

General Revision

Algebra

1th preparatory

Second Term

Algebra

Exercise (1)

[1] Complete :

- 1) Rational number is
- 2) The set of integer is
- 3) If $\frac{a}{b}$ is rational then $b \neq$
- 4) The number $\frac{4}{x-3}$ is rational if $x \neq$
- 5) The number $\frac{x+5}{x-5}$ is rational if $x \neq$
- 6) The rational number $\frac{5-x}{x-4} = 0$ if $x =$
- 7) The rational number $\frac{a}{b}$ is an integer if
- 8) Express of 0.57 as rational number is simplest form
- 9) The rational number $\frac{x}{-4}$ is negative if x zero .
- 10) If $\frac{a}{b}$ is rational number and $ab = \text{zero}$ then $a =$
- 11) Write the rational number $\frac{7}{11}$ as decimals

Exercise (2)**[1] Represent each of the following on number line :**

a) $-\frac{7}{4}$ b) $1\frac{1}{5}$ c) $-\frac{1}{2}$

[2] Write the correct sign (< , > , =) :

a) Every positive rational numberzero .

b) Every negative rational numberzero .

c) $|\frac{-13}{2}|$ $6\frac{1}{2}$

d) $\frac{-9}{3}$ -3

e) $|\frac{15}{2}|$ $7\frac{1}{2}$

f) 0.5 0.5^*

g) $|\frac{-3}{2}|$ $\frac{1}{2}$

[3] Write two rational number lying between :

1) $\frac{1}{3}$ and $\frac{4}{5}$ 2) $\frac{-1}{2}$ and 1 3) 0.3 and $\frac{4}{5}$

[4] Complete :

1) Between each two successive integers there is

2) The opposite rational number $\frac{1}{3}$ on number line3) The number of integers lying between $\frac{5}{7}$ and $\frac{8}{11}$ are**[5] Write the rational number that equal $\frac{3}{4}$ and the sum of terms 28 .****Exercise (3)****[1] Complete :**1) The additive identity element in ϕ is2) The additive inverse of number $\frac{3}{5}$ is3) The additive inverse of $(\frac{2}{3})^{\text{zero}}$ is4) The additive inverse of $|\frac{-4}{5}|$ is

5) The additive inverse of number zero

6) The additive inverse of - 0.5 is

7) The remainder of subtracting $\frac{1}{5}$ from $\frac{6}{5} =$ 8) The remainder of subtracting $\frac{1}{3}$ from $\frac{-4}{3}$ 9) The remainder of subtracting $\frac{-3}{2}$ from zero10) $A + \frac{7}{8} = \text{zero}$ then $A =$ 11) If $(A + \frac{1}{4})$ is additive inverse of number $\frac{3}{4}$ then $A =$ 12) If $X = 2$, $Y = 3$ and $Z = 4$ then $\frac{X}{Y} - \frac{Z}{X} =$ **[2] Using the number line to find result :**

a) $-\frac{1}{3} + \frac{7}{3} =$

b) $\frac{5}{7} + \frac{1}{7} =$

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[3] Using the addition properties in :

a) $\frac{5}{8} + (-\frac{3}{4}) + \frac{3}{8} + \frac{3}{4}$

b) $7\frac{1}{4} + (-11\frac{1}{4})$

c) $\frac{2}{3} + \frac{4}{5} + \frac{3}{4}$

[4] If $X = \frac{5}{6}$, $Y = -\frac{1}{3}$, $Z = \frac{1}{2}$ find :

a) $X + Z$

b) $X - Y$

c) $(X + Z)$

d) $(X + Y) - Z$

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Exercise (4)

[1] Complete :

- 1) The multiplicative identity of the rational no. is
- 2) The multiplicative inverse of no. $\frac{3}{7}$ is
- 3) The multiplicative inverse $(\frac{-3}{5})^{\text{zero}}$ is
- 4) The rational no. $\frac{a-1}{5}$ has multiplicative inverse if $a = \dots\dots\dots$
- 5) The rational no. has multiplicative inverse is
- 6) $\frac{2}{3} \times (\frac{-4}{5}) = \frac{-4}{5} \times \dots\dots\dots$
- 7) If $\frac{a}{b} = 80$ then $\frac{a}{2b} = \dots\dots\dots$
- 8) $\frac{X}{Y} = \frac{2}{3}$ then $\frac{3X}{2Y} = \dots\dots\dots$
- 9) $\frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \times \dots\dots\dots \times \frac{50}{51} = \dots\dots\dots$
- 10) $\frac{-7}{3} \times (\frac{-3}{7}) = n$, then $n = \dots\dots\dots$
- 11) $\frac{-5}{3} \times \dots\dots\dots = 0$
- 12) $\dots\dots\dots \times \frac{19}{3} = 1$

