

# HOLIDAY HOME WORK OF MATHEMATICS

CLASS-VIII DATE-16/05/2020 WORKSHEET

## MULTIPLE CHOICE QUESTIONS

- 3 times  $(-6)$  times  $(-15)$  divided by 5 is:  
(a)  $-54$  (b)  $48$  (c)  $54$  (d)  $-48$
- The multiplicative inverse of  $2\frac{2}{5}$  is:  
(a)  $\frac{-12}{5}$  (b)  $\frac{5}{12}$  (c)  $\frac{12}{5}$  (d)  $\frac{-5}{12}$
- Which order shows the following rational numbers in ascending order:  
 $A = \frac{26}{3}$ ,  $B = \frac{35}{4}$ ,  $C = \frac{46}{5}$ ,  $D = \frac{17}{2}$   
(a) A, B, C, D (b) B, D, A, C (c) D, A, B, C (d) D, C, B, A
- The number  $x$  and  $-x$  are additive inverses. Which number is midway between them on a number line?  
(a) 1 (b) 0 (c)  $-1$  (d)  $\frac{1}{2}$
- Which number has the same absolute value as  $\frac{4}{3}$ ?  
(a)  $\frac{8}{9}$  (b)  $\frac{-8}{9}$  (c)  $\frac{-4}{3}$  (d)  $\frac{3}{4}$
- The sum of  $-16\frac{2}{3} + 16\frac{2}{3}$  is:  
(a)  $32\frac{1}{3}$  (b)  $33\frac{1}{3}$  (c)  $-33\frac{1}{3}$  (d) 0

## SOLVE MENTALLY

### True or False

- Irrational numbers are non-terminating numbers.
- There exist 10 rational numbers between 1 and 10.
- $\left(\frac{a}{b} + \frac{c}{d}\right) + \frac{e}{f} = \frac{a}{b} + \left(\frac{c}{d} + \frac{e}{f}\right)$  is the associative property of addition of rational numbers.
- $\frac{-5}{7}$  is the additive inverse of  $\frac{7}{5}$ .
- 1 is the multiplicative identity for multiplication of rational numbers.

### Fill in the Blanks

- The rational number equal to its negative is its \_\_\_\_\_.
- The product of two rational numbers is always a \_\_\_\_\_.
- The product of a negative and positive rational number is always a \_\_\_\_\_ number.
- Division of rational numbers is \_\_\_\_\_ associative.
- The rational number  $3\frac{1}{2}$  lies between \_\_\_\_\_ and \_\_\_\_\_ on the number line.



### Answer in One Word or a Line

1. What do you mean by the absolute value of a rational number?
2. Is multiplication of rational numbers distributive over subtraction?
3. How many rational numbers exist between any two given numbers?
4. Divisibility of rational numbers by which number is not defined?

### LET'S EVALUATE

1. Simplify: (a)  $\frac{-7}{26} + \frac{16}{39}$  (b)  $3 + \left(\frac{-5}{7}\right)$  (c)  $\frac{-3}{10} + \frac{3}{-20} + \frac{7}{15} + \frac{9}{-10} + \left(\frac{-13}{20}\right) + \frac{13}{15}$
2. Verify that  $x + (y + z) = (x + y) + z$  for:  
(a)  $x = \frac{7}{3}$ ,  $y = \frac{-4}{5}$ ,  $z = \frac{2}{5}$  (b)  $x = \frac{3}{5}$ ,  $y = \frac{-13}{15}$ ,  $z = \frac{-7}{3}$  (c)  $x = \frac{-2}{7}$ ,  $y = 3$ ,  $z = \frac{2}{3}$
3. Subtract the sum of  $\frac{1}{4}$  and  $\frac{-3}{8}$  from the additive inverse of  $\frac{-3}{8} - \left(\frac{-2}{7}\right)$ .
4. From what number should  $\frac{-8}{21}$  be subtracted to get  $\frac{29}{63}$ ?
5. Simplify and write the result in the form  $\frac{p}{q}$ .  
(a)  $\left(\frac{7}{2} \times \frac{5}{3}\right) + \left(\frac{1}{6} \times \frac{3}{2}\right) - \left(\frac{4}{3} \times \frac{13}{8}\right)$  (b)  $\left(\frac{1}{4} \times \frac{1}{2}\right) + \left(\frac{-15}{7} \times \frac{7}{-18}\right) - \left(2 \times \frac{1}{4}\right)$
6. Verify that  $x \times (y + z) = (x \times y) + (x \times z)$  for:  
(a)  $x = \frac{4}{7}$ ,  $y = \frac{-3}{8}$ ,  $z = \frac{12}{-13}$  (b)  $x = \frac{4}{5}$ ,  $y = \frac{-6}{7}$ ,  $z = \frac{-2}{3}$
7. Divide the sum of  $\frac{-5}{4}$  and  $\frac{-1}{3}$  by their difference.
8. By what number should  $\frac{-28}{15}$  be multiplied to get the multiplicative inverse of  $\frac{-5}{7}$ ?
9. Represent the following rational numbers on a number line:  
(a)  $\frac{-3}{5}$  (b)  $\frac{8}{3}$  (c)  $\frac{1}{3}$  (d)  $\frac{-7}{2}$
10. Find five rational numbers between  $\frac{-1}{2}$  and  $\frac{1}{2}$ .

