

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Chapter 01

RATIONAL NUMBERS

Exercise 1.1

1. Write the place value of the following numbers in base 10.

(i) 6287.48

Ans. $6 \times 10^3 + 2 \times 10^2 + 8 \times 10^1 + 7 \times 10^0 + 4 \times 10^{-1} + 8 \times 10^{-2}$

(ii) 4628370.52

Ans. $4 \times 10^6 + 6 \times 10^5 + 2 \times 10^4 + 8 \times 10^3 + 3 \times 10^2 + 7 \times 10^1 + 0 \times 10^0 + 5 \times 10^{-1} + 2 \times 10^{-2}$

2. Classify the following numbers as a whole number, an integer or a rational number.

(i) 3, -1.2, -2, 0

(ii) 4.5, $\frac{3}{4}$, -2.1, 0.5

(iii) 3.6, -1.5, -0.31, -2.8

(iv) $\frac{1}{6}$, 1.75, $-\frac{2}{3}$, 10

Ans.

(i)

Numbers	Whole Number	Integer	Rational Number
3	Yes	Yes	Yes
-1.2	No	No	Yes
-2	No	Yes	Yes
0	Yes	Yes	Yes

(ii)

Numbers	Whole Number	Integer	Rational Number
4.5	No	No	Yes
$\frac{3}{4}$	No	No	Yes

-2.1	No	No	Yes
0.5	No	No	Yes

(iii)

Numbers	Whole Number	Integer	Rational Number
3.6	No	No	Yes
-1.5	No	No	Yes
-0.31	No	No	Yes
-2.8	No	No	Yes

(iv)

Numbers	Whole Number	Integer	Rational Number
$\frac{1}{6}$	No	No	Yes
1.75	No	No	Yes
$\frac{2}{3}$	No	No	Yes
10	Yes	Yes	Yes

3. Fill in the blanks with $<$, $>$, $=$ to make sentence true:

(i) 40% _____ $\frac{12}{25}$

Ans. $0.4 - 0.48$
 $0.4 < 0.48$ so $40\% < 0.48$

(ii) 0.82 _____ $-\frac{5}{6}$

Ans. $0.82 - -0.83$
 $0.82 > -0.83$

(iii) $\frac{3}{5}$ _____ 59%

Ans. $\frac{3}{5}$ _____ 0.59
 $0.6 - 0.59$
 $0.6 > 0.59$ so $\frac{3}{5} > 59\%$

(iv) $\frac{9}{20}$ _____ 0.45

Ans. 0.45 _____ 0.45

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

$$0.45 = 0.45$$

$$\text{So } \frac{9}{20} = 0.45$$

$$(v) \quad \frac{5}{8} \text{ m } \underline{\hspace{1cm}} \quad \frac{1}{16} \text{ m}$$

$$\text{Ans. } 0.625 \underline{\hspace{1cm}} 0.0625$$

$$0.625 > 0.0625$$

$$\frac{5}{8} \text{ m } > \frac{1}{16} \text{ m}$$

$$(vi) \quad 0.25 \text{ kg } \underline{\hspace{1cm}} \quad \frac{2}{9} \text{ kg}$$

$$\text{Ans. } 0.25 \text{ kg } \underline{\hspace{1cm}} 0.22 \text{ kg}$$

$$0.25 \text{ kg } > 0.22 \text{ kg}$$

$$0.25 \text{ kg } > \frac{2}{9} \text{ kg}$$

4. Arrange numbers in each set form least to greatest using a number line.

$$(i) \quad 0.23, 19\%, \frac{1}{5}$$

$$\text{Ans. } 0.23, 0.19, 0.20 = 0.19 < 0.20 < 0.23 \\ = 19\% < \frac{1}{5} < 0.23$$

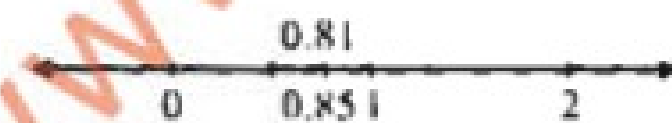
$$(ii) \quad \frac{8}{10}, 81\%, 0.805$$

