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These materials cover all aspects of Algebraic Expressions and Identities, from basic concepts to advanced problem-solving. Students can rely on Class 8 Math Book Exercise Chapter 8 Solutions Free PDF to tackle Algebraic Identities confidently. The NCERT Solutions for Class 8 Maths Chapter 8, Algebraic Expressions and Identities, also include notes that simplify learning for students who need additional support.Online access to Class 8 Mathematics Worksheet Chapter 8 Solutions enables learners to study anywhere. Teachers and parents can recommend NCERT Updated Maths Chapter 8 Solutions as a reliable study aid. By practicing the Algebraic Expressions and Identities Class 8 NCERT Modified Solutions, students ensure a solid grasp of key mathematical concepts, preparing them to excel in their exams.Class: 8MathematicsChapter 8:Algebraic Expressions and IdentitiesNumber of Exercises:4 (Four)Study Material:Exercises Questions SolutionMode of Content:Text and VideosAcademic Session:Year 2025-26Medium:Hindi and English MediumClass VIII Mathematics Exercise 8.1, Exercise 8.2, Exercise 8.3 and Exercise 8.4 in English and Hindi Medium updated for new academic session. Download Prashnavali 8.1, Prashnavali 8.2, Prashnavali 8.3 and Prashnavali 8.4 in Hindi Medium to study online or in PDF format to free download for offline use. NCERT (Solutions 2025-26 are updated for the new academic session based on updated NCERT Books. Download options for Hindi and English Medium NCERT Solutions are given here.Class 8 Maths Chapter 8 Algebraic Expressions and Identities all exercises in English Medium as well as Hindi Medium are given below to download in PDF format. All the solutions are done properly considering the latest CBSE Syllabus 2025-26. 297 x 303= (300 3) x (300 + 3)= 300^2 3^2 [Using (a b)(a + b) = a^2 b^2]= 90000 9= 89991 78 x 82= (80 2) x (80 + 2)= 80^2 2^2 [Using (a b)(a + b) = a^2 b^2]= 6400 4= 6396 In Chapter 8 Algebraic Expression and Identities, we have to learn about the fundamental terms like factors, coefficients, monomial, binomial, trinomial and all other polynomials, like and unlike terms in an algebraic expression, additions and subtractions of expressions taking like terms aside. Multiplications of two or three monomial and the multiplication of a monomial or binomial with a polynomial. Simplification of different polynomials using various identities. The following are the some standard identities:1. (a b) = a 2ab + b2. (a + b) = a + 2ab + b3. (a + b)(a b) = a bWhat does the NCERT Solutions for Class 8 Maths Chapter 8 cover?The NCERT Revised Solutions for Class 8 Mathematics Chapter 8, Algebraic Expressions and Identities, cover essential topics such as algebraic expressions, identities and their applications. These solutions provide detailed explanations for exercises like Class 8 Maths NCERT Textbook Exercise 8.1, helping students understand the concepts step by step. The Algebraic Expressions and Identities Class 8 Math Notes simplify complex topics, while the Class 8 Mathematics Chapter 8 Important Questions focus on exam-oriented problems. With resources like NCERT Maths Chapter 8 Solutions and downloadable PDFs, students can access study material anytime and strengthen their understanding of Algebraic Identities.In order to factorize or simplify any algebraic expression, common identities are required. Taking common helps to make the factors of expressions and simplify the factors of two. To understand the algebraic expression in the simplest format, we must remember almost all the identities. The Class 8th Mathematics NCERT Textbook Chapter 8 Solutions PDF is a valuable resource for exam preparation as it provides step-by-step answers to every question. This document includes solutions to Algebraic Expressions and Identities Class 8 Important Questions, ensuring students focus on critical areas of the syllabus. NCERT Class 8 Maths Book Chapter 8 PDF download option offers convenience, allowing learners to study offline. These solutions clarify tricky concepts in Algebraic Identities and provide ample practice material. By using NCERT Math Chapter 8 Solutions regularly, students can enhance their problem-solving skills and perform well in exams. 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The Class 8 Math Exercise Chapter 8 NCERT Solutions PDF also includes practice questions, notes and explanations of Algebraic Identities. With Class 8 Maths Chapter 8 Solutions Free PDF downloads available, students can access these resources anytime. This comprehensive guidance helps students excel in exams and understand algebra effectively. You can access Class 8 Mathematics Chapter 8 Solutions online through educational platforms like Tiwari Academy that offer NCERT resources. The NCERT Class 8 Maths Textbook Chapter 8 PDF Download option allows students to get a free copy of the solutions, making it convenient for offline study. These online resources cover Algebraic Expressions and Identities Class 8 NCERT Solutions, including notes, exercises, and Class 8 Maths Chapter 8 Important Questions. Whether youre preparing for exams or revising Algebraic Identities, NCERT Math Complete Chapter 8 Solutions ensure comprehensive coverage of the syllabus. 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These...CBSE is a national-level board of education in India, responsible for public and private school education, and is managed by the Gover...Mathematics is the study of patterns, structure, and relationships, rooted in fundamental practices like counting... NCERT Solutions for Class 8 Maths Chapter 9 Algebraic Expressions and Identities Exercise 9.1Ex 9.1 Class 8 Maths Question 1.Identify the terms, their coefficients for each of the following expressions.