



St. Xavier's
World School

CLASS -7
MATHEMATICS
CHAPTER-1 INTEGERS

PREVIOUS KNOWLEDGE QUESTIONS

Ques.1 What is digit?

Ans. A digit is a symbol used to enumerate the number.

Ques.2 Which types of digits we use in Hindu-Arabic system?

Ans. In Hindu Arabic system the digits are 0,1,2,3,4,5,6,7,8 and 9.

Ques.3 What are natural numbers?

Ans. Natural Numbers are the numbers used for counting e.g. $N=\{1,2,3,-----\}$.

Ques.4 Fill in the blanks:

Natural numbers together with zero (0) are called..... .

Ans. Natural numbers together with zero (0) are called Whole numbers.

Ques.5. What are positive numbers?

Ans. 1,2,3,4,..... all are positive numbers.

Ques.6. Can we write -1,-2,-3, - - etc.? Give name for these numbers?

Ans. Yes, we can write -1,-2,-3,..... . These are negative numbers.

Ques.7. Give the name for all positive and negative numbers together with zero?

Ans. These numbers (collection of these numbers) are known as integers.

NCERT SOLUTIONS

Ques. 1 Following number line shows the temperature in degree celsius ($^{\circ}\text{C}$) at different places on a particular day.



(a) Observe this number line and write the temperature of the places marked on it.

(b) What is the temperature difference between the hottest and the coldest places among the above?

(c) What is the temperature difference between Lahulspiti and Srinagar?

(d) Can we say temperature of Srinagar and Shimla taken together is less than the temperature at Shimla? Is it also less than the temperature at Srinagar?

Ans. (a) Lahulspiti: -8°C , Srinagar: -2°C , Shimla: 5°C , Ooty: 14°C , Bangalore: 22°C

(b) $30^{\circ}\text{C} [22^{\circ}\text{C} - (-8^{\circ}\text{C})] = 22^{\circ}\text{C} + 8^{\circ}\text{C} = 30^{\circ}\text{C}$

(c) $6^{\circ}\text{C} [-2^{\circ}\text{C} - (-8^{\circ}\text{C})] = [-2^{\circ}\text{C} + 8^{\circ}\text{C}] = 6^{\circ}\text{C}$

(d) Yes; No. $[(-2^{\circ}\text{C} + 5^{\circ}\text{C})] = 3^{\circ}\text{C}$; Temp. of Shimla $\rightarrow 5^{\circ}\text{C}$; temp. of Sri Nagar $\rightarrow -3^{\circ}\text{C}$, $-3^{\circ}\text{C} < 3^{\circ}\text{C}$

Ques.2 In a quiz, positive marks are given for correct answers and negative marks are given for incorrect answers. If Jack's scores in five successive rounds were 25, - 5, - 10, 15 and 10, what was his total at the end?

Ans. Total score obtained by Jack = $25 + (- 5) + (-10) + 15 + 10 = 35$.

Ques.3 At Srinagar temperature was $- 5^{\circ}\text{C}$ on Monday and then it dropped by 2°C on Tuesday. What was the temperature of Srinagar on Tuesday? On Wednesday, it rose by 4°C . What was the temperature on this day?

Ans. The temperature of Srinagar on Tuesday is -7°C . It's temperature on Wednesday is -3°C .

Ques.4 A plane is flying at a height of 5000 m above the sea level. At a particular point, it is exactly above a submarine floating 1200 m below the sea level. What is the vertical distance between them?

Ans. The vertical distance between the plane and submarine is $5000 + 1200 = 6200\text{m}$.

Ques.5 Mohan deposits Rs 2,000 in his bank account and withdraws Rs 1,642 from it, the next day. If withdrawal of amount from the account is represented by a negative integer, then how will you represent the amount deposited? Find the balance in Mohan's account after the withdrawal.

Ans. The amount deposited is represented by a positive integer.

The balance in Mohan's account after withdrawal = $2000 - 1642 = \text{Rs.}358$.

Ques.6 Rita goes 20 km towards east from a point A to the point B. From B, she moves 30 km towards west along the same road. If the distance towards east is represented by a positive integer then, how will you represent the distance travelled towards west? By which integer will you represent her final position from A?



Ans. The distance travelled towards west is represented by a negative integer.

The final position from A = $20 - 30 = -10 \text{ km}$.



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Ques.7 In a magic square each row, column and diagonal have the same sum. Check which of the following is a magic square.

column and diagonal have the same

5	-1	-4
-5	-2	7
0	3	-3

(i)

1	-10	0
-4	-3	-2
-6	4	-7

(ii)

Ans. (ii) is a magic square because each row, column and diagonal have the same sum -9.

Ques.8 Verify $a - (-b) = a + b$ for the following values of a and b .

(i) $a = 21$, $b = 18$ (ii) $a = 118$, $b = 125$

(iii) $a = 75$, $b = 84$ (iv) $a = 28$, $b = 11$.

Ans. (i) $a = 21$, $b = 18$

$$a - (-b) = 21 - (-18)$$

$$= 21 + 18$$

$$= 39$$

$$a + b = 21 + 18$$

$$= 39$$

Therefore $a - (-b) = a + b$

(ii) $a = 118$, $b = 125$

$$a - (-b) = 118 - (-125)$$

$$= 118 + 125$$

$$= 243$$

$$a + b = 118 + 125$$

$$= 243$$

Therefore $a - (-b) = a + b$

(iii) $a = 75$, $b = 84$

$$a - (-b) = 75 - (-84)$$

$$= 75 + 84$$

$$= 159$$

$$a + b = 75 + 84$$

$$= 159$$

Therefore $a - (-b) = a + b$

(iv) $a = 28$, $b = 11$

$$a - (-b) = 28 - (-11)$$

$$= 28 + 11$$

$$= 39$$

$$a + b = 28 + 11$$

$$= 39$$

Therefore $a - (-b) = a + b$.



Ques.9 Use the sign of $>$, $<$ or $=$ in

the box to make the statements true.

(a) $(-8) + (-4)$ $(-8) - (-4)$

(b) $(-3) + 7 - (19)$ $15 - 8 + (-9)$

(c) $23 - 41 + 11$ $23 - 41 - 11$

(d) $39 + (-24) - (15)$ $36 + (-52) - (-36)$

(e) $-231 + 79 + 51$ $-399 + 159 + 81$.

Ans.

(a) $<$

(b) $<$

(c) $>$

(d) $<$

(e) $>$

Ques.10 A water tank has steps inside it. A monkey is sitting on the topmost step (i.e., the first step). The water level is at the ninth step.

(i) He jumps 3 steps down and then jumps back 2 steps up.



In how many jumps will he reach the water level?

(ii) After drinking water, he wants to go back. For this, he jumps 4 steps up and then jumps back 2 steps down in every move. In how many jumps will he reach back the top step?

(iii) If the number of steps moved down is represented by negative integers and the number of steps moved up by positive integers, represent his moves in part (i) and (ii) by completing

(v) -3.

Ex. 1.3

Ques.1 Find each of the following products:

- (a) $3 \times (-1)$
 (b) $(-1) \times 225$
 (c) $(-21) \times (-30)$
 (d) $(-316) \times (-1)$
 (e) $(-15) \times 0 \times (-18)$.
 (f) $(-12) \times (-11) \times (10)$
 (g) $9 \times (-3) \times (-6)$
 (h) $(-18) \times (-5) \times (-4)$
 (i) $(-1) \times (-2) \times (-3) \times 4$
 (j) $(-3) \times (-6) \times (-2) \times (-1)$.

Ans.

- (a) -3
 (b) -225
 (c) 630
 (d) 316
 (e) 0
 (f) 1320
 (g) 162
 (h) -360
 (i) -24
 (j) 36.

Ques.2 Verify the following:

- (a) $18 \times [7 + (-3)] = [18 \times 7] + [18 \times (-3)]$
 (b) $(-21) \times [(-4) + (-6)] = [(-21) \times (-4)] + [(-21) \times (-6)]$.

Ans.

(a) L.H.S:

$$18 \times [7 + (-3)] = 18 \times (4)$$

$$= 72$$

R.H.S:

$$[18 \times 7] + [18 \times (-3)] = 126 - 54$$

$$= 72$$

Hence L.H.S = R.H.S

(b) L.H.S:

$$(-21) \times [(-4) + (-6)] = (-21) \times (-10)$$

$$= 210$$

R.H.S:

$$[(-21) \times (-4)] + [(-21) \times (-6)] = 84 + 126$$

= 210

Hence L.H.S = R.H.S.

Ques.3 (i) For any integer a, what is $(-1) \times a$ equal to?

(ii) Determine the integer whose product with (-1) is (a) -22 (b) 37 (c) 0 .

Ans.

(i) $(-1) \times a = -a$

(ii) (a) 22

(b) -37

(c) 0 .

Ques.4 Starting from $(-1) \times 5$, write various products showing some pattern to show $(-1) \times (-1) = 1$.

Ans.

$$-1 \times 5 = -5,$$

$$-1 \times 4 = -4 = -5 + 1$$

$$-1 \times 3 = -3 = -4 + 1$$

$$-1 \times 2 = -2 = -3 + 1$$

$$-1 \times 1 = -1 = -2 + 1$$

$$-1 \times 0 = 0 = -1 + 1 \text{ so, } (-1) \times (-1) = 1 = 0 + 1.$$

Ques.5 Find the product, using suitable properties:

(a) $26 \times (-48) + (-48) \times (-36)$

(b) $8 \times 53 \times (-125)$

(c) $15 \times (-25) \times (-4) \times (-10)$

(d) $(-41) \times 102$.

(e) $625 \times (-35) + (-625) \times 65$

(f) $7 \times (50 - 2)$

(g) $(-17) \times (-29)$

(h) $(-57) \times (-19) + 57$.

Ans.

$$\begin{aligned} \text{(a) } 26 \times (-48) + (-48) \times (-36) &= (-48) \times [26 + (-36)] \\ &= (-48) \times (-10) \\ &= 480. \end{aligned}$$

$$\begin{aligned} \text{(b) } 8 \times 53 \times (-125) &= [(8 \times 53)] \times (-125) \\ &= 424 \times (-125) \\ &= -53000 \end{aligned}$$

$$\begin{aligned} \text{(c) } 15 \times (-25) \times (-4) \times (-10) &= 15 \times [(-25) \times (-4)] \times (-10) \\ &= 15 \times [(100) \times (-10)] \\ &= 15 \times (-1000) \\ &= -15000 \end{aligned}$$



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$$\begin{aligned} \text{(d) } (-41) \times 102 &= (-41) \times [100 + 2] = (-41) \times 100 + (-41) \times 2 \\ &= -4100 - 82 \\ &= -4182. \end{aligned}$$

$$\begin{aligned} \text{(e) } 625 \times (-35) + (-625) \times 65 &= -625 \times [(35) + 65] \\ &= -625 \times 100 \\ &= -62500 \end{aligned}$$

$$\begin{aligned} \text{(f) } 7 \times (50 - 2) &= (7 \times 50) - (7 \times 2) \\ &= 350 - 14 \\ &= 336 \end{aligned}$$

$$\begin{aligned} \text{(g) } (-17) \times (-29) &= (-17) \times (-30 + 1) \\ &= (-17 \times -30) + (-17 \times 1) \\ &= 510 - 17 \\ &= 493 \end{aligned}$$

$$\begin{aligned} \text{(h) } (-57) \times (-19) + 57 &= (-57) [(-19) + (-1)] \\ &= (-57) \times [-20] \\ &= 1140. \end{aligned}$$

Ques.6 A certain freezing process requires that room temperature be lowered from 40°C at the rate of 5°C every hour. What will be the room temperature 10 hours after the process begins?

Ans. As the room temperature lowers from 40°C at the rate of 5°C every hour.

$$\begin{aligned} \text{After 10 hours the room temperature (in } ^{\circ}\text{C)} &= 40 - (5 \times 10) \\ &= 40 - 50 \\ &= -10. \end{aligned}$$

The room temperature after 10 hrs = -10°C .

Ques.7 In a class test containing 10 questions, 5 marks are awarded for every correct answer and (-2) marks are awarded for every incorrect answer and 0 for questions not attempted.

(i) Mohan gets four correct and six incorrect answers. What is his score?

(ii) Reshma gets five correct answers and five incorrect answers, what is her score?

(iii) Heena gets two correct and five incorrect answers out of seven questions she attempts. What is her score?

Ans. In a test containing 10 questions, for every correct answer the marks awarded is 5, (-2) for incorrect answer and 0 for question not attempted.

$$\text{(i) Mohan's score} = 4 \times 5 + 6 \times (-2) = 20 - 12 = 8.$$

$$\text{(ii) Reshma's score} = 5 \times 5 + 5 \times (-2) = 5 \times [5 + (-2)] = 5 \times [3] = 15.$$

$$\text{(iii) Heena's score} = 2 \times 5 + 5 \times (-2) = 5 \times [2 + (-2)] = 5 \times [0] = 0.$$



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Ques.8 A cement company earns a profit of Rs. 8 per bag of white cement sold and a loss of Rs. 5 per bag of grey cement sold.

(a) The company sells 3,000 bags of white cement and 5,000 bags of grey cement in a month. What is its profit or loss?

(b) What is the number of white cement bags it must sell to have neither profit nor loss, if the number of grey bags sold is 6,400 bags.

Ans. (a) Profit earned per kg of white cement = Rs. 8

Loss earned per kg of grey cement = Rs. 5

Profit obtained by selling 3000 bags of white cement = 8×3000

Loss obtained by selling 5000 bags of grey cement = 5×5000

$$\text{Thus } 8 \times 3000 - 5 \times 5000 = 8 \times [(1000 \times 3)] - 5 \times [(1000 \times 5)]$$

$$= 1000[24] - 1000[25]$$

$$= 1000[24 - 25] = 1000(-1)$$

$$= -1000.$$

$$\therefore \text{Loss} = \text{Rs. } 1000$$

(b) Number of grey bags sold = 6400

Since there is no profit or loss.

Loss obtained by selling 6400 grey cement bags = Profit obtained by selling white bags.

Thus, Loss obtained by selling 6400 grey cement bags = 6400×5

$$= \text{Rs. } 32000$$

Profit obtained by selling white bags = Rs. 32000

$$\text{No: of white bags} = \frac{32000}{8} = 4000.$$

Ques.9 Replace the blank with an integer to make it a true statement.

(a) $(-3) \times \underline{\quad} = 27$

(b) $5 \times \underline{\quad} = -35$

(c) $\underline{\quad} \times (-8) = -56$

(d) $\underline{\quad} \times (-12) = 132.$

Ans.

(a) -9

(b) -7

(c) 7

(d) -11.

Ex 1.4

Ques.1 Evaluate each of the following:

(a) $(-30) \div 10$

(b) $50 \div (-5)$

(c) $(-36) \div (-9)$

(d) $(-49) \div (49)$

(e) $13 \div [(-2) + 1]$.

(f) $0 \div (-12)$

(g) $(-31) \div [(-30) + (-1)]$

(h) $[(-36) \div 12] \div 3$

(i) $[(-6) + 5] \div [(-2) + 1]$.

Ans. (a) -3

(b) -10

(c) 4

(d) -1

(e) -13 .

(f) 0

(g) 1

(h) -1

(i) 1 .

Ques.2 Verify that $a \div (b + c) \neq (a \div b) + (a \div c)$ for each of the following values of a, b and c.

(a) $a = 12, b = -4, c = 2$

(b) $a = (-10), b = 1, c = 1$.

Ans.

(a) $a = 12, b = -4, c = 2$

L.H.S:

$$\begin{aligned} a \div (b + c) &= 12 \div (-4 + 2) \\ &= 12 \div -2 \\ &= -6. \end{aligned}$$

R.H.S:

$$\begin{aligned} (a \div b) + (a \div c) &= (12 \div (-4)) + (12 \div 2) \\ &= 3 + 6 \\ &= 9. \end{aligned}$$

\therefore L.H.S \neq R.H.S

(b) $a = (-10), b = 1, c = 1$

L.H.S:

$$\begin{aligned} a \div (b + c) &= (-10) \div (1 + 1) \\ &= (-10) \div (2) \\ &= -5 \end{aligned}$$



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$$\begin{aligned} \text{R.H.S:} & \\ & = -10 - 10 \\ \therefore \text{L.H.S} & \neq \text{R.H.S.} \end{aligned}$$

$$\begin{aligned} (a \div b) + (a \div c) & = ((-10) \div 1) + ((-10) \div 1) \\ & = -20 \end{aligned}$$

Ques.3 Fill in the blanks:

- (a) $369 \div \underline{\hspace{2cm}} = 369$
- (b) $(-75) \div \underline{\hspace{2cm}} = -1$
- (c) $(-206) \div \underline{\hspace{2cm}} = 1$
- (d) $-87 \div \underline{\hspace{2cm}} = 87.$
- (e) $\underline{\hspace{2cm}} \div 1 = -87$
- (f) $\underline{\hspace{2cm}} \div 48 = -1$
- (g) $20 \div \underline{\hspace{2cm}} = -2$
- (h) $\underline{\hspace{2cm}} \div (4) = -3.$

- Ans.**
- (a) 1
 - (b) 75
 - (c) -206
 - (d) -1
 - (e) -87
 - (f) -48
 - (g) -10
 - (h) -12.

Ques.4 Write five pairs of integers (a, b) such that $a \div b = -3$. One such pair is (6, -2) because $6 \div (-2) = (-3)$.

Ans.

The five pairs of integers such that $a \div b = -3$ are : (12, -4), (-12, 4), (-6, 2), (-9, 3), (9, -3).