$$\text{Ans. } 0.8, 0.81, 0.805$$

$$0.8, 0.805, 0.81$$

$$\frac{8}{10}, 0.805, 81\%$$

Number line =

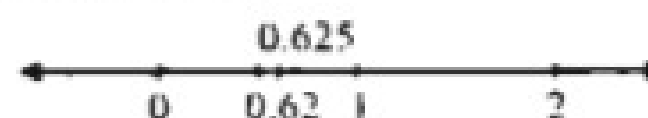


$$(iii) \quad 0.615, \frac{5}{8}, 62\%$$

$$\text{Ans. } 0.615, 0.625, 0.62$$

$$0.615, 0.62, 0.625 = 0.615 < 62\% < \frac{5}{8}$$

Number line



$$(iv) \quad -5.2, -\frac{3}{8}, -6, 0.3, -\frac{1}{9}$$

$$\text{Ans. } -5.2, -0.375, -6, 0.3, -0.25$$

$$-6 < -5.2 < -0.375 < -0.3 < -0.25$$

Number line



$$(v) \quad 2.1, 0, -\frac{13}{10}, -1.38, \frac{3}{5}$$

$$\text{Ans. } 2.1, 0, -1.3, -1.38, 0.6$$

$$-1.38 < -1.3 < 0.6 < 0 < 2.1$$

Number line



5. Arrange the following rational numbers in descending order:

$$(i) \quad \frac{3}{4}, \frac{5}{9}, \frac{7}{12}$$

$$\text{Ans. } 0.75, 0.56, 0.58$$

$$0.75, 0.58, 0.56$$

$$\text{So } \frac{3}{4} > \frac{7}{12} > \frac{5}{9}$$

$$\frac{3}{4}, \frac{7}{12}, \frac{5}{9}$$

$$(ii) \quad 3, -1.2, -2, 0$$

$$\text{Ans. } 3, 0 > 0 > -1.2 > -2$$

$$\text{So } 3, 0, -1.2, -2$$

$$(iii) \quad 4.5, \frac{3}{4}, -2.0, 0.5$$

$$\text{Ans. } 4.5, 0.75, -2.0, 0.5$$

$$4.5, 0.75, 0.5, -2.0$$

$$4.5, \frac{3}{4}, 0.5, -2.0$$

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

(iv) $3.6, -1.5, 0.31, -2.8$

Ans. $3.6 > -0.31 > -1.5 > -2.8$

So $3.6, 0.31, -1.5, -2.8$

(v) $\frac{1}{6}, 1.75, -\frac{2}{3}, 0$

Ans. $0.17, 1.75, -0.67, 0$

$1.75 > 0.17 > 0 > -0.67$

So $1.75, \frac{1}{6}, 0, -0.67$

6. Round off the following decimals the nearest whole numbers.

(i) $0.51 = 1$

Ans. Nearest whole number

(ii) $7.95 = 8$

Ans. Nearest whole number

(iii) $0.333 = 0$

Ans. Nearest whole number

7. Express the following fractions to the numbers of decimal places given in the brackets.

(i) $\frac{1}{33}$ (2 decimal places)

Ans. $0.303 = 0.03$

(ii) $\frac{14}{23}$ (1 decimal place)

Ans. $= 0.608 = 0.6$

(iii) $\frac{17}{53}$ (2 decimal places)

Ans. $= 0.3207 = 0.32$

8. In one week, Mahd spends 52 hours in front of the computer. What is the average number of hours he spend in front of computer each day? Round off your answer to the nearest whole number. Period = 1 week

Ans.

Time spent in front of computer = 52 hours

Each day time spent = $\frac{52}{7} = 7.428$ hours

Nearest whole number = 7 hours

9. The length of four insects are 0.02 cm, $\frac{1}{8}$ cm, 0.1 cm and $\frac{2}{3}$ cm. Arrange the length in descending order.

Ans. 0.02 cm, $\frac{1}{8}$ cm, 0.1 cm, $\frac{2}{3}$ cm

$0.02, 0.125, 0.1, 0.67$

Descending order

$0.67 > 0.125 > 0.10, 0.02$

$= \frac{2}{3}, \frac{1}{8}, 0.1, 0.02$

10. The cost of four items on a menu are Rs. 9, Rs. 0.99, Rs. 9.99 and Rs. 19.99. Order these costs from least to greatest.

Ans. Rs. 9, Rs. 0.99, Rs. 9.99, Rs. 19.99

From least to greatest

Rs. 0.99, Rs. 9.00, Rs. 9.99, Rs. 19.99

11. Ahmed and Sara played darts. Ahmed hit the bull's eye 5 out of 18 times. Sara missed the bull's eye 4 out of 15 times. Who played better?

Ans. Sara must hits = 4 out of 15 Ahmed and Ahmed hits 11 out of 15

Who played better = ?

$\frac{5}{18} : \frac{11}{15}$

$0.278 : 0.733$

$0.28 : 0.73$

$\frac{11}{15}$ is better

So Sara played better.

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

12. Three paint brushes have widths of $\frac{3}{8}$ cm, $\frac{1}{2}$ cm, $\frac{3}{4}$ cm. What is the measure of the brush with the greatest width?

Ans. $\frac{3}{8}, \frac{1}{2}, \frac{3}{4}$

0.375, 0.5, 0.75

Greatest $0.75 = \frac{3}{4}$ = third brush

13. The world's five largest deserts are shown in the table. Order the areas from least to greatest.

Desert	Area (millions of square meters)
Sahara	$\frac{7}{2}$
Kalahari	$\frac{2}{10}$
Gobi	$\frac{2}{5}$
Australian	$1\frac{4}{10}$
Arabian	$\frac{1}{2}$

Ans.

Desert	Area (millions of square meters)
Sahara	$\frac{7}{2} = 3.5$
Kalahari	$\frac{2}{10} = 0.20$
Gobi	$\frac{2}{5} = 0.40$
Australian	$1\frac{4}{10} = 1.4$
Arabian	$\frac{1}{2} = 0.5$

From least to greatest = ?

$0.20 < 0.40 < 0.5 < 1.4 < 3.5$

Kalahari, Gobi, Arabian, Australia, Sahara

14. An investor purchases 50 shares of stock at Rs. 3.50 per share. The next day, the change in value of a share of the stock is -0.25 . What is the total value of the shares on the next day.

Ans. Change in value = $0 - 0.25$

New value = 3.25

Total new value of 50 shares = ?

$50 \times 3.25 = \text{Rs. } 162.50$

15. Make an estimation and then choose the correct answer.

Ans.