[2] Using properties of following :

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

$$2) \frac{-3}{7} \times 8 + 5 \times (\frac{-3}{7}) + (\frac{-3}{7}) \times 9$$

$$3) \frac{27}{11} \times \frac{1}{4} - \frac{27}{11} \times \frac{1}{4} + \frac{27}{11} \times 9$$

[3] If $X = \frac{3}{2}$, $Y = \frac{-1}{4}$ and $Z = -2$

a) $\frac{1}{XYZ}$ b) $\frac{X}{Y} - \frac{Z}{Y}$

[4] Find the middle rational no. lying between :

a) $\frac{3}{\infty}, \frac{5}{\infty}$

b) $\frac{-1}{2}, \frac{-3}{4}$

c) zero, $\frac{2}{5}$

[5] Find the rational number lying at :

a) One fourth of way between $\frac{5}{7}$, $\frac{-3}{7}$

b) One tenth of way between $\frac{-1}{2}$, $\frac{-3}{5}$

Unit Two

[1] Complete :

1) The degree of term $3 X^2 Y$ isits coefficient is

2) The coefficient of algebraic term $\frac{2}{3} X^4 Y Z^3$ isand its degree

3) The degree of an absolute term in algebraic expression

4) $-3a^5b$ number of terms name is degree is

5) $5X^3 - 7X + 4$ number of terms name degree is

6) The coefficient of the algebraic term X isand its degree is

7) If the degree of the algebraic term $5 X^n Y^2$ is 5 then n =

8) If the degree of algebraic term Y^{m+1} is the degree of a algebraic term $5X^2Y^4$ then
in =

Sheet (7)

[1] Find the result of each of following :

$$1) 3X + 2X$$

$$2) -5a^2 + 3a^2$$

$$3) \frac{3X}{7} - \frac{X}{7}$$

4) $-2 X^2 Y + 3Y X^2$

5) Subtract Y^2 from $-3 Y^2$

6) What is increase of $3a^2b$ than a^2b is ?

7) What is decrease of $-3ab$ than $2ab$?

8) Find the sum of :

a) $3a - 4b + 6c$

b) $3a - 7b - 5c + 2$

c) $5x + 2y - z + 2$

$$5a + 6b - 2c$$

$$-a + 4b + c - 5$$

$$7x + y - 32 + 3$$

$$-2x - 5y + 4z - 1$$

[2] Find the sum of following :

- 1) $3X - 2Y$, $X + 2Y - 2$
- 2) $2a^2b - 3ab^2 + b^3$, $-a^2b + b^3$
- 3) $3X - 4X^2 + X^3$, $2X^2 - 6X^2 - 6X + 5$, $7X + 4 - X^3$

[3] Reduce each of the following :

- 1) $5X - 3X^2 + 4 - 7X^2 - 6X - 1$
- 2) $6X^2Y - 4XY^2 + 2XY^2 - 5X^2Y + 2X^2Y^2$
- 3) $5X^2 - 2X + 8 - 7X - 3 + X^2$
- 4) $-a^2 - 5ab + 4b^2 - 2 - 3a^2 + 2ab - 2b^2 - 7$

Sheet (8)**[1] Simplify :**

- 1) $4(X - 3) = \dots\dots\dots$
- 2) $a(a - 2) = \dots\dots\dots$
- 3) $-3k(2k^2 - 3k - 7) = \dots\dots\dots$
- 4) $-2c(7 - 3c) = \dots\dots\dots$
- 5) $2X^2Y(2X^2 - 3XY + Y^2) = \dots\dots\dots$
- 6) $Lm^2(L^2 - 3mL - 4m^2) = \dots\dots\dots$
- 7) $(3X + 4)(2X + 5) = \dots\dots\dots$
- 8) $(5X + 1)(3X + 2) = \dots\dots\dots$
- 9) $(2X + 5Y)(2X - 5Y) = \dots\dots\dots$
- 10) $(X - 4)(X + 4) = \dots\dots\dots$
- 11) $(2X + Y)^2 = \dots\dots\dots$
- 12) $(4X + 5Y)^2 = \dots\dots\dots$
- 13) $3(m - 5)(m + 2) = \dots\dots\dots$
- 14) $4(XY - 2)^2 = \dots\dots\dots$
- 15) $(2X^2 + 3)(X^2 - 5) - (3X^2 + 2)^2 = \dots\dots\dots$

[2] Find value of K :