Ques.5 The temperature at 12 noon was 10°C above zero. If it decreases at the rate of 2°C per hour until midnight, at what time would the temperature be 8°C below zero? What would be the temperature at mid-night?

Ans.

The temperature at 12 noon = 10°C .

The temperature decrease/ hr till midnight = 2°C

Let x denote the hours

$$\text{Thus, } 10^\circ\text{C} - x(2^\circ\text{C}) = -8^\circ\text{C}$$

$$18^\circ\text{C} = x(2^\circ\text{C})$$

$$9 = x$$

After 9 hrs from 12 noon the temperature reaches below 8°C zero.(i.e.,) 9 p.m.

The temperature at mid-night would be = $10^\circ\text{C} - 12(2^\circ\text{C})$

$$= 10^\circ\text{C} - 24^\circ\text{C}$$

$$= -14^\circ\text{C}.$$



Ques.6 In a class test (+ 3) marks are given for every correct answer and (-2) marks are given for every incorrect attempt and no marks for not attempting any question.

marks are given for every correct answer and (-2) marks are given for every incorrect attempt and no marks for not attempting any question.

(i) Radhika scored 20 marks. If she has got 12 correct answers, how many questions has she attempted incorrectly?

(ii) Mohini scores -5 marks in this test, though she has got 7 correct answers. How many questions has she attempted incorrectly?

(iii) Rakesh scores 18 marks by attempting 16 questions. How many questions has he attempted correctly and how many has he attempted incorrectly?

Ans. As in a class test (+ 3) marks are given for every correct answer, (-2) marks are given for every incorrect answer and no marks for not attempting any question.

(i) Total marks scored by Radhika = 20
Marks obtained by 12 correct answers = $12 \times 3 = 36$
Marks lost by incorrect answers = $20 - 36 = -16$.
Number of incorrect answers = $(-16) \div (-2) = 8$

(ii) Total marks scored by Mohini = -5
Number of correct answers = 7
Marks obtained by 7 correct answers = $7 \times (3) = 21$.
Marks lost by incorrect answers = $-5 - (21) = -26$.
Number of incorrect answers = $-26 \div (-2) = 13$.

(iii) Total marks scored by Rakesh = 18
Number of attempted questions = 16
Number of correct and incorrect answers = 16
Thus, Let x be the number of correct answers and (16 - x) be the number of incorrect answers.
 $x \times 3 + [(16 - x) \times (-2)] = 18$
 $3x - 32 + 2x = 18$
 $5x = 18 + 32 = 50$

$\therefore x = 10$
Number of correct answers = 10.
Number of incorrect answers = 6 (i.e., $16 - 10 = 6$).

Ques.7 An elevator descends into a mine shaft at the rate of 6 m/min. If the descent starts from 10 m above the ground level, how long will it take to reach - 350 m.

Ans. Rate of the elevator shafting = 6 m/ min.

From 10 m above the ground level it descends at the rate of 6m/min. Let t be time required to reach -350m

Thus, $-350 = 10 - (6 \times t)$

$(6 \times t) = 350 + 10$

$6t = 360$

$\therefore t = \frac{360}{6} = 60$ min

Therefore time taken to reach -350m = 60 min = 1 hour.



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HOTS SOLVED

Ques.1 List all the numbers by which -30 exactly divisible?

Ans. +1, +2, +3, +5, +6, +10, +15 and +30.

Ques.2 Find the area of a square whose side is $10-3 \times (-2)$ cm?

Sol. Area of the square = side \times side.

$$\text{Area of the square} = [10-3 \times (-2)] [10-3 \times (-2)]$$

$$= [10+6] [10+6] \text{ sq. cm.}$$

$$= [16 \times 16] \text{ Sq. cm.}$$

$$= 256 \text{ sq. cm.}$$

HOTS UNSOLVED

Ques.1 In a medical entrance examination, there are 60 questions in maths paper, 4 marks are given for every correct answer and – 2 marks are given for every incorrect answer.

a. Muskan attempts all questions but only 50 of her answers are corrects. What is her total score?

b. Urvi attempts 50 questions and gets 42 correct5 answers. What is her total score.

c. Who scored more marks.

Ans. a. Marks given for one correct answer =4

So, marks given for Muskan's 50 correct answers = $50 \times 4 = 200$

Marks given for 1 incorrect answer = -2

Marks given for Muskan's 10 (=60-50) incorrect answers = $-2 \times 10 = -20$

: So, Muskan's total score = $200 + (-20) = 180$

b. Marks given for Urvi 42 correct answer = $42 \times 4 = 168$

Marks given for Urvi's 8 (=50-42) incorrect answers = $2 \times 8 = 16$

Urvi's total score = $168 + (-16) = 152$

c. Muskan scored more marks.

Ques.2 Suppose we represent the distance above the ground by a positive integer and that below the ground by a negative integer.

a. An elevator descends into a mine shaft at the rate of 4 m per minute from the ground. What will be its position after half hour?

b. If the elevator begins to descend from 10 m above the ground find its position after one hour.

Ans. a. Since the elevator is going down, the distance covered by it will be represented by a negative integer.

Change in the position of the elevator in 1 minute = -4 m

The position of the elevator after 30 minutes = $-4 \times 30 = -120$ m, i.e., 120 m below the ground level.

b. Change in the position of the elevator after 60 minutes (1 hour) = $-4 \times 60 = -240$ m .

So, the final position of the elevator = $(-240 + 10)$ m = -230 m , i.e., 230 m below the ground level.

VALUE BASED QUESTIONS

Ques.1 Rita planted 17 rose plants, 19 mango plants and 28 Neem plants but Geeta uprooted 9 rose plants and 10 Neem plants. Find total number of plants remain in the garden?

Also write the values Rita shows with this activity of hers.

Ans. Total number of plants remain in the garden

$$= [17+19+28-9-10] \text{ plants}$$

$$= (64-19) \text{ plants}$$

$$= 45 \text{ plants}$$

Expected Values:

- (a) Love for health
- (b) Environmental cleanliness
- (c) Collective responsibility
- (d) Live for environment

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CHAPTER-2 FRACTIONS & DECIMALS

PREVIOUS KNOWLEDGE QUESTIONS:

Ques.1 Name two tendencies which human beings should possess?

Ans. To share our views and things with other people.

Ques.2 If Mohan & Sohan are two friends and have one pizza. Then can each of them get equal share of pizza?

Ans. They will divide the pizza into two equal parts.

Ques.3 Which Concept of mathematics we prove here?

Ans. We have used the concept of fraction.

Ques 4 What is a fraction?

Ans. Fraction is a part of the whole or collection.

Ques 5 How much part does a fraction possess?

Ans. A fraction possesses two parts numerator and denominator.

Ques 6 What is decimal fraction?

Ans. Fractions with denominators 10,100, 1000 etc. are known as decimal fractions e.g.

$\frac{3}{10}$ $\frac{7}{100}$ $\frac{795}{1000}$ etc. are decimal fractions.

NCERT SOLUTIONS

Exercise 2.1

Ques.1

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

(ii) $4 + \frac{7}{8}$

(iii) $\frac{3}{5} + \frac{2}{7}$

(iv) $\frac{9}{11} - \frac{4}{15}$

(v) $\frac{7}{10} + \frac{2}{5} + \frac{3}{2}$

(vi) $2\frac{2}{3} + 3\frac{1}{2}$



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

Ans. (i) $2 - \frac{3}{5}$ (Taking LCM 5 as common denominator)

$$\begin{aligned} &= \frac{2(5) - 3}{5} \\ &= \frac{10 - 3}{5} \\ &= \frac{7}{5} \end{aligned}$$

(ii) $4 + \frac{7}{8}$ (Taking LCM 8 as common denominator)

$$\begin{aligned} &= \frac{4(8) + 7}{8} \\ &= \frac{32 + 7}{8} \\ &= \frac{39}{8} \end{aligned}$$

(iii) $\frac{3}{5} + \frac{2}{7}$ (Taking LCM 35 as common denominator)

$$\begin{aligned} &= \frac{3(7) + 2(5)}{35} \\ &= \frac{21 + 10}{35} \\ &= \frac{31}{35} \end{aligned}$$

(iv) $\frac{9}{11} - \frac{4}{15} = \frac{9 \times 15}{11 \times 15} - \frac{4 \times 11}{15 \times 11} = \frac{135 - 44}{165} = \frac{91}{165}$

(v) $\frac{7}{10} + \frac{2}{5} + \frac{3}{2} = \frac{7}{10} + \frac{2 \times 2}{5 \times 2} + \frac{3 \times 5}{2 \times 5} = \frac{7 + 4 + 15}{10} = \frac{26}{10} = \frac{13}{5} = 2\frac{3}{5}$

(vi) $2\frac{2}{3} + 3\frac{1}{2} = \frac{8}{3} + \frac{7}{2} = \frac{8 \times 2}{3 \times 2} + \frac{7 \times 3}{2 \times 3} = \frac{16 + 21}{6} = \frac{37}{6} = 6\frac{1}{6}$

Ques.2 Arrange the following in descending order

(i) $\frac{2}{9}, \frac{2}{3}, \frac{8}{21}$

(ii) $\frac{1}{5}, \frac{3}{7}, \frac{7}{10}$

Ans

$$(i) \frac{2}{9}, \frac{2}{3}, \frac{8}{21}$$

Taking LCM of 9, 3, 21 = $3 \times 3 \times 7 = 63$

$$\begin{aligned} & \frac{2}{9}, \frac{2}{3}, \frac{8}{21} \\ &= \frac{14}{63}, \frac{42}{63}, \frac{24}{63} \end{aligned}$$

The descending order is $\frac{42}{63}, \frac{24}{63}, \frac{14}{63}$

$$= \frac{2}{3}, \frac{8}{21}, \frac{2}{9}$$

$$(ii) \frac{1}{5}, \frac{3}{7}, \frac{7}{10}$$

LCM OF 5, 7, 10 = $5 \times 7 \times 2 = 70$

$$\begin{aligned} \therefore & \frac{1}{5}, \frac{3}{7}, \frac{7}{10} \\ &= \frac{14}{70}, \frac{3(10)}{70}, \frac{7(7)}{70} \\ &= \frac{14}{70}, \frac{30}{70}, \frac{49}{70} \end{aligned}$$

The descending order is $\frac{49}{70}, \frac{30}{70}, \frac{14}{70}$

$$(i.e.,) \frac{7}{10}, \frac{3}{7}, \frac{1}{5}.$$

Ques.3 In a 'magic square' the sum of the numbers in each row, in each column, and along the diagonal is the same. Is this a magic square?

$\frac{4}{11}$	$\frac{9}{11}$	$\frac{2}{11}$
$\frac{3}{11}$	$\frac{5}{11}$	$\frac{7}{11}$
$\frac{8}{11}$	$\frac{1}{11}$	$\frac{6}{11}$

Ans.

$$\begin{aligned} \text{Along 1}^{\text{st}} \text{ row sum} &= \frac{4}{11} + \frac{9}{11} + \frac{2}{11} \\ &= \frac{15}{11} \end{aligned}$$



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$$\begin{aligned}\text{Along 2}^{\text{nd}} \text{ row sum} &= \frac{3}{11} + \frac{5}{11} + \frac{7}{11} \\ &= \frac{15}{11}\end{aligned}$$

$$\begin{aligned}\text{Along 3}^{\text{rd}} \text{ row sum} &= \frac{8}{11} + \frac{1}{11} + \frac{6}{11} \\ &= \frac{15}{11}\end{aligned}$$

$$\begin{aligned}\text{Along 1}^{\text{st}} \text{ column sum} &= \frac{4}{11} + \frac{3}{11} + \frac{8}{11} \\ &= \frac{15}{11}\end{aligned}$$

$$\begin{aligned}\text{Along 2}^{\text{nd}} \text{ column sum} &= \frac{9}{11} + \frac{5}{11} + \frac{1}{11} \\ &= \frac{15}{11}\end{aligned}$$

$$\begin{aligned}\text{Along 3}^{\text{rd}} \text{ column sum} &= \frac{2}{11} + \frac{7}{11} + \frac{6}{11} \\ &= \frac{15}{11}\end{aligned}$$

$$\begin{aligned}\text{One diagonal sum} &= \frac{4}{11} + \frac{5}{11} + \frac{6}{11} \\ &= \frac{15}{11}\end{aligned}$$

$$\begin{aligned}\text{another diagonal sum} &= \frac{2}{11} + \frac{5}{11} + \frac{8}{11} \\ &= \frac{15}{11}\end{aligned}$$

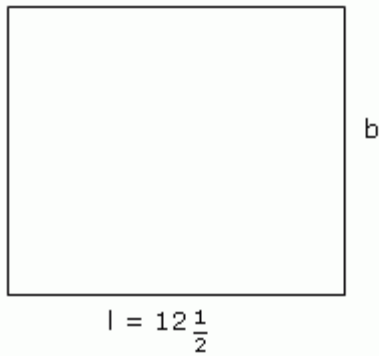
Since the sum of the numbers in each row, in each column and along the diagonals is same it is a magic square.

Ques.4 A rectangular sheet of paper is $12\frac{1}{2}$ cm long and $10\frac{2}{3}$ cm wide.
Find its perimeter.



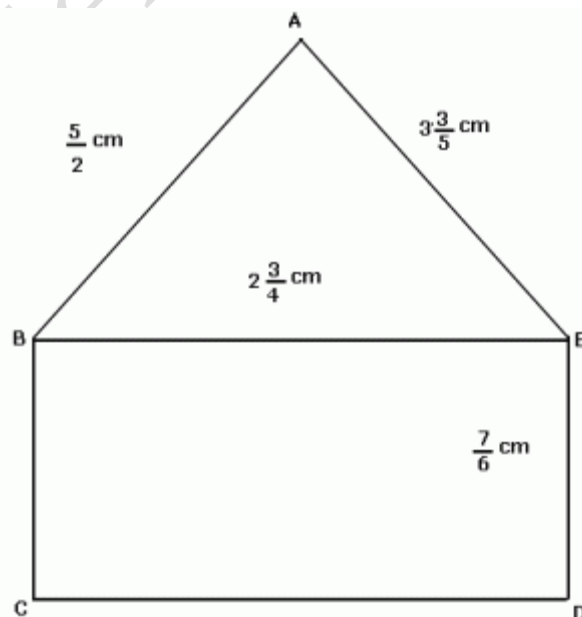
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Ans.



$$\begin{aligned}\text{Perimeter} &= 2(l + b) = 2\left(12\frac{1}{2} + 10\frac{2}{3}\right) \\ &= 2\left(\frac{25}{2} + \frac{32}{3}\right) \\ &= 2\left(\frac{25}{2} + \frac{32}{3}\right) \\ &= 2\left(\frac{75 + 64}{6}\right) \\ &= 2\left(\frac{139}{6}\right) = \frac{139}{3} \\ \therefore \text{Perimeter} &= \frac{139}{3} = 46\frac{1}{3} \text{ cm.}\end{aligned}$$

Ques.5 Find the perimeters of (i) ΔABE (ii) the rectangle BCDE in this figure. Whose perimeter is greater?





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Ans.

$$\begin{aligned} \text{(i) Perimeter of } \triangle ABE &= \left(\frac{5}{3} + 2\frac{3}{4} + 3\frac{3}{5} \right) \text{cm} \\ &= \frac{5}{3} + \frac{11}{4} + \frac{18}{5} \quad (\text{Taking LCM of } 3, 4, 5 = 60) \\ &= \frac{20(5) + 15(11) + 18(12)}{60} \\ &= \frac{100 + 165 + 216}{60} \\ &= \frac{481}{60} = 8\frac{1}{60} \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{(ii) Perimeter of rectangle BCDE} &= 2(l+b) \\ &= 2 \left(2\frac{3}{4} + \frac{7}{6} \right) \\ &= 2 \left(\frac{11}{4} + \frac{7}{6} \right) \\ &= 2 \left(\frac{33 + 14}{12} \right) \quad (\text{Taking LCM of } 4, 6 = 12) \\ &= 2 \left(\frac{47}{12} \right) \\ &= \frac{47}{6} = 7\frac{5}{6} \text{ cm} \end{aligned}$$

Perimeter of $\triangle ABE$ > Perimeter of rectangle BCDE.

Ques.6 Salil wants to put a picture in a frame. The picture is $7\frac{3}{5}$ cm wide. To fit into the frame, the picture cannot be more than $7\frac{3}{10}$ cm wide. How much should the picture be trimmed?

Ans.

$$\text{Width of the picture} = 7\frac{3}{5} \text{ cm}$$

$$\text{Width of the frame} = 7\frac{3}{10} \text{ cm}$$

$$\begin{aligned} \therefore \text{The difference} &= 7\frac{3}{5} - 7\frac{3}{10} \\ &= \frac{38}{5} - \frac{73}{10} \\ &= \frac{38(2) - 73}{10} \end{aligned}$$

$$= \frac{76 - 73}{10}$$

$$= \frac{3}{10}$$

∴ The picture should be trimmed by $\frac{3}{10}$ cm to fit into the frame.

Ques.7 Ritu ate $\frac{3}{5}$ part of an apple and the remaining apple was eaten by her brother Somu. How much part of the apple did Somu eat? Who had the larger share? By how much?

Ans.

Rita ate $\frac{3}{5}$ part of an apple

Remaining part = $1 - \frac{3}{5}$

= $\frac{2}{5}$ part of the apple.

As $\frac{3}{5} > \frac{2}{5}$

Ritu gets the larger share

Difference $\frac{3}{5} - \frac{2}{5} = \frac{1}{5}$

∴ Ritu gets $\frac{1}{5}$ share more than Somu.