(i) 82.45×9.78

(a) 80.6361 ✓(b) 806.361

(c) 8063.61 (d) 80636.1

(ii) 30.03×0.065

✓(a) 1.95195 (b) 19.5195

(c) 195.195 (d) 1951.95

Exercise 1.2

1. Evaluate the following, expressing your answer in the simplest form?

(i) $8\frac{5}{12} \times 11\frac{1}{4}$

Ans. $\frac{101}{12} + \frac{45}{4}$

$\frac{101 + 135}{12} = \frac{236}{12} = 19\frac{2}{3}$

(ii) $8\frac{3}{8} + 10\frac{1}{3}$

Ans. $\frac{67}{8} + \frac{31}{3}$

$\frac{201 + 248}{24} = \frac{449}{24} = 18\frac{17}{24}$

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

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Ans. $\frac{46}{5} - \frac{13}{5}$

$$\frac{46 - 13}{5} = \frac{33}{5} = 6\frac{3}{5}$$

(iv) $14\frac{1}{6} - 7\frac{1}{3}$

Ans. $\frac{85}{6} - \frac{22}{3}$

$$= \frac{85 - 44}{6} = \frac{41}{6} = 6\frac{5}{6}$$

(v) $8 - 3\frac{2}{3}$

Ans. $\frac{8}{1} - \frac{11}{3}$

$$\frac{24 - 11}{3} = \frac{13}{3} = 4\frac{1}{3}$$

(vi) $13 - 5\frac{5}{6}$

Ans. $\frac{13}{1} - \frac{35}{6}$

$$= \frac{78 - 35}{6} = \frac{43}{6} = 7\frac{1}{6}$$

2. Evaluate the following:

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

Ans. $\frac{14}{3} + \frac{8}{3} - \frac{5}{4}$

$$= \frac{56 + 32 - 15}{12} = \frac{88 - 15}{12}$$

$$= \frac{73}{12} = 6\frac{1}{12}$$

(ii) $6\frac{1}{6} + 1\frac{2}{3} + 5\frac{5}{9}$

Ans. $\frac{37}{6} + \frac{5}{3} + \frac{50}{9}$

$$= \frac{111 + 30 + 100}{18} = \frac{241}{18} = 13\frac{7}{8}$$

(iii) $3\frac{1}{4} + 2\frac{5}{6} - 4\frac{1}{3}$

Ans. $\frac{13}{4} + \frac{17}{6} - \frac{13}{3}$

$$= \frac{39 + 34 - 52}{12} = \frac{73 - 52}{12}$$

$$= \frac{21}{12} = 1\frac{9}{12} = 1\frac{3}{4}$$

(iv) $4\frac{3}{5} - 1\frac{2}{15} - 2\frac{7}{9} - \frac{2}{45}$

Ans. $\frac{23}{5} - \frac{17}{15} - \frac{25}{9} - \frac{2}{45}$

$$= \frac{207 - 51 - 125 - 2}{45}$$

$$= \frac{207 - 178}{45} = \frac{29}{45}$$

(v) $8\frac{1}{3} - 1\frac{1}{9} - \frac{5}{18} - 2\frac{5}{6}$

Ans. $\frac{25}{3} - \frac{10}{9} - \frac{5}{18} - \frac{17}{6}$

$$= \frac{150 - 20 - 5 - 51}{18} = \frac{150 - 76}{18}$$

$$= \frac{74}{18} = \frac{37}{9} = 4\frac{1}{9}$$

3. Find the value of the following:

(i) $6\frac{1}{5} + \left(-2\frac{3}{10}\right)$

Ans. $\frac{31}{5} - \frac{23}{10}$

$$= \frac{62 - 23}{10} = \frac{39}{10} = 3\frac{9}{10}$$

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

Ans. $\frac{15}{2} - \frac{18}{5}$

$$= \frac{75 - 36}{10} = \frac{39}{10} = 3\frac{9}{10}$$

(iii) $-\frac{7}{4} - \left(-\frac{5}{6}\right) + \left(-1\frac{1}{3}\right)$

Ans. $-\frac{7}{4} + \frac{5}{6} - \frac{4}{3}$

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

$$= \frac{-21 + 10 - 16}{12} = \frac{10 - 37}{12}$$

$$\therefore \frac{-27}{12} = -2\frac{3}{12} = -2\frac{1}{4}$$

(iv) $-2\frac{3}{4} + \left(-\frac{5}{6}\right) + \left(-\frac{2}{5}\right)$

Ans. $-\frac{11}{4} - \frac{5}{6} - \frac{2}{5}$

$$\therefore \frac{-33 - 10 - 8}{12} = \frac{-51}{12}$$

$$= -4\frac{3}{12} = -4\frac{1}{4}$$

(v) $-3\frac{1}{2} + \left(-7\frac{2}{5}\right) + \left(-9\frac{3}{10}\right)$

Ans. $-\frac{7}{2} - \frac{37}{5} - \frac{93}{10}$

$$= \frac{-35 - 74 - 93}{10} = \frac{-202}{10}$$

$$= -\frac{202}{10} = -20\frac{2}{10} = -20\frac{1}{5}$$

(vi) $8\frac{2}{3} + \left(-6\frac{3}{5}\right) + 3\frac{1}{4}$

Ans. $\frac{26}{3} - \frac{33}{5} + \frac{13}{4}$

$$= \frac{520 - 396 + 195}{60} = \frac{715 - 396}{60}$$

$$= \frac{319}{60} = 5\frac{19}{60}$$

4. Identify the property being illustrated.

(i) $-3 + 3 = 0$

Ans. Inverse

(ii) $(-6 + 1) + 7 = -6 + (1 + 7)$

Ans. Associative

(iii) $9 + (-1) = -9 + 9$

Ans. Commutative

(iv) $-8 + 0 = -8$

Ans. Identity

(v) $(1 + 2) + 3 = 1 + (2 + 3)$

Ans. Associative

(vi) $1 + (-4) = -4 + 1$

Ans. Commutative

(vii) $8\frac{2}{3} + \left(-8\frac{2}{3}\right) = 0$

Ans. Inverse

(viii) $8\frac{2}{3} + \left(-6\frac{3}{5}\right) = -6\frac{3}{5} + \left(8\frac{2}{3}\right)$

Ans. Commutative

(ix) $\left(-6\frac{3}{4}\right) + 0 = \left(-6\frac{3}{4}\right)$

Ans. Identity

(x) $-3\frac{1}{2} + \left\{\left(-7\frac{2}{5}\right) + \left(-9\frac{3}{10}\right)\right\}$
 $= \left\{-3\frac{1}{2} + \left(-7\frac{2}{5}\right)\right\} + \left(-9\frac{3}{10}\right)$

