



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 $\frac{3a}{2b} = \dots\dots\dots$
- 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 $x = \dots\dots\dots$
 - 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 $x : y = \dots\dots\dots$
 - 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 $\frac{5}{3} > \dots\dots\dots$
 - 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:

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

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:

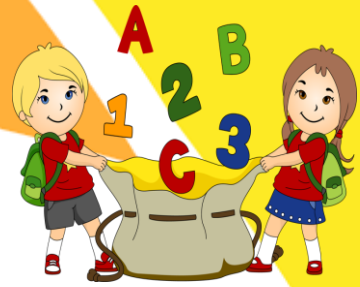
1) The additive inverse of the number $\frac{7}{25} \times (-5)^2$ is

2) $3 \times \dots = 1$

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

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) $\frac{5}{8} - \frac{1}{8} > \dots\dots\dots$

- 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 $\dots\dots\dots$

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

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

- a) $> \text{zero}$ b) $< \text{zero}$ c) $\leq \text{zero}$ d) $= \text{zero}$

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:

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

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

First: $(x + y) \div z$ 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.



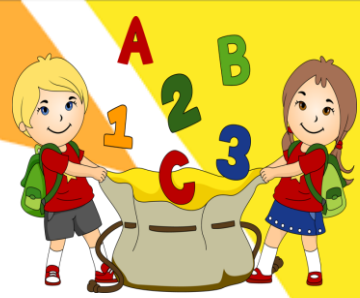
Exercise (3)

(1) Complete the following:

- 1) $\frac{3}{5} + \frac{7}{10} + \left(-\frac{1}{2}\right) = \dots\dots\dots$
- 2) $\frac{4}{25} = \frac{2}{5} \times \frac{\dots\dots\dots}{35}$
- 3) $\left(\frac{2}{7} + \frac{3}{5}\right)$ is the multiplicative inverse of the rational number
- 4) The rational number that lies half way between $\frac{3}{7}$ and $\frac{6}{7}$ is
- 5) $\frac{2}{3} \left(2 + \frac{1}{2}\right) = \frac{2}{3} \times 2 + \frac{2}{3} \times \dots\dots\dots$

(2) Choose the correct answer from those given:

- 1) If $\frac{7}{x+5}$ is a rational number , then $x \neq \dots\dots\dots$
 - 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 $3a = 27$ and $ab = 1$, then $b = \dots\dots\dots$
 - 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:

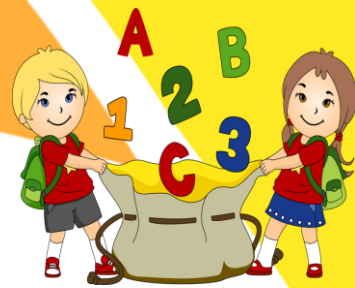
$$\frac{3}{10}, \frac{7}{30}, \frac{1}{3}, \frac{1}{5}, \frac{4}{15}$$

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

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 $10x$ is
- 3) The perimeter of the rectangle whose dimensions are $(2x + 1)$ and $(2 - x)$ equals unit length.
- 4) $\frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \times \dots \times \frac{49}{50} = \dots$

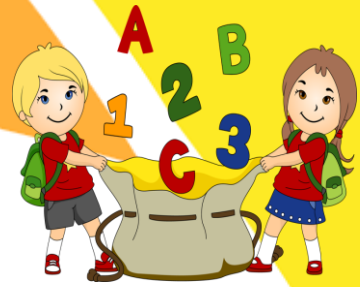
(2) Choose the correct answer from those given:

- 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 $\frac{x}{-5}$ is negative if x :
 a) $> \text{zero}$ b) $< \text{zero}$ c) $\leq \text{zero}$ 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 $\frac{a}{b} = 60$, $\frac{a}{3b}$ then equals:
 a) 17 b) 20 c) 23 d) 180

(2) 1) Find the result of: $19 \times 17 + 19 \times 8 - 19 \times 15$ by identifying the common factor.

- 2) If $x = -\frac{1}{3}$, $y = \frac{3}{4}$ 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 $2x^2 - 4 - 2x$

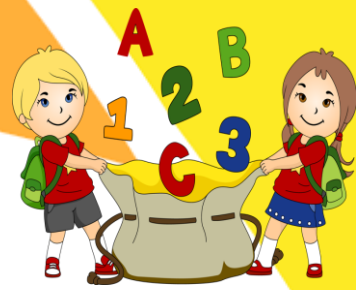
- 3) Simplify to the simplest form: $\left(\frac{1}{3}\right)^2 \times \left(\frac{-1}{3}\right)^3 \div \left(\frac{-1}{3}\right)^4 \times \left(\frac{1}{5}\right)^0$

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

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

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

Calculate the numerical value of the expression: $ab - c^2$ when
 $x = 0$



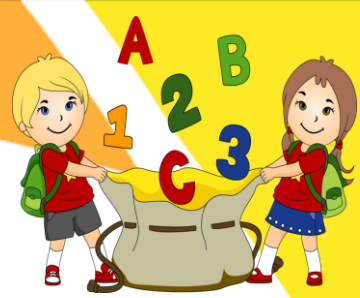
Exercise (6)

(1) Complete each of the following:

- 1) The degree of the algebraic term $-2x^2y$ is and its coefficient is
- 2) $(4x^2 + 2x) \div 2x = \dots\dots\dots$
- 3) If $a + 3b = 7$ and $c = 3$, then the value of the expression $a + 3(b + c) = \dots\dots\dots$
- 4) The seventh term in the pattern $\frac{1}{10000}, \frac{1}{1000}, \frac{1}{100}, \dots\dots\dots$ 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 $xy = \dots\dots\dots$
 a) 1 b) 2 c) 3 d) 4
- 3) A rectangle whose length is 6ℓ and its width is $3m$, 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) $t + s$

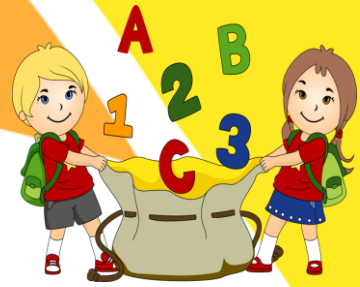


(3)

- 1) Simplify to simplest form: $3a(2a + 3b) - 2b(2a + 3b)$
- 2) Simplify the expression $\frac{6x^3y + 9y^3x}{3xy}$ 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) $x > \text{zero}$

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

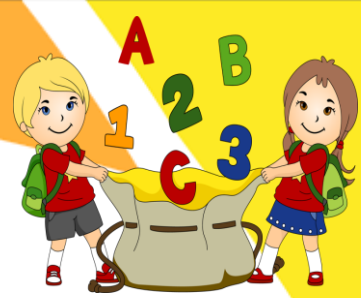
2) $4x$

3) $\frac{2x}{5}$

(3) $7x + 14 y$

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

$$\begin{array}{r} -5x + 3x^2 + 2 \\ \oplus \quad \ominus \quad \oplus \\ -x + 7x^2 - 3 \\ \hline -4x - 4x^2 + 5 \end{array}$$



$$\begin{array}{r} x + 5x^2 + 1 \\ - 2x + 2x^2 - 4 \\ \hline - x + 7x^2 - 3 \end{array}$$

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

Exercise (5)

(1) Choose:

1) $> \text{zero}$ 2) 0 3) 20

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

(3) 1) $-4x^2 - 4x + 5$
 2) $\frac{-1}{3}$

Exercise (6)

(1) Complete:

1) Third degree , - 2 2) 100

(2)

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

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