Ques.8 Michael finished colouring a picture in $\frac{7}{12}$ hour. Vaibhav finished colouring the same picture in $\frac{3}{4}$ hour. Who worked longer? By what fraction was it longer?

Ans.

Michael coloured the picture in $\frac{7}{12}$ hr.

Vaibhav coloured the picture in $\frac{3}{4}$ hr.

Comparing $\frac{7}{12}$ and $\frac{3}{4}$

(Taking LCM of 12, 4 as 12)

$\frac{7}{12}$ and $\frac{3 \times 3}{12}$

$$\frac{7}{12} \text{ and } \frac{9}{12}$$

∴ Vaibhav who worked for $\frac{9}{12}$ hr worked longer.

$$\text{Difference} = \frac{9}{12} - \frac{7}{12} = \frac{2}{12} = \frac{1}{6} \text{ hr}$$

It is longer by $\frac{1}{6}$ hr.

Ex. 2.1

Ques.1 Which of the drawings (a) to (d) show:

(i) $2 \times \frac{1}{5}$ (ii) $2 \times \frac{1}{2}$ (iii) $3 \times \frac{2}{3}$ (iv) $3 \times \frac{1}{4}$



Ans.

(i) $2 \times \frac{1}{5}$

(d)

(ii) $2 \times \frac{1}{2}$

(b)

(iii) $3 \times \frac{2}{3}$

(a)

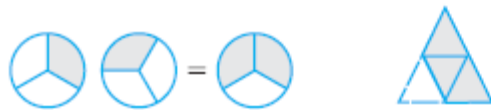
(iv) $3 \times \frac{1}{4}$

(c).

Ques.2 Some pictures (a) to (c) are given below. Tell which of them show:



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(a)



(i) $3 \times \frac{1}{5} = \frac{3}{5}$ (ii) $2 \times \frac{1}{3} = \frac{2}{3}$ (iii) $3 \times \frac{3}{4} = 2 \frac{1}{4}$

Ans.

(i) $3 \times \frac{1}{5} = \frac{3}{5}$
(c)

(ii) $2 \times \frac{1}{3} = \frac{2}{3}$
(a)

(iii) $3 \times \frac{3}{4} = 2 \frac{1}{4}$
(b).

Ques.3 Multiply and reduce to lowest form:

(i) $7 \times \frac{3}{5}$ (ii) $4 \times \frac{1}{3}$ (iii) $2 \times \frac{6}{7}$ (iv) $5 \times \frac{2}{9}$ (v) $\frac{2}{3} \times 4$.

Ans.

(i) $7 \times \frac{3}{5}$
 $= \frac{21}{5} = 4 \frac{1}{5}$

(ii) $4 \times \frac{1}{3}$
 $= \frac{4}{3} = 1 \frac{1}{3}$

(iii) $2 \times \frac{6}{7}$



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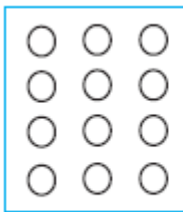
$$= \frac{12}{7} = 1 \frac{5}{7}$$

$$\begin{aligned} \text{(iv)} \quad & 5 \times \frac{2}{9} \\ & = \frac{10}{9} = 1 \frac{1}{9} \end{aligned}$$

$$\begin{aligned} \text{(v)} \quad & \frac{2}{3} \times 4 \\ & = \frac{8}{3} = 2 \frac{2}{3} \end{aligned}$$

Ques.4 Shade:

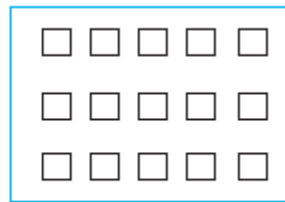
- (i) $\frac{1}{2}$ of the circles in box (a) (ii) $\frac{2}{3}$ of the triangles in box (b)
(iii) $\frac{3}{5}$ of the squares in box (c).



(a)

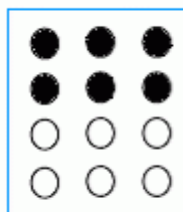


(b)



(c)

Ans.



(a)



(b)



(c)

Ques.5 Find:

(a) $\frac{1}{2}$ of (i) 24 (ii) 46

(b) $\frac{2}{3}$ of (i) 18 (ii) 27

(c) $\frac{3}{4}$ of (i) 16 (ii) 36

(d) $\frac{4}{5}$ of (i) 20 (ii) 35.

Ans.

(a) (i) $\frac{1}{2}$ of 24 = $\frac{1}{2} \times 24 = 12$

(ii) $\frac{1}{2}$ of 46 = $\frac{1}{2} \times 46 = 23$

(b) $\frac{2}{3}$ of (i) 18 (ii) 27

(i) $\frac{2}{3} \times 18 = 12$

(ii) $\frac{2}{3} \times 27 = 18$

(c) $\frac{3}{4}$ of (i) 16 (ii) 36

(i) $\frac{3}{4} \times 16 = \frac{3}{4} \times 16 = 12$

(ii) $\frac{3}{4} \times 36 = \frac{3}{4} \times 36 = 27$

(d) $\frac{4}{5}$ of (i) 20 (ii) 35

(i) $\frac{4}{5}$ of 20 = $\frac{4}{5} \times 20 = 16$

(ii) $\frac{4}{5}$ of 35 = $\frac{4}{5} \times 35 = 28$.

Ques.6 Multiply and express as a mixed fraction:

(a) $3 \times 5 \frac{1}{5}$

(b) $5 \times 6 \frac{3}{4}$

(c) $7 \times 2 \frac{1}{4}$

(d) $4 \times 6 \frac{1}{3}$



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$$(e) 3\frac{1}{4} \times 6$$

$$(f) 3\frac{2}{5} \times 8$$

Ans.

$$(a) 3 \times 5\frac{1}{5}$$

$$= 3 \times \frac{26}{5} = \frac{78}{5} = 15\frac{3}{5}$$

$$(b) 5 \times 6\frac{3}{4}$$

$$= 5 \times \frac{27}{4} = \frac{135}{4} = 33\frac{3}{4}$$

$$(c) 7 \times 2\frac{1}{4}$$

$$= 7 \times \frac{9}{4} = \frac{63}{4} = 15\frac{3}{4}$$

$$(d) 4 \times 6\frac{1}{3}$$

$$= 4 \times \frac{19}{3} = \frac{76}{3} = 25\frac{1}{3}$$

$$(e) 3\frac{1}{4} \times 6$$

$$= \frac{13}{4} \times 6 = \frac{78}{4} = \frac{39}{2} = 19\frac{1}{2}$$

$$(f) 3\frac{2}{5} \times 8$$

$$= \frac{17}{5} \times 8 = \frac{136}{5} = 27\frac{1}{5}$$

Ques.7 Find

$$(a) \frac{1}{2} \text{ of } (i) 2\frac{3}{4} \quad (ii) 4\frac{2}{9}$$

$$(b) (i) \frac{5}{8} \text{ of } 3\frac{5}{6} \quad (ii) 9\frac{2}{3}$$

Ans.

$$(a) (i) \frac{1}{2} \text{ of } 2\frac{3}{4}$$

$$= \frac{1}{2} \times \frac{11}{4}$$

$$= \frac{11}{8} = 1\frac{3}{8}$$

$$(ii) \frac{1}{2} \text{ of } 4\frac{2}{9}$$

$$= \frac{1}{2} \times \frac{38}{9} = \frac{38}{18} = 2\frac{2}{18} = 2\frac{1}{9}$$

$$(b) (i) \frac{5}{8} \text{ of } 3\frac{5}{6}$$

$$= \frac{5}{8} \times \frac{23}{6} = \frac{115}{48} = 2\frac{19}{48}$$

$$(ii) \frac{5}{8} \text{ of } 9\frac{2}{3}$$

$$= \frac{5}{8} \times \frac{29}{3} = \frac{145}{24} = 6\frac{1}{24}$$

Ques.8 Vidya and Pratap went for a picnic. Their mother gave them a water bag that

contained 5 litres of water. Vidya consumed $\frac{2}{5}$ of the water. Pratap consumed the remaining water.

(i) How much water did Vidya drink?

(ii) What fraction of the total quantity of water did Pratap drink?

Ans.

The water bag contains 5 litres of water

$$\text{Quantity of water Vidya consumed} = \frac{2}{5} \times 5 = 2 \text{ litres}$$

$$\text{Pratap consumed remaining water} = 5 - 2 = 3 \text{ litres}$$

$$\text{Fraction of water quantity Pratap drink} = \frac{3}{5}$$

Ex. 2.3

Ques.1 Find:

(i) $\frac{1}{4}$ of (a) $\frac{1}{4}$ (b) $\frac{3}{5}$ (c) $\frac{4}{3}$

(ii) $\frac{1}{7}$ of (a) $\frac{2}{9}$ (b) $\frac{6}{5}$ (c) $\frac{3}{10}$.

Ans.

(i) $\frac{1}{4}$ of (a) $\frac{1}{4}$

$$= \frac{1}{4} \times \frac{1}{4}$$

$$= \frac{1}{16}$$

(b) $\frac{1}{4}$ of $\frac{3}{5}$

$$= \frac{1}{4} \times \frac{3}{5}$$

$$= \frac{3}{20}$$

(c) $\frac{1}{4}$ of $\frac{4}{3}$

$$= \frac{1}{4} \times \frac{4}{3}$$

$$= \frac{1}{3}$$

(ii) $\frac{1}{7}$ of (a) $\frac{2}{9}$

$$= \frac{1}{7} \times \frac{2}{9}$$

$$= \frac{2}{63}$$

(b) $\frac{1}{7}$ of $\frac{6}{5}$

$$= \frac{1}{7} \times \frac{6}{5}$$

$$= \frac{6}{35}$$

$$\begin{aligned} \text{(c)} \quad & \frac{1}{7} \text{ of } \frac{3}{10} \\ & = \frac{1}{7} \times \frac{3}{10} \\ & = \frac{3}{70} \end{aligned}$$

Ques.2 Multiply and reduce to the lowest form (if possible):

$$\text{(i)} \quad \frac{2}{3} \times 2 \frac{2}{3} \quad \text{(ii)} \quad \frac{2}{7} \times \frac{7}{9} \quad \text{(iii)} \quad \frac{3}{8} \times \frac{6}{4} \quad \text{(iv)} \quad \frac{9}{5} \times \frac{3}{5}$$

Ans.

$$\begin{aligned} \text{(i)} \quad & \frac{2}{3} \times 2 \frac{2}{3} \\ & = \frac{2}{3} \times \frac{8}{3} = \frac{16}{9} = 1 \frac{7}{9} \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad & \frac{2}{7} \times \frac{7}{9} \\ & = \frac{2}{7} \times \frac{7}{9} = \frac{2}{9} \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad & \frac{3}{8} \times \frac{6}{4} \\ & = \frac{3}{8} \times \frac{6}{4} = \frac{9}{16} \end{aligned}$$

$$\begin{aligned} \text{(iv)} \quad & \frac{9}{5} \times \frac{3}{5} \\ & = \frac{27}{25} = 1 \frac{2}{25} \end{aligned}$$

Ques.3 For the fractions given below :

(a) Multiply and reduce the product to lowest form (if possible)

(b) Tell whether the fraction obtained is proper or improper.

(c) If the fraction obtained is improper then convert it into a mixed fraction.

$$\text{(i)} \quad \frac{2}{5} \times 5 \frac{1}{4} \quad \text{(ii)} \quad 6 \frac{2}{5} \times \frac{7}{9} \quad \text{(iii)} \quad \frac{3}{2} \times 5 \frac{1}{3} \quad \text{(iv)} \quad \frac{5}{6} \times 2 \frac{3}{7}$$

Ans.

$$\text{(i)} \quad \frac{2}{5} \times 5 \frac{1}{4}$$

$$\frac{2}{5} \times \frac{21}{4} = \frac{42}{20} = \frac{21}{10}$$

This is an improper fraction.

$$\frac{21}{10} = 2\frac{1}{10}$$

$$(ii) \quad 6\frac{2}{5} \times \frac{7}{9}$$

$$\frac{32}{5} \times \frac{7}{9}$$

$$= \frac{224}{45} \text{ (This is an improper fraction)}$$

$$\therefore \frac{224}{45} = 4\frac{44}{45}$$

$$(iii) \quad \frac{3}{2} \times 5\frac{1}{3}$$

$$\frac{3}{2} \times \frac{16}{3} = 8$$

This is a proper fraction.

$$(iv) \quad \frac{5}{6} \times 2\frac{3}{7}$$

$$\frac{5}{6} \times \frac{17}{7} = \frac{85}{42} = 2\frac{1}{42}$$

Ques.4 Which is greater:

$$(i) \quad \frac{2}{7} \text{ of } \frac{3}{4} \text{ or } \frac{3}{5} \text{ of } \frac{5}{8} \quad (ii) \quad \frac{1}{2} \text{ of } \frac{6}{7} \text{ or } \frac{2}{3} \text{ of } \frac{3}{7}$$

Ans.

$$(i) \quad \frac{2}{7} \text{ of } \frac{3}{4} \text{ or } \frac{3}{5} \text{ of } \frac{5}{8}$$

$$\frac{2}{7} \times \frac{3}{4} = \frac{2}{7} \times \frac{3}{4} \quad (\text{or}) \quad \frac{3}{5} \times \frac{5}{8} = \frac{3}{8}$$

$$= \frac{3}{14} \text{ (or) } \frac{3}{8}$$

Taking LCM of 14, 8 = 56

$$\frac{3}{14} = \frac{12}{56} \text{ and } \frac{3}{8} = \frac{21}{56}$$

$$\therefore \frac{21}{56} > \frac{12}{56} \Rightarrow \frac{3}{5} \text{ of } \frac{5}{8} > \frac{2}{7} \text{ of } \frac{3}{4}$$

$$(ii) \frac{1}{2} \text{ of } \frac{6}{7} \text{ or } \frac{2}{3} \text{ of } \frac{3}{7}$$

$$\frac{1}{2} \times \frac{6}{7} = \frac{3}{7} \text{ (or) } \frac{2}{3} \times \frac{3}{7} = \frac{2}{7}$$

$$\therefore \frac{3}{7} > \frac{2}{7}$$

$$\Rightarrow \frac{1}{2} \text{ of } \frac{6}{7} \text{ is } > \frac{2}{3} \text{ of } \frac{3}{7}$$

Ques.5 Saili plants 4 saplings, in a row, in her garden. The distance between two adjacent

saplings is $\frac{3}{4}$ m. Find the distance between the first and the last sapling.

Ans.

$$\text{The distance between 1}^{\text{st}} \text{ and last sapling} = \frac{3}{4} + \frac{3}{4} + \frac{3}{4}$$

$$= \frac{9}{4}$$

$$= 2 \frac{1}{4} \text{ m.}$$

Ques.6 Lipika reads a book for $1 \frac{3}{4}$ hours every day. She reads the entire book in 6 days. How many hours in all were required by her to read the book?

Ans.

$$\text{Number of hours she reads a book per day} = \frac{7}{4} \text{ hrs.}$$

$$\text{No. of days she takes to read the entire book} = 6 \text{ days.}$$

$$\therefore \text{Total number of hours required} = 1 \frac{3}{4} \times 6$$

$$= \frac{7}{4} \times 6$$

$$= \frac{21}{2} = 10 \frac{1}{2} \text{ hrs.}$$

Ques.7 A car runs 16 km using 1 litre of petrol. How much distance will it cover using

$2 \frac{3}{4}$ litres of petrol.

Ans.

The distance covered with 1 litre of petrol = 16 km

If $2 \frac{3}{4}$ litre of petrol is consumed.

$$\text{Distance covered} = 16 \times 2 \frac{3}{4}$$

$$= 16 \times \frac{11}{4}$$

$$= 44 \text{ km.}$$

Ques.8 (a) (i) Provide the number in the box , such that $\frac{2}{3} \times \text{input} = \frac{10}{30}$.

(ii) The simplest form of the number obtained in is _____.

(b) (i) Provide the number in the box, such that $\frac{3}{5} \times \text{input} = \frac{24}{75}$?

(ii) The simplest form of the number obtained in is _____.

Ans.

(a) (i) $\frac{2}{3} \times \frac{5}{10} = \frac{10}{30}$

(ii) $\frac{1}{2}$

(b) (i) $\frac{3}{5} \times \frac{8}{15} = \frac{24}{75}$

(ii) $\frac{8}{15}$.

Ex. 2.4

Ques.1 (i) $12 \div \frac{3}{4}$ (ii) $14 \div \frac{5}{6}$ (iii) $8 \div \frac{7}{3}$ (iv) $4 \div \frac{8}{3}$ (v) $3 \div 2 \frac{1}{3}$

(vi) $5 \div 3 \frac{4}{7}$.

Ans.

(i) $12 \div \frac{3}{4}$

$$= 12 \times \frac{4}{3} = 16$$

(ii) $14 \div \frac{5}{6}$

$$= 14 \times \frac{6}{5} = \frac{84}{5}$$

$$\begin{aligned} \text{(iii) } 8 \div \frac{7}{3} \\ = 8 \times \frac{3}{7} = \frac{24}{7} \end{aligned}$$

$$\begin{aligned} \text{(iv) } 4 \div \frac{8}{3} \\ = 4 \times \frac{3}{8} = \frac{3}{2} \end{aligned}$$

$$\begin{aligned} \text{(v) } 3 \div 2\frac{1}{3} \\ = 3 \div \frac{7}{3} \\ = 3 \times \frac{3}{7} \\ = \frac{9}{7} \end{aligned}$$

$$\begin{aligned} \text{(vi) } 5 \div 3\frac{4}{7} \\ = 5 \div \frac{25}{7} \\ = 5 \times \frac{7}{25} = \frac{7}{5} \end{aligned}$$

Ques.9 Find the reciprocal of each of the following fractions. Classify the reciprocals as proper fractions, improper fractions and whole numbers.