- 1) $(2X + Y)^2 = 4X^2 + KXY + Y^2$ then $K = \dots\dots\dots$
- 2) If $(X - Y)(2X + Y) = 2X^2 + KXY - Y^2$ then $K = \dots\dots\dots$
- 3) $(X - 3)(X + 3) = X^2 + K$ then $K = \dots\dots\dots$

[3] Find numerical value of following :

If $X = 1$, $Y = -2$

- 1) $(2Y + 7)(3Y + 4)$
- 2) $(X + 4)(3X + 2)$
- 3) $(3X + Y)(X + 3Y)$

Sheet (8)**[1] Find the quotient :**

a) $\frac{18a^2}{3a}$

b) $\frac{18m^3 + 36m^2}{-2m^2}$

c) $\frac{48X^3 - 80mX^2}{8X^2}$

d) $\frac{32X^5 - 32X^2 + 36X^7}{4X^2}$

e) $2X^2 + 13X + 15$ by $X + 5$

f) $X^3 - 27$ by $X - 3$

g) $3X^3 - 4X + 1$ by $X - 1$

h) If area of rectangle is $(2X^2 + 7X - 15)$ and length is $(X + 5)$ find perimeter if $X = 3$ cm.

Sheet (9)**Factorize by identifying the H.C.F :**

- a) $3X^2 + 6X$
 b) $35a + 10a^2$
 c) $3X^2 + 12X - 6$
 d) $8Y^2 - 4X^2$
 e) $3X(a + b) + 7(a + b)$
 f) $3X^3(X - 4) + 4X(X - 4) + 3(X - 4)$
 g) $4m^5(2X + 5Y) - 3m(2X + 5Y) - 6(2X + 5Y)$
 h) $7 \times 123 + 7 \times 35 - 7 \times 18$
 i) $6 \times 15^2 + 18 \times 15 - 24 \times 15$

Sheet (10)

- 1) The mode of set of values is
 2) The mode of values 2, 3, 8, 2, 9 is
 3) The mode of values 3, 6, 13, 19, 19, 12 is
 4) If the mode of values $\frac{1}{3}, \frac{1}{7}, \frac{1}{5}, \frac{1}{7}$ is $\frac{1}{X}$ then $X =$
 5) If the mode of values 12, 17, $X - 1$, 7, 12 is 7 then $X =$
 6) If mode of values of $a + 2, a + 1, a + 3, a + 2$ equal 12 then $a =$
 7) The median of values 4, 8, 3 is
 8) The median of values 6, 5, 9, 8 is
 9) The median of values 8, 17, 4, 6, 10 is
 10) The median of values 6, 2, 5, 4 is
 11) The mean of values 5, 12, 6, 17 is
 12) The mean of values 2, 5, 8, 9, 14, 28 is
 13) The mean of values $2 - a, 4, 1, 5, 3 + a$ is
 14) The mean of values $X, X - Y, Y - X$ is

[2] The following table shows the number of hours that . Ali and Ahmed study daily in a week .

Ali	7	5	8	9	8	6	4
Ahmed	8	9	7	9	9	5	5

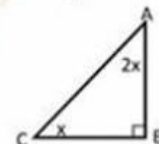
- a) find mean of studying hour for each Ali , Ahmed
 b) Find median of each of them .
 c) Find mode of hours of each of them .

Question

(1) Choose the correct answer from the given:

- 1) $(x^n)^n = \dots\dots\dots$
 a) x^{2n} b) x^{n^n} c) x^{n^2} d) $x^{\frac{n}{n}}$
- 2) $\left(-\frac{1}{5}\right)^0 = \dots\dots\dots$
 a) zero b) $-\frac{1}{5}$ c) $\frac{1}{5}$ d) 1
- 3) If the thickness of a piece of paper = 0.012 cm, then the height of a sheet formed from 600 pieces of paper =cm.
 a) 72×10^{-3} b) 72×10^{-2} c) 7.2×10^0 d) 72
- 4) If: $x + 3 = 3$, then $x = \dots\dots\dots$
 a) 6 b) -6 c) 3 d) zero
- 5) A class contains 20 boys and 15 girls. If a pupil is chosen randomly, then the probability that the pupil is a boy =
 a) $\frac{1}{20}$ b) $\frac{1}{15}$ c) $\frac{3}{7}$ d) $\frac{4}{7}$
- 6) $2.37 \times 10^{-4} = \dots\dots\dots$
 a) 0.00237 b) 0.000237 c) 23700 d) 0.0000237
- 7) $\frac{s^2t}{s} \left(\frac{t^2}{2s}\right)^3 = \dots\dots\dots$
 a) $\frac{t^5}{6s}$ b) $\frac{t^7}{8s^2}$ c) $\frac{s^2t^6}{8}$
- 8) $\frac{a^{-1}}{b^2} \left(\frac{a^{-1}}{2b^2}\right)^{-2} = \dots\dots\dots$
 a) $4b^2a$ b) $4b^4a^2$ c) $\frac{b^2}{4a}$