(i) 5xyz2 3zy(ii) 1 + x + x2(iii) 4x2y2 4x2y2z2 + z2(iv) 3 pq + qr rp(v) \(\frac { x }{ 2 }\) + \(\frac { y }{ 2 }\) xy(vi) 0.3a 0.6ab + 0.5bSolution:Ex 9.1 Class 8 MathsQuestion 2.Classify the following polynomials as monomials, binomials, trinomials. Which polynomials do not fit in any of these three categories?x + y, 1000, x + x2 + x3 + x4, 7 + y + 5x, 2y 3y2, 2y 3y2 + 4y3, 5x 4y + 3xy, 4z 15z2, ab + bc + cd + da, pqr, p2q + pq2, 2p + 2qSolution: Ex 9.1 Class 8 MathsQuestion 3.Add the following:(i) ab bc, bc ca, ca ab(ii) a b + ab, b c + bc, c a + ac(iii) 2p2q2 3pq + 4, 5 + 7pq 3p2q2(iv) l2 + m2, m2 + n2, n2 + l2, 2lm + 2mn + 2nlSolution:(i) Given: ab bc, bc ca, ca abWe have(ab bc) + (bc ca) + (ca ab) (Adding all the terms)= ab bc + bc ca + ca ab= (ab ab) + (bc bc) + (ca ca) (Collecting the like terms together)= 0 + 0 + 0= 0(ii) Given:a b + ab, b c + bc, c a + acWe have (a b + ab) + (b c + bc) + (c a + ac) (Adding all the terms)= a b + ab + b c + bc + c a + ac= (a a) + (b b) + (c c) + ab + bc + ac (Collecting all the like terms together)= 0 + 0 + 0 + ab + bc + ac= ab + bc + ac(iii) Given:2p2q2 3pq + 4, 5 + 7pq 3p2q2By arranging the like terms in the same column, we have(Adding columnwise) (iv) Given: l2 + m2, m2 + n2, n2 + l2, 2lm + 2mn + nlBy arranging the like terms in the same column, we haveThus, the sum of the given expressions is 2(l2 + m2 + n2+ lm + mn + nl)Ex 9.1 Class 8 MathsQuestion 4.(a) Subtract 4a 7ab + 3b + 12 from 12a 9ab + 5b 3(б) Subtract 3xy + 5yz 7zx from 5xy 2yz 2zx + 10xyz(c) Subtract 4p2q 3pq + 5pq2 8p + 7q 10 from 18 3p 11q + 5pq 2pq2 + 5p2qSolution:(a) Arranging the like terms column-wise, we have[Change the signs of all the terms of lower expressions and then add](b) Arranging the like terms column-wise, we have[Change the signs of all the terms of lower expressions and then add](c) Arranging the like terms column-wise, we have[Change the signs of all the terms of lower expressions and then add]The terms are p2q 7pq2 + 8pq 18q + 5p + 20 More CBSE Class 8 Study Material Doubtnut is No.1 Study App and Learning App with Instant Video Solutions for NCERT Class 6, Class 7, Class 8, Class 9, Class 10, Class 11 and Class 12, IIT JEE prep, NEET preparation and CBSE, UP Board, Bihar Board, Rajasthan Board, MP Board, Telangana Board etc NCERT solutions for CBSE and other state boards is a key requirement for students. 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Tops her class with an outstanding score of 77.5/80.Received prestigious Pradhan Mantri Rashtriya Bal Puraskar from the Prime Minister of India.Got Level 5 in the STAAR exam at the Renaissance Institute for Competitive Exams.Secured Rank 1 at SOF IMO Level 1 2023, by scoring an outstanding 100/100! Received prestigious President's Education Awards Program from the President of US. Tops her class with an outstanding score of 77.5/80.Received prestigious Pradhan Mantri Rashtriya Bal Puraskar from the Prime Minister of India.Got Level 5 in the STAAR exam at the Renaissance Institute for Competitive Exams.Secured Rank 1 at SOF IMO Level 1 2023, by scoring an outstanding 100/100! Received prestigious President's Education Awards Program from the President of US. Tops her class with an outstanding score of 77.5/80.Received prestigious Pradhan Mantri Rashtriya Bal Puraskar from the Prime Minister of India.Got Level 5 in the STAAR exam at the Renaissance Institute for Competitive Exams.My son started Cuemath in Grade 1 & now he is in Grade 7. All these years, I have been reassured for math subject! I'm sure he will continue with Cuemath till it serves!Cuemath has helped my kids learn math concepts and practice them in an online setting. It is a great online platform with 1:1 learning experience.Our daughter was losing interest in math. After 4-5 classes, I could see her asking for homework. She started liking math again and has now developed a lot of interest.Cuemath keeps introducing new methods, systems, & make it interesting for learners. Unlike the traditional teaching system, it has innovated a different way of teaching.My son has been taking coaching from Cuemath and is showing consistent improvement. It is mainly because of the standard curriculum, mentoring, supervision, & teaching.Have been a great platform with multiple avenues to augment my 8yr olds math skills. Good support from teacher too!My son started Cuemath in Grade 1 & now he is in Grade 7. All these years, I have been reassured for math subject! I'm sure he will continue with Cuemath till it serves!Cuemath has helped my kids learn math concepts and practice them in an online setting. It is a great online platform with 1:1 learning experience.Our daughter was losing interest in math. After 4-5 classes, I could see her asking for homework. She started liking math again and has now developed a lot of interest.Cuemath keeps introducing new methods, systems, & make it interesting for learners. Unlike the traditional teaching system, it has innovated a different way of teaching.My son has been taking coaching from Cuemath and is showing consistent improvement. It is mainly because of the standard curriculum, mentoring, supervision, & teaching.Have been a great platform with multiple avenues to augment my 8yr olds math skills. Good support from teacher too!We had a great experience with Cuemath. He started in 2021 and was quite weak but since joining Cuemath he has been getting better grades.Cuemath's app facilitates teacher-student interaction. The teacher in India understands our Australian math curriculum. We couldn't find such a teacher even locally.Private 1-to-1 tutoring that just works1-3 classes per week, with hassle-free scheduling.Customized learning plan for every child.Get regular insights on your child's progress.What is the frequency and duration of your classes?Typically, the number of classes is two per week for grades K to 8, and three per week for high school. But the schedule is flexible, according to your childs requirements and availability. Also, each class runs for 55 minutes, extendable to an hour.What devices do I need for attending your classes?A desktop or laptop computer that supports video calling is necessary for attending our classes. We also highly recommend a writing tablet for the best learning experience.My child has specific learning requirements. Is your program flexible enough?Absolutely. Our tutors will always customize the classes according to what your child needs - be it homework help, exam or test prep, remedial support for past gaps, or advanced learning.Can your tutors teach the topics covered in my childs school or curriculum?Our tutors are trained to teach according to various curricula across countries. Further, we have a fully customizable