(i) $\frac{3}{7}$ (ii) $\frac{5}{8}$ (iii) $\frac{9}{7}$ (iv) $\frac{6}{5}$.

Ans.

(i) $\frac{3}{7}$

The reciprocal of $\frac{3}{7}$ is $\frac{7}{3}$.

The reciprocal is an improper fraction.

(ii) $\frac{5}{8}$

The reciprocal of $\frac{5}{8}$ is $\frac{8}{5}$.

The reciprocal is an improper fraction.

(iii) $\frac{9}{7}$

The reciprocal of $\frac{9}{7}$ is $\frac{7}{9}$.

The reciprocal is a proper fraction.

(iv) $\frac{6}{5}$

The reciprocal of $\frac{6}{5}$ is $\frac{5}{6}$.

The reciprocal is a proper fraction.

Ques.3 Find

(i) $\frac{7}{3} \div 2$ (ii) $\frac{4}{9} \div 5$ (iii) $\frac{6}{13} \div 7$

(iv) $4 \frac{1}{3} \div 3$ (v) $3 \frac{1}{2} \div 4$ (vi) $4 \frac{3}{7} \div 7$

Ans.

(i) $\frac{7}{3} \div 2$

$$\frac{7}{3} \times \frac{1}{2} = \frac{7}{6}$$

(ii) $\frac{4}{9} \div 5$

$$= \frac{4}{9} \times \frac{1}{5} = \frac{4}{45}$$

(iii) $\frac{6}{13} \div 7$

$$= \frac{6}{13} \times \frac{1}{7} = \frac{6}{91}$$

(iv) $4 \frac{1}{3} \div 3$

$$= \frac{13}{3} \times \frac{1}{3} = \frac{13}{9}$$

(v) $3 \frac{1}{2} \div 4$

$$= \frac{7}{3} \times \frac{1}{4} = \frac{7}{12}$$

$$(vi) 4 \frac{3}{7} \div 7$$

$$= \frac{31}{7} \times \frac{1}{7} = \frac{31}{49}.$$

Ques.4 Find

$$(i) \frac{2}{5} \div \frac{1}{2} \quad (ii) \frac{4}{9} \div \frac{2}{3} \quad (iii) \frac{3}{7} \div \frac{8}{7} \quad (iv) 2\frac{1}{3} \div \frac{3}{5}.$$

Ans.

$$(i) \frac{2}{5} \div \frac{1}{2}$$

$$= \frac{2}{5} \times \frac{2}{1} = \frac{4}{5}$$

$$(ii) \frac{4}{9} \div \frac{2}{3}$$

$$= \frac{4}{9} \times \frac{3}{2} = \frac{2}{3}$$

$$(iii) \frac{3}{7} \div \frac{8}{7}$$

$$= \frac{3}{7} \times \frac{7}{8} = \frac{3}{8}$$

$$(iv) 2\frac{1}{3} \div \frac{3}{5}$$

$$= \frac{7}{3} \times \frac{5}{3} = \frac{15}{9} = \frac{5}{3}.$$

Ex. 2.5

Ques.4 Which is greater?

- (i) 0.5 or 0.05
- (ii) 0.7 or 0.5
- (iii) 7 or 0.7
- (iv) 1.37 or 1.49
- (v) 2.03 or 2.30
- (vi) 0.8 or 0.88.

Ans.

- (i) $0.5 > 0.05$
- (ii) $0.7 > 0.5$
- (iii) $7 > 0.7$
- (iv) $1.37 < 1.49$
- (v) $2.03 < 2.30$



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(vi) $0.8 < 0.88$.

Ques.2 Express as rupees using decimals:

(i) 7 paise

(ii) 7 rupees 7 paise

(iii) 77 rupees 77 paise

(iv) 50 paise

(v) 235 paise.

Ans.

(i) 7 paise = 0.07

(ii) 7 rupees 7 paise = 7.07

(iii) 77 rupees 77 paise = 77.77

(iv) 50 paise = 0.50

(v) 235 paise = 2.35.

Ques.3 (i) Express 5 cm in metre and kilometre

(ii) Express 35 mm in cm, m and km.

Ans.

$$\begin{aligned} \text{(i) } 5 \text{ cm} &= \frac{5}{100} = \frac{1}{20} \text{ m} \\ &= \frac{1}{20} \div \frac{1}{1000} \\ &= \frac{1}{20000} \text{ km} \end{aligned}$$

$$\begin{aligned} \text{(ii) } 35 \text{ mm} &= \frac{35}{10} \\ &= 3.5 \text{ cm} \end{aligned}$$

$$\begin{aligned} 35 \text{ mm} &= \frac{35}{1000} \\ &= 0.035 \text{ m} \end{aligned}$$

$$\begin{aligned} 35 \text{ mm} &= \frac{35}{1000000} \\ &= 0.000035 \text{ km.} \end{aligned}$$

Ques.4 Express in kg:

(i) 200 g (ii) 3470 g (iii) 4 kg 8 g (iv) 2598 mg.

Ans.

$$\text{(i) } 200 \text{ g} = \frac{200}{1000} = 0.2 \text{ kg}$$

$$\text{(ii) } 3470 \text{ g} = \frac{3470}{1000} = 3.47 \text{ kg}$$

$$\text{(iii) } 4 \text{ kg } 8 \text{ g} = 4.008 \text{ kg}$$

$$(iv) 2598 \text{ mg} = \frac{2598}{1000 \times 1000} = 0.002598.$$

Ques.5 Write the following decimal numbers in the expanded form:

(i) 20.03 (ii) 2.03 (iii) 200.03 (iv) 2.034.

Ans.

$$(i) 20.03 = 20 \frac{3}{100}$$

$$(ii) 2.03 = 2 \frac{3}{100}$$

$$(iii) 200.03 = 200 \frac{3}{100}$$

$$(iv) 2.034 = 2 \frac{34}{1000}.$$

Ques.6 Write the place value of 2 in the following decimal numbers:

(i) 2.56 (ii) 21.37 (iii) 10.25 (iv) 9.42 (v) 63.352.

Ans.

(i) 2.56 - ones place

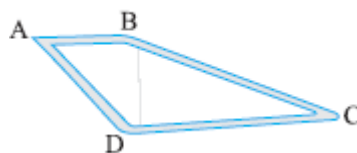
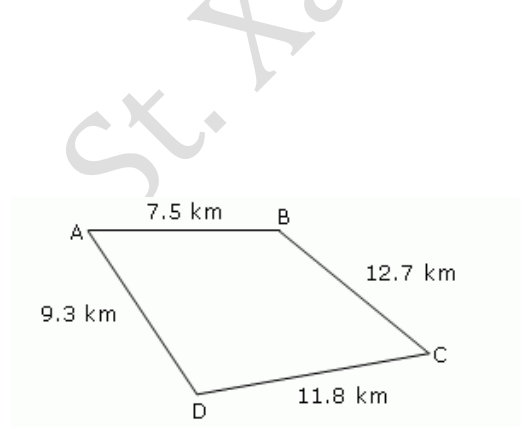
(ii) 21.37 - Tens place

(iii) 10.25 - $\frac{1}{10}$ th place

(iv) 9.42 - $\frac{1}{100}$ th place

(v) 63.352 - $\frac{1}{1000}$ th place.

Ques.7 Dinesh went from place A to place B and from there to place C. A is 7.5 km from B and B is 12.7 km from C. Ayub went from place A to place D and from there to place C. D is 9.3 km from A and C is 11.8 km from D. Who travelled more and by how much?



$$\begin{aligned}\text{Distance travelled by Dinesh} &= AB + BC \\ &= 7.5 + 12.7 \\ &= 20.2 \text{ km}\end{aligned}$$

$$\begin{aligned}\text{Distance travelled by Ayub} &= AD + DC \\ &= 9.3 + 11.8 \\ &= 21.1 \text{ km.}\end{aligned}$$

Difference in their distances = $21.1 - 20.2 = 0.9 \text{ km}$
So, Ayub travelled more than Dinesh by 0.9 km.

Ques.8 Shyama bought 5 kg 300 g apples and 3 kg 250 g mangoes. Sarala bought 4 kg 800 g oranges and 4 kg 150 g bananas. Who bought more fruits?

Ans.

Shyama bought 5kg 300 g and 3kg 250 g

$$\begin{aligned}&= 5 \frac{300}{1000} + 3 \frac{250}{1000} \text{ kg} \\ &= 5.3 + 3.25 \\ &= 8.55 \text{ kg.}\end{aligned}$$

Sarala bought = 4 kg 800 g + 4kg 150 g

$$\begin{aligned}&= 4.8 + 4.15 \\ &= 8.95 \text{ kg}\end{aligned}$$

$8.95 \text{ kg} > 8.55 \text{ kg}$

Sarala bought more fruits.

Ques.9 How much less is 28 km than 42.6 km?

Ans.

$$42.6 \text{ km} - 28 \text{ km} = 14.6 \text{ km}$$

It is less by 14.6 km.

Ex. 2.6

Ques.1 Find:

(i) 0.2×6 (ii) 8×4.6 (iii) 2.71×5 (iv) 20.1×4 .

Ans.

$$(i) 0.2 \times 6 = 1.2$$

$$(ii) 8 \times 4.6 = 36.8$$

$$(iii) 2.71 \times 5 = 13.55$$

$$(iv) 20.1 \times 4 = 80.4.$$

Ques.2 Find the area of rectangle whose length is 5.7cm and breadth is 3 cm.

Ans.

Area of rectangle = $l \times b$ sq.units

$$l = 5.7 \text{ cm}$$

$$b = 3 \text{ cm}$$

$$\begin{aligned}\therefore \square \text{ Area} &= 5.7 \times 3 \\ &= 17.1 \text{ sq. cm.}\end{aligned}$$

Ques.3 Find:

(i) 1.3×10 (ii) 36.8×10 (iii) 153.7×10 (iv) 168.07×10

(v) 31.1×100 (vi) 156.1×100 .

Ans

(i) $1.3 \times 10 = 13$

(ii) $36.8 \times 10 = 368$

(iii) $153.7 \times 10 = 1537$

(iv) $168.07 \times 10 = 1680.7$

(v) $31.1 \times 100 = 3110$

(vi) $156.1 \times 100 = 15610$.

Ques.4 A two-wheeler covers a distance of 55.3 km in one litre of petrol. How much distance will it cover in 10 litres of petrol?

Ans.

Distance covered with 1 litre of petrol = 55.3 km

$$\begin{aligned}\therefore \text{Distance covered with 10 litres of petrol} &= 55.3 \times 10 \\ &= 553 \text{ km.}\end{aligned}$$

Ques.5 Find:

(i) 2.5×0.3 (ii) 0.1×51.7 (iii) 0.2×316.8 (iv) 1.3×3.1

(v) 0.5×0.05 .

Ans.

(i) $2.5 \times 0.3 = 0.75$

(ii) $0.1 \times 51.7 = 5.17$

(iii) $0.2 \times 316.8 = 63.36$

(iv) $1.3 \times 3.1 = 4.03$

(v) $0.5 \times 0.05 = 0.025$.

Ex.2.7

Ques.1 Find:

(i) $0.4 \div 2$ (ii) $0.35 \div 5$ (iii) $2.48 \div 4$ (iv) $65.4 \div 6$.

Ans.

(i) $0.4 \div 2 = 0.2$

(ii) $0.35 \div 5 = 0.07$

(iii) $2.48 \div 4 = 0.62$

(iv) $65.4 \div 6 = 10.9$.

Ques.2 Find:

(i) $4.8 \div 10$ (ii) $52.5 \div 10$ (iii) $0.7 \div 10$ (iv) $33.1 \div 10$.

Ans.

(i) $4.8 \div 10 = 0.48$

(ii) $52.5 \div 10 = 5.25$

(iii) $0.7 \div 10 = 0.07$

(iv) $33.1 \div 10 = 3.31$.

Ques.3 Find:

**(i) $2.7 \div 100$ (ii) $0.3 \div 100$ (iii) $0.78 \div 100$
(iv) $432.6 \div 100$ (v) $23.6 \div 100$ (vi) $98.53 \div 100$.**

Ans.

(i) $2.7 \div 100 = 0.027$

(ii) $0.3 \div 100 = .003$

(iii) $0.78 \div 100 = .0078$

(iv) $432.6 \div 100 = 4.326$

(v) $23.6 \div 100 = 0.236$

(vi) $98.53 \div 100 = 0.9853$.

Ques.4 Find:

**(i) $7.9 \div 1000$ (ii) $26.3 \div 1000$ (iii) $38.53 \div 1000$
(iv) $128.9 \div 1000$ (v) $0.5 \div 1000$.**

Ans.

(i) $7.9 \div 1000 = 0.0079$

(ii) $26.3 \div 1000 = 0.0263$

(iii) $38.53 \div 1000 = 0.03853$

(iv) $128.9 \div 1000 = 0.1289$

(v) $0.5 \div 1000 = 0.0005$.

Ques.5 Find:

**(i) $7 \div 3.5$ (ii) $36 \div 0.2$ (iii) $3.25 \div 0.5$ (iv) $30.94 \div 0.7$
(v) $0.5 \div 0.25$.**

Ans.

(i) $7 \div 3.5 = \frac{7}{3.5} = \frac{70}{35} = 2$

(ii) $36 \div 0.2 = \frac{36}{0.2} = \frac{360}{2} = 180$

(iii) $3.25 \div 0.5 = \frac{3.25}{0.5} = \frac{32.5}{5} = 6.5$

$$(iv) 30.94 \div 0.7 = \frac{30.94}{0.7} = \frac{309.4}{7} = 44.2$$

$$(v) 0.5 \div 0.25 = \frac{0.5}{0.25} = \frac{50}{25} = 2.$$

Ques.6 A vehicle covers a distance of 43.2 km in 2.4 litres of petrol. How much distance will it cover in one litre of petrol?

Ans.

Distance covered with 2.4 litres of petrol = 43.2 km

$$\begin{aligned} \text{Distance covered with 1 litre of petrol} &= \frac{43.2}{2.4} \\ &= \frac{43.2}{2.4} \\ &= 18 \text{ km.} \end{aligned}$$

Ques.7 Solve:

$$(i) \frac{9}{11} - \frac{4}{15}$$

$$(ii) \frac{7}{10} + \frac{2}{5} + \frac{3}{2}$$

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

$$(iv) 2\frac{2}{3} + 3\frac{1}{2}$$

Ans.

$$(i) \frac{9}{11} - \frac{4}{15}$$

(Taking LCM of 11 and 15 = $15 \times 11 = 165$ as common denominator)

$$\begin{aligned} &= \frac{9(15) - 4(11)}{165} \\ &= \frac{135 - 44}{165} \\ &= \frac{91}{165} \end{aligned}$$

$$\frac{7}{10} + \frac{2}{5} + \frac{3}{2}$$

(ii)

Taking LCM of 10, 5, 2 = 10 as common denominator

$$\frac{7 + 4 + 15}{10} = \frac{26}{10}$$

$$(iii) \quad 8\frac{1}{2} - 3\frac{5}{8}$$

$$= \frac{17}{2} - \frac{29}{8}$$

Taking the LCM of 2, 8 = 8 as common denominator.

$$= \frac{17 \times 4 - 29}{8} = \frac{68 - 29}{8} = \frac{39}{8}$$

$$(vi) \quad 2\frac{2}{3} + 3\frac{1}{2}$$

$$= \frac{8}{3} + \frac{7}{2}$$

Taking the LCM of 3, 2 = 6 as common denominator.

$$= \frac{8(2) + 3(7)}{6} = \frac{16 + 21}{6} = \frac{37}{6}$$

Ques.8 Multiply and reduce to lowest form:

(i) $\frac{5}{2} \times 6$ (ii) $11 \times \frac{4}{7}$ (iii) $20 \times \frac{4}{5}$ (iv) $13 \times \frac{1}{3}$ (v) $15 \times \frac{3}{5}$.

Ans.

$$(i) \quad \frac{5}{2} \times 6$$

$$= \frac{5}{2} \times 6 = 15$$

$$(ii) \quad 11 \times \frac{4}{7}$$

$$= \frac{44}{7} = 6\frac{2}{7}$$

$$(iii) \quad 20 \times \frac{4}{5}$$

$$= 20 \times \frac{4}{5} = 16$$

$$\begin{aligned} \text{(iv)} \quad & 13 \times \frac{1}{3} \\ & = \frac{13}{3} = 4 \frac{1}{3} \end{aligned}$$

$$\begin{aligned} \text{(v)} \quad & 15 \times \frac{3}{5} \\ & = 15 \times \frac{3}{5} = 9. \end{aligned}$$

Ques.9 Multiply and reduce to lowest form (if possible):

$$\text{(i)} \quad \frac{1}{3} \times \frac{15}{8} \quad \text{(ii)} \quad \frac{11}{2} \times \frac{3}{10} \quad \text{(iii)} \quad \frac{4}{5} \times \frac{12}{7} .$$

Ans.

$$\begin{aligned} \text{(i)} \quad & \frac{1}{3} \times \frac{15}{8} \\ & \frac{1}{3} \times \frac{15}{8} = \frac{5}{8} \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad & \frac{11}{2} \times \frac{3}{10} \\ & \frac{33}{20} = 1 \frac{13}{20} \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad & \frac{4}{5} \times \frac{12}{7} \\ & \frac{48}{35} = 1 \frac{13}{35} . \end{aligned}$$

Ques.10 For the fractions given below :

(a) Multiply and reduce the product to lowest form (if possible)

(b) Tell whether the fraction obtained is proper or improper.

