

India's Number 1 Education App

#### **MATHS**

#### **BOOKS - PSEB**

## **Algebraic Expressions**

### Example

1. Identify, in the following expressions, terms which are not constants.

Give their numerical coefficients

$$xy + 4$$
,  $13 - y^2$ ,  $13 - y + 5y^2$ ,  $4p^2q - 3pq^2 + 5$ 



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2. What are the coefficients of x in the following expressions?

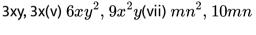
4x-3y, 8-x+y,  $y^2x-y$ , 2z-5xz

3. What are the coefficients of y in the following expressions?

$$4x-3y, 8+yz, yz^2+5, my+m$$



**4.** State with reasons, which of the following pairs of terms are of like terms and which are of unlike terms:(i) 7x, 12y(ii)15x, -21x(iii) - 4ab, 7ba(iv)





**5.** Get the algebraic expressions in the following cases using variables, constants and arithmetic operations

.Subtraction of z from y.



**6.** Get the algebraic expressions in the following cases using variables, constants and arithmetic operations

.One-half of the sum of numbers x and y.



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**7.** Get the algebraic expressions in the following cases using variables, constants and arithmetic operations

.The number z multiplied by itself.



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**8.** Get the algebraic expressions in the following cases using variables, constants and arithmetic operations.

One-fourth of the product of numbers p and q



9. Get the algebraic expressions in the following cases using variables, constants and arithmetic operations

.Numbers x and y both squared and added.



10. Get the algebraic expressions in the following cases using variables, constants and arithmetic operations

.Number 5 added to three times the product of numbers m and n.



11. Get the algebraic expressions in the following cases using variables, constants and arithmetic operations.

Product of numbers y and z subtracted from 10.



12. Get the algebraic expressions in the following cases using variables, constants and arithmetic operations

Sum of numbers a and b subtracted from their product.



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13. Identify the terms and their factors in the following expressions Show the terms and factors by tree diagram

x-3



14. Identify the terms and their factors in the following expressions Show the terms and factors by tree diagram  $1 + x + x^2$ 



**15.** Identify the terms and their factors in the following expressions Show the terms and factors by tree diagram,

$$y\!\!-\!y^3$$



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**16.** Identify the terms and their factors in the following expressions Show the terms and factors by tree diagram

$$5xy^2 + 7x^2y$$



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17. Identify the terms and their factors in the following expressions Show the terms and factors by tree diagram

$$-ab + 2b^2 - 3a^2$$



18. identify terms and factors in the expressions given below:

- -4x + 5
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- 19. identify terms and factors in the expressions given below:
  - -4x + 5y

 $5y + 3y^2$ 

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- 20. identify terms and factors in the expressions given below:

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- 21. identify terms and factors in the expressions given below:
- $xy + 2x^2y^2$

22. dentify terms and factors in the expressions given below:

pq+q



23. dentify terms and factors in the expressions given below:

1.2 ab - 2.4 b + 3.6 a



24. dentify terms and factors in the expressions given below:

$$\frac{3}{4}x + \frac{1}{4}$$



25. dentify terms and factors in the expressions given below:

 $0.1p^2 + 0.2q^2$ 



**26.** Identify the numerical coefficients of terms (other than constants) in the following expressions

$$5 - 3t^2$$



**27.** Identify the numerical coefficients of terms (other than constants) in the following expressions

$$1 + t + t^2 + t^3$$



**28.** Identify the numerical coefficients of terms (other than constants) in the following expressions

$$x + 2xy + 3y$$



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**29.** Identify the numerical coefficients of terms (other than constants) in the following expressions

100m + 1000n



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**30.** Identify the numerical coefficients of terms (other than constants) in the following expressions

$$-p^2q^2+7pq$$



**31.** Identify the numerical coefficients of terms (other than constants) in the following expressions

1.2 a + 0.8 b



**32.** Identify the numerical coefficients of terms (other than constants) in the following expressions

 $3.14r^{2}$ 



**33.** Identify the numerical coefficients of terms (other than constants) in the following expressions

2(l + b)



**34.** Identify the numerical coefficients of terms (other than constants) in the following expressions

- $0.1y + 0.01y^2$ 
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**35.** Identify terms which contain x and give the coefficient of x.