Ans. Associative

5. Ahmed bought $1\frac{1}{4}$ kg beef and $2\frac{5}{8}$ kg of chicken. How much more chicken did he buy?

Ans. Beef = $1\frac{1}{4}$ kg = $\frac{5}{4}$ kg

Chicken = $2\frac{5}{8}$ kg = $\frac{21}{8}$ kg

More chicken = $\frac{21}{8} - \frac{5}{4}$
 $= \frac{21 - 10}{8}$
 $= \frac{11}{8} = 1\frac{3}{8}$ kg

6. Laiba had $4\frac{2}{3}$ cups of chopped walnuts. She used $1\frac{1}{4}$ cups in a

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

recipe. How many cups of chopped walnuts are left?

Ans. Walnut = $4\frac{2}{3} = \frac{14}{3}$ cups

Used = $1\frac{1}{4}$ cups = $\frac{5}{4}$ cups

$$\begin{aligned}\text{Left} &= \frac{14}{3} - \frac{5}{4} \\ &= \frac{56 - 15}{12} = \frac{41}{12} = 3\frac{5}{12} \text{ cups}\end{aligned}$$

7. *Salma wakes up at 6:00 a.m. It takes her $1\frac{1}{4}$ hours to shower, get dressed, and comb her hair. It takes her $\frac{1}{2}$ hour to eat breakfast, brush her teeth and make her bed. At what time she will be ready for school?*

Ans. Waking time = 6:00

Shower etc = $1\frac{1}{4}$ hour

Breakfast etc. = $\frac{1}{2}$ hour

$$\begin{aligned}\text{Total time taken} &= 1\frac{1}{4} + \frac{1}{2} \\ &= \frac{5}{4} + \frac{1}{2} \\ &= \frac{5+2}{4} \\ &= \frac{7}{4} \text{ hours} \\ &= 1\frac{3}{4} \text{ hours}\end{aligned}$$

$$\begin{aligned}\text{Time to be ready for school} &= 6:00 \text{ am} \\ &+ 1 \text{ hour and } 45 \text{ minutes} \\ &= 6:00 + 1:45 = 7:45 \text{ am}\end{aligned}$$

8. *Out of 160 cell phone owners, $\frac{3}{8}$ use their phone for text messaging only, $\frac{1}{4}$ prefer playing games only and remaining owners prefer only taking pictures. What fraction of owners prefer using their cell phones for taking pictures?*

Ans. Cell phone owners = 160

Using text message = $\frac{3}{8}$

For playing games = $\frac{1}{4}$

$$\begin{aligned}\text{(i) and (ii) Total} &= \frac{3}{8} + \frac{1}{4} \\ &= \frac{3+2}{8} = \frac{5}{8}\end{aligned}$$

Owners using minutes for purchaser = ?

$$1 - \frac{5}{8} = \frac{8-5}{8} = \frac{3}{8}$$

9. *The temperature in a city at 6a.m. was -8°F and increased by 15°F by noon. What was the temperature at noon?*

Ans. Temperature at 6 am = -8°F

By noon = increased by 15°F

Present temperature = $-8 + 15 = 7^{\circ}\text{F}$

10. *The temperature in a fridge is 5°C . The temperature in a freezer is -20°C . How many degrees colder is the freezer?*

Ans. Temperature in fridge = 5°C

Temperature in freezer = -20°C

$$\begin{aligned}\text{Freezer is colder} &= -5 - 20 \\ &= -25^{\circ}\text{C}\end{aligned}$$

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Exercise 1.3

1. Find the product:

(i) $-\frac{5}{6}(-12)(-4)$

Ans. $-\frac{5}{6} \times -12 \times -4$
 $= -5 \times -2 \times -4 = -5 \times 8 = -40$

(ii) $0.5(-20)(-3)$

Ans. $= \frac{5}{10} \times -20 \times -3$
 $= 5 \times -2 \times -3$
 $= 5 \times 6 = 30$

(iii) $-1.6(-2)(-10)$

Ans. $= -\frac{16}{10} \times -2 \times -10$
 $= -16 \times -2 \times -1 = -32$

(iv) $18\left(-\frac{2}{3}\right)\left(-\frac{1}{5}\right)$

Ans. $6(-2)\left(-\frac{1}{5}\right)$
 $= 12 \times \left(\frac{1}{5}\right) = \frac{12}{5} = 2\frac{2}{5} = 2.4$

(v) $\left(-\frac{3}{4}\right)\left(-\frac{1}{3}\right)\left(-\frac{8}{9}\right)$

Ans. $-\frac{\cancel{3}}{\cancel{4}} \times -\frac{1}{\cancel{3}} \times \frac{-\cancel{8}^2}{9} = -\frac{2}{9}$

(vi) $9(-7)(-1.2)$

Ans. $= (-63)(-1.2) = 75.6$

2. Identify the properties:

(i) $-\frac{2}{5} \times 0 = 0$

Ans. Multiplicative property of zero

(ii) $-1 \times (-6) = 6$

Ans. Multiplicative property of -1

(iii) $(-2 \times 5) \times 4 = -2 \times (5 \times 4)$

Ans. Associative property of multiplication

(iv) $-143 \times 1 = -143$

Ans. Identity property

(v) $0 \times (-76) \times 3 = 0$

Ans. Multiplicative property of zero

3. Find the multiplicative inverse of each number:

(i) -18

Ans. As $-18 \times -\frac{1}{18} = 0$

So $-\frac{1}{18}$

(ii) -9

Ans. As $-9 \times -\frac{1}{9} = 0$

So $-\frac{1}{9}$

(iii) $-\frac{3}{4}$

Ans. As $-\frac{3}{4} \times -\frac{4}{3} = 0$

So $-\frac{4}{3}$

(iv) $-\frac{5}{9}$

Ans. As $-\frac{5}{9} \times \frac{-9}{5} = 0$

So $-\frac{9}{5}$

(v) $-4\frac{1}{3}$

Ans. As $-\frac{13}{3} \times \frac{-3}{13} = 0$

So $-\frac{3}{13}$

(vi) $-2\frac{2}{5}$

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Ans. As $-\frac{12}{5} \times \frac{-5}{12} = 0$
 $-\frac{5}{12}$