(c) If the fraction obtained is improper then convert it into a mixed fraction.

$$\text{(i)} \quad 3 \frac{2}{5} \times \frac{4}{7} \quad \text{(ii)} \quad 2 \frac{3}{5} \times 3 \quad \text{(iii)} \quad 3 \frac{4}{7} \times \frac{3}{5} .$$

Ans.

$$\begin{aligned} \text{(i)} \quad & 3 \frac{2}{5} \times \frac{4}{7} \\ & \frac{17}{5} \times \frac{4}{7} = \frac{68}{35} = 1 \frac{33}{35} \end{aligned}$$



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$$\frac{13}{5} \times 3 = \frac{39}{5} = 7 \frac{4}{5}$$

$$(ii) 2 \frac{3}{5} \times 3$$

$$(iii) 3 \frac{4}{7} \times \frac{3}{5}$$

$$\frac{25}{7} \times \frac{3}{5} = \frac{15}{7}$$

Ques.11 Find the reciprocal of each of the following fractions. Classify the reciprocals as proper fractions, improper fractions and whole numbers.

$$(i) \frac{12}{7} \quad (ii) \frac{1}{8} \quad (iii) \frac{1}{11}$$

Ans.

$$(i) \frac{12}{7}$$

The reciprocal of $\frac{12}{7}$ is $\frac{7}{12}$.

The reciprocal is a proper fraction.

$$(ii) \frac{1}{8}$$

The reciprocal of $\frac{1}{8}$ is $\frac{8}{1} = 8$.

The reciprocal is a whole number.

$$(iii) \frac{1}{11}$$

The reciprocal of $\frac{1}{11}$ is $\frac{11}{1} = 11$.

The reciprocal is a whole number.

Ques.12 Find

$$(i) 3 \frac{1}{2} \div \frac{8}{3} \quad (ii) \frac{2}{5} \div 1 \frac{1}{3} \quad (iii) 3 \frac{1}{5} \div 1 \frac{2}{3} \quad (iv) 2 \frac{1}{5} \div 1 \frac{1}{5}$$

Ans.

$$(i) 3 \frac{1}{2} \div \frac{8}{3} \\ = \frac{7}{2} \times \frac{3}{8} = \frac{21}{16}$$

$$(ii) \frac{2}{5} \div 1 \frac{1}{3} \\ = \frac{2}{5} \times \frac{3}{4} = \frac{3}{10}$$

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

$$= \frac{16}{5} \times \frac{3}{5} = \frac{48}{25}$$

$$(iv) 2 \frac{1}{5} \div 1 \frac{1}{5}$$

$$= \frac{11}{5} \times \frac{5}{6} = \frac{11}{6}$$

Ques. 13 Find:

(i) 0.05×7 (ii) 211.02×4 (iii) 2×0.86 .

Ans. (i) $0.05 \times 7 = 0.35$
(ii) $211.02 \times 4 = 844.08$
(iii) $2 \times 0.86 = 1.72$.

Ques.14 Find:

**(i) 3.62×100 (ii) 43.07×100 (iii) 0.5×10 (iv) 0.08×10 (v) 0.9×100
(vi) 0.03×1000 .**

Ans.

(i) $3.62 \times 100 = 362$
(ii) $43.07 \times 100 = 4307$
(iii) $0.5 \times 10 = 5$
(iv) $0.08 \times 10 = 0.8$
(v) $0.9 \times 100 = 90$
(vi) $0.03 \times 1000 = 30$.

Ques.15 Find:

**(i) 11.2×0.15 (ii) 1.07×0.02 (iii) 10.05×1.05
(iv) 101.01×0.01 (v) 100.01×1.1 .**

Ans.

(i) $11.2 \times 0.15 = 1.68$
(ii) $1.07 \times 0.02 = .0214$
(iii) $10.05 \times 1.05 = 10.5525$
(iv) $101.01 \times 0.01 = 1.0101$
(v) $100.01 \times 1.1 = 110.011$.

Ques.16 Find:

(i) $651.2 \div 4$ (ii) $14.49 \div 7$ (iii) $3.96 \div 4$ (iv) $0.80 \div 5$.

Ans.

(i) $651.2 \div 4 = 162.8$
(ii) $14.49 \div 7 = 2.07$
(iii) $3.96 \div 4 = 0.99$
(iv) $0.80 \div 5 = 0.16$.

Ques.17 Find:

(i) 272.23 ÷ 10 (ii) 0.56 ÷ 10 (iii) 3.97 ÷ 10.

Ans. (i) $272.23 \div 10 = 27.223$

(ii) $0.56 \div 10 = 0.056$

(iii) $3.97 \div 10 = 0.397$.

Ques.18 Find:

(i) 7.75 ÷ 0.25 (ii) 76.5 ÷ 0.15 (iii) 37.8 ÷ 1.4

(iv) 2.73 ÷ 1.3.

Ans.

$$(i) 7.75 \div 0.25 = \frac{7.75}{0.25} = \frac{775}{25} = 31$$

$$(ii) 76.5 \div 0.15 = \frac{76.5}{0.15} = \frac{7650}{15} = 510$$

$$(iii) 37.8 \div 1.4 = \frac{37.8}{1.4} = \frac{378}{14} = 27$$

$$(iv) 2.73 \div 1.3 = \frac{2.73}{1.3} = \frac{27.3}{13} = 2.1.$$

HOTS SOLVED

Ques. 1 Will the quotient for $7\frac{1}{6} \div 3\frac{2}{3}$ be a fraction less than 1 or greater than 1?

Solution

$$7\frac{1}{6} \div 3\frac{2}{3}$$

$$= \frac{43}{6} \div \frac{11}{3} = \frac{43}{6} \times \frac{3}{11} = \frac{43}{22}$$

Quotient- greater than 1 as the quotient is an improper fraction and value of an improper fraction is always greater than 1.

2. Two fractions which are not improper are multiplied. Is the product sometimes, always, or never less than 1? Explain..

Solution: Always less than 1, since numerator in the product of two proper fractions will always be less than the denominator.

HOTS Unsolved

Ques.1 Find the product of the largest and the smallest fractions from the following set.

$$\frac{10}{13}, \frac{4}{13}, \frac{8}{13}, \frac{5}{13}, \frac{11}{13}, \frac{7}{13}$$

Ans. $\frac{11}{13} \times \frac{4}{13} = \frac{44}{13}$

Ques.2 $31/41$, when multiplied by x gives the product 1 . which fraction does x represent?

Ans. $31/41 \times X = 1$

$X = 41/31$, it is a improper fraction.

Value Based Questions

1. Sanjeev is making book marks like the one shown here from the waste ribbon. How many bookmarks can be made from a 15m spool of ribbon?

What is the value shown by Sanjeev?

What is he doing by this action?

Ans.

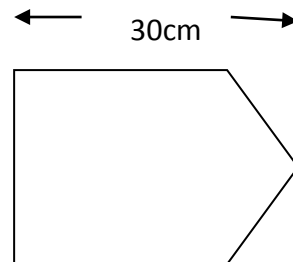
Length of 1 book mark = 30m

Total length of spool of ribbon = 15×100 cm

= 1500cm

No. of book mark made by Sanjeev

= $\frac{1500}{30} = 50$



Value shown by Sanjeev are his lone to environment, & he is reducing waste.

On Independence day, Ravi made a grant cake in the shape of Indian flag which had. Breadth 20cm and length $1 \frac{1}{2}$ time of breadth what was the perimeter of the cake?

2

Also write the value shown by his act.

Solution:

Given

breadth of the cake = 20cm

length of the cake = $1 \frac{1}{2}$ time 20m

2



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$$= \frac{3}{2} \times 20^{10m}$$

$$= 30m$$

Perimeter of the cake = $2(30m + 20m)$

$$= 2(50m)$$

$$= 100m.$$

Expected value: Patriotism.

Intra class Activity- (Lab Activity)

Title multiplication of a whole number & a fraction.

Objective After performing this actively, the students will be able to multiply a whole number and fraction.

Pre- requisite Knowledge

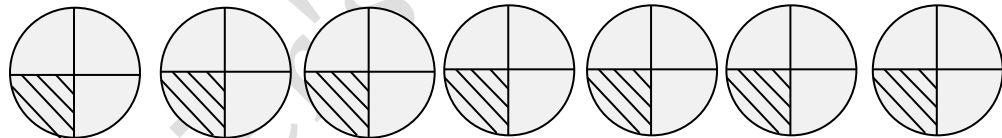
Fractions, multiplication is repeated addition.

Produce.

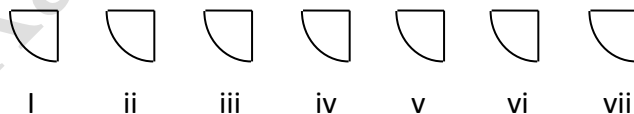
Let us find $7 \times \frac{1}{4}$

i. Represent $\frac{1}{4}$ diagrammatically.

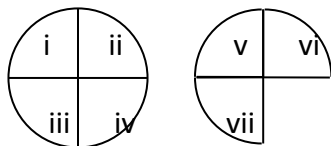
ii. Now represent $7 \times \frac{1}{4}$ as $\frac{1}{4} + \frac{1}{4}$ 7 times.



iii. Cut $\frac{1}{4}$ from each paper plate



iv. Rearranging them as shown here we get



Observation

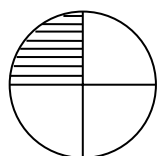
One full circle & a $\frac{3}{4}$ of a circle.

$$\text{Result } 7 \times \frac{1}{4} = \frac{7}{4} = \frac{13}{4}$$

F.A 1. Puzzle

* I am a fraction my numerator is a one digit odd number, my denominator is also a one digit that is four times greater than my numerator. What fraction am I? Am I a special type of fraction? If yes then of what type? Show this fraction with the help of diagram.

Ans. $\frac{1}{4}$, unit fraction



→ $\frac{1}{4}$ (Fraction for shaded part)

* Make animal faces using fruits & vegetables
Skill acquired life skills – creative skill, paper craft.
Mathematical skills – Decimals.

Method Cut a strip of white paper about 20cmx2.5cm and draw teeth along the strip.

1. Give the strip over one end of the cucumber, so that it look, like a mouth.
2. Draw and cut circles of diameter 1.4cm to make eyes.
3. Glue the eyes above the end of the mouth.
4. We have the head of the crocodile ready.

Or Lemon Pig →

Value included

- Mutual respect
- Respect for beliefs and cultures of various races.

CHAPTER- 3 - DATA HANDLING

Previous Knowledge question

Ques.1 What is data?

Ans. Data is a collection of numerical figures giving some specific information.

Ques.2 How many types do we represent the data?

Ans. We can represent the data in the following ways.

- i. Tabular form
- ii. Bar-graph & donble bar graph
- iii. Histogram
- iv. Pie chart

NCERT QUESTIONS

Ques.1 Find the range of heights of any ten students of your class.

Ans. Range of heights of 10 students = Height of the tallest student - Height of the shortest student.

Ques.2 Organise the following marks in a class assessment, in a tabular form.

4	6	7	5	3	5	4	5	2	6
2	5	1	9	6	5	8	4	6	7

(i) Which number is the highest? (ii) Which number is the lowest?

(iii) What is the range of the data? (iv) Find the arithmetic mean.

Ans.

(i) 9 is the highest.

(ii) One is the lowest.

(iii) Range = Highest – least

$$= 9 - 1$$

$$= 8$$

(iv) Arithmetic mean = $\frac{\text{sum of the marks}}{\text{NO: of test}} = \frac{100}{20} = 50.$

Ques.3 Find the mean of the first five whole numbers.

Ans.

$$\text{Mean of first 5 numbers} = \frac{1 + 2 + 3 + 4 + 5}{5} = 3.$$

Ques.4 A cricketer scores the following runs in eight innings:

58, 76, 40, 35, 46, 45, 0, 100. Find the mean score.

Ans.

$$\text{Mean score} = \frac{58 + 76 + 40 + 35 + 46 + 45 + 0 + 100}{8} = \frac{400}{8} = 50.$$

Ques.5 The following table shows the points of each player scored in four games:

Player	Game 1	Game 2	Game 3	Game 4
A	14	16	10	10
B	0	8	6	4
C	8	11	Did not play	13

Now answer the following questions:

- Find the mean to determine A's average number of points scored per game.
- To find the mean number of points per game for C, would you divide the total points by 3 or by 4? Why?
- B played in all the four games. How would you find the mean?
- Who is the best performer?

- Ans.
- Average score obtained by A = $\frac{50}{4} = 12.5$
 - To find the mean number of points per game for C, we would divide the total points by 3, because C played only 3 games
 - As B played in all the four games; to find the mean score we would divide the total by 4, even though B scored zero in the first game.

$$\text{Mean} = \frac{0 + 8 + 6 + 4}{4} = \frac{18}{4} = \frac{9}{2}$$

- Player A is the best performer.

Ques.6 The marks (out of 100) obtained by a group of students in a science test are 85, 76, 90, 85, 39, 48, 56, 95, 81 and 75. Find the:

- Highest and the lowest marks obtained by the students.
- Range of the marks obtained.
- Mean marks obtained by the group.

- Ans.
- The highest mark is 95 and the lowest mark is 39.
 - Range = Highest mark – lowest mark = $95 - 39 = 56$

$$\text{(iii) Mean mark} = \frac{\text{Sum of all the marks}}{\text{number of students}} = \frac{85 + 76 + 90 + 85 + 39 + 48 + 56 + 95 + 81 + 75}{10} = \frac{730}{10} = 73$$

Ques.7 The enrollment in a school during six consecutive years was as follows:1555, 1670, 1750, 2013, 2540, 2820.Find the mean enrollment of the school for this period.

Ans.

Mean enrollment =

$$\frac{\text{Sum of all the enrolments}}{\text{number of enrolments}} = \frac{1555 + 1670 + 1750 + 2013 + 2540 + 2820}{6} = \frac{12258}{6} = 2043$$

Therefore, the mean enrolment of the school for this period is 2058.

Ques.8 The rainfall (in mm) in a city on 7 days of a certain week was recorded as follows:

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Rain fall	0.0	12.2	2.1	0.0	20.5	5.5	1.0

(in mm)

(i) Find the range of the rainfall in the above data.

(ii) Find the mean rainfall for the week.

(iii) On how many days was the rainfall less than the mean rainfall?

Ans.

(i) Range = Highest reading – lowest reading
 = 20.5 – 0.0
 = 20.5.

Therefore the range = 20.5

(ii) Mean rainfall of the week = $\frac{\text{Sum of all the readings}}{\text{number of reading}} =$
 $\frac{0.0 + 12.2 + 2.1 + 0.0 + 20.5 + 5.5 + 1.0}{7} = \frac{41.3}{7} = 5.9$

(iii) On Monday, Wednesday, Thursday, Saturday and Sunday i.e. 5 days the rainfall was below the mean rainfall.

Ques.9 The heights of 10 girls were measured in cm and the results are as follows:

135, 150, 139, 128, 151, 132, 146, 149, 143, 141.

(i) What is the height of the tallest girl?

(ii) What is the height of the shortest girl?

(iii) What is the range of the data?

(iv) What is the mean height of the girls?

(v) How many girls have heights more than the mean height?

Ans.

(i)The height of the tallest girl is 151 cm.

(ii)The height of the shortest girl is 128 cm

(iii) The range of the data is $(151 - 128) = 23$.

(iv) Mean height = $\frac{135 + 150 + 139 + 128 + 151 + 132 + 146 + 149 + 143 + 141}{10} = \frac{1414}{10} = 141.4$

(v) The number of girls more than the mean height = 5.

Ques.10 The scores in mathematics test (out of 25) of 15 students is as follows: 19, 25, 23, 20, 9, 20, 15, 10, 5, 16, 25, 20, 24, 12, 20. Find the mode and median of this data. Are they the same?

Ans.

Mode = The score 20 is repeated maximum number of times i.e. 4 times. Therefore the mode is 20. For finding the median, we have to arrange the data in ascending order as below :
5, 9, 10, 12, 15, 16, 19, 20, 20, 20, 20, 23, 24, 25, 25.

Median is the middle most value which is 20.

Yes, the mode and median are both same.

Ques.11 The runs scored in a cricket match by 11 players is as follows: 6, 15, 120, 50, 100, 80, 10, 15, 8, 10, 15. Find the mean, mode and median of this data. Are the three same?

Ans.

Mean score = $\frac{6 + 15 + 120 + 50 + 100 + 80 + 10 + 15 + 8 + 10 + 15}{11} = \frac{429}{11} = 39$

Writing the scores in ascending order
6, 8, 10, 10, 15, 15, 15, 50, 80, 100, 120.

The median is the middle most value, which is 15.

The score 15 is repeated most number of times. Therefore the mode is 15.

No. All the three are not same.

Ques.12 The weights (in kg.) of 15 students of a class are: 38, 42, 35, 37, 45, 50, 32, 43, 43, 40, 36, 38, 43, 38, 47

(i) Find the mode and median of this data.

(ii) Is there more than one mode?

Ans.

Arranging the given data in ascending order :

32, 35, 36, 37, 38, 38, 38, 40, 42, 43, 43, 43, 45, 47, 50

Median is the middle most value, which is the 8th observation i.e. 40.

38 and 43 are both the modes which is repeated most number of times i.e. 3 times.

As said above there are more than one mode i.e. two modes are there.

Ques. 13 Find the mode and median of the data: 13, 16, 12, 14, 19, 12, 14, 13, 14.