curriculum, tailored to your childs needs.Can my child join anytime of the year?Yes. Our tutors always customize the learning plan according to your childs needs, and the time left in the current academic year. If you wish to cover additional topics in the same time, you can always schedule extra classes.What if I dont like the tutor?In the rare case that happens, please raise a ticket with our helpdesk. Well be happy to diagnose the issue, and find you a different tutor that aligns better with your childs needs.What if I do not like your classes after I enroll? Will I get my money back?We have a no questions asked refund policy. If youre unhappy with the experience, you can cancel anytime for a full refund of the unused classes.What happens if my child misses a Cuemath class?We have a flexible leave policy that allows for both planned and unplanned leaves. Just keep your tutor informed.How can I keep track of my child's maths progress?We have a dedicated parent app, that lets you track the progress of your child, and also lets you connect with their tutor.How do I enroll for your classes?Please tap on the Get Started button. Well ask you a few questions about your child to understand their needs better. Once we receive the details, our admissions counselor will call you to match your child with the right tutor, and schedule a free trial class as per your availability. If you like the experience, you can choose a plan and make the payment to begin your classes.Affordable and personalized. Try a class for free. Our learning resources for the chapter, Algebraic Expressions and Identities in Mathematics Class 8th chapter 8 are designed to ensure that you grasp this concept with clarity and perfection. Whether youre studying for an upcoming exam or strengthening your concepts, our engaging animated videos, practice questions and notes offer you the best of integrated learning with interesting explanations and examples. This chapter introduces algebraic expressions, combining constants and variables. It covers addition, subtraction, multiplication, and factorization of expressions. Students learn to simplify expressions and understand identities like (a+b) = a+2ab+b. This foundation aids in solving equations and real-life problems. Algebraic Expressions and Identities form a crucial part of Class 8 Mathematics, covering fundamental concepts that lay the groundwork for advanced algebra. This chapter delves into expressions, terms, coefficients, and identities, offering a comprehensive understanding of how to manipulate and simplify algebraic expressions. For learning Algebraic Expressions and Identities in class 8 we need to learn first what are expressions. In algebra, we use letters (variables) and numbers (constants) to represent values. These variables can take various values and when combined with constants using arithmetic operations, they form algebraic expressions. Examples include: Expressions can change their values depending on the values assigned to their variables. For instance: For x = 1 and y = 1, the expression xy + 2 equals 3. For x = 100 and y = 2, the expression xy + 2 equals 202. An algebraic expression comprises terms, which are individual components separated by addition or subtraction. Terms themselves can be formed by multiplying constants and variables, known as factors. For example: In the expression 2a + 4ab + 5a(b + c), the terms are 2a, 4ab, and 5a(b + c). The factors for these terms are 2 and a; 4, a and b; 5, a and (b + c), respectively. The numerical part of a term is called its coefficient. For example: In the term 5x, the coefficient is 5. In the term xy, the coefficient is 1. In the term 4z, the coefficient is 4. Algebraic expressions can be classified based on the number of terms: Monomial: An expression with a single term (e.g., 2x, 3xy, 9z). Binomial: An expression with two terms (e.g., 2x + y, 3xy 4). Trinomial: An expression with three terms (e.g., 2x + y + 3z, a b + c). Polynomial: An expression with one or more terms where variables have non-negative exponents (e.g., x + y + z, 17 xyz 17). Terms with the same variables are called like terms and can be combined. Those with different variables are called unlike terms. To add algebraic expressions, align the like terms and then sum them. For example: Add -8x + 2yz 11 and -2x + 9yz 1:(3+2)x + (2+9)yz + (9+3) = 5x + 11yz 6 Similar to addition, but subtract the corresponding terms: Subtract 2x + 9yz from 5x + 11yz 6:(52)x + (119)yz + (63) = 3x + 2yz 9 Monomial Monomial: Multiply the coefficients and then the variables.8ab 2c = 16abc 13ab 9abc = 117abc Monomial Polynomial: Use the distributive property to expand the product.xyz(x + z) = xyz + xyz Polynomial Polynomial: Each term in one polynomial multiplies each term in the other. In chapter 8 of class 8, Algebraic Expressions and Identities we have learned about Algebraic Expressions, and now we will learn about Identities. Identities are equations that hold for all values of the variables. Important standard identities include: (a+b) = a + 2ab + b (ab) = a 2ab + b (a+b)(ab) = a b (x+a)(x+b) = x + (a + b)x + ab Identities simplify calculations in algebraic expressions, especially useful in squaring numbers or finding products quickly. This chapter builds a strong foundation in algebra, crucial for tackling more complex mathematical problems in future studies. Understanding these concepts enables students to solve equations, factorize expressions, and work with polynomials, laying the groundwork for advanced algebraic techniques. This article needs additional citations for verification. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.Find sources:"Algebraic expression"news newspapers books scholar JSTOR (August 2024) (Learn how and when to remove this message)Mathematical expression using basic operationsIn mathematics, an algebraic expression is an expression built up from constants (usually, algebraic numbers), variables, and the basic algebraic operations: addition (+), subtraction (-), multiplication (), division (), whole number powers, and roots (fractional powers).