4. Find the quotient:

(i) $-21 \div (3)$

Ans. $= -\frac{21}{3} = -7$

(ii) $-\frac{1}{2} \div \left(-\frac{1}{5}\right)$

Ans. $= -\frac{1}{2} \times \left(\frac{-5}{1}\right) = \frac{5}{2}$

(iii) $15 \div \left(-\frac{3}{4}\right)$

Ans. $= 15 \times \left(\frac{-4}{3}\right) = 5 \times -4 = -20$

(iv) $\left(-\frac{1}{5}\right) \div (-6)$

Ans. $= -\frac{1}{5} \times -\frac{1}{6} = \frac{1}{30}$

5. Find the mean of the following:

(i) $7, -4, 1, -9, -6$

Ans. $\frac{7 + 1 - 4 - 9 - 6}{5} = \frac{8 - 19}{5}$
 $= \frac{-11}{5} = -2.2$

(ii) $-2, 9, -3, 5$

Ans. $\frac{9 + 5 - 2 - 3}{4} = \frac{14 - 5}{4}$
 $= \frac{9}{4} = 2\frac{1}{4} = 2.25$

(iii) $0.25, -4, -0.75, -1, 6$

Ans. $\frac{6 + 0.25 - 4 - 0.75 - 1}{5} = \frac{6.25 - 5.75}{5} = \frac{0.5}{5} = 0.1$

(iv) $-0.6 + 0.18 - 2 + 5 - 0.5$

Ans. $= 0.18 + 5 - 0.6 - 2 - 0.5$
 $= 5.18 - 2 - 0.6 - 0.5$

$= 5.18 - 2 - 1.1$

$= \frac{5.18 - 3.1}{5} = \frac{2.08}{5} = 0.416$

6. Find the value of the following:

(i) $3\frac{2}{3} \div \left(-2\frac{4}{9}\right)$

Ans. $\frac{11}{3} \div \left(\frac{-22}{9}\right)$
 $= \left(\frac{11}{3}\right) \times \left(\frac{-9}{22}\right)$
 $= \frac{-1 \times 3}{2} = \frac{-3}{2} = -1\frac{1}{2}$

(ii) $5\frac{1}{4} \div \left(-2\frac{4}{5}\right)$

Ans. $5\frac{1}{4} \div \left(-2\frac{4}{5}\right) = \frac{21}{4} \div \left(-\frac{14}{5}\right)$
 $= \frac{21^3}{4} \times -\frac{5}{14_2} = -\frac{15}{8} = -1\frac{7}{8}$

(iii) $-2\frac{4}{5} \times \left(-\frac{5}{2}\right) \div \left(-2\frac{4}{3}\right)$

Ans. $-2\frac{4}{5} \times \left(-\frac{5}{2}\right) \div \left(-2\frac{4}{3}\right)$
 $= -\frac{14}{5} \times \left(-\frac{5}{2}\right) \div \left(-\frac{10}{3}\right)$
 $= -\frac{14}{5} \times \frac{-5^1}{2} \times \frac{-3}{10_2}$
 $= -\frac{14^7}{5} \times \frac{3}{4_2} = -\frac{21}{10} = -2\frac{1}{10}$

(iv) $1\frac{3}{4} \times \left[\left(\frac{6}{5}\right) \div \left(-\frac{1}{2}\right)\right]$

Ans. $1\frac{3}{4} \times \left[\left(\frac{6}{5}\right) \div \left(-\frac{1}{2}\right)\right]$
 $= 1\frac{3}{4} \times \left[\left(\frac{6}{5} \times \frac{-2}{1}\right)\right]$
 $= \frac{7}{4_2} \times \frac{-12^3}{5} = \frac{-21}{5} = -4\frac{1}{5}$

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

$$(v) -2 \frac{4}{10} \times \left(-\frac{15}{2}\right) \div \left(-4 \frac{1}{3}\right)$$

$$\begin{aligned} \text{Ans. } & -2 \frac{4}{10} \times \left(-\frac{15}{2}\right) \div \left(-4 \frac{1}{3}\right) \\ & = -2 \frac{4}{10} \times \left(\frac{-15}{2}\right) \div \left(\frac{-13}{3}\right) \\ & = \frac{-24}{10} \times \left(\frac{-15}{2} \times \frac{-3}{13}\right) \\ & = \frac{-24^{12}}{102_1} = \frac{-108^{54}}{26_{13}} = \frac{-54}{13} = -4 \frac{2}{13} \end{aligned}$$