Ans. Arranging the given data in the ascending order :

12, 12, 13, 13, 14, 14, 14, 16, 19

Mode of the data is 14 which is repeated the highest number of times i.e. 3 times.

Median is the middle most value i.e. 14.

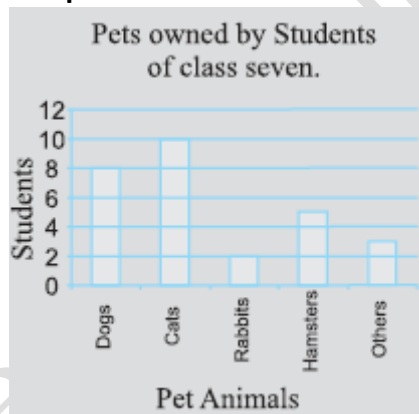
Ques.14 Write whether the statement is true or false:

- (i) The mode is always one of the numbers in a data.
- (ii) The mean can be one of the numbers in a data.
- (iii) The median is always one of the numbers in a data.
- (iv) A data always has a mode.
- (v) The data 6, 4, 3, 8, 9, 12, 13, 9 has mean 9.

Ans. (i) True (ii) False (iii) True (iv) True (v) False.

Ques.15 Use the bar graph below to answer the following questions.

- (a) Which is the most popular pet?
- (b) How many children have dog as a pet?

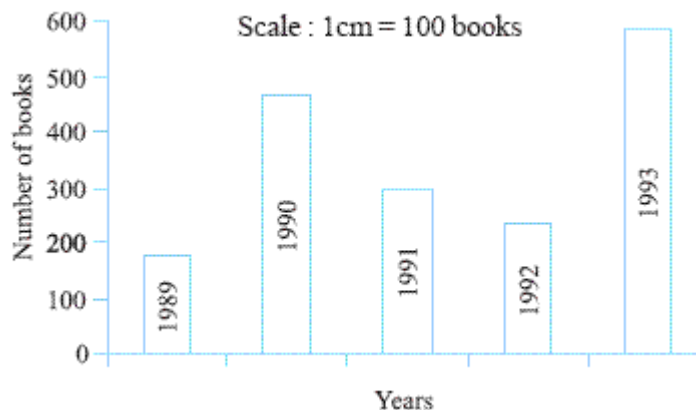


Ans.

- (a) The most popular pets are cats.
- (b) 8 children have dogs as their pets.

Ques.16 Read the bar graph (Figure shown above) which shows the number of books sold by a bookstore during five consecutive years and answer the following questions:

- (i) About how many books were sold in 1989? 1990? 1992?
- (ii) In which year were about 475 books sold? About 225 books sold?
- (iii) In which years were fewer than 250 books sold?
- (iv) Can you explain how you would estimate the number of books sold in 1989?



- Ans.** (i) Books sold in 1989 = 190 (approx.), Books sold in 1990 = 475 (approx.), Books sold in 1992 = 225 (approx).
(ii) In the year 1990 about 475 books were sold and in the year 1992, 225 books were sold.
(iii) In the years 1992 and 1989, less than 250 books were sold.
(iv) Approximately each unit has hundred books. In the year 1989, the graph is almost touching the 200 mark. Therefore we can estimate this to have about 190 books.

Ques.17 Number of children in six different classes are given below. Represent the data on a bar graph.

Class	Fifth	Sixth	Seventh	Eight	Nine	Tenth
Number of Children	135	120	95	100	90	80

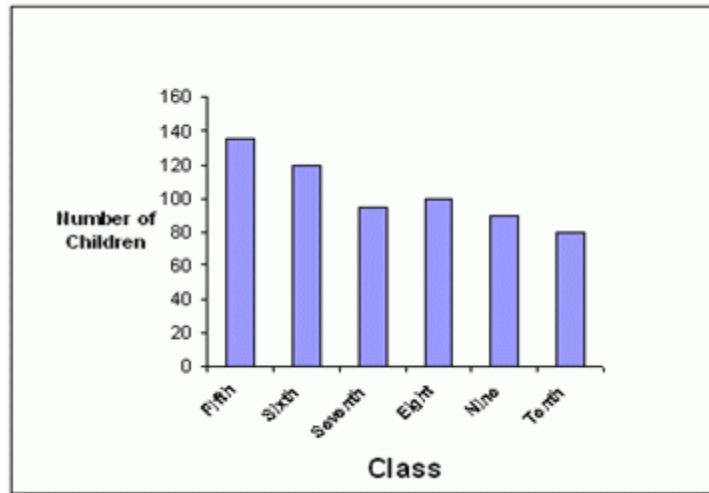
- (a) How would you choose a scale?
(b) Answer the following questions:
(i) Which class has the maximum number of children? And the minimum?
(ii) Find the ratio of students of class sixth to the students of class eight.

- Ans.** (a) The scale can be chosen as 0-20-40...140
(b) (i) Class 5 has maximum number of children i.e. 135.
Class 10 has minimum number of children i.e. 80.
(ii) The ratio of the students of class sixth to the ratio of the students of the class eight =

$$\frac{120}{100} = \frac{6}{5}$$



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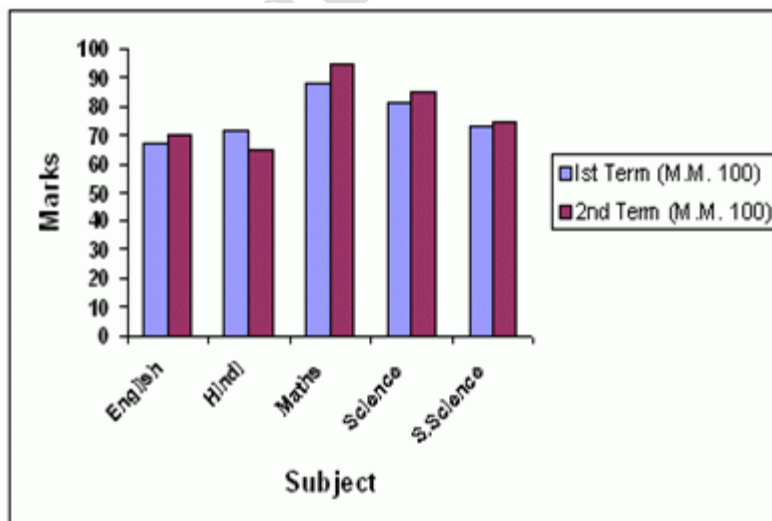


Ques.18 The performance of students in 1st Term and 2nd Term is given. Draw a double bar graph choosing appropriate scale and answer the following:

Subject	English	Hindi	Maths	Science	S.Science
1st Term (M.M. 100)	67	72	88	81	73
2 nd Term (M.M. 100)	70	65	95	85	75

- In which subject, has the child improved his performance the most?
- In which subject is the improvement the least?
- Has the performance gone down in any subject?

Ans.



- (i) The student has shown his performance the most in Maths.
- (ii) The student has shown least performance in Social Science
- (iii) Yes, the performance has gone down in Hindi.

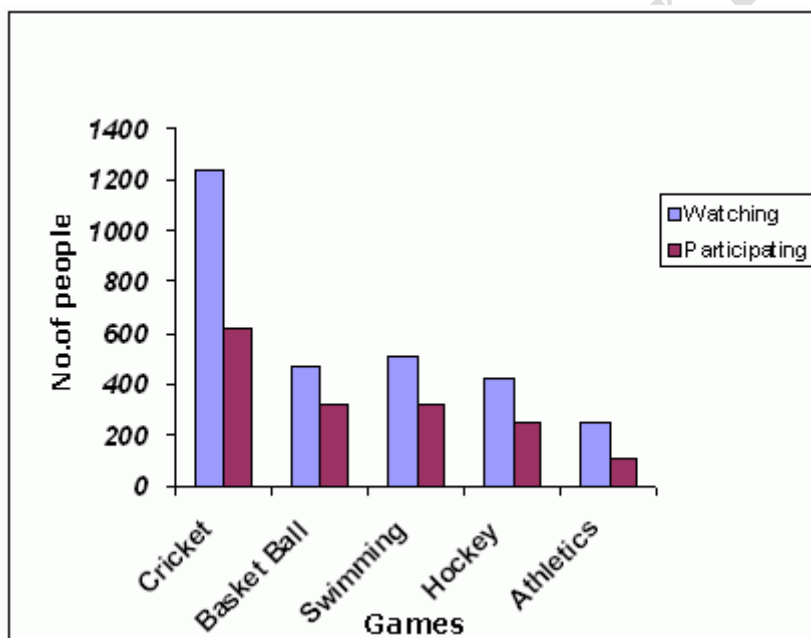
Ques.19 Consider this data collected from a survey of a colony.

Favourite Sport	Cricket	Basket Ball	Swimming	Hockey	Athletics
Watching	1240	470	510	423	250
Participating	620	320	320	250	105

- (i) Draw a double bar graph choosing an appropriate scale. What do you infer from the bar graph?
- (ii) Which sport is most popular?
- (iii) Which is more preferred, watching or participating in sports?

Ans.

(i)



- (ii) Cricket is the most popular sport.
- (iii) More preference is given for watching than for participating in sports.

Ques.20 Take the data giving the minimum and the maximum temperature of various cities given below. Plot a double bar graph using the data and answer the following:

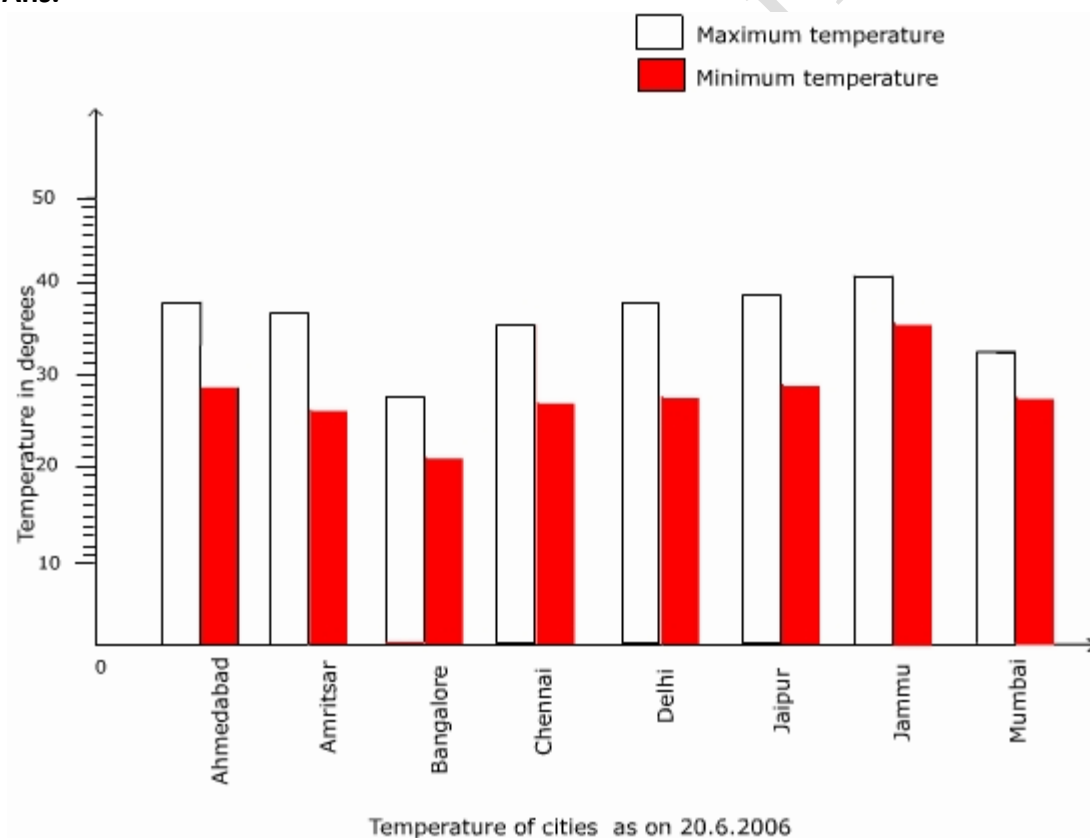
- (i) Which city has the largest difference in the minimum and maximum temperature on the given date?
- (ii) Which is the hottest city and which is the coldest city?

(iii) Name two cities where maximum temperature of one was less than the minimum temperature of the other.

(iv) Name the city which has the least difference between its minimum and the maximum temperature.

City	Max.	Min.
Ahmedabad	38°C	29°C
Amristar	37°C	26°C
Bangalore	28°C	21°C
Chennai	36°C	27°C
Delhi	38°C	28°C
Jaipur	39°C	29°C
Jammu	41°C	26°C
Mumbai	32°C	27°C

Ans.



(i) Jammu has the largest difference in the minimum and maximum temperature.

(ii) Jammu is the hottest city and Bangalore is the coldest city.

(iii) Bangalore and Jaipur are the two cities where the maximum temperature of one is less than the minimum temperature of the other.

(iv) Mumbai is the city which has the least difference between its minimum and maximum temperature.

Ques. 21 Tell whether the following is certain to happen, impossible, can happen but not certain

(i) You are older today than yesterday (ii) A tossed coin will land heads up

(iii) A die when tossed shall land up with 8 on top.

(iv) The next traffic light seen will be green.

(v) Tomorrow will be a cloudy day.

Ans. (i) Certain to happen
(ii) Can happen but not certain
(iii) Impossible
(iv) Can happen but not certain
(v) Can happen but not certain.

Ques. 22 There are 6 marbles in a box with numbers from 1 to 6 marked on each of them.

(i) What is the probability of drawing a marble with number 2?

(ii) What is the probability of drawing a marble with number 5?

Ans. (i) Total number of marbles = 6

Number of marbles with number 2 = 1

$P(\text{Drawing a marble with number 2}) = \frac{1}{6}$

(ii) Total number of marbles = 6

Number of marbles with number 5 = 1

$P(\text{Drawing a marble with number 5}) = \frac{1}{6}$

Ques. 23 A coin is flipped to decide which team starts the game. What is the probability that your team will start?

Ans.

Total number of outcomes when you flip a coin is 2.

Number of possible ways to start the game = 1.

Probability to start the game = $\frac{1}{2}$



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HOTS SOLVED

Ques.1 Find the mean of the first six odd natural numbers.

Ans. mean = $\frac{1+3+5+7+9+11}{6} = \frac{36}{6} = 6$ Ans.

Ques.2 A child throw a dice, find the probability of getting

(a) 6

(b) An odd number

(c) A number > 3

Ans. (a). $P(6) = \frac{1}{6}$

(b). $P(\text{an odd number}) = \frac{3}{6} = \frac{1}{2}$

(c). $P(\text{a number } > 3) = \frac{4}{6} = \frac{2}{3}$

Unsolved

Ques.1 Find the mean of the following numbers.

3, -7, 5, 13, -2

Ans. The sum of the given number is $3-7+5+13-2=12$ and the number of the observations are 5.

Therefore, mean is = $\frac{12}{5}$
=2.4

Value Based Questions

Ques.1 Make frequency table for the following set of data

Mode of Listening to the music by students (for 1 hour)



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I	C	M	I
M			
R	M	I	M
R			
R	C	I	R
C			
M	C	C	R
M			
R	I	R	R
C			

Here C- CDs

R-Radio

I-Internet

M-Music Videos

What values do the students have?

Mode of music	Tally Marks	Frequency
CDs	TTT II	7
Radio	TTTT III	8
Internet	IIII	4
Music Videos	TTTT I	6
Total		25

Expected values: Appreciation for art love for music and time management

Ques.2 Make frequency table for the following set of data

Liking of the children for household chores					
D	L	C	L	P	R
L					
D	L	R	D	R	D
C					
P	D	P	R	R	C
R					
R	R	C	L	D	P
R					
D	R	P	R	R	D
L					

D= Washing dishes,
P= watering plants
C= cooking
R= cleaning room
L= doing laundry

Which chore do students like the least and which chore the most?

What can you say about the values children have these?

Chores	Tally Marks	Frequency
C	IIII	4
D	IIII III	8
L	IIII I	6
R	IIII IIII II	12
P	IIII	5
Total		35

Expected Value: self reliance, value of labor, collaboration

F.A - (Project)

Take you marks in English, Hindi Maths, Science and Social Science in the two unit

Teste conducted so for and convert them into percent. Represent this information in donble for graph.

Intra class Academic activity

Objective

To explore the concept of probability by activity method.

Material Required No. cards (1to5) and a bag.

1 2 3 4 5

Procedure

1. Put all the no. cards in bag.
2. Now, take out one no. card from the bag without looking
3. Answer the following question.
 - a. What is the probability of each outcome?
 - b. What is the probability that the card taken out shows an even no.?
 - c. What is the probability that the card taken out shows an odd no.?

Ans. (a) $P(1) = \frac{1}{5}$

$$(b) P(2) = \frac{1}{5}$$

$$(c) P(3) = \frac{1}{5}$$

$$(d) P(4) = \frac{1}{5}$$

$$(a) P(5) = \frac{1}{5}$$

$$(b) P(\text{even no.}) = \frac{1}{5}$$

$$(c) P(\text{odd no.}) = \frac{3}{5}$$

Step5.

Repeat this activity at least ten times and record all observations.

Outcome.	Change										Probability	
	1	2	3	4	5	6	7	8	9	0		
Odd no.												-out of 10
Even no.												-out of 10

CHAPTER-4 SIMPLE EQUATIONS

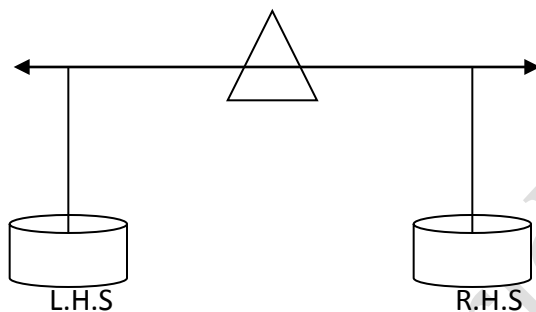
Introductory Questions

Ques.1 what is an equation?