### THINKING SKILLS

1. A bus is moving at the speed of  $40\frac{2}{5}$  km/h. How far will it travel in  $6\frac{2}{3}$  hours? If the bus is still at a distance of  $10\frac{2}{3}$  km from the final destination, how far is the final destination from the starting point?
2. If  $\frac{3}{5}$  of a number exceeds its  $\frac{2}{7}$  by 44, find the number.
3. Which is longer and by how much, perimeter of a square of side  $4\frac{2}{3}$  m or perimeter of a rectangle with length  $5\frac{1}{5}$  m and breadth  $3\frac{2}{5}$  m?



## MULTIPLE CHOICE QUESTIONS

1. The value of  $(2)^{-5} \times (64)^{\frac{2}{3}}$  is:  
(a) 512 (b)  $\frac{1}{512}$  (c) 16 (d)  $\frac{1}{2}$
2.  $\left\{ \left( \frac{-2}{3} \right)^{-3} \right\}^2$  is equal to:  
(a)  $\frac{3}{2}$  (b)  $\frac{64}{729}$  (c)  $\frac{81}{32}$  (d)  $\frac{729}{64}$
3. Which of the following is not equal to  $\left( \frac{-2}{5} \right)^4$ ?  
(a)  $\frac{2^4}{(-5)^4}$  (b)  $\left( \frac{-2}{5} \right) \times \left( \frac{-2}{5} \right) \times \left( \frac{-2}{5} \right) \times \left( \frac{-2}{5} \right)$  (c)  $\frac{(-2)^4}{(5)^4}$  (d)  $-\frac{(2)^4}{(5)^4}$
4.  $\left( \frac{-2}{7} \right)^{-6} \div \left( \frac{-2}{7} \right)^4$  is equal to:  
(a)  $\left( \frac{-2}{7} \right)^2$  (b)  $\left( \frac{-2}{7} \right)^{-10}$  (c)  $\left( \frac{-7}{2} \right)^{-10}$  (d)  $\left( \frac{-7}{2} \right)^2$
5.  $\{(4)^{-1} - (2)^{-1}\} \times (3)^{-1}$  is equal to:  
(a)  $\frac{-1}{12}$  (b)  $\frac{1}{12}$  (c)  $\frac{3}{8}$  (d)  $\frac{-3}{8}$

## SOLVE MENTALLY

### True or False

1. The standard form of 0.0000000000942 is  $9.42 \times (10)^{-11}$ .
2. The value of  $m$  for which  $\left( \frac{6}{13} \right)^{-4} \times \left( \frac{6}{13} \right)^{3m} = \left( \frac{6}{13} \right)^5$  is  $-3$ .
3. If  $\{(2)^{3m-1} + 10\} \div 7 = 6$ , then  $m$  is 2.
4. The usual form of  $6.8 \times (10)^4$  is 6,80,000.
5. The value of  $(2)^{55} \times (2)^{60} - (2)^{97} \times (2)^{18}$  is 0.