[1][2][3][bettersourceneeded]. For example, 3 x 2 2 x y + c {\displaystyle 3x^{2}-2xy+c} is an algebraic expression. Since taking the square root is the same as raising to the power 1/2, the following is also an algebraic expression: 1 x 2 1 + x 2 {\displaystyle {\sqrt {\frac {1-x^{2}}{1+x^{2}}}}} An algebraic equation is an equation involving polynomials, for which algebraic expressions may be solutions.If you restrict your set of constants to be numbers, any algebraic expression can be called an arithmetic expression. However, algebraic expressions can be used on more abstract objects such as in Abstract algebra. If you restrict your constants to integers, the set of numbers that can be described with an algebraic expression are called Algebraic numbers.[contradictory]By contrast, transcendental numbers like and e are not algebraic, since they are not derived from integer constants and algebraic operations. Usually, is constructed as a geometric relationship, and the definition of e requires an infinite number of algebraic operations. More generally, expressions which are algebraically independent from their constants and/or variables are called transcendental.Algebra has its own terminology to describe parts of an expression:1 Exponent (power), 2 coefficient, 3 term, 4 operator, 5 constant, x , y {\displaystyle x,y} - variablesBy convention, letters at the beginning of the alphabet (e.g. a , b , c {\displaystyle a,b,c}) are typically used to represent constants, and those toward the end of the alphabet (e.g. x , y {\displaystyle x,y} and z {\displaystyle z}) are used to represent variables.[4] They are usually written in italics.[5]By convention, terms with the highest power (exponent), are written on the left, for example, x 2 {\displaystyle x^{2}} is written to the left of x {\displaystyle x} . When a coefficient is one, it is usually omitted (e.g. 1 x 2 {\displaystyle 1x^{2}} is written x 2 {\displaystyle x^{2}}).[6] Likewise when the exponent (power) is one, (e.g. 3 x 1 {\displaystyle 3x^{1}} is written 3 x {\displaystyle 3x}),[7] and, when the exponent is zero, the result is always 1 (e.g. 3 x 0 {\displaystyle 3x^{0}} is written 3 {\displaystyle 3} , since x 0 {\displaystyle x^{0}} is always 1 {\displaystyle 1}).[8]The roots of a polynomial expression of degree n, or equivalently the solutions of a polynomial equation, can always be written as algebraic expressions if n < 5 (see quadratic formula, cubic function, and quartic equation). Such a solution of an equation is called an algebraic solution. But the AbelRuffini theorem states that algebraic solutions do not exist for all such equations (just for some of them) if n {\displaystyle \geq } 5.See also: Rational functionGiven two polynomials P (x) {\displaystyle P(x)} and Q (x) {\displaystyle Q(x)} , their quotient is called a rational expression or simply rational fraction.[9][10][11] A rational expression P (x) Q (x) {\textstyle {\frac {P(x)}{Q(x)}}} is called proper if deg P (x) < deg Q (x) {\displaystyle \deg P(x)go to slidego to slidego to slidego to slideHow can your child master math concepts?Math mastery comes with practice and understanding the Why behind the What. Experience the Cuemath difference.Book a Free Trial ClassFAQs on Algebraic Expressions An algebraic expression is a variable expression described using its terms, and operations on the terms. For example, x + 3 can be described as "3 more than x". While a + b - 7 can be described as "7 less than the sum of a and b".How Many Terms are There in an Algebraic Expression?A term is a variable alone (or) a constant alone (or) it can be a combination of variables and constants by the operation of multiplication or division. We apply this definition to identify the terms in an algebraic expression. After we identify the terms, we can just count them.Why are Algebraic Expressions Useful?The algebraic expressions use variables (which take multiple multiples) in order to describe a real-life scenario. Instead of saying "The cost of 3 pens and 4 pencils", it is simple to say 3x+4y where x and y are the costs of each pen and pencil respectively. Also, writing a real-life scenario as an expression helps to perform mathematical calculations.How do you Identify an Algebraic Expression?An algebraic expression is a combination of variables and constants. However, no equalities should be present in it. Otherwise, it will become an algebraic equation.How to Simplify an Algebraic Expression?To simplify an algebraic expression, we just combine the like terms and solve further to get a simplified form of the expression.Is 7 an Algebraic Expression?Yes, 7 is an algebraic expression, because it can be considered as a monomial.What are Algebraic Expression and Equation?An algebraic expression is any number, variable, or different operations combined together, while an equation is two different algebraic expressions combined together with an equal sign.Q1: The number of terms in the expression 2y - 3 + 2 - 5x are:4213Q2: Rony earns 17 dollars less than half of what John earns. If John earns p dollars, how much does Rony earn in dollars?p - 1/21/2 + p17 + (p/2)(p/2) - 17Exercise 8.1: This exercise consists of 2 Questions and Solutions. This exercise deals with addition and subtraction of Algebraic Expressions.Exercise 8.2: This exercise consists of 5 Questions and Solutions. This exercise deals with multiplication of Algebraic Expressions, multiplying a monomial by a monomial and multiplying three or more monomials.Exercise 8.3: This exercise consists of 5 Questions and Solutions. This exercise deals with multiplying a monomial by a polynomial, multiplying a monomial by a binomial, multiplying a monomial by a trinomial.Exercise 8.4: This exercise consists of 3 Questions and Solutions. This exercise deals with multiplying a polynomial by a polynomial, multiplying a binomial by a binomial, multiplying a binomial by a trinomial.Access NCERT Solutions for Class 8 Maths chapter 8 Algebraic Expressions and IdentitiesExercise - 8.11. Add the following:(i) ${\text{ab - bc,bc - ca,ca - ab}}$Ans:${\text{ 12a - 9ab + 5b - 3}} $Therefore, the sum of the given expressions is o.