Questions

Exercise (1)

(1) Complete each of the following:

1) The multiplicative inverse of the number $\frac{-9}{8}$ is ………………

2) If $\frac{a}{b} = \frac{2}{3}$, then $\frac{3a}{2b}$ = ………………

3) The remainder of subtracting $\left(\frac{1}{5}\right)$ from $\left(-\frac{2}{5}\right)$ equals ………………

4) The simplest form of the expression: $\frac{3}{4} \times \left(\frac{1}{2} - \frac{1}{3}\right)$ is ………………

5) The rational number half way between $-\frac{5}{2}$ and $-\frac{3}{2}$ is …………

(2) Choose the correct answer from those given:

1) If $\frac{15}{x} = \frac{-3}{4}$, then x = ………………

    a) – 20   b) – 5   c) 5   d) 20

2) The number $= \frac{-9}{-7}$ is the additive inverse of the number: ………

    a) $\frac{-9}{7}$ b) $\frac{-7}{9}$ c) $\frac{7}{9}$ d) $\frac{9}{7}$

3) If $5x - 3y = 0$, then x : y = ………………

    a) 5 : 3   b) 3 : 5   c) – 5 : 3   d) – 3 : 5

4) If $a \times \frac{b}{3} = \frac{a}{3}$, then b equals: ………………

    a) – a   b) 1   c) $\frac{a}{3}$ d) a

5) The number $\frac{5}{3} >$ ………………

    a) $\frac{10}{3}$ b) $\frac{25}{9}$ c) $\frac{10}{6}$ d) $\frac{3}{5}$

(3) Answer the following:

1) Complete in the same pattern:

$$7 , 6\frac{1}{3} , 5\frac{2}{3} , 4\frac{1}{3} , \ldots\ldots , \ldots\ldots , \ldots\ldots 1\frac{2}{3}$$

2) Use the property of distribution to calculate the value of:

$$\frac{6}{37} \times 7 + \frac{6}{37} \times 5 + \frac{6}{37} \times (-11)$$

3) If $-3\frac{4}{7} \times x = -3\frac{4}{7}$, then find the value of x.

4) If $x = \frac{3}{2}$, $y = -\frac{1}{4}$ and $z = -2$, then find the numerical value of:

$$x - (z \div y)$$

5) The ratio between exports and imports in one year is 3 : 4 , if exports increased by 20% and imports decreased by 10% in the next year. Find the ratio between exports and imports in the last year.
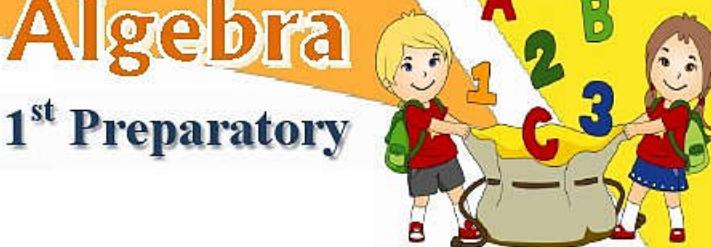
Exercise (2)

(1) Complete the following:

1) The additive inverse of the number $\frac{7}{25} \times (-5)^2$ is ……………..

2) $3 \times$ ……………….. $= 1$

3) If $\frac{x-5}{x-7} = 0$, then $x =$ ……………

4) The rational number which hasn't a multiplicative inverse is …..

5) If $\frac{x}{2} + \frac{5}{7} = \frac{10}{35}$, then 2x equals ……………..

(2) Choose the correct answer from those given:

1) $\frac{5}{8} - \frac{1}{8} >$ ……………….

    a) 1   b) $\frac{3}{4}$ c) $\frac{1}{2}$ d) $\frac{1}{4}$

2) The number of integers lying between $\frac{7}{4}$, $\frac{11}{8}$ is …………….

    a) zero   b) 1   c) 2   d) infinite number

3) The rational number $\frac{x}{-5}$ is negative if x = …………….

    a) > zero   b) < zero   c) $\leq$ zero   d) = zero

4) The remainders of dividing four consecutive integers by the number 3 respectively may be:

    a) 1 , 2, 3, 1   b) 1, 2, 3, 4   c) 0, 1, 2, 3   d) 0, 1, 2, 0

(3) Answer the following questions:

1) Complete in the same pattern:

$$……… , \frac{2}{2} , \frac{3}{4} , \frac{4}{8} , \frac{5}{16} , ……… , ……… , \frac{8}{128}$$

2) If x = $-\frac{1}{3}$, y = $\frac{3}{4}$ and z = -3 then find the value of:

    First: (x + y) ÷ z   second: xy + yz

3) If the two rational numbers $\frac{3x}{4}$ and $\frac{2}{3}$ are equal then find the value of x.

4) Find the value of the expression: $\frac{1}{3} \times \left(-\frac{1}{3}\right) \div \left(-\frac{1}{3}\right) \times \frac{1}{5}$

5) Find the rational number that lies two third of the way from $\frac{4}{7}$ to $1\frac{3}{4}$ from the smallest.

Exercise (3)

(1) Complete the following:

1) $\frac{3}{5} + \frac{7}{10} + \left(-\frac{1}{2}\right) = \ldots\ldots\ldots\ldots$

2) $\frac{4}{25} = \frac{2}{5} \times \frac{\ldots\ldots}{35}$

3) $\left(\frac{2}{7} + \frac{3}{5}\right)$ is the multiplicative inverse of the rational number $\ldots\ldots$

4) The rational number that lies half way between $\frac{3}{7}$ and $\frac{6}{7}$ is $\ldots\ldots$

5) $\frac{2}{3}\left(2 + \frac{1}{2}\right) = \frac{2}{3} \times 2 + \frac{2}{3} \times \ldots\ldots\ldots\ldots$

(2) Choose the correct answer from those given:

1) If $\frac{7}{x+5}$ is a rational number , then x $\neq$ $\ldots\ldots\ldots\ldots$

     a) -5 b) 0   c) 2   d) 10

2) If x = 3 , y = 4 and z = 6 , then $\frac{x}{y} - \frac{z}{x}$ equals:

     a) $-1\frac{1}{4}$ b) $\frac{1}{4}$ c) $\frac{5}{4}$ d) $1\frac{3}{4}$

3) The remainder of subtracting $\frac{3}{7}$ from $\frac{9}{21}$ equals:

     a) zero   b) $\frac{6}{21}$ c) $\frac{6}{14}$ d) $\frac{12}{28}$

4) If 3 a = 27 and ab = 1 , then b = $\ldots\ldots$

     a) $\frac{1}{9}$ b) $\frac{1}{5}$ c) 5   d) 9

5) Which of the following relations is true, where x = 3 , y = 5 , z = 15

     a) y = xz   b) x = yz   c) y = $\frac{z}{x}$ d) z = $\frac{y}{x}$

(3) Answer the following questions:

1) Arrange the following rational numbers in a descending order:

$$\frac{3}{10} \, , \, \frac{7}{30} \, , \, \frac{1}{3} \, , \, \frac{1}{5} \, , \, \frac{4}{15}$$

2) If x = $-\frac{7}{4} \times -\frac{4}{7}$, then find the value of x

3) Find the result of: $\frac{7}{12} \times \frac{23}{45} + \frac{7}{12} \times \frac{23}{45} - 2 \times \frac{23}{45}$

4) If x = $\frac{2}{3}$, y = $-\frac{1}{6}$, z = -3 , then find: (x ÷ y) − (z ÷ y)

5) Find the number one fourth of the way from $-\frac{1}{9}$ to $-\frac{7}{8}$

Exercise (4)

(1) Complete each of the following:

1) The degree of the term $-3a^2b$ is …………. and its coefficient is ………….

2) The increase of 7x than 10 x is ………….

3) The perimeter of the rectangle whose dimensions are $(2x + 1)$ and $(2 - x)$ equals …………. unit length.

