MATHS

BOOKS - MBD

ALGEBRA

Example

1. Find the rule,which gives the number of matchsticks required to make the following matchstick patterns.Use a variable to write the

rule.

A matchstick pattern of letter T and t

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2. Find the rule,which gives the number of matchsticks required to make the following matchstick patterns.Use a variable to write the rule.

A matchstick pattern of letter Z as z

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3. Find the rule,which gives the number of matchsticks required to make the following metchstick patterns.Use a variable to write the rule.

A matchstick pattern of letter U as u

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4. Find the rule,which gives the number of matchsticks required to make the following metchstick patterns.Use a variable to write the

rule.

A matchstick pattern of letter V as v

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5. Find the rule,which gives the number of matchsticks required to make the following metchstick patterns.Use a variable to write the rule.

A matchstick pattern of letter E as E

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6. Find the rule,which gives the number of matchsticks required to make the following metchstick patterns.Use a variable to write the rule.

A matchstick pattern of letter S as s

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7. Find the rule,which gives the number of matchsticks required to make the following metchstick patterns.Use a variable to write the

rule.

A matchstick pattern of letter A as A

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8. We already know the rule for the pattern of letters L,C and F.Some of the ltters fom Q.1 (given above) give us the same rule as that given by L.Which are these ?Why does this happen?

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9. Cadets are marching in a parade.There are 5 cadets in a row.What is the rule,which gives the number of cadets,given the number of rows?(Use n for the number of rows.)

10. If there are 50 mangoes in a box,how will you write the total number of mangoes in terms of the number of boxes ?(Use b for the number of bxes.)

11. the teacher distributes 5 pencils per student.Can you tell how many pencils are neede,given the number of students?(Uses for the number of students.)

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12. A bird flies 1 kilometre in one minute.Can you express the distance covered by the bird

in terms of its flying time in minutes?(Use t for flying time in minutes)

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13. Radha is drawing a dot Rangoli(a beautiful pattern of lines joining dots with chalk powder as in Fig.) She has 8 dots in a row.How many dots will her Rangoli have for r rows ?How many dots are there if there are 8 rows?If there ae 10 rows?

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14. Leela is Radha's youger sister.Leela is 4 years younger than Radha.Can you write Leela's age in terms of Radha's age ?Take Radha 's age to be x years.

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15. Mother has made laddus.She gives some laddus to guests and family members, still 5

laddus remain .If the number of laddus mother gave away is l, how many laddus did she make?

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16. Oranges are to be transferred from larger boxes into smaller boxes. When a large box is emptied, the oranges from it fill two smaller boxes and still, 10 oranges remain outside. If the number of oranges in a small box is taken to be x, what is the number of oranges in the larger box?

A. $10 - 2x$

B. $2x + 10$

C. $2x - 10$

D. $\frac{x + 10}{2}$

Answer: B

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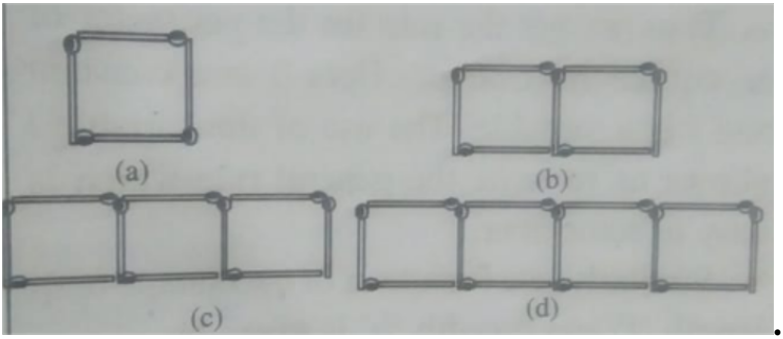
17. Look at the following matchstick pattern of squares. The squares are not separate. Two neighboring squares have a common

matchstick. Observe the patterns and find the rule that gives the number of matchsticks in terms of the number of squares. (Hint: If you remove the vertical stick at the end, you will get a pattern of Cs.)