(ii) ${\text{a - b + ab,b - c + bc,c - a + ac}}$Ans:$ {\text{ }}a - b + ab $$ {\text{ }} + b{\text{ }} - c + bc $$ {\text{ }} + \quad - a{\text{ }} + c{\text{ + ac}} $$ \overline {{\text{ ab + bc + ac}}} $Thus the sum of given expressions is ${\text{ab + bc + ac}}$(iii) ${\text{2}}{{\text{p}}^{\text{2}}}{{\text{q}}^{\text{2}}}{\text{ - 3pq + 4,5 + 7pq - 3}}{{\text{p}}^{\text{2}}}{{\text{q}}^{\text{2}}}$Ans:$ {\text{ 2}}{{\text{p}}^{\text{2}}}{{\text{q}}^{\text{2}}}{\text{ - 3pq + 4}} $$ {\text{ + - 3}}{{\text{p}}^{\text{2}}}{{\text{q}}^{\text{2}}}{\text{ + 7pq + 5}}$$ \overline {{\text{ - }}{{\text{p}}^{\text{2}}}{{\text{q}}^{\text{2}}}{\text{ + 4pq + 9}}} $Therefore, the sum of given expressions is ${\text{ - }}{{\text{p}}^{\text{2}}}{{\text{q}}^{\text{2}}}{\text{ + 4pq + 9}}$(iv) ${{\text{l}}^{\text{2}}}{\text{ + }}{{\text{m}}^{\text{2}}}{\text{,}}{{\text{m}}^{\text{2}}}{\text{ + }}{{\text{n}}^{\text{2}}}{\text{,}}{{\text{n}}^{\text{2}}}{\text{ + }}{{\text{l}}^{\text{2}}}{\text{,2lm + 2mn + 2nl}}$Ans:$ {\text{ }}{{\text{l}}^{\text{2}}}{\text{ + }}{{\text{m}}^{\text{2}}} $$ {\text{ + }}{{\text{m}}^{\text{2}}}{\text{ + }}{{\text{n}}^{\text{2}}} $$ {\text{ + }}{{\text{l}}^{\text{2}}}{\text{ + }}{{\text{n}}^{\text{2}}} $$ {\text{ + 2lm + 2mn + 2nl}} $$ \overline {{\text{ 2}}{{\text{l}}^{{^{\text{2}}}}}{\text{ + 2}}{{\text{m}}^{\text{2}}}{\text{ + 2}}{{\text{n}}^{\text{2}}}{\text{ + 2lm + 2mn + 2nl}}} $Therefore, the sum of the given expressions is ${\text{2}}{{\text{l}}^{{^{\text{2}}}}}{\text{ + 2}}{{\text{m}}^{\text{2}}}{\text{ + 2}}{{\text{n}}^{\text{2}}}{\text{ + 2lm + 2mn + 2nl}}}$2. Solve the following:(i) Subtract ${\text{4a - 7ab + 3b + 12}}$ from ${\text{12a - 9ab + 5b - 3}}$Ans:$ {12a - 9ab + 5b - 3} $$ {4a - 7ab + 3b + 12} $$ {(-)\quad (+)\quad (-)(-)} $$ {\overline {8a - 2ab + 2b - 15} } $(ii) Subtract ${\text{3xy + 5yz - 7zx}}$ from ${\text{5xy - 2yz - 2zx + 10xyz}}$Ans:$ {\text{5xy - 2yz - 2zx + 10xyz}} $$ {\text{3xy + 5yz - 7zx}} $$ {\text{(-)(-)}}\quad {\text{(+)}} $$ \overline {{\text{2xy - 7yz + 5zx + 10xyz}}} $(iii) Subtract ${\text{4p 2q - 3pq + 5pq2 - 8p + 7q - 10}}$from ${\text{18 - 3p - 11q + 5pq - 2pq2 + 5p 2q}}$Ans: $ {\text{18 - 3p - 11q + 5pq - 2p}}{{\text{q}}^{\text{2}}}{\text{ + 5}}{{\text{p}}^{\text{2}}}{\text{q}} $$ {\text{ - 10 - 8p + 7q - 3pq + 5p}}{{\text{q}}^{\text{2}}}{\text{ + 4}}{{\text{p}}^{\text{2}}}{\text{q}} $$ \dfrac{{{\text{(+)(+)(-)(+)(-)}}\quad {\text{(-)}}}}{{{\text{28 + 5p - 18q + 8pq - 7p}}{{\text{q}}^{\text{2}}}{\text{ + }}{{\text{p}}^{\text{2}}}{\text{q}}}} $Exercise -8.21. Find the product of the following pairs of monomials.(i) ${\text{4,7p}}$Ans: ${{4 \times 7p = 4 \times 7 \times p = 28p}}$(ii) $\dfrac{{{\text{first monomial}} \to }}{{{\text{second monomial}} \downarrow }}$Ans: ${{ - 4p \times 7p = - 4 \times p \times 7 \times p = }}\left({{{ - 4 \times 7}}} \right){{ \times }}\left({{{p \times p}}} \right){\text{ = - 28 }}{{\text{p}}^2}$(iii) ${\text{ - 4p,7pq}}$Ans: ${{ - 4p \times 7pq = - 4 \times p \times 7 \times p \times q = }}\left({{{ - 4 \times 7}}} \right){{ \times }}\left({{{p \times p \times q}}} \right){\text{ = - 28}}{{\text{p}}^2}{\text{q }}$(iv) ${\text{4}}{{\text{p}}^{\text{3}}}{\text{ , - 3p }}$Ans: ${\text{ 4}}{{\text{p}}^{\text{3}}}{{ \times }}{\text{ - 3p = 4 \times }}\left({{\text{ - 3}}} \right){{ \times p \times p \times p \times p = - 12 }}{{\text{p}}^{\text{4}}}$(v) ${\text{4p, 0}}$Ans: ${{4p \times 0 = 4 \times p \times 0 = 0 }}$2. Find the areas of rectangles with the following pairs of monomials as their lengths and breadths respectively.$\left({{\text{p, q}}} \right){\text{; }}\left({{\text{10m, 5n}}} \right){\text{; }}\left({{\text{20}}{{\text{x}}^{\text{2}}}{\text{ , 5}}{{\text{y}}^{\text{2}}}{\text{ }}} \right){\text{; }}\left({{\text{4x, 3}}{{\text{x}}^{\text{2}}}{\text{ }}} \right){\text{; }}\left({{\text{3mn, 4np}}} \right){\text{ }}$Ans: We know that,Area of rectangle = length x breadthArea of 1st rectangle = p x q = pqArea of 2nd rectangle = ${{10m \times 5n = 10 \times 5 \times m \times n = 50mn}}$Area of 3rd rectangle = ${\text{20}}{{\text{x}}^{\text{2}}}{{ \times 5}}{{\text{y}}^{\text{2}}}{{ = 20 \times 5 \times }}{{\text{x}}^{\text{2}}}{{ \times }}{{\text{y}}^{\text{2}}}{\text{ = 100}}{{\text{x}}^{\text{2}}}{{\text{y}}^{\text{2}}}$Area of 4th rectangle = ${{4x }} \times {\text{ 3}}{{\text{x}}^{\text{2}}}{{ = 4 \times 3}} \times {{x}}{{\text{x}}^2}{\text{ = 12}}{{\text{x}}^3}$Area of 5th rectangle ${{ = 3mn \times 4np = 3 \times 4 \times m \times n \times n \times p = 12m}}{{\text{n}}^{\text{2}}}{\text{p}}$3. Complete the table of products.$\dfrac{{{\text{first monomial}} \to }}{{{\text{second monomial}} \downarrow }}$2x-5y3x2-4xy7x2y-9x2y2x4x2..-5y15x23x2-4xy7x2y-9x2y2Ans:The table can be completed as follows.$\dfrac{{{\text{first monomial}} \to }}{{{\text{second monomial}} \downarrow }}$2x-5y3x24xy7x2y-9x2y2x4x2-10xy6x2-8x2y14x3y-18x3y2-5y-10xy25y2-15x220xy2-35x2y245x2y33x26x3-15x2y9x4-12x321x4y-27x4y2-4xy-8x2y20xy2-12x3y16x2y2-28x3y236x3y37x2y14x3y-35x2y221x4y-28x3y249x4y2-63x4y3-9x2y2-18x3y245x2y3-27x4y236x3y3-63x4y381x4y44. Obtain the volume of rectangular boxes with the following length, breadth and height respectively.(i) ${\text{5a,3}}{{\text{a}}^{\text{2}}}{\text{,7}}{{\text{a}}^{\text{4}}}$Ans: We know thatVolume= length x breadth x heightVolume =${{5a \times 3}}{{\text{a}}^{\text{2}}}{{ \times 7}}{{\text{a}}^{\text{4}}}{\text{ = 105}}{{\text{a}}^{\text{7}}}$(ii) ${\text{2p,4q,8r}}$Ans: We know thatVolume = length x breadth x heightVolume = ${{2p \times 4q \times 8r = 64pqr}}$(iii) ${\text{xy,2}}{{\text{x}}^{\text{2}}}{\text{y,2x}}{{\text{y}}^{\text{2}}}$Ans: We know thatVolume = length x breadth x heightVolume = ${{xy \times 2}}{{\text{x}}^{\text{2}}}{{y \times 2x}}{{\text{y}}^{\text{2}}}{\text{ = 4}}{{\text{x}}^{\text{4}}}{{\text{y}}^{\text{4}}}$(iv) ${\text{a,2b,3c}}$Ans: We know thatVolume = length x breadth x heightVolume = ${{a}} \times {\text{2b}} \times {\text{3c = 6abc}}$5. Obtain the product of(i) ${\text{xy, yz, zx }}$Ans: ${{xy \times yz \times zx = }}{{\text{x}}^{\text{2}}}{\text{ }}{{\text{y}}^{\text{2}}}{\text{ }}{{\text{z}}^{\text{2}}}$(ii) ${\text{a, - }}{{\text{a}}^{\text{2}}}{\text{ , }}{{\text{a}}^{\text{3}}}{\text{ }}$Ans: ${{a}} \times ({\text{ - }}{{\text{a}}^{\text{2}}}) \times {\text{ }}{{\text{a}}^{\text{3}}}{\text{ = - }}{{\text{a}}^6}{\text{ }}$(iii) ${\text{2, 4y, 8}}{{\text{y}}^2}{\text{ , 16}}{{\text{y}}^3}$Ans: ${{2}} \times {{ 4y}} \times {\text{8}}{{\text{y}}^2} \times {\text{ 16}}{{\text{y}}^3} = 1024{y^6}$(iv) ${\text{a, 2b, 3c, 6abc}}$Ans: ${{a \times 2b \times 3c \times 6abc = }}$${\text{36}}{{\text{a}}^{\text{2}}}{{\text{b}}^{\text{2}}}{{\text{c}}^{\text{2}}}$(v) ${\text{m, - mn, mnp}}$Ans: ${{m \times }}\left({{\text{ - mn}}} \right){{ \times mnp = - }}{{\text{m}}^{\text{3}}}{{\text{n}}^{\text{2}}}$Exercise -8.31. Carry out the multiplication of the expressions in each of the following pairs.