# ©゙doubtnut 

India's Number 1 Education App

## MATHS

# BOOKS - JNAN PUBLICATION 

## ALGEBRAIC FORMULA

## Example

1. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and b in each case and hence find their square.
$x+3$
2. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and $b$ in each case and hence find their square. $p+9$

## - Watch Video Solution

3. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and $b$ in each case and hence find their square.

6-x

## - Watch Video Solution

4. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for a and $b$ in each case and hence find their square.
$y-2$

## (D) Watch Video Solution

5. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and $b$ in each case and hence find their square. $m n+1$

## - Watch Video Solution

6. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and b in each case and hence find their square.

$$
6 x+3
$$

## - Watch Video Solution

7. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and
$b$ in each case and hence find their square.
$4 x+5 y$

## - Watch Video Solution

8. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for a and $b$ in each case and hence find their square.

$$
\mathrm{pqc}+2
$$

## - Watch Video Solution

9. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and b in each case and hence find their square.
$\frac{5}{k}+3$

## - Watch Video Solution

10. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and b in each case and hence find their square.
$\frac{3}{r}+\frac{2}{p}$

## - Watch Video Solution

11. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and b in each case and hence find their square.
$\frac{p}{q}+\frac{m}{n}$

## - Watch Video Solution

12. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and b in each case and hence find their square.
$3 x y+4 z$
13. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and b in each case and hence find their square. 102

## - Watch Video Solution

14. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for a and $b$ in each case and hence find their square. $2 x+3 y+z$

## - Watch Video Solution

15. To find the square of the algebraic expressions given below using $(a+b)^{2}=a^{2}+2 a b+b^{2}$, Let's find what has to be substituted for $a$ and
$b$ in each case and hence find their square.

$$
p+q+r+s
$$

## - Watch Video Solution

16. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares.
$x-5$

## - Watch Video Solution

17. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares.
m-n

## - Watch Video Solution

18. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares. $10-x$

## - Watch Video Solution

19. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares. $x+y$

## - Watch Video Solution

20. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares.
21. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares. $4 m+2$

## - Watch Video Solution

22. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares. $5 y+x$

## - Watch Video Solution

23. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each
cases and hence let's find the squares. ce-fg

## - Watch Video Solution

24. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares.
$p x-\frac{1}{2}$

## - Watch Video Solution

25. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares.

$$
p+q-r
$$

26. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares. $p-q+r$

## - Watch Video Solution

27. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares.
$\frac{2 x}{3}-\frac{3 y}{4}$

## - Watch Video Solution

28. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares.
$3 m^{2}-4 n^{3}$
29. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares.
$2 x+y-4$

## - Watch Video Solution

30. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each cases and hence let's find the squares. 999

## - Watch Video Solution

31. To find the square of the algebric expressions given below using $(a-b)^{2}=a^{2}-2 a b+b^{2}$, what has to be susbtitued for a and b in each
cases and hence let's find the squares.
$p+q-r-s$

Watch Video Solution
32. Write true or false: The product of $(a+b) \times(a+b)$ is $a^{2}+b^{2}$

## - Watch Video Solution

33. Write true or false: The product of $(a+b) \times(a+b)$ is $(a+b)^{2}$

## - Watch Video Solution

34. Write true or false: product of $(a+b) \times(a+b)$ is equas to $2(a+b)$
35. Write true or false: the product of $(a+b) \times(a+b)$ is $4 a b$

## - Watch Video Solution

36. Let's find, which of the following will be value of $k$ satisfying the identify $(x+7)^{2}=x^{2}+14 x+k$

## - Watch Video Solution

37. Which on of the following algebric expression must be added $a^{2}+b^{2}$ so that the sum is a perfect square.
1) 4 ab 2$\left.) 2 \mathrm{ab} 3) 2\left(a^{2}+b^{2}\right) 4\right) \mathrm{ab}$

