ADDITIONAL® PRACTICE

MATHEMATICS 6

Answer Key

DNA education
New Delhi-110002

Chapter 01

Knowing our Numbers

WORKSHEET 1: COMPARING NUMBERS

1. Greatest 4-digit number = 9750

   Smallest 4-digit number = 5079

   Sum of numbers = 9750 + 5079

   = 14829

   Difference of numbers = 9750 – 5079

   = 4671

2. Greatest No. = 55555

   Smallest No. = 11111

   Sum of both numbers = 55555 + 11111

   = 66666

   Difference of both numbers

   = 55555 - 11111

   = 44444

3. (a) 83, 462 (b) 58,027

4. (a) 4, 972 (b) 41,002

5. 10,000 – 1 = 9,999

6. 9,899 + 1 = 9, 900

7. (a) 1,897; 2,635; 14,886; 28,543

   (b) 4,458; 43,708; 45,362; 48,926

   (c) 25, 785; 36,701; 98,405

   (d) 67,300; 67,400; 77,800; 77,900

8. (a) Greatest two digit number = 99

   Successor = 99 + 1 = 100

   (b) Smallest three digit number = 100

   Predecessor = 100 – 1 = 99

9. (a) Successor = 999 + 1 = 1000

   (b) Predecessor = 99,999 – 1 = 99,998

   (c) Successor = 9,856 + 1 = 9,857

   (d) Predecessor = 15,612 – 1 = 15,611

10. (a) 1,44,445; 1,44,344; 1,42,442; 1,40,344

    (b) 5,404, 999; 5,222,333; 5,011,003; 72,772

    (c) 5,404,999; 5,222,333; 5,011,003; 5,001,939

    (d) 4,444,444; 2,333,111; 2,222,222; 1,111,111

WORKSHEET 2: PLACE VALUE AND USE OF COMMAS

1. (a) Indian System:- 48, 75, 326

   Forty eight lakh seventy five thousand three hundred twenty-six.

   International System:- 4, 875, 326

   Four million eight hundred seventy five thousand three hundred twenty-six.

   (b) Indian System: - 83, 05, 208

   Eighty three lakh five thousand two hundred eight.

   International System: - 8,305, 208

   Eight million three hundred five thousand two hundred eight.

   (c) Indian System:- 9,37,00,40,210

   Nine hundred thirty seven crore forty thousand two hundred ten.

   International System :- 9,370,040,210

   Nine billion thirty seven hundred million forty thousand two hundred ten.

2. (a) 74, 28, 493 (b)8, 05, 20, 202

   (c) 93, 873, 586 (d)8, 002, 342, 100

3. (a) 60,000

(b) 40, 00, 000

(c) Place value of 5 in 5, 43, 26, 145

= 5,00, 00, 000; 5

Difference = 5, 00, 00, 000 – 5
= 4, 99, 99, 995

(d) Place value of 6 in 93, 60, 04, 010
= 60, 00, 000

Face value of 6 in 93, 60, 04, 010 = 6

Sum = 60, 00, 000 + 6 = 60,00, 006

(e) Place value of two nines in 6, 93, 89, 002

= 90, 00, 000; 9,000

Product = 90, 00, 000 × 9,000

= 81, 000, 000, 000

4. (a) 87, 345 = 8 × 10,000 + 7 × 1000 + 3 × 100 + 4 × 10 + 5 × 1

(b) 7, 80, 54, 001 = 7 × 1,00, 00, 000 + 8 × 10,00,000 + 0 × 100, 000 + 5 × 10,000

+ 4 × 1000 + 0 × 100 + 0 × 10 + 1 × 1

5. 10 lakhs make a million.

6. 10 million make a crore.

7. 999999 – 100000 + 1 = 900000

8. 10,00,023

9. 99,99,876

WORKSHEET 3: LARGE NUMBERS IN PRACTICE

1. (a) 1 m = 100 cm = 1000 millimeters

(b) 1 kg = 1000 g = 10, 00, 000 mg

(c) 1000 millilitres = 1 liters

(d) 1 cm = 10 mm

(e) 10 g = 1 decagram

(f) 1000 kg = 1 tonne

(g) 1 gram = 1000 milligrams

(h) 6 kilometers = 6,000 metres

(i) 12 metres = 12,000 mm.