(i) ${\text{4p, q + r }}$Ans: $\left({{\text{4p}}} \right){{ \times }}\left({{\text{q + r}}} \right){\text{ = }}\left({{{4p \times q}}} \right){\text{ + }}\left({{{4p \times r}}} \right){\text{ = 4pq + 4pr}}$(ii) ${\text{ab, a - b }}$Ans: $\left({{\text{ab}}} \right){{ \times }}\left({{\text{a - b}}} \right){\text{ = }}\left({{{ab \times a}}} \right){\text{ + }}\left[{{{ab \times }}\left({{\text{ - b}}} \right)} \right]{\text{ = }}{{\text{a}}^{\text{2}}}{\text{b - a}}{{\text{b}}^{\text{2}}}$(iii) ${\text{a + b, 7}}{{\text{a}}^{\text{2}}}{{\text{b}}^{\text{2}}}$Ans: $\left({{\text{a + b}}} \right){{ \times }}\left({{\text{7a 2 b 2 }}} \right){\text{ = }}\left({{{a \times 7}}{{\text{a}}^{\text{2}}}{{\text{b}}^{\text{2}}}{\text{ }}} \right){\text{ + }}\left({{{b \times 7}}{{\text{a}}^{\text{2}}}{{\text{b}}^{\text{2}}}{\text{ }}} \right){\text{ = 7}}{{\text{a}}^{\text{3}}}{{\text{b}}^{\text{2}}}{\text{ + 7}}{{\text{a}}^{\text{2}}}{{\text{b}}^{\text{3}}}$(iv) ${{\text{a}}^{\text{2}}}{\text{ - 9, 4a}}$Ans: $\left({{{\text{a}}^2}{\text{ - 9}}} \right){{ \times }}\left({{\text{4a}}} \right){\text{ = }}\left({{{\text{a}}^{\text{2}}}{{ \times 4a}}} \right){\text{ + }}\left({{\text{ - 9}}} \right){{ \times }}\left({{\text{4a}}} \right){\text{ = 4}}{{\text{a}}^{\text{3}}}{\text{ - 36a}}$(v) ${\text{pq + qr + rp, 0}}$Ans: $\left({{\text{pq + qr + rp}}} \right){{ \times 0 = }}\left({{{pq \times 0}}} \right){\text{ + }}\left({{{qr \times 0}}} \right){\text{ + }}\left({{{rp \times 0}}} \right){\text{ = 0 }}$2. Complete the table--First expressionSecond expressionProductab+c+d-x+y-55xy-p${\text{6}}{{\text{p}}^{\text{2}}}{\text{ - 7p + 5 }}$-${\text{4}}{{\text{p}}^{\text{2}}}{{\text{q}}^{\text{2}}}$${{\text{p}}^{\text{2}}}{\text{ - }}{{\text{q}}^{\text{2}}}$-a+b+cabc-Ans: The table can be completed as follows:---First expressionSecond expressionProductab+c+dab+ac+adx+y-55x5x2y+5xy2-25xyp${\text{6}}{{\text{p}}^{\text{2}}}{\text{ - 7p + 5 }}$6p3-7p2+5p${\text{4}}{{\text{p}}^{\text{2}}}{{\text{q}}^{\text{2}}}$${{\text{p}}^{\text{2}}}{\text{ - }}{{\text{q}}^{\text{2}}}$4p4q2-4p2q4a+b+cabca2bc+ab2c+abc23. Find the product:(i) $\left({{{\text{a}}^{\text{2}}}} \right){{ \times }}\left({{\text{2}}{{\text{a}}^{{\text{22}}}}} \right){{ \times }}\left({{\text{4}}{{\text{a}}^{{\text{26}}}}} \right)$Ans: $\left({{{\text{a}}^{\text{2}}}} \right){{ \times }}\left({{\text{2}}{{\text{a}}^{{\text{22}}}}} \right){{ \times }}\left({{\text{4}}{{\text{a}}^{{\text{26}}}}} \right){{ = 2 \times 4 \times }}{{\text{a}}^{\text{2}}}{{ \times }}{{\text{a}}^{{\text{22}}}}{{ \times }}{{\text{a}}^{{\text{26}}}}{\text{ = 8}}{{\text{a}}^{{\text{50}}}}$(ii) $\left({\dfrac{{\text{2}}}{{\text{3}}}{\text{xy}}} \right){{ \times }}\left({\dfrac{{{\text{ - 9}}}}{{{\text{10}}}}{{\text{x}}^{\text{2}}}{{\text{y}}^{\text{2}}}} \right)$Ans: $\left({\dfrac{{\text{2}}}{{\text{3}}}{\text{xy}}} \right){{ \times }}\left({\dfrac{{{\text{ - 9}}}}{{{\text{10}}}}{{\text{x}}^{\text{2}}}{{\text{y}}^{\text{2}}}} \right){\text{ = }}\left({\dfrac{{\text{2}}}{{\text{3}}}} \right){{ \times }}\left({\dfrac{{{\text{ - 9}}}}{{{\text{10}}}}} \right){{ \times x \times y \times }}{{\text{x}}^{\text{2}}}{{ \times }}{{\text{y}}^{\text{2}}}{\text{ = }}\dfrac{{{\text{ - 3}}}}{{\text{5}}}{{\text{x}}^{\text{3}}}{{\text{y}}^{\text{3}}}$(iii) $\left({{\text{ - }}\dfrac{{{\text{10}}}}{{\text{3}}}{\text{p}}{{\text{q}}^{\text{3}}}} \right){{ \times }}\left({\dfrac{{\text{6}}}{{\text{5}}}{{\text{p}}^{\text{3}}}{\text{q}}} \right)$Ans: $\left({{\text{ - }}\dfrac{{{\text{10}}}}{{\text{3}}}{\text{p}}{{\text{q}}^{\text{3}}}} \right){{ \times }}\left({\dfrac{{\text{6}}}{{\text{5}}}{{\text{p}}^{\text{3}}}{\text{q}}} \right){\text{ = }}\left({\dfrac{{{\text{ - 10}}}}{{\text{3}}}} \right){{ \times }}\left({\dfrac{{\text{6}}}{{\text{5}}}} \right){{ \times p}}{{\text{q}}^{\text{3}}}{{ \times }}{{\text{p}}^{\text{3}}}{\text{q = - 4}}{{\text{p}}^{\text{4}}}{{\text{q}}^{\text{4}}}$(iv) ${{x \times }}{{\text{x}}^{\text{2}}}{{ \times }}{{\text{x}}^{\text{3}}}{{ \times }}{{\text{x}}^{\text{4}}}$Ans: ${{x \times }}{{\text{x}}^{\text{2}}}{{ \times }}{{\text{x}}^{\text{3}}}{{ \times }}{{\text{x}}^{\text{4}}}{\text{ = }}{{\text{x}}^{10}}$4. Solve the following(a) Simplify ${\text{3x }}\left({{\text{4x - 5}}} \right){\text{ + 3}}$and find its values for(i) ${\text{ x = 3}}$Ans: ${\text{3x }}\left({{\text{4x - 5}}} \right){\text{ + 3 = 12}}{{\text{x}}^{\text{2}}}{\text{ - 15x + 3 }}$$ {\text{ For x = 3, 12}}{{\text{x}}^{\text{2}}}{\text{ - 15x + 3 = 12 }}{\left({\text{3}} \right)^{\text{2}}}{\text{ - 15}}\left({\text{3}} \right){\text{ + 3 }} $$ {\text{ = 108 - 45 + 3 }} $$ {\text{ = 66 }} $(ii) ${\text{x = }}\dfrac{{\text{1}}}{{\text{2}}}$Ans:$ {\text{ For x = }}\dfrac{{\text{1}}}{{\text{2}}}{\text{, 12}}{{\text{x}}^{\text{2}}}{\text{ - 15x + 3 = 12 }}{\left({\dfrac{{\text{1}}}{{\text{2}}}} \right)^{\text{2}}}{\text{ - 15}}\left({\dfrac{{\text{1}}}{{\text{2}}}} \right){\text{ + 3 }} $$ {\text{ = 3 - }}\dfrac{{{\text{15}}}}{{\text{2}}}{\text{ + 3 }} $$ {\text{ = 6 - }}\dfrac{{{\text{15}}}}{{\text{2}}}{\text{ = }}\dfrac{{{\text{12 - 15}}}}{{\text{2}}}{\text{ = }}\dfrac{{{\text{ - 3}}}}{{\text{2}}} $(b) ${\text{a }}\left({{{\text{a}}^{\text{2}}}{\text{ + a + 1}}} \right){\text{ + 5}}$ and find its value for(i) ${\text{a = 0}}$Ans: ${\text{For a = 0, }}{{\text{a}}^{\text{3}}}{\text{ + }}{{\text{a}}^{\text{2}}}{\text{ + a + 5 = 0 + 0 + 0 + 5 = 5}}$(ii) ${\text{a = 1}}$Ans: $ {\text{For a = 1, }}{{\text{a}}^{\text{3}}}{\text{ + }}{{\text{a}}^{\text{2}}}{\text{ + a + 5 = }}{\left({\text{1}} \right)^{\text{3}}}{\text{ + }}{\left({\text{1}} \right)^{\text{2}}}{\text{ + 1 + 5}} $$ {\text{ = 1 + 1 + 1 + 5 = 8 }} $(iii) ${\text{a = - 1}}$Ans: $ {\text{For a = - 1, }}{{\text{a}}^{\text{3}}}{\text{ + }}{{\text{a}}^{\text{2}}}{\text{ + a + 5 = }}{\left({{\text{ - 1}}} \right)^{\text{3}}}{\text{ + }}{\left({{\text{ - 