7. Evaluate, giving each answer as a fraction in its simplest form.

$$(i) 2 \frac{3}{5} + 3 \frac{3}{4}$$

$$\begin{aligned} \text{Ans. } 2 \frac{3}{5} + 3 \frac{3}{4} &= \frac{13}{5} + \frac{15}{4} = \frac{52 + 75}{20} \\ &= \frac{127}{20} = 6 \frac{7}{20} \end{aligned}$$

$$(ii) \left(5 \frac{1}{3} \times \frac{1}{4}\right) - \left(3 \frac{1}{3} \div 2 \frac{6}{7}\right)$$

$$\begin{aligned} \text{Ans. } & \left(\frac{16}{3} \times \frac{1}{4}\right) - \left(\frac{10}{3} \div \frac{20}{7}\right) \\ & \frac{4}{3} - \left(\frac{10^1}{3} \times \frac{7}{20_3}\right) \\ & = \frac{4}{3} - \frac{7}{6} = \frac{8-7}{6} = \frac{1}{6} \end{aligned}$$

$$(iii) 42 \div (2 \div 0.4)$$

$$\begin{aligned} \text{Ans. } & 42 \div (2.4) \\ & 42 \div \frac{24}{10} \\ & \frac{42 \times 10}{24} = \frac{42^{27} \times 10^5}{24^{24} \times 10^2} \\ & = \frac{35}{2} = 17 \frac{1}{2} \end{aligned}$$

$$(iv) 2 \frac{2}{7} \times \left(3 \frac{1}{3} - 1 \frac{7}{12}\right)$$

$$\begin{aligned} \text{Ans. } & \frac{16}{7} \times \left(\frac{10}{3} - \frac{19}{12}\right) \\ & = \frac{16}{7} \times \left(\frac{40-19}{12}\right) \\ & = \frac{16}{7} \times \frac{21}{12} \\ & = \frac{16^4}{7_1} \times \frac{21^1}{12^1} = 4 \end{aligned}$$

8. To attend the class field trip, 24 students brought their permission slips. If this represented $\frac{4}{5}$ of the class, how many students are there in the class?

$$\text{Ans. } \frac{4}{5} \text{ of the class} = 24 \text{ students}$$

$$\text{Total students} = x \times \frac{4}{5} = 24$$

$$\frac{5}{4} \times \frac{4}{5} \times x = 24 \times \frac{5}{4}$$

$$x = 6 \times 5 = 30 \text{ students}$$

9. Five eighths of the students at a college live in hostels. If 6000 students live in hostel, how many students are there in the college?

$$\text{Ans. Student living in hostel}$$

$$= \frac{5}{8} \text{ of the total}$$

$$= \frac{5}{8} x = 6000$$

$$\frac{8}{5} \times \frac{5}{8} x = \frac{6000}{5} \times 8$$

$$x = 1200 \times 8$$

$$x = 9600 \text{ students}$$

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Review Exercise 1

1. Choose the correct option.

(i) $-(-6) =$

(a) $\frac{1}{6}$ (b) -6

✓(c) $+6$ (d) 0

(ii) $8 - [-6 - (-10)] =$

✓(a) 4 (b) -8

(c) 12 (d) -4

(iii) $-3.6 + (-5.5) =$

(a) 9.1 ✓(b) -9.1

(c) 1.9 (d) -1.9

(iv) $16.1 + (-9.3) =$

(a) 25.4 (b) -25.4

✓(c) 6.8 (d) -6.8

(v) $-\frac{4}{7} + \left(-\frac{9}{14}\right) =$

(a) $\frac{17}{14}$ ✓(b) $-\frac{17}{14}$

(c) $\frac{5}{14}$ (d) $-\frac{5}{14}$

(vi) $\frac{1}{2}(-6)(-3) =$

(a) 4.5 (b) -9

✓(c) 9 (d) -4.5

(vii) $\frac{3}{2} - 2 - (-3) =$

✓(a) $\frac{5}{2}$ (b) $-\frac{1}{2}$

(c) $-\frac{4}{2}$ (d) $\frac{1}{2}$

(viii) $-6 \div \left(\frac{3}{13}\right) =$

(a) $\frac{18}{13}$ (b) $-\frac{18}{13}$

(c) $\frac{78}{3}$ ✓(d) $-\frac{78}{3}$

(ix) $\left(\frac{24 - 40}{8}\right) =$

(a) $\frac{16}{8}$ ✓(b) $-\frac{16}{8}$

(c) $\frac{64}{8}$ (d) $-\frac{64}{8}$

(x) $\left(\frac{-18 - 9}{-9}\right) =$

(a) $\frac{-9}{-9}$ ✓(b) $\frac{-27}{-9}$

(c) $\frac{9}{-9}$ (d) $\frac{27}{-9}$

2. Identify the properties:

(i) $3 + (-3) = 0$

Ans. inverse property

(ii) $-1 + 0 = -1$

Ans. Identity property

(iii) $5 + 7 = 7 + 5$

Ans. Commutative property

(iv) $3 \times (5 \times 8) = (3 \times 5) \times 8$

Ans. Associative property

(v) $-4 \times (-7) = -7 \times (-4)$

Ans. Commutative property

(vi) $25 \times x = x \times 25$

Ans. Commutative property

(vii) $-3 \times (-1) = 3$

Ans. Multiplicative property of -1

(viii) $0 \times (-15) = 0$

Ans. Multiplicative property of 0

3. Complete the following:

(i) $-6 \underline{\hspace{1cm}} 4 = 4 \underline{\hspace{1cm}} -6 = -24$

Ans. $\times$

(ii) $22 \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}} \times 22 = -264$