2. Amount of ready made garments exported by India in two years = ₹ 65, 98, 23, 604
Amount of ready made garments exported in one year
= ₹ 32, 76, 58, 435
∴ Amount exported in the second year
= ₹ 65, 98, 23, 604 – ₹ 32, 76, 58, 435
= ₹ 33, 21, 65, 169

3. 20 Petrol tankers can be filled with = 6250 kl

1 Petrol tanker can be filled with = $\frac{6250}{20}$ kl

5 Petrol tankers can be filled with = $\frac{6250}{20} \times 5$ kl

= 1562.5 kl.

4. Distance between the garden and the farmer's house = 2 km 265 m

= 2000 m + 265 m [∴ 1 km = 1000 m]

= 2265 m

Distance covered both ways = 2 × 2265 m

= 4530 m

∴ Distance covered in a week = 7 × 4530 m

= 31710 m

= 31 km 710 m

5. Profit made by shopkeeper by selling clothes and shoes in a year = ₹ 62, 900

Profit from shoes = ₹ 23,800

∴ Profit from clothes = ₹ (62900 – 23,800)

= ₹ 39,100

6. The required multiplication = 6,231 × 58

The multiplication done by the student
= 6, 231 × 85

Difference = [6231 × 85] – [6231 × 58]

= 6231 [85 – 58]

= 6231 × 27

= 1,68, 237

Thus, student's answer is 1, 68, 237 more than the correct answer.

7. Price of the three flats = ₹ 26, 76, 885;

₹ 38, 90, 424; ₹ 4, 26, 65, 900

Total price of three flats =

₹	26,	76,	885
₹	38,	90	424
₹4,	26,	65,	900
₹4,	92,	33,	209

He paid brokerage of three flats = ₹ 65, 829

Total money spent for the flats = ₹ 4, 92, 33, 209 + 65, 829

= ₹ 4, 92, 99, 038

8. Total people in a village = 2,354

Each person donates to the 'Poor People Helping Fund' = ₹ 178

Total money collected = ₹ 178 × 2354

= ₹ 4, 19, 012

WORKSHEET 4: ESTIMATION

1. 500 2. 1500 3. 500

4. 100 5. 1200

6. (a) 6390 → 6400 (Nearest hundred)

18, 987 → 19,000

Sum = 6400 + 19000 = 25400

(b) 6390 → 6000 (Nearest thousand)

18,987 → 19000

Sum = 6000 + 19000 = 25000

7. 8, 432 → 8400 (Nearest hundred)

432 → 400

∴ Estimated difference = 8400 – 400

= 8,000

8. 872 × 549

872 → 900

549 → 500 (Nearest hundred)

∴ Estimated product = 900 × 500

= 450000

9. 4837 ÷ 235

⇒ 4837 → 4800

235 → 200

Estimated quotient = 4800 ÷ 200

= 24

10. Smallest 5 digit no. = 10,000 → 10,000 (Nearest thousand)

Greatest 5 digit no. = 99,999 → 1,00,000

Difference between the smallest and the greatest numbers = 1,00,000 – 10,000

= 90,000

11. No. of fruits = 408

No. of students = 17

∴ No. of fruits per student = $\frac{408}{17}$

= 24 → 20 (Nearest ten)

Each student got 25 fruits

12. No. of Stamps with Latika = 98

No. of Stamps given to Asif = 19

No. of Stamps left with Latika = 98 – 79

= 79 → 80 (Nearest ten)

WORKSHEET 5: USING BRACKETS

1. (a) (5 × 2) + 7

(b) (12 + 20) ÷ 8

(c) 55 × 4 (6 + 7)

(d) (13 + 4) × (40 – 30)

2. (8 – 5) × 7 → Situations

(a) Seven multiplied by the difference of eight and five.