## - Watch Video Solution

38. Which on of the following algebraic expression must be added $a^{2}+b^{2}$ so that the sum is a perfect square.
1) $-4 a b$
2) $-2 a b$
3) $2\left(a^{2}+b^{2}\right)$
4) $-a b$

## - Watch Video Solution

39. Which on of the following algebric expression must be added $a^{2}+b^{2}$ so that the sum is a perfect square.

2 ab or -2 ab

## - Watch Video Solution

40. Which on of the following algebraic expression must be added $a^{2}+b^{2}$ so that the sum is a perfect square.
1) 0
2) $2 a b$
3) $4 a b$
4) -1

## - Watch Video Solution

41. If $(a+b)^{2}=a^{2}+6 a+9$. Let's find, the possible value of b .

## - Watch Video Solution

42. If $(a+b)^{2}=a^{2}+6 a+9$. Let's find, which of the following is the posible value of $b$.

## - Watch Video Solution

43. If $(a+b)^{2}=a^{2}+6 a+9$. Let's find, which of the following is the posible value of $b$.

## - Watch Video Solution

44. If $(a+b)^{2}=a^{2}+6 a+9$. Let's find, which of the following is the posible value of $b$.

## - Watch Video Solution

45. Write true or false:
$\frac{1}{64}$ when added to $x^{2}+\frac{1}{4} x$ make it a perfect square.

## - Watch Video Solution

46. Write true or false:
$-\frac{1}{64}$ when added to $x^{2}+\frac{1}{4} x$ make it a perfect square.

## - Watch Video Solution

47. Write true or false:
$\frac{1}{8}$ when added to $x^{2}+\frac{1}{4} x$ make it a perfect square.

## Watch Video Solution

48. Let's find, for which value of k , will the expression $c^{2}+k c \frac{1}{2}+\frac{1}{4}$ be a perfect square.

## - Watch Video Solution

49. Let's find what number must be added or subtracted from $9 p^{2}+\frac{1}{9 p^{2}}$ to make it a perfect square.

## - Watch Video Solution

50. If $(x-y)^{2}=4-4 y+y^{2}$, then let's find the value of x .
51. If $(c-3)^{2}=c^{2}+k c+9$, Let's find the value of $k$

## - Watch Video Solution

52. Let's simplify using formula.
$(2 q-3 z)^{2}-2(2 q-3 z)(q-3 z)+(q-3 z)^{2}$

## - Watch Video Solution

53. Let's simplify using formula.
$(3 p+2 q-4 r)^{2}+2(3 p+2 q-4 r)(4 r-2 p-q)+(4 r-2 p-q)^{2}$

## - Watch Video Solution

54. Let's express the following as perfect square.

$$
16 a^{2}-40 a c+25 c^{2}
$$

55. Let's express the following as perfect square.
$4 p^{2}-2 p+\frac{1}{4}$

## - Watch Video Solution

56. Let's express the following as perfect square.
$1+\frac{4}{a}+\frac{4}{a^{2}}$

## - Watch Video Solution

57. Let's express the following as perfect square.
$9 a^{2}+24 a b+16 b^{2}$

## - Watch Video Solution

58. Let's express the following square and hence find the value.
$64 a^{2}+16 a+1$
when $a=1$

## - Watch Video Solution

59. Let's express the following in perfect square and hence find the value. $25 a^{2}-30 a b+9 b^{2}$ when $a=1, b=1$

## - Watch Video Solution

60. Let's express the following in perfect square and hence find the value.
$64-\frac{16}{p}+\frac{1}{p^{2}}$, when $p=-1$

- Watch Video Solution

61. Let's express the following in perfect square and hence find the value. $p^{2} q^{2}+10 p q r+25 r^{2}$ when $p=2, q=-1, r=3$

## Watch Video Solution

62. 

$(a+b)^{2}+(a-b)^{2}=2\left(a^{2}+b^{2}\right)$ or $(a+b)^{2}-(a-b)^{2}=4 a b$ or $a b=$ to find the following.