Ans. 12

(iii) $(-12) \times (8 - 9) = [-12 \times \underline{\hspace{1cm}}]$

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

$$-[-12 \times \underline{\quad}] = \underline{\quad}$$

Ans. 8, 9, 12

4. Find the sum or difference for the following:

(i) $-5 + 2$

Ans. $-5 + 2 = -3$

(ii) $1.3 + (10.4)$

Ans. $1.3 + (10.4) = 11.7$

(iii) $\frac{1}{-3} + \frac{1}{6}$

Ans. $\frac{1}{-3} + \frac{1}{6} = \frac{-2+1}{6} = \frac{-1}{6}$

(iv) $-\frac{2}{7} - \frac{5}{14}$

Ans. $-\frac{2}{7} - \frac{5}{14} = \frac{-4-5}{14} = -\frac{9}{14}$

(v) $-\frac{5}{8} + \frac{1}{5}$

Ans. $-\frac{5}{8} + \frac{1}{5} = \frac{-25+8}{40} = -\frac{17}{40}$

5. Find the product or quotient for the following:

(i) $11(-7)$

Ans. $11(-7) = -77$

(ii) $-4.5(20)(2)$

Ans. $-4.5(20)(2) = -4.5 \times 20 \times 2$
 $= -90 \times 2 = -180$

(iii) $-\frac{1}{5}(-20)(-5)$

Ans. $-\frac{1}{5} \times -20 \times -5$
 $= 4 \times -5 = -20$

(iv) $-\frac{3}{5} \div 12$

Ans. $= \frac{-3}{5} \times \frac{1}{12} = \frac{-\cancel{3} \times 1}{5 \times \cancel{12}_4} = -\frac{1}{20}$

(v) $5 \div \left(-\frac{10}{11}\right)$

Ans. $5 \div \left(-\frac{10}{11}\right) = 5 \times \frac{-11}{10} = \frac{-11}{2}$

6. Find the additive and multiplicative inverse of the following rational numbers.

Numbers	Additive Inverse	Multiplicative Inverse
(1) -12	$-12 + \boxed{+12} = 0$ 12 Ans.	$-12 \times \boxed{\frac{1}{-12}} = 1$ $-\frac{1}{12}$ Ans.
(2) $\frac{1}{4}$	$\frac{1}{4} + \boxed{-\frac{1}{4}} = 0$ $-\frac{1}{4}$ Ans.	$\frac{1}{4} \times \boxed{4} = 1$ 4 Ans.
(3) $-\frac{3}{4}$	$-\frac{3}{4} + \boxed{+\frac{3}{4}} = 0$ $\frac{3}{4}$ Ans.	$-\frac{3}{4} \times \boxed{-\frac{4}{3}} = 1$ $-\frac{4}{3}$ Ans.
(4)	$\frac{-13}{29} + \boxed{+\frac{13}{29}} = 0$ $\frac{13}{29}$ Ans.	$\frac{-13}{29} \times \boxed{\frac{-29}{13}} = 1$ $\frac{-29}{13}$

7. Simplify the following:

(i) $8\frac{2}{5} + \left(-6\frac{3}{4}\right) + \left(3\frac{1}{6}\right)$

Ans. $8\frac{2}{5} + \left(-6\frac{3}{4}\right) + \left(3\frac{1}{6}\right)$
 $= \frac{42}{5} - \frac{27}{4} + \frac{19}{6}$
 $= \frac{504 - 405 + 190}{60}$
 $= \frac{504 + 190 - 405}{60}$
 $= \frac{289}{60} = 4.81$

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

$$(ii) \quad 5\frac{2}{3} - \left(-2\frac{5}{3}\right) + \left(7\frac{1}{4}\right)$$

$$\begin{aligned} \text{Ans. } 5\frac{2}{3} - \left(-2\frac{5}{3}\right) + \left(7\frac{1}{4}\right) \\ = \frac{17}{3} + \frac{11}{3} + \frac{29}{4} \\ = \frac{68 + 44 + 87}{12} = \frac{199}{12} = 16.58 \end{aligned}$$

$$(iii) \quad 2\frac{2}{3} + \left(-3\frac{2}{3}\right) + \left(-1\frac{1}{2}\right)$$

$$\begin{aligned} \text{Ans. } 2\frac{2}{3} + \left(-3\frac{2}{3}\right) + \left(-1\frac{1}{2}\right) \\ = \frac{8}{3} - \frac{11}{3} - \frac{3}{2} \\ = \frac{16 - 22 - 9}{6} = \frac{16 - 31}{6} = \frac{-15}{6} \\ = \frac{-5}{2} = -2.5 \end{aligned}$$

$$(iv) \quad 7\frac{2}{3} + \left(-5\frac{1}{6}\right) + \left(-3\frac{1}{12}\right)$$

$$\begin{aligned} \text{Ans. } 7\frac{2}{3} + \left(-5\frac{1}{6}\right) + \left(-3\frac{1}{12}\right) \\ = \frac{23}{3} - \frac{31}{6} - \frac{37}{12} \\ = \frac{92 - 62 - 37}{12} \\ = \frac{92 - 99}{12} = \frac{-7}{12} = -0.58 \end{aligned}$$

$$(v) \quad 9\frac{2}{3} + \left(5\frac{1}{2}\right) + \left(3\frac{5}{6}\right)$$

$$\begin{aligned} \text{Ans. } 9\frac{2}{3} + \left(5\frac{1}{2}\right) + \left(3\frac{5}{6}\right) \\ = \frac{29}{3} + \frac{11}{2} + \frac{23}{6} \\ = \frac{58 + 33 + 23}{6} = \frac{114}{6} = 19 \end{aligned}$$

8. Use distributive law to solve the:

$$(i) \quad \frac{1}{2} \times \frac{1}{3} + \frac{1}{2} \times \frac{1}{4}$$

$$\begin{aligned} \text{Ans. } \frac{1}{2} \times \frac{1}{3} + \frac{1}{2} \times \frac{1}{4} &= \frac{1}{2} \left(\frac{1}{3} + \frac{1}{4}\right) \\ &= \frac{1}{2} \left(\frac{4+3}{12}\right) \\ &= \frac{1}{2} \times \frac{7}{12} = \frac{7}{24} \end{aligned}$$

$$(ii) \quad -5 \times \left(\frac{-1}{6}\right) - 7 \times \left(\frac{-1}{6}\right)$$

$$\begin{aligned} \text{Ans. } -5 \times \left(\frac{-1}{6}\right) - 7 \times \left(\frac{-1}{6}\right) \\ = \frac{-1}{6} (-5 - 7) \\ = \frac{-1}{6} \times (-12) = 2 \end{aligned}$$