## Fill in the Blanks

- $(x)^m = (x)^n \Rightarrow$  \_\_\_\_\_
- $\left(\frac{p}{q}\right)^{-m} = \left(\frac{\quad}{\quad}\right)^m$
- The standard form of  $21.36 \times (10)^{-5} =$  \_\_\_\_\_
- The usual form of  $4.39 \times (10)^3 =$  \_\_\_\_\_

## Answer in One Word or a Line

- What is the reciprocal of  $x^n$ ?
- What is the reciprocal of  $x^m \times x^n$ ?
- If  $x^m = x^5$ , what is the value of  $m$ ?
- What is  $(2^2)^3$ ?
- What is  $\left(\frac{3}{4}\right)^5 \div \left(\frac{3}{4}\right)^2$ ?

## Let's Evaluate

- Write in the form  $\frac{p}{q}$ : (a)  $\left(\frac{-4}{5}\right)^{-4}$  (b)  $\left(\frac{2}{3}\right)^{-5}$  (c)  $\frac{1}{(4)^{-2}}$
- Find the value of: (a)  $\{(6)^0 + (2)^{-1}\} \times 3^2$  (b)  $\{(2)^{-2} + (3)^{-2} + (4)^{-2}\}^0$  (c)  $\left\{\left(\frac{1}{6}\right)^{-1} - \left(\frac{1}{5}\right)^{-1}\right\}^{-1}$
- Simplify: (a)  $\left\{\left(\frac{1}{3}\right)^{-3} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-3}$  (b)  $\{(2)^{-3} + (3)^{-3}\} \times (7)^0$  (c)  $\{(1)^{-1} + (2)^{-1} + (3)^{-1}\} \div (4)^{-1}$
- By what number should  $(2)^{-1}$  be multiplied to get the product as  $\left(\frac{-7}{4}\right)^{-1}$ ?
- Express the following as a power with base 2: (a)  $(4)^{-3}$  (b)  $(8)^{-5}$  (c)  $(4)^6$  (d)  $(16)^3$
- Write as a rational number with negative exponent: (a)  $\left(\frac{1}{6}\right)^4$  (b)  $(2)^5$  (c)  $\left\{\left(\frac{6}{7}\right)^3\right\}^{-2}$
- Simplify: (a)  $\{(3)^3 - (2)^3\} \times \left(\frac{2}{3}\right)^{-3}$  (b)  $\left[\left\{\left(\frac{-1}{2}\right)^2\right\}^{-2}\right]^{-1}$
- Find  $m$  if: (a)  $(3)^{-7} \div (3)^{-10} = (3)^{2m-1}$  (b)  $\left(\frac{-1}{4}\right)^{3m} \times \left(\frac{-1}{4}\right)^2 = \left(\frac{-1}{4}\right)^{m-6}$
- Write in standard form: (a) 0.00000000156 (b) 0.009801 (c)  $215.06 \times (10)^{-2}$
- Write in usual form: (a)  $8.03 \times (10)^{-7}$  (b)  $1.426 \times (10)^5$  (c)  $6 \times (10)^{-5}$



### MULTIPLE CHOICE QUESTIONS

1. In the algebraic expression  $2x^2y^2 - 3x^2y^2z^2 + 3z^2$ , the coefficient of the middle term is:  
(a) 2 (b) 3 (c) -3 (d) -2
2.  $(3x - 4y) - (2x - y)$  is equal to:  
(a)  $x + 5y$  (b)  $x - 3y$  (c)  $5x - y$  (d)  $x + 3y$
3. The product  $(2xy^2z^3) \times (6x^3y^2z)$  is equal to:  
(a)  $12x^3y^3z^4$  (b)  $8x^4y^4z^4$  (c)  $12x^4y^4z^4$  (d)  $8x^4y^3z^5$
4. The volume of a rectangular box with length  $l^2m^2$ , breadth  $m^3n^2$  and height  $l^4n^3$  is:  
(a)  $l^6m^5n^5$  (b)  $l^8m^6n^6$  (c)  $l^6m^6n^6$  (d)  $l^8m^5n^5$
5. The product of  $2x^8y^8 \times 4z^9 \times 0$  is equal to:  
(a)  $8x^8y^8z^9$  (b) 0 (c)  $4x^8y^8z^9$  (d) 8
6. If  $x - \frac{1}{x} = 3$ , then the value of  $x^2 + \frac{1}{x^2}$  is:  
(a) 7 (b) 9 (c) 5 (d) 11
7. If  $xy = 6$  and  $x + y = 5$  then the value of  $x^2 + y^2$  is:  
(a) 13 (b) 11 (c) 16 (d) 12

### SOLVE MENTALLY

#### True or False

1. A constant factor is called a numerical factor and a variable factor is called literal factor.
2.  $(p + q)(p - q) = p^2 + q^2$
3. The product of two factors with same sign is positive and with different sign is negative.
4. In addition or subtraction of algebraic expressions, unlike terms are grouped and the sum or difference of each group is found out.