1}}} \right)^{\text{2}}}{\text{ + }}\left({{\text{ - 1}}} \right){\text{ + 5 }} $$ {\text{ = - 1 + 1 - 1 + 5 = 4 }} $5. Solve the following(i) Add: ${\text{p (p - q), q (q - r)}}$ and ${\text{r (r - p)}}$Ans:$ {\text{First expression = p }}\left({{\text{p - q}}} \right){\text{ = }}{{\text{p}}^{\text{2}}}{\text{ - pq }} $$ {\text{Second expression = q }}\left({{\text{q - r}}} \right){\text{ = }}{{\text{q}}^2}{\text{ - qr}} $$ {\text{Third expression = r }}\left({{\text{r - p}}} \right){\text{ = }}{{\text{r}}^2}{\text{ - pr}} $Adding the three expressions, we obtain$ {\text{ }}{{\text{p}}^{\text{2}}}{\text{ - pq }} $$ {\text{ + }}{{\text{q}}^{\text{2}}}{\text{ - qr}} $$ {\text{ + }}{{\text{r}}^{\text{2}}}{\text{ - pr}} $$ \overline {{\text{ }}{{\text{p}}^{\text{2}}}{\text{ - pq + }}{{\text{q}}^{\text{2}}}{\text{ - qr + }}{{\text{r}}^{\text{2}}}{\text{ - pr}}} $Therefore, the sum is ${{\text{p}}^{\text{2}}}{\text{ - pq + }}{{\text{q}}^{\text{2}}}{\text{ - qr + }}{{\text{r}}^{\text{2}}}{\text{ - pr}}$(ii) Add: ${\text{2x }}\left({{\text{z - x - y}}} \right){\text{ and 2y }}\left({{\text{z - y - x}}} \right){\text{ }}$Ans:$ {\text{First expression = 2x }}\left({{\text{z - x - y}}} \right){\text{ = 2xz - 2}}{{\text{x}}^{\text{2}}}{\text{ - 2xy }} $$ {\text{Second expression = 2y }}\left({{\text{z - y - x}}} \right){\text{ = 2yz - 2}}{{\text{y}}^{\text{2}}}{\text{ - 2yx }} $Adding the two expressions, we obtain$ {\text{ 2xz - 2}}{{\text{x}}^{\text{2}}}{\text{ - 2xy }} $$ {\text{ + - 2yx + 2yz - 2}}{{\text{y}}^{\text{2}}}{\text{ }} $$ \overline {\,\,{\text{ 2xz - 2}}{{\text{x}}^{\text{2}}}{\text{ - 4xy + 2yz - 2}}{{\text{y}}^{\text{2}}}} $Therefore, the sum is ${\text{2xz - 2}}{{\text{x}}^{\text{2}}}{\text{ - 4xy + 2yz - 2}}{{\text{y}}^{\text{2}}}$(iii) Subtract ${\text{3l }}\left({{\text{l - 4m + 5n}}} \right){\text{ from 4l }}\left({{\text{10n - 3m + 2l}}} \right){\text{ }}$Ans:$ {\text{3l }}\left({{\text{l - 4m + 5n}}} \right){\text{ = 3}}{{\text{l}}^{\text{2}}}{\text{ - 12lm + 15ln }} $$ {\text{4l }}\left({{\text{10n - 3m + 2l}}} \right){\text{ = 40ln - 12lm + 8}}{{\text{l}}^{\text{2}}}{\text{ }} $Subtracting these expressions, we obtain$ {\text{ 8}}{{\text{l}}^{\text{2}}}{\text{ - 12lm + 40ln}} $$ {\text{ 3}}{{\text{l}}^{\text{2}}}{\text{ - 12lm + 15ln}} $$ (-)\,{\text{ }}(+){\text{ }}(-) $$ \overline {{\text{ 5}}{{\text{l}}^2}{\text{ + 25ln }}} {\text{ }} $Therefore, the result is ${\text{5}}{{\text{l}}^2}{\text{ + 25ln}}$(iv) Subtract ${\text{3a }}\left({{\text{a + b + c}}} \right){\text{ - 2b }}\left({{\text{a - b + c}}} \right){\text{ from 4c }}\left({{\text{ - a + b + c}}} \right)$Ans:$ {\text{ + 4}}{{\text{c}}^{\text{2}}}{\text{ - 4ac + 4bc }} $$ {\text{ 3}}{{\text{a}}^{\text{2}}}{\text{ + 2}}{{\text{b}}^{\text{2 }}}{\text{ + ab + 3ac - 2bc}} $$ {\text{(-) (-) (-) (-) (+)}} $$ \overline {{\text{ - 3}}{{\text{a}}^{\text{2}}}{\text{ - 2}}{{\text{b}}^{\text{2}}}\,{\text{ + 4}}{{\text{c}}^{\text{2}}}{\text{ + ab - 7ac + 6bc}}} $Therefore, the result is ${\text{ - 3}}{{\text{a}}^{\text{2}}}{\text{ - 2}}{{\text{b}}^{\text{2}}}\,{\text{ + 4}}{{\text{c}}^{\text{2}}}{\text{ + ab - 7ac + 6bc}}$Exercise -8.41. Multiply the binomials.(i) ${\text{(2x + 5)}}$and ${\text{(4x - 3)}}$Ans: ${\text{(2x + 5) }} \times {\text{ (4x - 3) = 2x }} \times {\text{(4x - 3) + 5 }} \times {\text{(4x - 3)}}$${\text{ = 8}}{{\text{x}}^2}{\text{ - 6x + 20x - 15}}$${\text{ = 8x2 + 14x - 15 (By adding like terms)}}$(ii) ${\text{(y - 8)}}$and ${\text{(3y - 4)}}$Ans: ${{ (y - 8) \times (3y - 4) = y \times (3y - 8) - 8 \times (3y - 4)}}$${\text{ = 3}}{{\text{y}}^2}{\text{ - 4y - 24y + 32}}$${\text{ = 3}}{{\text{y}}^{\text{2}}}{\text{ - 28y + 32 (By adding like terms)}}$(iii) ${\text{(2}}{\text{.5l - 0}}{\text{.5m)}}$and ${\text{(2}}{\text{.5l + 0}}{\text{.5m)}}$Ans: ${\text{(2}}{\text{.5l - 0}}{\text{.5m)(2}}{\text{.5l + 0}}{\text{.5m) = 2}}{{.5l \times (2}}{\text{.5l + 0}}{\text{.5m) - 0}}{\text{.5m(2}}{\text{.5l + 0}}{\text{.5m)}}$${\text{ = 6}}{\text{.25}}{{\text{l}}^2}{\text{ + 1}}{\text{.25lm - 1}}{\text{.25lm - 0}}{\text{.25}}{{\text{m}}^2}$${\text{ = 6}}{\text{.25}}{{\text{l}}^2}{\text{ - 0}}{\text{.25}}{{\text{m}}^2}$(iv) $\left({{\text{a + 3b}}} \right)$and ${\text{(x + 5)}}$Ans: ${\text{(a + 3b) }} \times {\text{ (x + 5) = a}} \times {{(x + 5) + 3b }} \times {\text{(x + 5)}}$${\text{ = ax + 5a + 3bx + 15b}}$(v) ${\text{(2pq + 3}}{{\text{q}}^2}{\text{)}}$and ${\text{(3pq - 2}}{{\text{q}}^2}{\text{)}}$Ans: ${\text{(2pq + 3}}{{\text{q}}^2}{\text{)}} \times {\text{(3pq - 2}}{{\text{q}}^2}{\text{) = 2pq }} \times {\text{(3pq - 2}}{{\text{q}}^2}{\text{) + 3}}{{\text{q}}^2} \times {\text{(3pq - 2}}{{\text{q}}^2}{\text{)}}$${\text{ = 6p2}}{{\text{q}}^2}{\text{ - 4p}}{{\text{q}}^3}{\text{ + 9p}}{{\text{q}}^3}{\text{ - 6}}{{\text{q}}^4}$${\text{ = 6p2}}{{\text{q}}^2}{\text{ + 5p}}{{\text{q}}^3}{\text{ - 6}}{{\text{q}}^4}$(vi) $\left({\dfrac{3}{4}{a^2} + 3{b^2}} \right)$and $4\left({{a^2} - \dfrac{2}{3}{b^2}} \right)$Ans: $\left({\dfrac{{\text{3}}}{{\text{4}}}{{\text{a}}^{\text{2}}}{\text{ + 3}}{{\text{b}}^{\text{2}}}} \right){{ \times }}\left[{{\text{4}}\left({{{\text{a}}^{\text{2}}}{\text{ - }}\dfrac{{\text{2}}}{{\text{3}}}{{\text{b}}^{\text{2}}}} \right)} \right]{\text{ = }}\left({\dfrac{{\text{3}}}{{\text{4}}}{{\text{a}}^{\text{2}}}{\text{ + 3}}{{\text{b}}^{\text{2}}}} \right){{ \times }}\left({{\text{4}}{{\text{a}}^{\text{2}}}{\text{ - }}\dfrac{{\text{8}}}{{\text{3}}}{{\text{b}}^{\text{2}}}} \right)$${\text{ = }}\dfrac{{\text{3}}}{{\text{4}}}{{\text{a}}^{\text{2}}}{{ \times }}\left({{\text{4}}{{\text{\alpha }}^{\text{2}}}{\text{ - }}\dfrac{{\text{8}}}{{\text{3}}}{{\text{b}}^{\text{2}}}} \right){\text{ + 3}}{{\text{b}}^{\text{2}}}{{ \times }}\left({{\text{4}}{{\text{a}}^{\text{2}}}{\text{ - }}\dfrac{{\text{8}}}{{\text{3}}}{{\text{b}}^{\text{2}}}} \right) $$ {\text{ = 3}}{{\text{a}}^{\text{4}}}{\text{ - 2}}{{\text{a}}^{\text{2}}}{{\text{b}}^{\text{2}}}{\text{ + 12}}{{\text{b}}^{\text{2}}}{{\text{a}}^{\text{2}}}{\text{ - 8}}{{\text{b}}^{\text{4}}} $$ {\text{ = 3}}{{\text{a}}^{\text{4}}}{\text{ + 10}}{{\text{a}}^{\text{2}}}{{\text{b}}^{\text{2}}}{\text{ - 8}}{{\text{b}}^{\text{4}}} $2. Find the product.