 $y^2x + y$ 



**36.** Identify terms which contain x and give the coefficient of x.

 $13y^2 - 8yx$ 



**37.** Identify terms which contain x and give the coefficient of x.

$$x + y + 2$$



**38.** Identify terms which contain x and give the coefficient of x.

5 + z + zx



**39.** Identify terms which contain x and give the coefficient of x.

1 + x + xy



**40.** Identify terms which contain x and give the coefficient of x.

 $12xy^2+25$ 



41. Identify terms which contain x and give the coefficient of x.

 $7x + xy^2$ 



**42.** Identify terms which contain y2 and give the coefficient of  $y^2$ 

 $8-xy^2$ 

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**43.** Identify terms which contain  $y^2$  and give the coefficient of  $y^2$  $5u^2 + 7x$ 



**44.** Identify terms which contain  $y^2$  and give the coefficient of  $y^2$ 

$$2x^2y - 15xy^2 + 7y^2$$



45. Classify into monomials, binomials and trinomials

4y - 7



46. Classify into monomials, binomials and trinomials



x + y - xy

 $y^2$ 



**48.** Classify into monomials, binomials and trinomials

100

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**49.** Classify into monomials, binomials and trinomials

ab – a – b

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**50.** Classify into monomials, binomials and trinomials

Watel

5 – 3t



51. Classify into monomials, binomials and trinomials

$$4p^2q$$
–  $4pq^2$ 



52. Classify into monomials, binomials and trinomials

7mn



53. Classify into monomials, binomials and trinomials



 $a^2 + b^2$ 

 $z^2 - 3z + 8$ 



**55.** Classify into monomials, binomials and trinomials

$$z^2 + z$$



**56.** Classify into monomials, binomials and trinomials

$$1+x+x^2$$



**57.** State whether a given pair of terms is of like or unlike terms.

1, 100



**58.** State whether a given pair of terms is of like or unlike terms.

$$-7x, \frac{5}{2}x$$



**59.** State whether a given pair of terms is of like or unlike terms.

- 29x, 29y
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**60.** State whether a given pair of terms is of like or unlike terms.

14xy, 42yx



**61.** State whether a given pair of terms is of like or unlike terms.

 $4m^2p, 4mp^2$ 

**62.** State whether a given pair of terms is of like or unlike terms.

 $10pq, 7p, 8q, -p^2q^2, -7qp, -100q, -23, 12q^2p^2, -5p2, 41, 2405p, 78qp, 13p^2q, q^2, -100q, -20, 12q^2p^2, -100q, -100q, -20, 12q^2p^2, -100q, -1$ 

$$12xz, 12x^2z^2$$



$$-xy^2, -4yx^2, 8x^2, 2xy^2, 7y, -11x^2, -100x, -11yx, 20x^2y, -6x^2, y, 2xy, 3x$$



# 64. Identify like terms in the following



**65.** Collect like simplify the expression: terms and  $12m^2 - 9m + 5m - 4m^2 - 7m + 10$ 





66. subtract 24ab - 10b - 18a from 30ab + 12b + 14a.



**67.** From the sum of  $2y^2 + 3yz$ ,  $-y^2 - yz - z^2$  and  $yz + 2z^2$ , subtract the sum of  $3y^2 - z^2$  and  $-y^2 + yz + z^2$ .



68. Simplify combining like terms:

21b - 32 + 7b - 20b



**69.** Simplify combining like terms:

$$-z^2+13z^2-5z+7z^3-15z$$



**70.** Simplify combining like terms:

$$p - (p - q) - q - (q - p)$$



71. Simplify combining like terms:

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



72. Simplify combining like terms:

$$5x^2y - 5x^2 + 3yx^2 - 3y^2 + x^2 - y^2 + 8xy^2 - 3y^2$$



## 73. Simplify combining like terms:

$$(3y^2 + 5y - 4) - (8y - y^2 - 4)$$



#### **74.** Add:

3mn, - 5mn, 8mn, - 4mn



**75.** Add:

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# t - 8tz, 3tz - z, z - t



- 7mn + 5, 12mn + 2, 9mn - 8, - 2mn - 3



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## **77.** Add:

a + b - 3, b - a + 3, a - b + 3



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# **78.** Add:

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14x + 10y - 12xy - 13, 18 - 7x - 10y + 8xy, 4xy

**79.** Add:

5m - 7n, 3n - 4m + 2, 2m - 3mn - 5



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**80.** Add:

 $4x^2y, -3xy^2, -5xy^2, 5x^2y$ 

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**81.** Add

 $3p^2q^2-4pq+5, -10p^2q^2, 15+9pq+7p^2q^2$ 

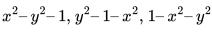
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82. Add

ab - 4a, 4b - ab, 4a - 4b



**83.** Add







84. Subtract:



6xy from –12xy

85. Subtract:



86. Subtract: (a - b) from (a + b)Watch Video Solution 87. Subtract: a (b - 5) from b (5 - a)Watch Video Solution 88. Subtract:  $-m^2 + 5mn$  from  $4m^2 - 3mn + 8$ Watch Video Solution 89. Subtract:  $-x^2 + 10x - 5$  from 5x - 10

91. Subtract:

$$5a^2 - 7ab + 5b^2$$
 from  $3ab - 2a^2 - 2b^2$ 



# 4pq– $5q^2$ – $3p^2$ from $5p^2+3q^2$ – pq



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**92.** What should be added to  $x^2 + xy + y^2$  to obtain  $2x^2 + 3xy$ ?