Let's find st and $\left(s^{2}+t^{2}\right)$ when $s+t=12 \& s-t=8$

## - Watch Video Solution

63. $(a+b)^{2}+(a-b)^{2}=2\left(a^{2}+b^{2}\right)$ or $(a+b)^{2}-(a-b)^{2}=4 a b$ or $a b=\left(\frac{a+b}{2}\right)^{2}-\left(\frac{a-b}{2}\right)^{2}$ to find the following.
Let's find $8 x y\left(x^{2}+y^{2}\right)$ when $(x+y)=5$ and $(x-y)=1$

## - Watch Video Solution

$(a+b)^{2}+(a-b)^{2}=2\left(a^{2}+b^{2}\right)$ or $(a+b)^{2}-(a-b)^{2}=4 a b \quad$ or $a b=\left(\frac{a+b}{2}\right)^{2}-\left(\frac{a-b}{2}\right)^{2}$ to find the following.
Let's find $\frac{x^{2}+y^{2}}{2 x y}$ when $(\mathrm{x}+\mathrm{y})=9$ and $(\mathrm{x}-\mathrm{y})=5^{\text {' }}$

## - Watch Video Solution

65. 

$(a+b)^{2}+(a-b)^{2}=2\left(a^{2}+b^{2}\right)$ or $(a+b)^{2}-(a-b)^{2}=4 a b$ or $a b=$
to find the following.
Let's express 36 as the difference of two squares.

## - Watch Video Solution

66. Let's
apply,
$(a+b)^{2}+(a-b)^{2}=2\left(a^{2}+b^{2}\right)$ or $(a+b)^{2}-(a-b)^{2}=4 a b$
$a b=\left(\frac{a+b}{2}\right)^{2}-\left(\frac{a-b}{2}\right)^{2}$ to find the following.
Let's express 44 as the difference of two squres.

## - Watch Video Solution

67. Let's

$$
\text { apply, }(a+b)^{2}+(a-b)^{2}=2\left(a^{2}+b^{2}\right) \text { or }
$$

$(a+b)^{2}-(a-b)^{2}=4 a b$ or $a b=\left(\frac{a+b}{2}\right)^{2}-\left(\frac{a-b}{2}\right)^{2}$ to find the following.

Let's express $8 x^{2}+50 y^{2}$ as the sum of two squares.

## - Watch Video Solution

68. 

$(a+b)^{2}+(a-b)^{2}=2\left(a^{2}+b^{2}\right)$ or $(a+b)^{2}-(a-b)^{2}=4 a b o r$
$a b=\left(\frac{a+b}{2}\right)^{2}-\left(\frac{a-b}{2}\right)^{2}$
to find the following Let's express x as the difference of two squares.
69. Using the identity $(x+a)(x+b)=x^{2}+(a+b) x+a b$, let's find the product of the following algebraic expression. $(x+7)(x+1)$

## - Watch Video Solution

70. Using the identity $(x+a)(x+b)=x^{2}+(a+b) x+a b$, let's find the product of the following algebraic expression.
$(X-8)(x-2)$

## - Watch Video Solution

71. Using the identity $(x+a)(x+b)=x^{2}+(a+b) x+a b$, let's find the product of the following algebraic expression.
$(x+9)(x-6)$

## - Watch Video Solution

72. Using the identity $(x+a)(x+b)=x^{2}+(a+b) x+a b$, let's find the product of the following algebraic expression.
$(2 x+1)(2 x-1)$

## - Watch Video Solution

73. Using the identity $(x+a)(x+b)=x^{2}+(a+b) x+a b$, let's find the product of the following algebraic expression.
$(x y-4)(x y+2)$

## - Watch Video Solution

74. Using the identity $(x+a)(x+b)=x^{2}+(a+b) x+a b$, let's find the product of the following algebraic expression. $\left(a^{2}+5\right)\left(a^{2}-4\right)$