4) $\frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \times …………. \times \frac{49}{50} = ………….$

(2) Choose the correct answer from those given:

1) The algebraic expression $x^3 - 3x^2 + 4$ is of the ……. degree.

    a) first   b) second   c) third   d) fourth

2) $2x + 3y$ is greater than $3y - 2x$ by ………….

    a) $-6y$ b) $-4x$ c) $4x$ d) $6y$

3) $\frac{3x}{5} - \frac{x}{5}$ equals:

    a) $\frac{2}{5}$ b) $\frac{x}{5}$ c) $\frac{2x}{5}$ d) $2x$

(3) Simplify to simplest form: $5x + 10y + 6x - 3y + 7y - 4x$

(4) Find four rational numbers between $\frac{1}{3}$ and $\frac{7}{9}$

(5) A rational number, if it is subtracted from its additive inverse, the result will be $\frac{3}{2}$ what is the number?

Exercise (5)

(1) Choose the correct answer from those given:

1) The rational number $\dfrac{x}{-5}$ is negative if x :

   a) > zero   b) < zero   c) $\leq$ zero   d) zero

2) If a = 0 , b = 5 and c = 2 , then the numerical value of $a^2b + ac$ equals :

   a) 0   b) 2   c) 7   d) 10

3) If $\dfrac{a}{b}$ = 60 , $\dfrac{a}{3b}$ then equals:

   a) 17   b) 20   c) 23   d) 180

(2)   1) Find the result of: 19 × 17 + 19 × 8 − 19 × 15

       by identifying the common factor.

    2) If $x = -\dfrac{1}{3}$, $y = \dfrac{3}{4}$ and $z = -3$, find the value of:

      a) x^2yz b) $xy + yz$ c) $x + y - z$

(3)   1) Divide: $x^3y - 4xy^2 + 6xy$ by xy

    2) What is the increase of $3x^2 - 5x + 2$ than the sum of:

      $x + 5x^2 + 1$ and $2x^2 - 4 - 2x$

    3) Simplify to the simplest form: $\left(\dfrac{1}{3}\right)^2 \times \left(\dfrac{-1}{3}\right)^3 \div \left(\dfrac{-1}{3}\right)^4 \times \left(\dfrac{1}{5}\right)^0$

(4)   1) Find the product: (2x − 3y) (3x + 7y)

    2) Simplify to simplest form: $\dfrac{(17)^2 - 2 \times 17 + 17}{17}$

    3) If a = 3x , b = x + 2 and c = 2x − 3

    Calculate the numerical value of the expression: $ab - c^2$ when

    x = 0

Exercise (6)

(1) Complete each of the following:

1) The degree of the algebraic term $-2x^2y$ is ………… and its coefficient is …………

2) $(4x^2 + 2x) \div 2x = $ …………

3) If $a + 3b = 7$ and $c = 3$, then the value of the expression $a + 3(b + c) = $ …………

4) The seventh tern in the pattern $\frac{1}{10000}$, $\frac{1}{1000}$, $\frac{1}{100}$, …… is ……

5) If $x + y = 5$, then the numerical value of $x^2 + 2xy + y^2$ is ………

(2) Choose the correct answer from those given:

1) If $(x + 4)(x - 3) = x^2 + m - 12$, then m equals: ………

    a) $-7x$ b) $-x$ c) x d) $7x$

2) If $(x + y)^2 = 15$ and $x^2 + y^2 = 9$, then $xy = $ …………

    a) 1   b) 2   c) 3   d) 4

3) A rectangle whose length is 6ℓ and its width is 3 m , then its perimeter is …………

    a) $9\ell m$ b) $18\ell m$ c) $3(2\ell + m)$ d) $6(2\ell + m)$

4) If $x = 3$, $y = 4$ and $z = 6$, then $\frac{x}{y} - \frac{z}{x}$ equals: …………

    a) $-\frac{5}{4}$ b) $\frac{1}{4}$ c) $\frac{5}{4}$ d) $\frac{7}{4}$

5) The relation which represents the uniform velocity of a car covered a distance (s) in a time (t) is:

    a) $\frac{t}{s}$ b) $\frac{s}{t}$ c) ts d) $t + s$

(3)

1) Simplify to simplest form: $3a(2a + 3b) - 2b(2a + 3b)$

2) Simplify the expression $\dfrac{6x^3y + 9y^3x}{3xy}$ to the simplest form.