(i) ${\text{(5 - 2x) (3 + x)}}$Ans: ${\text{(5 - 2x) (3 + x) = 5 (3 + x) - 2x (3 + x)}}$$ {\text{ = 15 + 5x - 6x - 2}}{{\text{x}}^2} $$ {\text{ = 15 - x - 2}}{{\text{x}}^2} $(ii) ${\text{(x + 7y) (7x - y)}}$Ans: ${\text{(x + 7y) (7x - y) = x (7x - y) + 7y (7x - y)}}$$ {\text{ = 7}}{{\text{x}}^2}{\text{ - xy + 49xy - 7}}{{\text{y}}^2} $$ {\text{ = 7}}{{\text{x}}^2}{\text{ + 48xy - 7}}{{\text{y}}^2} $(iii) ${\text{(}}{{\text{a}}^2}{\text{ + b) (a + }}{{\text{b}}^2}{\text{)}}$Ans: ${\text{(}}{{\text{a}}^2}{\text{ + b) (a + }}{{\text{b}}^2}{\text{) = }}{{\text{a}}^2}{\text{ (a + }}{{\text{b}}^2}{\text{) + b (a + }}{{\text{b}}^2}{\text{)}}$${\text{ = }}{{\text{a}}^3}{\text{ + }}{{\text{a}}^2}{{\text{b}}^2}{\text{ + ab + }}{{\text{b}}^3}$(iv) ${\text{(}}{{\text{p}}^2}{\text{ - }}{{\text{q}}^2}{\text{) (2p + q)}}$Ans: ${\text{(a - b) (a + b) + (b - c) (b + c) + (c - a) (c + a) = 0}}$${\text{ = 2}}{{\text{p}}^3}{\text{ + }}{{\text{p}}^2}{\text{q - 2p}}{{\text{q}}^2}{\text{ - }}{{\text{q}}^3}$3. Simplify.(i) ${\text{(}}{{\text{x}}^2}{\text{ - 5) (x + 5) + 25}}$Ans: ${\text{(}}{{\text{x}}^2}{\text{ - 5) (x + 5) + 25}}$$ {{\text{x}}^2}{\text{ (x + 5) - 5 (x + 5) + 25}} $$ {\text{ = }}{{\text{x}}^3}{\text{ + 5}}{{\text{x}}^2}{\text{ - 5x - 25 + 25}} $$ {\text{ = }}{{\text{x}}^3}{\text{ + 5}}{{\text{x}}^2}{\text{ - 5x}} $(ii) ${\text{(}}{{\text{a}}^2}{\text{ + 5) (}}{{\text{b}}^3}{\text{ + 3) + 5}}$Ans: ${\text{(}}{{\text{a}}^2}{\text{ + 5) (}}{{\text{b}}^3}{\text{ + 3) + 5}}$$ {\text{ = }}{{\text{a}}^2}{\text{ (}}{{\text{b}}^3}{\text{ + 3) + 5 (}}{{\text{b}}^3}{\text{ + 3) + 5}} $$ {\text{ = }}{{\text{a}}^2}{{\text{b}}^3}{\text{ + 3}}{{\text{a}}^2}{\text{ + 5}}{{\text{b}}^3}{\text{ + 15 + 5}} $$ {\text{ = }}{{\text{a}}^2}{{\text{b}}^3}{\text{ + 3}}{{\text{a}}^2}{\text{ + 5}}{{\text{b}}^3}{\text{ + 20}} $(iii) ${\text{(t + }}{{\text{s}}^2}{\text{) (}}{{\text{t}}^2}{\text{ - s)}}$Ans: ${\text{(t + }}{{\text{s}}^2}{\text{) (}}{{\text{t}}^2}{\text{ - s)}}$$ {\text{ = t (}}{{\text{t}}^2}{\text{ - s) + }}{{\text{s}}^2}{\text{ (}}{{\text{t}}^2}{\text{ - s)}} $$ {\text{ = }}{{\text{t}}^3}{\text{ - st + }}{{\text{s}}^2}{{\text{t}}^2}{\text{ - }}{{\text{s}}^3} $(iv) ${\text{(a + b) (c - d) + (a - b) (c + d) + 2 (ac + bd)}}$Ans: ${\text{(a + b) (c - d) + (a - b) (c + d) + 2 (ac + bd)}}$$ {\text{ = a (c - d) + b (c - d) + a (c + d) - b (c + d) + 2 (ac + bd)}} $$ {\text{ = ac - ad + bc - bd + ac + ad - bc - bd + 2ac + 2bd}} $$ {\text{ = (ac + ac + 2ac) + (ad - ad) + (bc - bc) + (2bd - bd - bd)}} $$ {\text{ = 4ac}} $(v) ${\text{(x + y) (2x + y) + (x + 2y) (x - y)}}$Ans: ${\text{(x + y) (2x + y) + (x + 2y) (x - y)}}$$ {\text{ = x (2x + y) + y (2x + y) + x (x - y) + 2y (x - y)}} $$ {\text{ = 2}}{{\text{x}}^2}{\text{ + xy + 2xy + }}{{\text{y}}^2}{\text{ + }}{{\text{x}}^2}{\text{ - xy + 2xy - 2}}{{\text{y}}^2} $$ {\text{ = (2}}{{\text{x}}^2}{\text{ + }}{{\text{x}}^2}{\text{) + (}}{{\text{y}}^2}{\text{ - 2}}{{\text{y}}^2}{\text{) + (xy + 2xy - xy + 2xy)}} $$ {\text{ = 3}}{{\text{x}}^2}{\text{ - }}{{\text{y}}^2}{\text{ + 4xy}} $(vi) ${\text{(x + y) (}}{{\text{x}}^2}{\text{ - xy + }}{{\text{y}}^2}{\text{)}}$Ans: ${\text{(x + y) (}}{{\text{x}}^2}{\text{ - xy + }}{{\text{y}}^2}{\text{)}}$$ {\text{ = x (}}{{\text{x}}^2}{\text{ - xy + }}{{\text{y}}^2}{\text{) + y (}}{{\text{x}}^2}{\text{ - xy + }}{{\text{y}}^2}{\text{)}} $$ {\text{ = }}{{\text{x}}^3}{\text{ - }}{{\text{x}}^2}{\text{y + x}}{{\text{y}}^2}{\text{ + }}{{\text{x}}^2}{\text{y - x}}{{\text{y}}^2}{\text{ + }}{{\text{y}}^3} $$ {\text{ = }}{{\text{x}}^3}{\text{ + }}{{\text{y}}^3}{\text{ + (x}}{{\text{y}}^2}{\text{ - x}}{{\text{y}}^2}{\text{) + (}}{{\text{x}}^2}{\text{y - }}{{\text{x}}^2}{\text{y)}} $$ {\text{ = }}{{\text{x}}^3}{\text{ + }}{{\text{y}}^3} $(vii) ${\text{(1}}{\text{.5x - 4y) (1}}{\text{.5x + 4y + 3) - 4}}{\text{.5x + 12y}}$Ans: ${\text{(1}}{\text{.5x - 4y) (1}}{\text{.5x + 4y + 3) - 4}}{\text{.5x + 12y}}$$ {\text{ = 1}}{\text{.5x (1}}{\text{.5x + 4y + 3) - 4y (1}}{\text{.5x + 4y + 3) - 4}}{\text{.5x + 12y}} $$ {\text{ = 2}}{\text{.25 }}{{\text{x}}^2}{\text{ + 6xy + 4}}{\text{.5x - 6xy - 16}}{{\text{y}}^2}{\text{ - 12y - 4}}{\text{.5x + 12y}} $$ {\text{ = 2}}{\text{.25 }}{{\text{x}}^2}{\text{ + (6xy - 6xy) + (4}}{\text{.5x - 4}}{\text{.5x) - 16}}{{\text{y}}^2}{\text{ + (12y - 12y)}} $$ {\text{ = 2}}{\text{.25}}{{\text{x}}^2}{\text{ - 16}}{{\text{y}}^2} $(viii) ${\text{(a + b + c) (a + b - c)}}$Ans: ${\text{(a + b + c) (a + b - c)}}$$ {\text{ = a (a + b - c) + b (a + b - c) + c (a + b - c)}} $$ {\text{ = }}{{\text{a}}^2}{\text{ + ab - ac + ab + }}{{\text{b}}^2}{\text{ - bc + ca + bc - }}{{\text{c}}^2} $$ {\text{ = }}{{\text{a}}^2}{\text{ + }}{{\text{b}}^2}{\text{ - }}{{\text{c}}^2}{\text{ + (ab + ab) + (bc - bc) + (ca - ca)}} $$ {\text{ = }}{{\text{a}}^2}{\text{ + }}{{\text{b}}^2}{\text{ - }}{{\text{c}}^2}{\text{ + 2ab}} $NCERT Solutions for Class 8 Maths chapter 8 PDFOverview of Deleted Syllabus for CBSE Class 8 Maths Algebraic Expressions and IdentitiesChapterDropped TopicsAlgebraic Expressions and Identities8.1 Introduction8.2 Terms, Factors and Coefficients8.3 Monomials, Binomials and Polynomials8.4 Like and Unlike Terms8.10 What is an Identity?8.11 Standard Identities8.12 Applying IdentitiesClass 8 Maths chapter 8: Exercises BreakdownExerciseNumber of QuestionsExercise 8.12 Questions and SolutionsExercise 8.25 Questions and SolutionsExercise 8.35 Questions and SolutionsExercise 8.43 Questions with SolutionsConclusionNCERT Solutions for Maths Algebraic Expressions Class 8 Chapter 8 by Vedantu are essential for building a strong foundation in algebra. This chapter introduces you to the basics of forming and simplifying algebraic expressions, and understanding and applying various algebraic identities.In previous year exams, around 34 questions have been asked from this chapter, highlighting its significance in the overall curriculum. By thoroughly practising the problems and understanding the step-by-step solutions provided by Vedantu, you can confidently tackle algebraic expressions and identities.Other Study Material for CBSE Class 8 Maths chapter 8Chapter-Specific NCERT Solutions for Class 8 MathsGiven below are the chapter-wise NCERT Solutions for Class 8 Maths. Go through these chapter-wise solutions to be thoroughly familiar with the concepts.Important Related Links for CBSE Class 8 Maths

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