### Fill in the Blanks

1. In algebraic expressions, the elements separated by + or - sign are called terms.
2. Algebraic expressions with three terms are called trinomials.
3. Terms with identical symbolic variables are called like terms and the others are called unlike terms.
4.  $2x - 3y$ ,  $6xy + 7$  and  $3a^2b + 5ab^2$  are examples of polynomials.
5. Multiplication of two polynomials involves repeated use of law of commutativity and the law of associativity of multiplication.

### Answer in One Word or a Line

1. What is an algebraic expression? Give an example.
2. What are factors of an algebraic expression?
3. Define algebraic identity.
4. How can you distinguish between an identity and an equation?
5. Which property is utilized in multiplication of two binomials?
6. State the standard identities.

### LET'S EVALUATE

1. Add: (a)  $\frac{3}{4}ab^2 - \frac{2}{3}a^2b, \frac{4}{5}a^2b + \frac{2}{5}ab^2$  (b)  $4x^2 + 3x - 7, 2x^2 - 5x + 6, x^2 + 2x + 4$
2. Subtract:  
(a)  $\frac{7}{6}x^2 - \frac{5}{6}x^3 + \frac{4}{7} + \frac{3}{7}x$  from  $\frac{2x^3}{7} - \frac{5}{7}x^2 + \frac{x}{6} - \frac{11}{6}$  (b)  $\frac{2}{3}xz - \frac{5}{7}xy + \frac{2}{3}yz$  from  $\frac{3}{2}xy - \frac{7}{4}xz - \frac{5}{6}yz$
3. Simplify  $\left(\frac{1}{3}x^2 - \frac{4}{7}x + 11\right) - \left(\frac{1}{7}x - 3 + 2x^2\right) - \left(\frac{2}{7}x - \frac{2}{3}x^2 + 2\right)$
4. Calculate: (a)  $(15x^{10}y^{30}z^{20}) \times (20x^2y^2z^2)$  (b)  $\left(\frac{2}{3}x^2y^2z\right) \times (1.5xyz^3) \times (1.15x^2y^3z^2) \times (3xyz)$
5. Find the following products:  
(a)  $\frac{-8}{27}abc\left(\frac{3}{2}abc^2 - \frac{9}{4}ab^2c^3\right)$  (b)  $(4x^2 - 3y^2)(2x + 5y)$   
(c)  $(4x^2 - 5x + 8) \times (8x + 3)$  (d)  $\left(\frac{3}{5}xy^2 + \frac{2}{5}x\right) \times \left(\frac{9}{2}x^2yz - \frac{3}{4}xyz^2\right)$   
(e)  $(4x - 9) \times (4x + 5)$  (f)  $\left(\frac{4}{3}x - \frac{2}{3}y\right)\left(\frac{4}{3}x + \frac{2}{3}y\right)$
6. Simplify the following:  
(a)  $4lm(l - m) - 6l^2(m - m^2) - 3m^2(2l^2 - l) + 2lm(l - m)$   
(b)  $(3x + 2y)(3x + 2y) - (4x - 3y)^2 + (2x + 3y)(2x - 3y)$   
(c)  $(3l + 4m)^2 - (3l + 4m)(3l - 4m) - (5l - 7m)^2$
7. If  $x^2 + y^2 + z^2 - xy - yz - zx = 0$ , prove that  $x = y = z$ .
8. Evaluate the following using a suitable identity:  
(a)  $(99)^2$  (b)  $(106)^2$  (c)  $47 \times 53$  (d)  $122^2 - 22^2$  (e)  $36 \times 34$
9. Find the product:  
(a)  $(2y - 1)(2y + 1)(4y^2 + 1)(16y^4 + 1)$  (b)  $(x - 2)(x + 2)(x^2 + 4)(x^4 + 16)$
10. If  $x + \frac{1}{x} = 9$  and  $x^2 + \frac{1}{x^2} = 53$ , find  $x - \frac{1}{x}$ .