Ans. An equation is a condition on a variable.

Ques.2 what is a balanced equation?

Ans. Balanced equation is like weighing balance with equal weight in the two pans



NCERT QUESTIONS

Ques.1 Complete the last column of the table.

S. No.	Equation	Value	Say, whether the equation is satisfied. (Yes/ No)
(i)	$x + 3 = 0$	$x = 3$	
(ii)	$x + 3 = 0$	$x = 0$	
(iii)	$x + 3 = 0$	$x = -3$	
(iv)	$x - 7 = 1$	$x = 7$	
(v)	$x - 7 = 1$	$x = 8$	
(vi)	$5x = 25$	$x = 0$	
(vii)	$5x = 25$	$x = 5$	
(viii)	$5x = 25$	$x = -5$	
(ix)	$\frac{m}{3} = 2$	$m = -6$	
(x)	$\frac{m}{3} = 2$	$m = 0$	
(xi)	$\frac{m}{3} = 2$	$m = 6$	

Ans. (i) No
(ii) No

- (iii) Yes
- (iv) No
- (v) Yes
- (vi) No
- (vii) Yes
- (viii) No
- (ix) No
- (x) No
- (xi) Yes.

Ques.2 Check whether the value given in the brackets is a solution to the given equation or not:

(a) $n + 5 = 19$ ($n = 1$) (b) $7n + 5 = 19$ ($n = -2$) (c) $7n + 5 = 19$ ($n = 2$) (d) $4p - 3 = 13$ ($p = 1$) (e) $4p - 3 = 13$ ($p = -4$) (f) $4p - 3 = 13$ ($p = 0$).

Ans.

(a) $n + 5 = 19$
 $n = 19 - 5$
 $= 14$

$n = 1$ is not a solution to the equation.

(b) $7n + 5 = 19$
 $7n = 19 - 5 = 14$
 $n = \frac{14}{7} = 2$

$n = -2$ is not a solution to the equation.

(c) $7n + 5 = 19$
 $7n = 19 - 5 = 14$

$n = 2$ is a solution to the equation

(d) $4p - 3 = 13$
 $4p = 13 + 3 = 16$
 $p = 4$

As $p = 4$ is not a solution to the equation.

(e) $4p - 3 = 13$
 $4p = 13 + 3 = 16$

$p = \frac{16}{4} = 4$

$p = -4$ is not a solution to the equation

(f) $4p - 3 = 13$
 $4p = 13 + 3 = 16$
 $p = 4$

$p = 0$ is not a solution to the equation.

Ques.3 Solve the following equations by trial and error method:

(i) $5p + 2 = 17$ (ii) $3m - 14 = 4$.

Ans.

(i) $5p + 2 = 17$

Let $p = 1$ then, $(5 \times 1) + 2 = 7 \neq 17$. Hence $p \neq 1$

Let $p = 2$ then, $(5 \times 2) + 2 = 12 \neq 17$. Hence $p \neq 2$

Let $p = 3$ then, $(5 \times 3) + 2 = 17$. Hence $p = 3$

Hence the solution of the equation is $p = 3$.

(ii) $3m - 14 = 4$

Let $m = 1$ then $(3 \times 1) - 14 = -11 \neq 4$.

Let $m = 2$ then $(3 \times 2) - 14 = -8 \neq 4$.

Let $m = 3$ then $(3 \times 3) - 14 = -5 \neq 4$.

Let $m = 4$ then $(3 \times 4) - 14 = -2 \neq 4$.

Let $m = 5$ then $(3 \times 5) - 14 = 1 \neq 4$.

Let $m = 6$ then $(3 \times 6) - 14 = 4$.

Hence the solution of the equation is $m = 6$.

Ques.4 Write equations for the following statements:

(i) The sum of numbers x and 4 is 9.

(ii) The difference between y and 2 is 8.

(iii) Ten times a is 70.

(iv) The number b divided by 5 gives 6.

(v) Three fourth of t is 15.

(vi) Seven times m plus 7 gets you 77.

(vii) One fourth of a number minus 4 gives 4.

(viii) If you take away 6 from 6 times y , you get 60.

(ix) If you add 3 to one third of z , you get 30.

Ans.

(i) $x + 4 = 9$

(ii) $y - 2 = 8$

(iii) $10a = 70$

(iv) $\frac{b}{5} = 6$

(v) $\frac{3}{4}t = 15$

(vi) $7m + 7 = 77$

(vii) $\frac{x}{4} - 4 = 4$

(viii) $6y - 6 = 60$

(ix) $\frac{z}{3} + 3 = 30$

Ques.5 Write the following equations in statement forms:

(i) $p + 4 = 15$

(ii) $m - 7 = 3$

(iii) $2m = 7$

(iv) $\frac{m}{5} = 3$

(v) $\frac{3m}{5} = 6$

(vi) $3p + 4 = 25$

(vii) $4p - 2 = 18$

(viii) $\frac{p}{2} + 2 = 8$

Ans.

(i) 4 added p gives 15

(ii) 7 subtracted from m gives 3

(iii) 2 times m gives 7

(iv) one fifth of m gives 3

(v) Three fifth of m gives 6

(vi) Four added to three times p gives 25

(vii) Two subtracted from 4 times p gives eighteen.

(viii) Two added to half of p gives eight.

Ques.6 Set up an equation in the following cases:

(i) Irfan says that he has 7 marbles more than five times the marbles Parmit has. Irfan has 37 marbles. (Take m to be the number of Parmit's marbles.)

(ii) Laxmi's father is 49 years old. He is 4 years older than three times Laxmi's age. (Take Laxmi's age to be y years.)

(iii) The teacher tells the class that the highest marks obtained by a student in her class is twice the lowest marks plus 7. The highest score is 87. (Take the lowest score to be l .)

(iv) In an isosceles triangle, the vertex angle is twice either base angle. (Let the base angle be b in degrees. Remember that the sum of angles of a triangle is 180 degrees).

Ans.

(i) Let m be the number of marbles Parmit has

Irfan has $5m + 7$

Thus $5m + 7 = 37$

(ii) Let Laxmi age be y years

Age of Laxmi father = 49

$$= 3y + 4$$

$$3y + 4 = 49 \text{ is the equation.}$$

(iii) Let the lowest rank obtained by in her class be l .

But highest mark obtained = 87

$$= 2l + 7(\text{given})$$

$$2l + 7 = 87 \text{ is the equation.}$$

(iv) Let the base angle be b°

Vertex angle = $2b$ (given)

Sum of 3 angles of the = 180°

In any isosceles triangles the base angles are equal,

Recall, $b + b + 2b = 180$

$4b = 180$ is the equation.

Ques.7 Give first the step you will use to separate the variable and then solve the equation:(a) $x - 1 = 0$ (b) $x + 1 = 0$ (c) $x - 1 = 5$ (d) $x + 6 = 2$.

Ans.

(a) $x - 1 = 0$

Let us add 1 on both sides to get x

$$x - 1 + 1 = 0 + 1$$

$$x = 1$$

(b) $x + 1 = 0$

Subtracting 1 on both the sides to get x,

$$x + 1 - 1 = 0 - 1$$

$$x = -1$$

(c) $x - 1 = 5$

Adding 1 on both the sides to get x,

$$x - 1 + 1 = 5 + 1$$

$$x = 6$$

(d) $x + 6 = 2$

Subtracting 6 on both the sides to get x,

$$x + 6 - 6 = 2 - 6$$

$$x = -4.$$

Ques.8 Give first the step you will use to separate the variable and then solve the equation:

(a) $3l = 42$ (b) $\frac{b}{2} = 6$ (c) $\frac{p}{7} = 4$ (d) $4x = 25$.

Ans.

(a) $3l = 42$

Divide both sides by 3 to get l

$$\frac{3l}{3} = \frac{42}{3}$$

$$\Rightarrow l = \frac{42}{3} = 14$$

$$(b) \frac{b}{2} = 6$$

Multiply both sides by 2 to get b

$$b = 12.$$

$$(c) \frac{p}{7} = 4$$

Multiply both sides by 7 to get p on LHS

$$\frac{p}{7} \times 7 = 4 \times 7$$

$$p = 28.$$

$$(d) 4x = 25$$

Divide both sides by 4 to get x on LHS

$$\frac{4x}{4} = \frac{25}{4}$$

$$x = \frac{25}{4}.$$

Ques.9 Give the steps you will use to separate the variable and then solve the equation:

$$(a) 3n - 2 = 46 \quad (b) 5m + 7 = 17 \quad (c) \frac{20p}{3} = 40 \quad (d) \frac{3p}{10} = 6.$$

Ans.

$$(a) 3n - 2 = 46$$

Adding 2 on both sides

$$3n - 2 + 2 = 46 + 2$$

$$3n = 48$$

$$n = \frac{48}{3} = 16.$$

$$(b) 5m + 7 = 17$$

Subtracting 7 on both sides

$$5m + 7 - 7 = 17 - 7$$

$$5m = 10$$

Dividing by 5 on both sides

$$m = 2$$

$$(c) \frac{20p}{3} = 40$$

Multiplying both sides by the inverse of $\frac{20}{3}$ (i.e.,) $\frac{3}{20}$

$$\frac{3}{20} \times \frac{20}{3} p = \frac{3}{20} \times 40$$

$$p = 6$$

(d) $\frac{3p}{10} = 6$

Multiplying both sides by the inverse of $\frac{3}{10}$ (i.e.,) $\frac{10}{3}$

$$\frac{10}{3} \times \frac{3p}{10} = \frac{10}{3} \times 6$$

$p = 20.$

Ques.10 Solve the following equations:

(a) $10p = 100$ (b) $10p + 10 = 100$ (c) $\frac{p}{4} = 5$ (d) $\frac{p}{3} = 5$ (e) $\frac{3p}{4} = 6$ (f) $3s = -9$

Ans.

(a) $10p = 100$
 $p = 10$

(b) $10p + 10 = 100$

Subtracting 10 on both sides

$$10p + 10 - 10 = 100 - 10$$

$$10p = 90$$

Dividing by 10 on both sides

$p = 9$

(c) $\frac{p}{4} = 5$

Multiply by 4 on both sides

$$\frac{p}{4} \times 4 = 5 \times 4$$

$$p = 5 \times 4$$

$$p = 20$$

(d) $\frac{p}{3} = 5$

Multiplying both sides by 3 we get,

$$p = 5 \times 3 = 15$$

$$(e) \frac{3p}{4} = 6$$

Multiplying both sides by the inverse of $\frac{3}{4}$ (i.e.,) $\frac{4}{3}$

$$p = 6 \times \frac{4}{3}$$

$$= 2 \times 4$$

$$p = 8$$

$$(f) 3s = -9$$

Dividing on both sides by 3 we get,

$$\frac{3s}{3} = \frac{-9}{3}$$

$$s = -3.$$

Ques.11 Solve the following equations.

$$(a) 2y + \frac{5}{2} = \frac{37}{2} \quad (b) 5t + 28 = 10 \quad (c) \frac{a}{5} + 3 = 2 \quad (d)$$

$$\frac{q}{4} + 7 = 5$$

Ans.

$$(a) 2y + \frac{5}{2} = \frac{37}{2}$$

Transposing $\frac{5}{2}$ to RHS

$$2y = \frac{37}{2} - \frac{5}{2}$$

$$2y = \frac{32}{2} = 16$$

$$y = \frac{16}{2} = 8$$

$$(b) 5t + 28 = 10$$

Transposing 28 to RHS

$$5t = 10 - 28$$

$$t = \frac{-18}{5}$$

$$(c) \frac{a}{5} + 3 = 2$$

Transposing 3 to RHS

$$\frac{a}{5} = 2 - 3$$

$$a = -1 \quad 5 = -5$$

$$(d) \frac{q}{4} + 7 = 5$$

Transposing 7 to RHS

$$\frac{q}{4} = 5 - 7$$

$$\frac{q}{4} = -2$$

Multiply by 4 on both sides,

$$4 \frac{q}{4} = -2 \quad 4$$

$$\Rightarrow q = -8.$$

Ques.12 Solve the following equations.

$$(a) 2(x + 4) = 12 \quad (b) 3(n - 5) = 21 \quad (c) 3(n-5) = -21 \quad (d) 3 - 2(2 - y) = 7.$$

Ans.

$$(a) 2(x + 4) = 12$$

Dividing by 2 on both the sides we get,

$$x + 4 = 6$$

Transposing 4 to RHS

$$x = 6 - 4 \\ = 2$$

$$(b) 3(n - 5) = 21$$

Dividing by 3 we get,

$$n - 5 = \frac{21}{3} \\ = 7$$

Transposing -5 to RHS

$$n = 7 + 5 \\ n = 12$$

$$(c) 3(n-5) = -21$$

Dividing by 3 we get,

$$n - 5 = \frac{-21}{3} \\ = -7$$

Transposing -5 to RHS

$$n = -7 + 5 \\ n = -2$$

$$(d) 3 - 2(2 - y) = 7$$

Transposing 3 to RHS

$$-2(2 - y) = 7 - 3 = 4$$

$$(2 - y) = \frac{4}{-2}$$

$$= -2$$

Transposing 2 to RHS

$$-y = -2 - 2$$

$$y = 4.$$

Ques.14 Solve the following equations.

(a) $4 = 5(p - 2)$

(b) $-4 = 5(p - 2)$

(c) $-16 = -5(2 - p)$

(d) $10 = 4 + 3(t + 2)$ (e) $28 = 4 + 3(t + 5)$ (f) $0 = 16 + 4(m - 6)$.

(a) $4 = 5(p - 2)$

$$(p - 2) = \frac{4}{5}$$

Transposing 2 to RHS

$$p = 2 + \frac{4}{5} = \frac{10 + 4}{5} = \frac{14}{5}$$

(b) $-4 = 5(p - 2)$

$$5(p - 2) = -4$$

$$(p - 2) = \frac{-4}{5}$$

Transposing 2 to RHS

$$p = \frac{-4}{5} + 2$$

$$= \frac{-4 + 10}{5} = \frac{6}{5}$$

(c) $-16 = -5(2 - p)$

$$-5(2 - p) = -16$$

$$(2 - p) = \frac{16}{5}$$

Transposing 2 to RHS

$$-p = \frac{16}{5} - 2$$

$$-p = \frac{16 - 10}{5}$$

$$p = \frac{-6}{5}$$

(d) $10 = 4 + 3(t + 2)$

$$4 + 3(t + 2) = 10$$

Transposing 4 to RHS

$$3(t + 2) = 10 - 4$$

$$t + 2 = \frac{6}{3}$$

Transposing 2 to RHS

$$t = 2 - 2 = 0$$

(e) $28 = 4 + 3(t + 5)$

$$28 = 4 + 3t + 15$$

$$28 = 19 + 3t$$

Transposing 19 to RHS

$$3t = 28 - 19$$

$$t = \frac{9}{3} = 3$$

(f) $0 = 16 + 4(m - 6)$

$$16 + 4(m - 6) = 0$$

$$4(m - 6) = -16$$

$$(m - 6) = \frac{-16}{4}$$

Transposing -6 to RHS

$$m = -4 + 6$$

$$= 2.$$

Ques.14 (a) Construct 3 equations starting with $x = 2$

(b) Construct 3 equations starting with $x = -2$.

Ans.

(a) $10x + 2 = 22$

$$\frac{x}{5} = \frac{2}{5}$$

$$5x - 3 = 7$$

(b) $3x = -6$

$$3x + 7 = 1$$

$$3x + 10 = 4.$$

Ques.15 Set up equations and solve them to find the unknown numbers in the following cases:

(a) Add 4 to eight times a number; you get 60.

(b) One fifth of a number minus 4 gives 3.

(c) If I take three fourths of a number and count up 3 more, I get 21.

(d) When I subtracted 11 from twice a number, the result was 15.

Ans.

(a) Let the number be x

$$8x + 4 = 60$$

Transposing 4 to RHS

$$8x = 60 - 4$$

Dividing both the sides by 8,

$$x = \frac{56}{8} = 7$$

$$x = 7$$

(b) Let the number be x

$$\frac{1}{5}x - 4 = 3$$

Transposing 4 to RHS

$$\frac{1}{5}x = 7$$

$$x = 35$$

(c) Let the number be x

$$\frac{3}{4}x + 3 = 21$$

Transposing 3 to RHS

$$\frac{3}{4}x = 21 - 3$$

$$= 18$$

$$x = 18 \cdot \frac{4}{3}$$

$$x = 24$$

(d) Let the number be x

(given)

$$2x - 11 = 15$$

Transposing 11 to RHS

$$2x = 15 + 11$$

$$2x = 26$$

Dividing both the sides by 2,

$$x = 13.$$

Ques.16 Solve the following:

(a) The teacher tells the class that the highest marks obtained by a student in her class is twice the lowest marks plus 7. The highest score is 87. What is the lowest score?

(b) In an isosceles triangle, the base angles are equal. The vertex angle is 40° . What are the base angles of the triangle? (Remember, the sum of three angles of a triangle is 180°).

(c) Smita's mother is 34 years old. Two years from now mother's age will be 4 times Smita's present age. What is Smita's present age?

(d) Sachin scored twice as many runs as Rahul. Together, their runs fell two short of a double century. How many runs did each one score?

Ans.