## - Watch Video Solution

75. Using formula let's show that.
$(2 x+3 y)^{2}-(2 x-3 y)^{2}=24 x y$

## Watch Video Solution

76. Using formula let's show that.
$(a+2 b)^{2}+(a-2 b)^{2}=2\left(a^{2}+4 b^{2}\right)$

## - Watch Video Solution

77. Using formula let's show that.
$(l+m)^{2}=(l-m)^{2}+4 l m$

## - Watch Video Solution

78. Using formula let's show that.
$(2 p-q)^{2}=(2 p+q)^{2}-8 p q$
79. Using formula let's show that.
$(3 m+4 n)^{2}=(3 m-4 n)^{2}+48 m n$

## - Watch Video Solution

80. Using formula let's show that.
$(6 x+7 y)^{2}-84 x y=36 x^{2}+49 y^{2}$

## - Watch Video Solution

81. Using formula let's show that.
$(3 a-4 b)^{2}+24 a b=9 a^{2}+16 b^{2}$

- Watch Video Solution

82. Using formula let's show that.
$\left(2 a+\frac{1}{a}\right)^{2}=\left(2 a-\frac{1}{a}\right)^{2}+8$

## - Watch Video Solution

83. Using formula, let's solve each of the following problemsLet's find the value of $x^{2}+y^{2}$ when $x y=16$. and $x-y=4$

## - Watch Video Solution

84. Using formula, let's solve each of the following problems-

Let's find the value of $a^{2}+b^{2} w h e n, a b=24, a-b=2$

## - Watch Video Solution

85. Using formula, let's solve each of the following problems-

Let's find the value of $a^{2}+\frac{1}{a^{2}}$ When $a-\frac{1}{a}=4$

## - Watch Video Solution

86. Using formula, let's solve each of the following problems-

Let's find the value of When $l^{2}+m^{2}, l+m=5, l m=6$

## - Watch Video Solution

87. Using formula, let's solve each of the following problems-

Let's find the value of $a^{2}+\frac{1}{a^{2}}$ when, $a+\frac{1}{a}=4$

## - Watch Video Solution

88. Using formula, let's solve each of the following problems-

If $5 x+\frac{1}{x}=6$, Let's show $25 x^{2}+\frac{1}{x^{2}}=26$
89. Using formula, let's solve each of the following problems-

If $2 x+\frac{1}{x}=5$, Let's find the value of $4 x^{2}+\frac{1}{x^{2}}$

## - Watch Video Solution

90. Using formula, let's solve each of the following problems-

If $\frac{x}{y}+\frac{y}{x}=3$, Let's find the value of $\frac{x^{2}}{y^{2}}+\frac{y^{2}}{x^{2}}$

## - Watch Video Solution

91. Using formula, let's solve each of the following problems-

If $m+\frac{1}{m}=-p$, Let's show that $m^{2}+\frac{1}{m^{2}}=p^{2}-2$

## - Watch Video Solution

92. Using formula, let's solve each of the following problemsIf $a^{2}+b^{2}=5 a b$, let's show that $\frac{a^{2}}{b^{2}}+\frac{b^{2}}{a^{2}}=23$

## - Watch Video Solution

93. Using formula, let's solve each of the following problems-

If $6 x^{2}-1=4 x$, let's show $\left(36 x^{2}+\frac{1}{x^{2}}\right)=28$

## - Watch Video Solution

94. Using formula, let's solve each of the following problems-

If $m-\frac{1}{m}=p-2$, then lets show $m^{2}+\frac{1}{m^{2}}=p^{2}-4 p+6$

## - Watch Video Solution

95. Using formula, let's solve each of the following problems-

If $(m-2)-\frac{1}{m-2}=6$, then, find the value of $(m-2)^{2}+\frac{1}{(m-2)^{2}}$
96. Using the formula $a^{2}-b^{2}=(a+b)(a-b)$. Let's find the values $(37)^{2}-(13)^{2}$

