials;

(i) $\left(a^2+bc\right)\left(a^2-bc\right)$

(ii) $\left(\frac{4x}{5}-\frac{3y}{4}\right)\left(\frac{4x}{5}+\frac{3y}{4}\right)$

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216. Find the product of the following binomials;

$\left(2x+\frac{3}{y}\right)\left(2x-\frac{3}{y}\right)$ (ii) $\left(2a^3+b^3\right)\left(2a^3-b^3\right)$

Given:

$\Rightarrow \left(2x+\frac{3}{y}\right)\left(2x-\frac{3}{y}\right)$

$\Rightarrow (2x)^2+\left(\frac{3}{y}\right)^2$

$\Rightarrow 4x^2+\frac{9}{y^2}$

$\Rightarrow 4x^2+\frac{9}{y^2}$

(ii) $\left(2a^3+b^3\right)\left(2a^3-b^3\right)$

$\Rightarrow \left(2a^3\right)^2+\left(b^3\right)^2\Big)$

$\Rightarrow \left(4a^6\right)+\left(b^6\right)$

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217. Find the product of the following binomials;

(i) $\left(x^4+\frac{2}{x^2}\right)\left(x^4-\frac{2}{x^2}\right)$

(ii) $\left(x^3+\frac{1}{x^3}\right)\left(x^3-\frac{1}{x^3}\right)$

$(i)\left(x^4+\frac{2}{x^2}\right)\left(x^4-\frac{2}{x^2}\right)$

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218. Using the formula for squaring a binomial , evaluate the following: $(102)^2$ (ii) $(99)^2$ (iii) $(1001)^2$

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219. Using the formula for squaring a binomial , evaluate the following:

(i)$(999)^2$

(ii) $(703)^2$

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220. Simplify the following using the formula:

$(a-b)(a+b)=a^2-b^2$:

(i)$(82)^2-(18)^2$

(ii$(467)^2-(33)^2$

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221. Simplify the following using the formula:

$(a-b)(a+b)=a^2-b^2$:

(i)$(79)^2-(69)^2$

(ii) 197×203

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222. Simplify the following using the formula:

$(a-b)(a+b)=a^2-b^2$:

(i)113×87

(ii) 95×105

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223. Simplify the following using the formula: $(a-b)(a+b) = a^2 - b^2$:

(i)$1.\ 8 \times 2.2$

(ii) $9.\ 8 \times 10.2$

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224. Simplify the following using the identities:

(i) $\dfrac{58^2 - 42^2}{16}$

(ii) $178 \times 178 - 22 \times 22$

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225. Simplify the following using the identities:

(i) $\frac{198 \times 198 - 102 \times 102}{96}$

(ii) $1.73 \times 1.73 - 0.27 \times 0.27$

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226. Find the value of x, if:

(i) $4x = (52)^2 - (48)^2$

(ii) $14x = (47)^2 - (33)^2$

(iii) $5x = (50)^2 - (40)^2$

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227. If $x - \frac{1}{x} = 3$, find the value of $x^2 + \frac{1}{x^2}$.

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228. If $x - \frac{1}{x} = 3$, find the values of $x^2 + \frac{1}{x^2} and\ x^4 + \frac{1}{x^4}$.

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229. If $x^2 + \frac{1}{x^2} = 18$, find the values of $x + \frac{1}{x}$ and $x - \frac{1}{x}$.

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230. If $x + y = 4$ and $xy = 2$, find the values of $x^2 + y^2$

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231. If $x - y = 7\ and\ xy = 9$, find the value of $x^2 + y^2$

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232. If $3x + 5y = 11$ and $xy = 2$, find the value of $9x^2 + 25y^2$

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233. Find the values of the following expressions:

(i) $16x^2 + 24 + 9$, when $x = \frac{7}{4}$

(ii) $64x^2 + 81y^2 + 144xy$, when $x = 11$ and $y = \frac{4}{3}$

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234. If $x + \frac{1}{x} = 9$. find the value of $x^4 + \frac{1}{x^4}$.

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235. If $x + \frac{1}{x} = 12$, find the value of $x - \frac{1}{x}$.

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236. If $2x + 3y = 14$ a n d $2x - 3y = 2,$ find the value of xy [Hint use $(2x + 3y)^2 - (2x - 3y)^2 = 24xy$

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237. If $x^2 + y^2 = 29$ a n d $xy = 2,$ find the value of

(i)$x + y$

(ii) $x - y$

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238. What must be added to each of the following expressions to make it a whole squares?

$4x^2 - 12x + 7$

(ii) $4x^2 - 20x + 20$

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239. Simplify:

(i) $(x-y)(x+y)x^2+y^2)\left(x^4+y^4\right)$

(ii) $(2x-1)(2x+1)\left(4x^2+1\right)\left(16x^4+1\right)$

(iii) $(7m-8n)^2+(7m+8n)^2$

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240. Simplify: $\left(m^2-n^2m\right)^2+2m^3n^2$

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241. Show that :

(i) $(3x+7)^2-84x=(3x-7)^2$

(ii) $(9a-5b)^2+180ab=(9a+5b)^2$

(iii) $\left(\frac{4m}{3}-\frac{3n}{4}\right)^2+2mn=\frac{16m^2}{9}+\frac{9n^2}{16}$

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242. Show that :

(i) $(4pq+3q)^2-(4qp-3q)^2=48pq^2$

(ii) $(a-b)(a+b)+(b-c)(b+c)+(c-a)(c+a)=0$

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243. Find the following products:

(i) $(x+2)(x+3)$

(ii)$(x+7)(x-2)$

(iii)$y-4)(y-3)$

(iv) $(y-7)(y+3)$

(vi)$(2x-3)(2x+5)$

(vii) $(3x+4)(3x-5)$

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244. Evaluate the following :

(i)107×103

(ii) 56×48

(iii) 95×97

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245. Find the following products:

(i)$(x+4)(x+7)$

(ii) $(x-11)(x+4)$

(iii)$(x+7)(x-5)$

(iv) $x-3)(x-2)$

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246. Find the following products: (i)$\left(y^2-4\right)\left(y^2-3\right)$ (ii) $\left(x+\frac{4}{3}\right)\left(x+\frac{3}{4}\right)$ (iii)$(3x+5)(3x+11)$ (iv) $\left(2x^2-3\right)\left(2x^2+5\right)$

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247. Find the following products:

(i)$z^2+2)\left(z^2-3\right)$

(ii) $(3x-4y)(2x-4y)$

$\left(3x^2-4xy\right)\left(3x^2-3xy\right)$

(iv) $\left(x+\frac{1}{5}\right)(x+5)$

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248. Find the following products: (i) $\left(z+\frac{3}{4}\right)\left(z+\frac{4}{3}\right)$ (ii) $\left(x^2+4\right)\left(x^2+9\right)$ (iii) $\left(y^2+12\right)\left(y^2+6\right)$ (iv) $\left(p^2+16\right)\left(p^2-\frac{1}{4}\right)$

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249. Evaluate the following :

(i) 102×106

(ii) 109×107

(iii) 35×37

(iv) 53×55

Given:

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250. Evaluate the following :

(i) 103×96

(ii) 34×36

(iii) 994×1006