(a) Let the lowest score be l

$$2l + 7 = 87 \text{ (given)}$$

Transposing 7 to RHS

$$2l = 80 - 7$$

$$= 80$$

$$l = \frac{80}{2}$$

$$= 40$$

The lowest mark is 40

(b) Let each base angle be x°

Sum of 3 angles of a triangle = 180°

$$40^\circ + x + x = 180^\circ$$

$$40^\circ + 2x = 180^\circ$$

Transposing 40° to RHS

$$2x = 140^\circ$$

$$x = 70^\circ$$

Each base angle = 70°

(c) Let Smita present age be x

2 years from now Smita's age = $x + 2$

2 years from now her mother's age = $4(x + 2)$

$$\text{(i.e.,)} \quad 36 = 4(x + 2)$$

$$(x + 2) = \frac{36}{4} = 9$$

$$\Rightarrow x = 7$$

Smita present age = 7 yrs.

(d) Let Rahul's score be x runs

Sachin's score = $2x$

Their joint score

$$(2x + x) + 2 = 200 \text{ (given)}$$

$$3x + 2 = 200$$

Transposing 2 to RHS

$$3x = 198$$

$$x = 66$$

Rahul score = 66 runs

Sachin's score = 132 runs.

Ques. 17 Solve the following riddle:

I am a number,

Tell my identity!

Take me seven times over

And add a fifty!

To reach a triple century

You still need forty!

Ans.

30.

Ques. 18 Give first the step you will use to separate the variable and then solve the equation:

(a) $y - 4 = -7$ (b) $y - 4 = 4$ (c) $y + 4 = 4$ (d) $y + 4 = -4$.

Ans.

(a) $y - 4 = -7$

Adding 4 on both the sides to get y,

$$y - 4 + 4 = -7 + 4$$

$$y = -3.$$

(b) $y - 4 = 4$

Adding 4 on both the sides, we get

$$y - 4 + 4 = 4 + 4$$

$$y = 8$$

(c) $y + 4 = 4$

Subtracting 4 on both the sides to get y,

$$y + 4 - 4 = 4 - 4$$

$$y = 0.$$

(d) $y + 4 = -4$

Subtracting 4 on both the sides to get y,

$$y + 4 - 4 = -4 - 4$$

$$y = -8.$$

Ques.19 Give first the step you will use to separate the variable and then solve the equation:

(a) $8y = 36$ (b) $\frac{z}{3} = \frac{5}{4}$ (c) $\frac{a}{5} = \frac{7}{15} - 10$.

Ans.

(a) $8y = 36$

Divide both by 8 to get y on LHS

$$\frac{8y}{8} = \frac{36}{8}$$

$$y = \frac{9}{2}$$

(b) $\frac{z}{3} = \frac{5}{4}$

Multiply both sides by 3 to get z on LHS

$$\frac{z}{3} \times 3 = \frac{5}{4} \times 3$$

$$z = \frac{15}{4}$$

(c) $\frac{a}{5} = \frac{7}{15}$

Multiply both sides by 5 to get a on LHS

$$\frac{a}{5} \times 5 = \frac{7}{15} \times 5$$

$$a = \frac{7}{3}$$

(d) $20t = -10$

Divide both the sides by 20 to get t on LHS

$$\frac{20t}{20} = \frac{-10}{20}$$

$$t = \frac{-1}{2}$$

Ques.20 Solve the following equations:

(a) $3s + 12 = 0$ (b) $3s = 0$ (c) $2q = 6$ (d) $2q - 6 = 0$ (e) $2q + 6 = 0$ (f) $2q + 6 = 12$.

Ans.

(a) $3s + 12 = 0$

Subtracting 12 on both sides we get,

$$3s + 12 - 12 = 0 - 12$$

$$3s = -12$$

Dividing by 3, on both sides

$$\frac{3s}{3} = \frac{-12}{3}$$

$$s = -4$$

(b) $3s = 0$

Dividing by 3, on both sides

$$\frac{3s}{3} = \frac{0}{3}$$

$$s = 0$$

(c) $2q = 6$

Dividing by 2, on both sides

$$\frac{2q}{2} = \frac{6}{2}$$

$$q = 3$$

(d) $2g - 6 = 0$

Adding 6 on both the sides we get,

$$2g - 6 + 6 = 0 + 6$$

$$2g = 6$$

Dividing by 2, on both sides

$$\frac{2g}{2} = \frac{6}{2}$$

$$g = 3$$

(e) $2q + 6 = 0$

Adding -6 on both the sides we get,

$$2q + 6 - 6 = 0 - 6$$

$$2q = -6$$

Dividing by 2, on both sides

$$\frac{2q}{2} = \frac{-6}{2}$$

$$q = -3$$

(f) $2q + 6 = 12$

Adding -6 on both the sides we get,

$$2q + 6 - 6 = 12 - 6$$

$$2q = 6$$

Dividing by 2, on both sides

$$\frac{2q}{2} = \frac{6}{2}$$

$$q = 3.$$

Ques.21 Solve the following equations.

(a) $\frac{5}{2}x = \frac{25}{4}$ (b) $7m + \frac{19}{2} = 13$ (c) $6z + 10 = -2$ (d) $\frac{3l}{2} = \frac{2}{3}$.

Ans.

(a) $\frac{5}{2}x = \frac{25}{4}$

Multiply by $\frac{2}{5}$ on both sides,

$$\frac{5x}{2} \times \frac{2}{5} = \frac{25}{4} \times \frac{2}{5}$$

$$x = \frac{25}{4} \times \frac{2}{5}$$

$$x = \frac{5}{2}$$

(b) $7m + \frac{19}{2} = 13$

Transposing $\frac{19}{2}$ to RHS

$$7m = 13 - \frac{19}{2}$$

$$= \frac{26 - 19}{2} = \frac{7}{2}$$

Dividing by 7 on both the sides we get,

$$\frac{7m}{7} = \frac{7}{2 \times 7}$$

$$m = \frac{1}{2}$$

(c) $6z + 10 = -2$

Transposing 10 to RHS

$$6z = -2 - 10$$

$$6z = -12$$

Dividing by 6 on both the sides we get,

$$\frac{6z}{6} = \frac{-12}{6}$$

$$z = -2$$

$$(d) \frac{3l}{2} = \frac{2}{3}$$

Multiplying by 2 on both sides

$$\frac{3l}{2} \times 2 = \frac{2}{3} \times 2$$

$$3l = \frac{4}{3}$$

Dividing by 3 on both the sides we get,

$$\frac{3l}{3} = \frac{4}{3 \times 3}$$

$$l = \frac{4}{9}$$

Ques.22 Solve the following equations.

(a) $-4(2 - x) = 9$ (b) $4(2 - x) = 9$ (c) $4 + 5(p - 1) = 34$ (d) $34 - 5(p - 1) = 4$.

Ans.

(a) $-4(2 - x) = 9$

$$(2 - x) = \frac{9}{-4}$$

Transposing 2 to RHS

$$-x = \frac{-9}{4} - 2$$

$$= \frac{-9 - 8}{4} = \frac{-17}{4}$$

$$x = \frac{17}{4}$$

(b) $4(2 - x) = 9$

$$(2 - x) = \frac{9}{4}$$

Transposing 2 to RHS

$$-x = \frac{9}{4} - 2$$

$$= \frac{9 - 8}{4} = \frac{1}{4}$$

$$x = -\frac{1}{4}$$

(c) $4 + 5(p - 1) = 34$

$$5(p - 1) = 34 - 4$$

$$p - 1 = \frac{30}{5}$$

Transposing 1 to RHS

$$p = 6 + 1 = 7$$

(d) $34 - 5(p-1) = 4$
 $-5(p-1) = 4 - 34$

$$(p - 1) = \frac{-30}{-5}$$

Transposing -1 to RHS

$$p = 6 + 1 = 7.$$

Ques.23 Set up equations and solve them to find the unknown numbers in the following cases:

(a) Munna subtracts thrice the number of notebooks he has from 50, he finds the result to be 8.

(b) Ibenhal thinks of a number. If she adds 19 to it and divides the sum by 5, she will get 8.

(c) Anwar thinks of a number. If he takes away 7 from $\frac{5}{2}$ of the number, the result is $\frac{11}{2}$.

Ans.

(a) Let the number of note book be x (given)

$$50 - 3x = 8$$

Transposing 50 to RHS

$$-3x = 8 - 50$$

$$-3x = -42$$

$$x = \frac{42}{3}$$

$$= 14$$

(b) Let the number be x

$$\frac{19 + x}{5} = 8 \quad (\text{given})$$

$$19 + x = 40$$

Transposing 19 to RHS

$$x = 40 - 19$$

$$= 21$$

The number is 21

(c) Let the number be x

$$\frac{5}{2}x - 7 = \frac{11}{2} \quad (\text{given})$$

$$\frac{5x}{2} = \frac{11}{2} + 7$$

$$= \frac{11 + 14}{2}$$

$$x = \frac{25}{2} \times \frac{2}{5}$$

$$x = 5$$

the number is 5.

HOTS (SOLVED)

Ques.1 On her birthday, Sanya distributed balloons among her friends and is left with 3 balloons. If she had brought 33 balloons and each friend got 5 balloons, how many friends does Sanya have?

Ans. Let Sanya has x friends

$$5x + 3 = 33$$

$$5x = 33 - 3$$

$$5x = 30$$

$$x = 30/5 = 6$$

Thus, Sanya has 6 friends.

Ques.2 Sahil and Arman are brothers and have Rs.60 and Rs. 120 respectively. Sahil saves Rs. 7 per day and Arman saves Rs. 5 per day. In how many days will Sahil and Arman save the same amount of money?

Ans. Let in x days, they save the same amount of money.

$$7x + 60 = 5x + 120$$

$$\text{or } 7x - 5x = 120 - 60$$

$$\text{or } 2x = 60$$

$$\text{or } x = 60/2$$

$$\text{or } x = 30$$

Thus, They can save the same amount in 30 days.

HOTS (Unsolved)

Ques.1 Anchal is 12 years older than her sister. After 4 years, Anchal's age will be equal to thrice the age of her sister Manya. Find their ages.

Ans. Let the present age of Manya be x years. Thus, the present age of Anchal is $x + 12$ years. After 4 years, Manya's age will be $x + 4$ years and Anchal's age will be $x + 16$ years.

Now, according to the question.

$$x + 16 = 3(x + 4)$$

$$\text{or } x + 16 = 3x + 12$$

$$\text{or } 16 - 12 = 3x - x$$

or $4=2x$
 or $4/2=x$
 or $x=2$

Thus, Manya's age is 2 years and Anchal's age 14 years .

Ques.2 Two small jugs and one large jug can hold 8 cups of water. One large jug can hold 2 cups more than the small jug. Find how many cups of water each jug can hold.

Ans. Let a small jug can hold x cups of water. So, a large jug can hold $x+2$ cups of water
 According to the question,

$$2x + x + 2 = 8$$

or $3x + 2 = 8$
 or $3x = 8 - 2$
 or $3x = 6$
 or $x = 6/3$
 or $x = 2$

Thus, a small jug can hold 2 cups of water and a large jug can hold 4 cups of water.

VALUE BASED QUESTIONS

Ques.1 A horse and a cart together cost Rs. 1600. If the cost of a cart is one third of the cost of the horse, find the cost of the cart and horse separately, Owner sells the cart for Rs. 500 saving that he is selling at the cost price. Do you think he is lacking moral values? Explain the moral value lacking in him?

Ans. Let cost of the horse be Rs. x

Therefore, cost of the cart = Rs. $x/3$

Now, $x + x/3 = 1600$

or $3x + x/3 = 1600$

or $4x/3 = 1600$

or $4x = 1600 \times 3$

or $x = 1600 \times 3/4$

or $x = \text{Rs. } 1200$

Therefore, cost of the horse = Rs. 1200

$$\text{cost of the cart} = \text{Rs. } 1200/3 = \text{Rs. } 400$$

Yes, he is lacking honesty (moral value)

ACTIVITY

Title : Solving linear equation in one variable.

objective - After performing this activity the students will be able to solve linear equations in one variable experimentally.

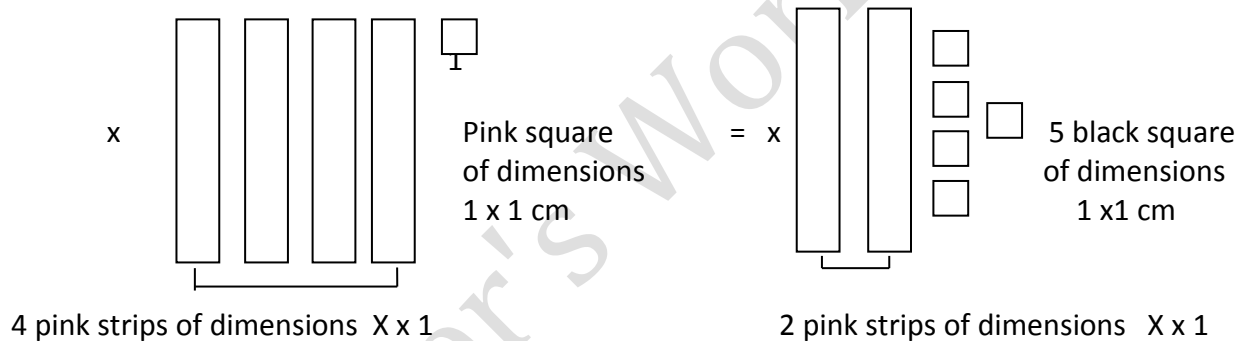
PREREQUISITE KNOWLEDGE

1. Simple addition and subtraction.
2. Balancing an equation.
3. Black square represents positive.
4. Pink square represents negative.
5. A black and pink square collectively represents zero.

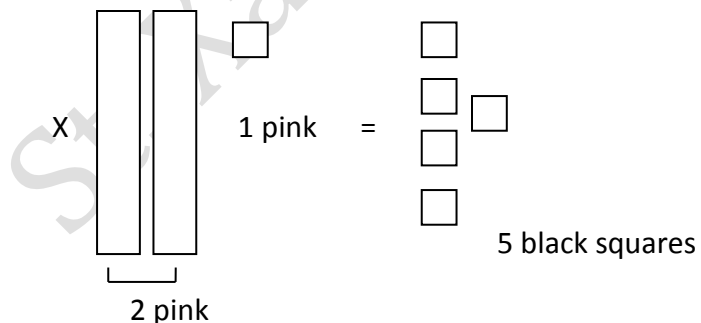
MATERIALS REQUIRED : Thick paper strips of two colours (pink and black) of dimension $X \times 1$. Thick paper squares of two colours (pink and black) of dimension $1 \text{ cm} \times 1 \text{ cm}$.

PROCEDURE

1. To solve a linear equation of one variable say $4x - 1 = 2x + 5$ experimentally.
2. Represent linear equation $4x - 1 = 2x + 5$ by using strips and squares as



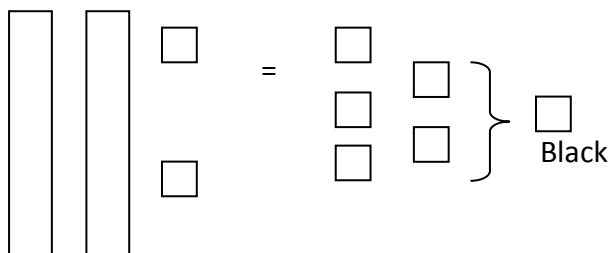
3. Removing 2 Pink strips of dimensions $X \times 1 \text{ cm}$ from L.H.S. as well from R.H.S. We get



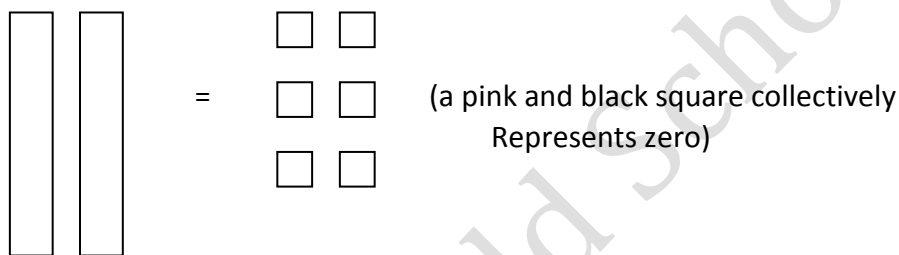
$$4x - 1 - 2x = 2x - 2x + 5$$

$$2x - 1 = 5$$

sides we get



We get



And



OBSERVATION

We observe that two pink strips of dimension $x \times 1$ is equal to 6 black squares of dimension 1×1 or one pink strip is equal to 3 black squares.

Now if we substitute $x = 3$ in the given linear equations

$$4x - 1 = 2x + 5,$$

We get ,

$$12 - 1 = 2 \times 3 + 5$$

$$11 = 11$$

$x = 3$ is the solution of given equation.

Which has been solved experimentally and verified.

Conclusion: students can solve:

(a) $2x + 5 = x + 3$

(b) $3x - 4 = 2x - 6$

(c) $9 - x = 5 + x$



VIVA:

Ques.1 What is an equation?

Ans. An algebraic expression having '=' sign is an algebraic equation.

Ques. 2 What do you understand by linear equation?

Ans. An algebraic expression having one variable and an equal to sign is a linear equation.

Ques. 3 For solving $2x + 5 = 3$, how many pink strips of dimension $X \times 1$ are required?

Ans. 2.

Ques. 4 How many squares and of what color are required in the beginning?

Ans. 8 squares of black color.

Ques. 5 What will be the solution of $2x + 5 = 3$.

Ans. -1 or a pink square.

St. Xavier's World School