- 9) If the total weight of 500 grains of salt is $6\frac{1}{2}$ gm, then the weight of one grain = gm.
 a) $\frac{78}{10000}$ b) $\frac{13}{1000}$ c) $\frac{78}{1000}$ d) $\frac{325}{1000}$
- 10) If the thickness of a sheet of paper is 0.012 cm. Then a ream of 400 sheets is of height
 a) 48×10^{-3} b) 48×10^{-2} c) 4.8×10^0 d) 48
- 11) Quarter of $4^{20} = \dots\dots\dots$
 a) 4^5 b) 4^{10} c) 4^{19} d) 2^{10}
- 12) $3^{-2} = \dots\dots\dots$
 a) $\frac{1}{3}$ b) $\frac{1}{9}$ c) $-\frac{1}{3}$ d) $-\frac{1}{9}$
- 13) $0.00000027 = \dots\dots\dots$
 a) 2.7×10^{-7} b) 2.7×10^{-6} c) 2.7×10^{-8} d) 2.7×10^{-1}
- 14) $\sqrt{8^2 + 6^2} = 8 + \dots\dots\dots$
 a) 6 b) 2 c) -6 d) -2
- 15) In the opposite figure: $m(\angle A) = \dots\dots\dots$
 a) 30° b) 60° c) 90° d) 180°
- 16) The S.S of the inequality $-2 \leq x < 2$ in Z is
 a) $\{-2, -1, 0\}$ b) $\{-1, 0, 1, 2\}$ c) $\{-2, -1, 0, 1\}$ d) $\{-1, 0, 1\}$
- 17) As throwing a die once, the probability of appearance of a number divisible by 4 on the upper face is
 a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{1}{6}$ d) $\frac{5}{6}$



(2) Complete:

1) $2 \times 6 - 4 \div 2 = \dots\dots\dots$

2) $\sqrt{\left(\frac{-5}{6}\right)^2} = \dots\dots\dots$

3) In the opposite figure:

$m(\angle A) = \dots\dots\dots^\circ$



4) If the substitution set is $\{-1, 0, 1, 2, 3, 4\}$, then the S.S of the inequality $x + 5 \leq 7$ is $\dots\dots\dots$

5) As throwing a die once, the probability of getting a number divisible by 7 is $\dots\dots\dots$

6) If the probability of success of a student = 0.8 , then the probability of his failure = $\dots\dots\dots$

7) The additive inverse of $\left(\frac{-2}{5}\right)^2$ is $\dots\dots\dots$

8) The multiplicative inverse of $\sqrt{\frac{10}{2.5}}$ is $\dots\dots\dots$

9) $\left(\frac{-3}{7}\right)^7 + \left(\frac{3}{4}\right)^5 = \dots\dots\dots$

10) $\left(-\frac{1}{2}\right)^3 \cdot \left(-\frac{1}{2}\right)^2 = \dots\dots\dots$

11) If $0.00053 = 5.3 \times 10^m$ then $m = \dots\dots\dots$

12) $\sqrt{16+9} = \dots\dots\dots$

13) On tossing a fair coin once, the probability of appearance of tail = $\dots\dots\dots$

14) If $x + 1 > 0$, then $x > \dots\dots\dots$

(3) Simplify:

a) $\sqrt{\frac{25x^2y^2}{36}}$

b) $\frac{(2ab^{-2})^0}{3^0a^{-2}b}$

c) $\left(\frac{-2}{5}\right)^6 \div \left(\frac{2}{5}\right)^4$

d) $\frac{(-2)^6 \times (-2)^4}{(-2)^8}$

(4) a) Solve the equation: $8x + 4 = 20$, where $x \in \mathbb{Z}$.

b) Solve the inequality: $2x + 3 \geq 3x - 1$, where $x \in \mathbb{Q}$

a) Find the S.S of: $2x + 4 = 10$ in \mathbb{Q}

b) Solve the inequality $7x - 2x + 1 \leq 16$ in \mathbb{Z}

a) Solve the equation: $2(3x - 3) + 2x = 74$ where $x \in \mathbb{N}$

b) Solve the inequality: $-3x - 1 \leq 5$ where $x \in \mathbb{Z}$

(5)

a) The age of Ahmed equals three times the age of Hany and the difference between their ages equals 10 years. Find the age of each of them

(b) The length of a rectangle is twice its width and its surface area is 24.5 cm^2 , calculate each of its length and width.