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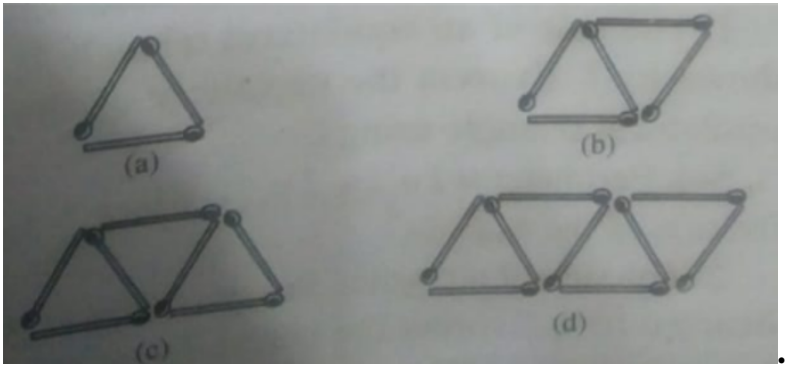
18. Figs. Below gives a matchstick pattern of triangles. As in Exercise 11 (a) above find the general rule that gives the number of matchsticks in terms of the number of triangles.



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19. The side of an equilateral triangle is shown by l. Express the perimeter of the equilateral triangle using l.

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20. Solve the following equation

$7x - 9 = 3$

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21. A cube is a three-dimensional figure. It has six faces and all of them are identical squares. The length of an edge of the cube is given by l. Find the formula for the total length of the edges of a cube.

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22. The diameter of a circle is a line, which joins two points on the circle and also passes

through the center of the circle. (In the adjoining figure AB is a diameter of the circle, C is its center). Express the diameter of the circle (d) in terms of its radius (r).

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23. To find the sum of three numbers 14, 27 and 13. We can have two ways.

We may add 27 and 13 to get 40 and then add 14 to get the sum 54. Thus

This can be done for any three numbers. This property is known as the associativity of the addition of numbers. Express this property which we have already studied in the chapter on Whole Numbers, in a general way, by using variables a,b and c.

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25. Make up as many expressions with numbers (no variables) as you from three

numbers 5, 7 and 8. Every number should be used not more than once. Use only addition, subtraction and multiplication.

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26. Which out of the following are expressions with numbers only?

y+3

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27. Which out of the following are expressions with numbers only?

$7 \times 20 - 8z.$

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28. Which out of the following are expressions with numbers only?

$5(21 - 7) + 7 \times 2$

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29. Which out of the following are expressions with numbers only?

5

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30. Which out of the following are expressions with numbers only?

$3x$

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31. Which out of the following are expressions with numbers only?

v$5 - 5n$

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32. Which out of the following are expressions with numbers only?

$7 \times 20 - 5 \times 10 - 45 + p.$

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33. Identify the operations (addition,subtractin,division,multiplication)in forming the following expressions and tell how the expressions have been formed:

$z+1, z-1, y+17, y-17$

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34. Identify the operations (addition,subtractin,division,multiplication)in forming the following expressions and tell

how the expressions have been formed:

$17y, \frac{y}{17}, 2y - 17$

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35. Identify the operations (addition,subtractin,division,multiplication)in forming the following expressions and tell how the expressions have been formed:

$7m, -7m + 3, -7m - 3$

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36. Give expressins in the following cases:

7 added to p.

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37. Give expressins in the following cases:

7 subtracted from p

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38. Give expressins in the following cases:

p multiplied by 7

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39. Give expressins in the following cases:

p divided by 7

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40. Give expressins in the following cases:

7 subtracted from -m

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41. Give expressins in the following cases:

-p multipied by 5

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42. Give expressins in the following cases:

$-p \div dby5.$

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43. Give expressins in the following cases:

p multiplied by -5.

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44. Give expressions in the following cases:

11 added to 2m

Watch Video Solution

45. Give expressions in the following cases:

11 subtracted from 2m

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46. Give expressions in the following cases:

5 times y to which 3 is added

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47. Give expressions in the following cases:

5 times y from which 3 is subtracted.

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48. Give expressions in the following cases:

y is multiplied by -8

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49. Give expressions in the following cases:

y is multiplied by -8 and then 5 is added to the result.

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50. Give expressions in the following cases:

y is multiplied by 5 and the result is subtracted from 16.

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51. Give expressions in the following cases:

y is multiplied by -5 and the result is added to 16.

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52. Form expressions using t and 4.Use not more than one number operation.Every expression must have t in it.

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53. Form expressions using y, 2 and 7.Every expression must have y in it.Use only two number operations.These should be different.

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54. Answer the following

Take Sarita's present age to be y years.

What will be her age 5 years from now?

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55. Answer the following

Take Sarita's present age to be y years.

What was her age 3 years back?

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56. Answer the following

Take Sarita's present age to be y years.

Sarita's grandfrather's age is 6 times her age.What is grandfather's age?

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57. Answer the following

Take Sarita's present age to be y years.

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Watch Video Solution

58. Answer the following

Take Sarita's present age to be y years.

