Question 1.

Form four expressions with numbers 7, 5 and 8 (no variables) using operations of addition, subtraction or multiplication with the condition that every number should be used but not more than once.

Solution:

The possible expressions are:

$5 \times 7 + 8, 5 \times 8 - 7$

$(5 + 8) - 7, 8 \times (5 + 7)$

Question 2.

Which out of following are expressions with numbers only?

(i) $2y + 3$

(ii) $(7 \times 20) - 82$

(iii) $5 \times (21 - 7) + 9 \times 2$

(iv) $5 - 11n$

(v) $(5 \times 4) - 45 + p$

(vi) $3 \times (11 + 7) - 24 + 3$

Solution:

(iii) $5 \times (21 - 7) + 9 \times 2$,

(vi) $3 \times (11 + 7) - 24 \div 3$ are expressions with numbers only.

Question 3.

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

(i) x + 5

(ii) y − 7

(iii) 3z

(iv) $\frac{p}{5}$

(v) 2x + 17

(vi) 3y − 5

(vii) $-7m + \frac{2}{3}$

(viii) $\frac{x}{3} - 15$

Solution:

(i) x + 5

Addition on → 5 added to x.

(ii) y − 7

Subtraction → 7 subtracted from y.

(iii) 3z

Multiplication → z multiplied by 3.

(iv) $\frac{p}{5}$

Division → p divided by 5.

(v) 2x + 17

Multiplication and addition → First x mutliplied by 2 and then 17 added to the product.

(vi) 3y − 5

Multiplication and subtraction → First y multiplied by 3 and then 5 subtracted from the product.

(vii) $-7m + \frac{2}{3}$

Multiplication and addition → First m multiplied by −7 and then $\frac{2}{3}$ added to the product.

(viii) $\frac{x}{3} - 15$

Division and subtraction → First x divided by 3 and then 15 subtracted from the quotient.

Question 4.

Write expression for the following:

(i) 7 added to p

(ii) p subtracted from 7

(iii) p multiplied by 7

(iv) p divided by 7

(v) 7 divided by p

(vi) 7 subtracted from −m

(vii) p multiplied by −5

(viii) −p divided by 5

Solution:

(i) p + 7

(ii) 7 − p

(iii) 7p

(iv) $\frac{p}{7}$

(v) $\frac{7}{p}$

(vi) −m − 7

(vii) −5p

(viii) $\frac{-p}{5}$

Question 5.

Write expression for the following:

(i) 11 added to 2 m

(ii) 11 subtracted from 2 m

(iii) 3 added to 5 times y

(iv) 3 subtracted from 5 times y

(v) y is multiplied by −8 and then 5 is added to the result

(vi) y is multiplied by 5 and then the result is subtracted from 16.

Solution:

(i) 2m + 11

(ii) 2m − 11

(iii) 5y + 3

(iv) 5y − 3

(v) −8y + 5

(vi) 16 − 5y

Question 6.

Write the following in mathematical form using signs and symbols:

(i) 6 more than thrice a number x.

(ii) 7 taken away from y.

(iii) 3 less than quotient of x by y.

Solution:

(i) 3x + 6

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

(iii) y − 7

Question 7.

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

Solution:

$t + 4, t - 4, 4 - t, 4t, \frac{t}{4}, \frac{4}{t}$

Question 8.

Form expressions using y, 2 and 7. Use only two different number operations and every expression must have y in it.

Solution:

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

Question 9.

A student scored x marks in English but the teacher deducted 5 marks for bad handwriting. What was the student's final score in English?

Solution:

Marks in English = x

Deducted = 5

Final score = x – 5

Question 10.

Raju's father's age is 2 years more than 3 times Raju's age. If Raju's present age is y years, then what is his father's age?

Solution:

(3y + 2) years

Question 11.

Mohini is x years old. Express the following in algebraic form:

(i) three times Mohini's age next year.

(ii) four times Mohini's age 3 years ago.

(iii) the present age of Mohini's uncle, if his uncle is 5 times as old as Mohini will be two years from now.

(iv) the present age of Mohini's cousin, if her cousin is two years less than one–third of Mohini's age five years ago.

Solution:

(i) 3(x + 1) years

(ii) 4(x – 3) years

(iii) 5(x + 2) years

(iv) $\left[\frac{1}{3}(x-5)-2\right]$ years

Question 12.

A cuboidal 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 terms of the height.

Solution:

Length of the box = 5h cm

Breadth of the box = (5h – 10) cm

Question 13.

A bus travels at v km per hour. It is going from Delhi to Jaipur. After the bus has travelled 5 hours, Jaipur is still 20 km away. What is the distance from Delhi to Jaipur?

Solution:

Speed of the bus = v km/hr

Distance travelled in 5 hours = 5v km

∴ Total distance = (5v + 20) km

Question 14.

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

(i) A notebook cost ₹ p. A book costs ₹ 3p.

(ii) The cost of rice per kg is ₹ p. The cost of oil per litre is ₹5p.

(iii) The speed of a truck is v km per hour. The speed of a bus is (v + 10) km per hour.

(iv) Tony's box contains 8 times the marbles he puts on the table.

(v) The total number of students in the school is 20 times that of our class.

(vi) Raju is x years old. His uncle is 4x years old and his aunt is (4x – 3) years old.

(vii) In arrangement of dots there are r rows. Each row contains 5 dots.

Solution:

(i) The cost of a book is 3 times the cost of a note book.

(ii) The cost of oil per litre is 5 times the cost of rice per kg.

(iii) The speed of a bus is 10 km per hour more than the speed of a truck.

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

(v) Our class has n students. The school has 20 n students.

(vi) Raju's uncle is 4 times older than Raju and his aunt is 3 years younger than his uncle.

(vii) The total number of dots is 5 times the number of rows.