(c) If three quarters of the surface area of a square is $1 \frac{11}{64} \text{ m}^2$, calculate the side length of the square.

(6)

- a) In an experiment of throwing a fair die and observing the apparent number on the upper face, find the probability that the number is:-
 a) odd b) divisible by 5
- b) A bag contains 4 red balls, 3 white balls and 5 blue balls, a ball is drawn from the bag randomly. Calculate the probability that the drawn ball is:
 1) Red 2) not blue 3) green
- c) A card is drawn from a bag of 25 cards numbered from 1 to 25. Calculate the probability that the drawn card carries.
 a) number divisible by 5
 b) number ≥ 20
 c) a perfect square number

Model Answers

(1) Choose the correct answer from the given:

- | | | |
|-------|-------|-------|
| 1) e | 2) 1 | 3) c |
| 4) d | 5) d | 6) b |
| 7) b | 8) a | 9) b |
| 10) c | 11) c | 12) b |
| 13) a | 14) b | 15) b |
| 16) c | 17) c | |

Q (2): Complete

- 1) 10
- 2) $\left| \frac{-5}{6} \right| = \frac{5}{6}$
- 3) 15°
- 4) $\{2, 1, 0, -1\}$
- 5) zero
- 6) $1 - 0.8 = 0.2$
- 7) $\frac{-4}{25}$
- 8) 2
- 9) $\frac{-9}{16}$

10) $\frac{-3}{8}$

11) $m = -4$

12) 5

13) $\frac{1}{2}$

14) -1

Q (3): Simplify:

a) $\left| \frac{5xy}{6} \right|$

b) $\frac{a^2}{b}$

c) $\left(\frac{2}{5} \right)^2 = \frac{4}{25}$

d) 1

Q(4)

a) $S.S = \{2\}$

b) $S.S = \{x: x \in Q, x < 4\}$

c) $S.S = \{3\}$

d) $S.S = \{x: x \in Q, x \leq 3\}$

e) $S.S = \Omega$ in N

$S.S = \{x: x \in O, x \geq -2\}$

Model exam (Alg.)

[1] Complete :

a) $\frac{3-x}{x+2} = \text{zero}$ if $x = \dots\dots\dots$

b) The degree of the algebraic term $6x^2y^3$ is $\dots\dots\dots$

c) The additive inverse of the number $\left| \frac{-3}{5} \right|$ is $\dots\dots\dots$

d) $-8X$ exceeds $5X$ by $\dots\dots\dots$

e) $(12x^3 \div 4x) \times \dots\dots\dots = 6x^4$

[2] Choose the correct answer :

1) $\frac{-2}{5} \times n = 1$ Then $n = \dots\dots\dots$

a) $\frac{5}{2}$

b) $\frac{-5}{2}$

c) $\frac{2}{5}$

d) $\frac{-2}{5}$

2) The rational number $\dots\dots\dots$ lies in half way between $\frac{1}{2}$ and $\frac{7}{8}$

a) $\frac{11}{16}$

b) $\frac{5}{8}$

c) $\frac{3}{4}$

d) $\frac{1}{2}$

3) $\frac{3}{x+2}$ is a rational number then $x \neq \dots\dots\dots$

a) zero

b) -3

c) 2

d) -2

4) Express $\frac{4}{11}$ as a decimal $\dots\dots\dots$

a) 0.36

b) 0.363

c) 0.36

d) 0.036

5) If $\frac{x}{y} = \frac{2}{5}$ Then : $5x - 2y = \dots\dots\dots$

a) $\frac{2}{5}$

b) $\frac{5}{2}$

c) 1

d) zero

[3] a) Add : $3x - 5y - 6$ and $3y + 2x + 5$

b) Use distributive property to find : $\frac{5}{9} \times 11 + \frac{5}{9} \times 8 - \frac{5}{9}$

c) The length of a rectangle is $5x$ cm and its width is $3x$ cm . calculate its area .

[4] a) Subtract : $6x^2 + 2x - 5$ from $2x^2 - 3x + 4$

b) If $a = \frac{3}{4}$, $b = -\frac{1}{2}$ find the value of $(a+b) \div (a-b)$

c) Find three rational numbers between $\frac{1}{2}$, $\frac{1}{3}$

(3) Simplify:

a) $\sqrt{\frac{25x^2y^2}{36}}$

b) $\frac{(2ab^{-2})^0}{3^0a^{-2}b}$

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