## - Watch Video Solution

97. Using the formula $a^{2}-b^{2}=(a+b)(a-b)$. Let's find the values
$(2.06)^{2}-(0.94)^{2}$

## - Watch Video Solution

98. Using the formula $a^{2}-b^{2}=(a+b)(a-b)$. Let's find the values $(82)^{2}-(78)^{2}$

## - Watch Video Solution

99. Using the formula $a^{2}-b^{2}=(a+b)(a-b)$. Let's find the values $(1.15)^{2}-(0.85)^{2}$

## D Watch Video Solution

100. Using the formula $a^{2}-b^{2}=(a+b)(a-b)$. Let's find the values $(65)^{2}-(35)^{2}$

## - Watch Video Solution

101. If $k-p^{2}=(9+p)(9-p)$ lets find the value of $k$

## - Watch Video Solution

102. If $\left(25-4 x^{2}\right)=(5+a x)(5-a x)$ let's find the positive value of a

## - Watch Video Solution

103. Fill in the box, so that the identity $(4-x) \times ?=\left(16-x^{2}\right)$ is satisfied.

## - Watch Video Solution

104. Let's express the following in the product from using formula.
$25 l^{2}-16 m^{2}$

## - Watch Video Solution

105. Let's express the following in the product from using formula. $49 x^{4}-36 x^{4}$

## - Watch Video Solution

106. Let's express the following in the product from using formula.
$(2 a+b)^{2}-(a+b)^{2}$
107. Let's express the following in the product from using formula. $(x+y)^{2}-(a+b)^{2}$

## - Watch Video Solution

108. Let's express the following in the product from using formula.
$(x+y-z)^{2}-(x-y+z)^{2}$

## - Watch Video Solution

109. Let's express the following in the product from using formula.
$(m+p+q)^{2}-(m-p-q)^{2}$

## - Watch Video Solution

110. Using formula, lets find the continued, product of the followingl $(c+d)(c-d)\left(c^{2}+d^{2}\right)$

## - Watch Video Solution

111. Let's express the following in the product from using formula.

$$
\left(1-3 x^{2}\right)\left(1+3 x^{2}\right)\left(1+9 x^{4}\right)
$$

## - Watch Video Solution

112. Let's express the following in the product from using formula.
$\left(a^{2}+b^{2}\right)\left(a^{2}-b^{2}\right)\left(a^{4}+b^{4}\right)\left(a^{8}+b^{8}\right)$

## - Watch Video Solution

113. Let's express the following in the product form:
$16 c^{4}-81 d^{4}$
114. Let's express the following in the product form:
$p^{4} q^{4}-r^{4} s^{4}$

## - Watch Video Solution

115. Let's express the following in the product form:
$81-x^{4}$

## - Watch Video Solution

116. Let's express the following in the product form: $625-a^{4} b^{4}$

## - Watch Video Solution

117. Let's prove $(p+q)^{4}-(p-q)^{4}=8 p q\left(p^{2}+q^{2}\right)$

## - Watch Video Solution

118. Using formula let's multiply
$(a+b+c)(b+c-a)(c+a-b)(a+b-c)$

## - Watch Video Solution

119. If $x=\frac{a}{b}+\frac{b}{a}$ and $y=\frac{a}{b}-\frac{b}{a}$ then show that $x^{4}+y^{4}-2 x^{2} y^{2}=16$

## - Watch Video Solution

120. 

Using
formula
let's
multiply
$\left(a^{2}+a+1\right)\left(a^{2}-a+1\right)\left(a^{4}-a^{2}+1\right)$
121. If $x=a+\frac{1}{a}$ and $y=a-\frac{1}{a}$ then find the value of $x^{4}+y^{4}-2 x^{2} y^{2}$

## - Watch Video Solution

122. Let's express $\left(4 x^{2}+4 x+1-a^{2}+8 a-16\right)$ as the difference of two squares, using formula.

## - Watch Video Solution

123. Let's express $a^{2}+\frac{1}{a^{2}}-3$ as the difference of two squares.