Sarita's father's age is 5 years more thabn 3 times Sarit's age.What is her father's age?

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59. Answer the following

The length of a rectangular hall is 4 metres

less than 3 times the breadth of the hall.What is the length ,if the breadth is b metres?

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60. Answer the following

A rectangular box has height h cm.Its length is 5 times the height and breadth is 10 cm less than the length.Express the length and the breadth of the box in trems of the heigth.

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61. Answer the following

Meena, Beena, and Leena are climbing the steps to the hilltop. Meena is at step s, Beena is 8 steps ahead and Leena 7 steps behind. Where are Beena and Meena? The total number of steps to the hilltop is 10 less than 4 times what Meena has reached. Express the total number of steps using s.

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62. Answer the following

A bus travels at v km per hour. It is going from Daspur to Beespur. After the bus has traveled for 5 hours. Beespur is still 20 km away. What id the distance from Daspur to Beespur? Express it using v.

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63. Change the following statements using expressions into statements in ordinary

language.(For example, given Salim scores r runs in a cricket match, Nalin scores (r+15) runs. In ordinary language – Nalin scores 15 runs more than Salim).

A notebook costs `p. The book costs 3p.

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64. Change the following statements using expressions into statements in ordinary language.(For example, given Salim scores r runs in a cricket match, Nalin scores (r+15)

runs. In ordinary language – Nalin scores 15 runs more than Salim).

Tony puts q marbles on the table.He has 8q marbles in his box.

 Watch Video Solution

65. Change the following statements using expressions into statements in ordinary language.(For example, given Salim scores r runs in a cricket match, Nalin scores (r+15) runs. In ordinary language – Nalin scores 15

runs more than Salim).

Our class has n students.The school has 20 n students.

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66. Change the following statements using expressions into statements in ordinary language.(For example, given Salim scores r runs in a cricket match, Nalin scores (r+15) runs. In ordinary language – Nalin scores 15 runs more than Salim).

Jaggu is z years old.His uncle is 4z years old and his aunt is (4z-3) years old.

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67. Change the following statements using expressions into statements in ordinary language.(For example, given Salim scores r runs in a cricket match, Nalin scores (r+15) runs. In ordinary language – Nalin scores 15 runs more than Salim).

In an arrangement fo dots there are r rows.Each row contains 5 dots.

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68. Given,Munnu's age to be x years,can you guess what (x-2) may show?

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69. Given Sara's age today to be y years. Think of her age in the future or in the past. What

will the following expression indicate?

$y + 7, y - 3, y + 4\frac{1}{2}, y - 2\frac{1}{2}$

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70. Given ,n students in the class like football,what may 2n show?What may n/2 show?

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71. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the equations with a variable.

$17 = x + 7$

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72. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the

equations with a variable.

$(t-7) > 5$

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73. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the equations with a variable.

$\frac{4}{2} = 2$

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74. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the equations with a variable.

$7 \times 3 - 19 = 8$

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75. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the

equations with a variable.

$5 \times 4 - 8 = 2x$

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76. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the equations with a variable.

$x - 2 = 0$

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77. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the equations with a variable.

$xm < 30$

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78. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the

equations with a variable.

$2n + 1 = 11$

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79. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the equations with a variable.

$7 = 11 \times 5 - 12 \times 4$

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80. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the equations with a variable.

$7 = 11 \times 2 + p$

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81. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the

equations with a variable.

$20 = 5y$

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82. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the equations with a variable.

$\frac{3q}{2} < 5$

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83. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the equations with a variable.

$z + 12 > 24$

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84. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the

equations with a variable.

$20 - (10 - 5) = 3 \times 5$

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85. State which of the following are equations(with a variable).Give reason for your answer.Identify the variable from the equations with a variable.

$7 - x = 5$

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86. Complete the entries in the third colun of the table.

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87. Pick out the solution from the given values given in the bracket next to each question .Show that the other values do not satisfy the equation..

$5m = 60$

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88. Pick out the solution from the given values given in the bracket next to each question .Show that the other values do not satisfy the equation.

$n + 12 = 20$

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89. Pick out the solution from the given values given in the bracket next to each question

.Show that the other values do not satisfy the equation..

$p - 5 = 5$

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90. Pick out the solution from the given values given in the bracket next to each question .Show that the other values do not satisfy the equation.

$\frac{q}{2} = 7$

Watch Video Solution

91. Show that the other values do not satisfy the equation.

$r - 4 = 0$ (4,4,8,0)

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92. Pick out the solution from the given values given in the bracket next to each question .Show that the other values do not satisfy the equation..