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**94.** What should be taken away from  $3x^2-4y^2+5xy+20$  to obtain  $-x^2-y^2+6xy+20$ ?





**95.** From the sum of 3x - y + 11 and -y - 11, subtract 3x - y - 11.



**96.** From the sum of 4 + 3x and 5–  $4x + 2x^2$ , subtract the sum of  $3x^2$ – 5x and  $-x^2 + 2x + 5$ .



**97.** Find the values of the following expressions for x = 2.



**98.** Find the values of the following expressions for x = 2.

4x – 3



**99.** Find the values of the following expressions for x = 2.

 $19-5x^2$ 



**100.** Find the values of the following expressions for x = 2.



 $100-10x^3$ 

**101.** Find the value of the following expressions when n = -2.

5n – 2



**102.** Find the value of the following expressions when n = -2.

$$5n^2+5n\!\!-\!2$$



**103.** Find the value of the following expressions when n = -2.

$$n^3 + 5n^2 + 5n - 2$$



**104.** Find the value of the following expressions for a = 3, b = 2.

a + b

**105.** Find the value of the following expressions for a = 3, b = 2.

7a – 4b



**106.** Find the value of the following expressions for a = 3, b = 2.

$$a^2 + 2ab + b^2$$



**107.** Find the value of the following expressions for a = 3, b = 2.

$$a^3 - b^3$$



**108.** If m = 2, find the value of: m - 2

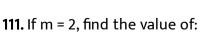






**110.** If m = 2, find the value of: 9 – 5m







$$\frac{5m}{2}$$
 –  $4$ 



4p + 7



# **114.** If p = – 2, find the value of

$$-3p^2+4p+7$$



**115.** If p = – 2, find the value of

$$-2p^3-3p^2+4p+7$$



**116.** Find the value of the following expressions, when x = -1:



**117.** Find the value of the following expressions, when x = -1:



- **118.** Find the value of the following expressions, when x = -1:
- $x^2+2x+1$

**119.** Find the value of the following expressions, when x = -1:

$$2x^2 - x - 2$$

 $a^2 + b^2$ 



**121.** If a = 2, b = – 2, find the value of:

$$a^2 + ab + b^2$$



**122.** If a = 2, b = -2, find the value of:

$$a^2 + ab + b^2$$



123. When a = 0, b = -1, find the value of the given expressions



**124.** When a = 0, b = -1, find the value of the given expressions

$$2a^2 + b^2 + 1$$



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**125.** When a = 0, b = -1, find the value of the given expressions

$$2a^2b + 2ab^2 + ab$$

**126.** When 
$$a = 0$$
,  $b = -1$ , find the value of the given expressions



 $a^2 + ab + 2$ 

# **127.** Simplify the expressions and find the value if x is equal to 2



## **128.** Simplify the expressions and find the value if x is equal to 2

3(x+2) + 5x - 7

x + 7 + 4 (x - 5)



**129.** Simplify the expressions and find the value if x is equal to 2

$$6x + 5(x - 2)$$



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130. Simplify the expressions and find the value if x is equal to 2

$$4(2x - 1) + 3x + 11$$



**131.** Simplify these expressions and find their values if x = 3, a = -1, b = -2

$$3x - 5 - x + 9$$



- **132.** Simplify these expressions and find their values if x = 3, a = -1, b = -2
  - 2 8x + 4x + 4

**133.** Simplify these expressions and find their values if 
$$x = 3$$
,  $a = -1$ ,  $b = -2$ 

3a + 5 – 8a + 1

10 - 3b - 4 - 5b



**134.** Simplify these expressions and find their values if x = 3, a = -1, b = -2

**135.** Simplify these expressions and find their values if x = 3, a = -1, b = -2

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2a – 2b – 4 – 5 + a



**136.** If z = 10, find the value of  $z^3 - 3(z-10)$ .



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**137.** If p = – 10, find the value of  $p^2 - 2p - 100$ 



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**138.** What should be the value of a if the value of  $2x^2 + x - a$  equals to 5, when x = 0?



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**139.** Simplify the expression and find its value when a = 5 and b = -3.

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



**140.** Use the given algebraic expression to complete the table of number patterns.