3) Find the product: $(x + 1)(x^2 - x + 1)$

(4)

1) What is the decrease of $2a - 8b - c$ than the sum of $3a - 3b + c$ and $2a - 4b - 8c$

2) Factorize by identifying the highest common factor:

$5(48)^2 + 7 \times 48 + 53 \times 48$

3) Find the result 201×199 as ad: difference of two squares.

Model Answers

Exercise (1)

(1) Complete:

1) $\frac{-8}{9}$　　　　　2) 1　　　　　3) $\frac{-3}{5}$

4) $\frac{1}{8}$　　　　　5) $\frac{-1}{2}$

(2) Choose:

1) - 20　　　　2) $\frac{-9}{7}$　　　　3) 3 : 5

4) b = 1　　　　5) $\frac{3}{5}$

(3)　　1) $3\frac{2}{3}$, 3 , $2\frac{1}{3}$　　　2) $\frac{6}{37}$　　　3) x = 1

4) $\frac{13}{2}$　　　　　5) $\frac{18}{5}$ x

Exercise (2)

(1) Complete:

1) - 7　　　　2) $\frac{1}{3}$　　　　3) x = 5

4) 0　　　　5) $\frac{-12}{7}$

(2) Choose:

1) $> \frac{1}{4}$　　2) 1　　3) x > zero　　4) 0 , 1 , 2 , 0

(3) Answer the following questions:

1) $\frac{6}{32}$, $\frac{7}{64}$　　2) First: $\frac{-5}{36}$　　Second: $\frac{-5}{2}$

3) x = $\frac{8}{9}$　　4) $\frac{5}{3}$　　5) $\frac{27}{28}$

Exercise (3)

(1) Complete:

1) $\frac{8}{10} = \frac{4}{5}$ 2) 14   3) $\frac{35}{31}$

4) $\frac{9}{14}$ 5) $\frac{1}{2}$

(2) Choose:

1) $x \neq -5$ 2) $\frac{3}{4} - \frac{6}{3} = -1\frac{1}{4}$ 3) zero

4) $\frac{1}{9}$ 5) $y = \frac{z}{x}$

(3) Answer the following questions:

1) $\frac{1}{3}$, $\frac{3}{10}$, $\frac{4}{15}$, $\frac{7}{30}$, $\frac{1}{5}$ 2) 1

3) zero   4) - 22   5) $\frac{-29}{96}$

Exercise (4)

(1) Complete:

1) Third degree , - 3   2) -3 x

3) 2x + 6   4) $\frac{1}{50}$

(2) Choose:

1) Third   2) 4x   3) $\frac{2x}{5}$

(3) 7x + 14 y

(4) $\frac{10}{27}$, $\frac{11}{27}$, $\frac{12}{27}$, $\frac{13}{27}$

$$- 5x + 3x^2 + 2$$
$$\underset{(+)}{} - \underset{(-)}{} x + 7x^2 \underset{(+)}{} - 3$$
$$- 4x - 4x^2 + 5$$

$$x + 5x^2 + 1$$
$$\underline{-\ 2x + 2x^2 - 4}$$
$$-\ x + 7x^2 - 3$$

(5) $\dfrac{\left(\frac{1}{3}\right)^2 \times \left(\frac{-1}{3}\right)^{\cancel{3}}}{\left(\frac{-1}{3}\right)^4 \times \left(\frac{1}{5}\right)^{\cancel{0}}} = \dfrac{\frac{1}{9}}{\frac{-1}{3}} = \dfrac{1}{9} \times\ -3 = \dfrac{-1}{3}$

Exercise (5)

(1) Choose:

1) > zero   2) 0   3) 20

(2)

a) $\dfrac{-1}{4}$ b) $\dfrac{-5}{2}$ c) $\dfrac{-31}{12}$

(3)

1) $-\ 4x^2 - 4x + 5$

2) $\dfrac{-1}{3}$

Exercise (6)

(1) Complete:

1) Third degree , - 2   2) 100

(2)

1) $6\ (2\ \ell + m)$ 2) $\dfrac{-5}{4}$ 3) ts

(3) $3a + b - 6c$