$x + 4 = 2$

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93. Complete the table and by inspection of the table find the solution to the equation $m+10 = 16$.

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94. Complete the table and by inspection of the table find the solution to the equation

m+10 = 16.

Watch Video Solution

95. Complete the table and by inspection of the table find the solution to the equation m+10 = 17.

Watch Video Solution

96. Complete the table and find the solution to the equation m-7 = 3

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97. Solve the following riddles,you may yourself construct such riddles.

Who am I?

Go around a square

Counting every corner

Thrice and no more!

Add the count to me

To get exactly thirty four!.

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98. Solve the following riddles,you may yourself construct such riddles.

Who am I?

For each day of the week

Make an upcount from me

If you make no mistake

You will get twenty three!.

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99. Solve the following riddles,you may yourself construct such riddles.

Who am I?

I am a special number

Take away from me a six!

A whole cricket team

You will still be able to fix!.

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100. Solve the following riddles,you may yourself construct such riddles.

Who am I?

Tell me who I am I shall give a pertty clue!

You will get me backIf you take me out of twenty two!?

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Exercise

1. Meera has some chocolates.She gave some chocolates to her brother and still she has 7 chocolates with her.If the number of chocolates she gave away is x how many chocolates did she have?

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2. My brother's age is 3 years more than twice my age. If my age is x years, what is my brother's age?

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3. 5 students stand in a row.Write the rule for the number of students for a given number of rows.(Use n for the number of rows.)

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4. The side of a square is a .Express the perimeter of the squareusing 'a'.

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5. We know that 3+5 = 5+3.This Property is called commutative property of addition.Express this property of addition. Express this property in a general way using the vaiables a and b.

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6. Write the following using numbers.literal numbers and arithmetic operations:

The sum of number 3 and x.

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7. Write the following using numbers.literal numbers and arithmetic operations:

5 more than y.

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8. Write the following using numbers.literal numbers and arithmetic operations:

One fifth of a number y.

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9. Write the following using numbers.literal numbers and arithmetic operations:

One third of a number x and y

10. Write the following using numbers.literal numbers and arithmetic operations:

6 times a number x.

11. Write a number 3 more than y.

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12. Write a number wh ich is 6 less than x.

Watch Video Solution

13. If 5 is added to x, it becomes z.Write z in terms of x.

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14. If 3 is subtracted to x,it becomes z,Write z in terms of x.

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15. Write the following using numbers,literal numbers and signs of basic operations.

The diameter of a circle is twice its radius.

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16. Write the following using numbers,literal numbers and signs of basic oprations.

The area of a rectangle is the product of its length and breadth.

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17. Change the following statements using expressins into statements in ordinary language:

Ram has 5 copies in his bag.He has 25 copies at home.

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18. Change the following statements using expressions into statements in ordinary language:

Kanika is x years old.Her sister is (x-4) years old.Her mother is 9x years old.

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19. The height of a rectangular box is h cm.Its length is 3 cm more than twice the height and its breadth is 1 cm less than the height.Express length and breadth in terms of height.

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20. What is algebraic expression for subtractiing 7 from -m?

A. m-7

B. $m + 7$

C. $7 - m$

D. $-m - 7.$

Answer:

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21. What is algebbraic expression for subtracting 7 from p?

A. $p - 7$

B. $p + 7$

C. $7 - p$

D. $7 \times p$.

Answer:

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22. What is algebraic expression for multiplying p by 16?

A. $16p$

B. $p + 6$

C. $p - 16$

D. $\frac{p}{16}$.

Answer:

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23. What is algebraic expression for first multiplying x by 3 and then adding 2 to the product?

A. $x + 6$

B. $3x + 2$

C. $3x - 2$

D. $6x$.

Answer:

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24. What is algebraic expression for first multiplying y by 2 and then subtracting 5 from the product?

A. $2y + 5$

B. $y + 10$

C. $2y - 5$

D. $10y$.

Answer: C

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25. What is algebraic expression for first multiplying y by 10 and then adding 7 to the product?

A. $10y + 7$

B. $y7 + y$

C. $10y - 7$

D. $70y$.

Answer:

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26. What is algebbraic expression for fiirst multiplying N by 2 and then subtracting L from the product?

A. $n + 2l$

B. $2n + l$

C. $2n - l$

D. $n - 2l$.

Answer:

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27. Out of the following expressions,which is the expression of only numbers?

A. $y + 3$

B. $7 \times 20 - 82$

C. $5 - 5n$

D. $5(21 - 7) + 7 \times 2.$

Answer:

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