9. Find the value of each of the following:

$$(a) \quad -\frac{5}{7} \times \left(\frac{-28}{15} + 1\frac{2}{3}\right)$$

$$\begin{aligned} \text{Ans. } &= -\frac{5}{7} \times \left(\frac{-28}{15} + \frac{5}{3}\right) \\ &= -\frac{5}{7} \times \left(\frac{-28 + 25}{15}\right) \\ &= -\frac{5}{7} \times \frac{-3}{15} \\ &= \frac{-\cancel{5}^1}{7} \times \frac{-\cancel{3}^1}{\cancel{15}_5^1} = \frac{1}{7} \end{aligned}$$

$$(b) \quad \left[-\frac{1}{4} - \left(-\frac{1}{3}\right)\right] + \left(\frac{1}{4} - \frac{1}{3}\right)$$

$$\begin{aligned} \text{Ans. } &= \left(-\frac{1}{4} + \frac{1}{3}\right) + \left(\frac{3-4}{12}\right) \\ &= \left(\frac{-3+4}{12}\right) + \left(-\frac{1}{12}\right) \\ &= \frac{1}{12} - \frac{1}{12} = 0 \end{aligned}$$

$$(c) \quad 10 - \frac{15}{8} \times \left(\frac{3}{2} \div 4\frac{1}{2}\right) + \left(-\frac{1}{4}\right)$$

MATHEMATICS NOTES FOR 7TH CLASS (FOR ISLAMABAD)

Ans. $10 - \frac{15}{8} \times \left(\frac{3}{2} \times \frac{2}{9} \right) + \left(-\frac{1}{4} \right)$
 $10 - \frac{15}{8} \times \frac{1}{3} - \frac{1}{4} = \frac{10}{1} - \frac{5}{8} - \frac{1}{4}$
 $\frac{80 - 5 - 2}{8} = \frac{80 - 7}{8} = \frac{73}{8} = 9\frac{1}{8}$

10. Fahad bought $4\frac{1}{2}$ liters of ice cream to serve at his birthday party. If a scoop is $\frac{1}{16}$ of a liter, how many scoops can be served?

Ans. Amount = $4\frac{1}{2}$ liters
 One scoop = $\frac{1}{16}$ liters
 Number of scoops
 $= 4\frac{1}{2} \div \frac{1}{16}$
 $= \frac{9}{2} \times \frac{16}{1} = 9 \times 8 = 72$ scoops

11. Nahyan has 8 cups of popcorns to divide into $\frac{2}{3}$ cup portions. How many portions will there be?

Ans. Total pop corn = 8 cups
 Each portion = $\frac{2}{3}$ cup portion
 Number of portions = ?
 $= 8 \div \frac{2}{3} = \frac{8 \times 3}{2}$
 $= 4 \times 3 = 12$ portions

12. Wasiq has $8\frac{1}{4}$ cups of fruit juice. If he divides the juice into $\frac{3}{4}$ cups serving, how many servings are possible?

Ans. Total fruit juice = $8\frac{1}{4}$ cups

Each serving cup = $\frac{3}{4}$ cup portions

Numbers of serving = ?

$= 8\frac{1}{4} \div \frac{3}{4}$
 $= \frac{33}{4} \times \frac{4}{3} = \frac{33}{3} = 11$ serving

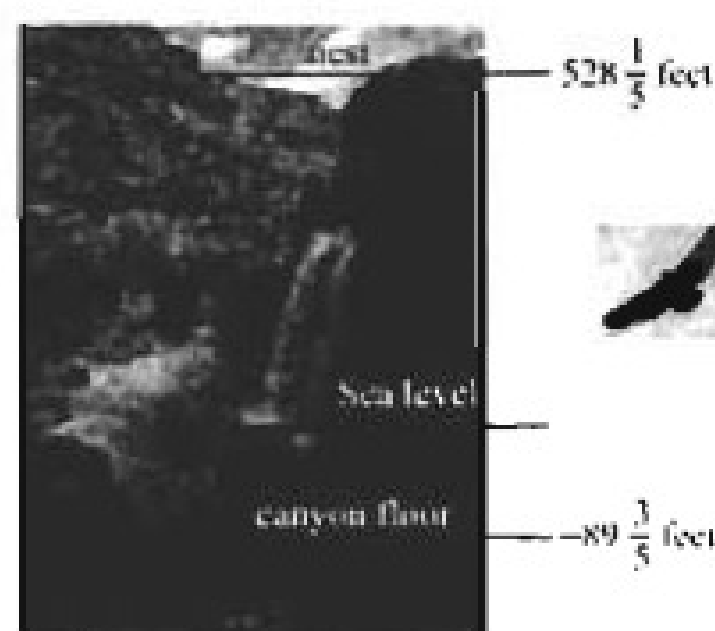
13. Amna says that $2\frac{5}{8}$ is same as 2.58.

(a) $2\frac{5}{8}$ to a decimal = $\frac{21}{8} = 2.625$

- (b) Was Anna correct in saying that $2\frac{5}{8}$ same as 2.58?

Ans. No, she was incorrect.

14. A bird flies from its nest to the bottom of the canyon. How far did the bird fly?



Ans. Nest height from sea level

$= 528\frac{1}{5}$ FT

$= 528.2$ ft

Canyon below

Sea level = $89\frac{3}{5}$ feet = 89.6 feet

The bird flew = $528.2 + 89.6$
 $= 617.8$ feet