(b) What is seven times the difference of eight and five?

(c) Seven children with ₹ 8 each went to market. Each of them bought pencils costing

₹ 5. What is the total money left with them?

3. (a) $8 \times (5 + 3)$

First Situation:- Eight multiplied by the sum of five and three.

Second Situation:- What is eight times the sum of five and three?

(b) $(8 \div 2) + (20 - 8)$

First Situation:- The sum of eight divided by two and eight subtracted from twenty.

Second Situation:- Quotient of eight and two added to the difference of twenty and eight.

4. (a) $110 \times 112 = (100 + 10) \times 112$

$= 100 \times 112 + 10 \times 112$

$= 11200 + 1120 = 12320$

(b) 306×204

$= (300 + 6) \times 204$

$= 300 \times 204 + 6 \times 204$

$= 61200 + 1224 = 62424$

(c) $88 \times 84 = (80 + 8) \times 84$

$= 80 \times 84 + 8 \times 84$

$= 6720 + 672 = 7392$

(d) $7 \times 405 = 7 \times (400 + 5)$

$= 7 \times 400 + 7 \times 5$

$= 2800 + 35$

$= 2835.$

(e) $99 \times 500 = (100 - 1) \times 500$

$= 100 \times 500 - 500$

$= 50000 - 500$

$= 49500.$

WORKSHEET 6: ROMAN NUMERALS

1. $238 = 200 + 30 + 8$

$= CC + XXX + VIII$

$= CC\ XXX\ VIII$

2. (a) XXX IV = 34

(b) CCIV = 204

3. MDCCCIV = 1804

MDCCIV = 1704

Man's age = MDCCCIV – MDCCIV

= 1804 – 1704

= 100 years

4. XXVII – XI – MMXVIII

5. MCCC = 1300

MDCC = 1700

So, MDCC is greater by

1700 – 1300 = 400

6. (a) CCXCIX

(b) 58

(c) DCCCLI

(d) 172

(e) MMDCV

(f) 1066

7. (a) XXXVI = 36

XXXIV = 34

so, XXXVI > XXXIV

(b) XCVII = 97

LXXXIX = 89

so, XCVII > LXXXIX

8. (a) MC + IX

= 1100 + 9 = 1109

(b) DC + XC + VIII = 600 + 90 + 8 = 698

(c) D + XC + VIII = 500 + 90 + 8 = 598

(d) M + DC + LXX + IX = 1000 + 600 + 70 + 9 = 1679

WORKSHEET (BASED ON COMPLETE CHAPTER)

1. (a) (i) 86330

   (b) (i) 500

   (c) (i) 1 million

   (d) (ii) D

2. (a) never subtracted

   (b) D and M

   (c) 500

   (d) 1000000 mg

3. (a) F

   (b) F

   (c) T

   (d) F

   (e) F

   (f) F

4. (a) Population of a town = 4, 50, 772

   Educated persons = 4,50, 772 ÷ 14

   = 32198

   ∴ Total educated persons in the town are 32198.

   (b) Total books sold = 5,496

   Books sold by Rahim= 3,168

   Books sold by Kareem= 5496 – 3168

   = 2328 books

   ∴ Total books sold by Kareem are 2328.

   (c) Bulbs made per day = 296

   Total days in December = 31

   ∴ Total bulbs made in December
   = 296 × 31

   = 9,176

   (d) Population of a town = 9,75,689

   A.T.Q.

   9,75,689 + 4,563 – 7,687

   = 9, 80, 252 – 7,687 = 9, 72, 565

   ∴ Population at the end of the second year is 9, 72, 565

   (e) Cost of 1 chair = ₹ 325

   Cost of 40 chairs = ₹ 325 × 40

   = ₹ 13000

   Cost of 1 table = ₹ 650

   Cost of 20 tables = ₹ 650 × 20

   = ₹ 13000

   Total amount = ₹ (13000 + 13000)

   = ₹ 26,000

Chapter 02

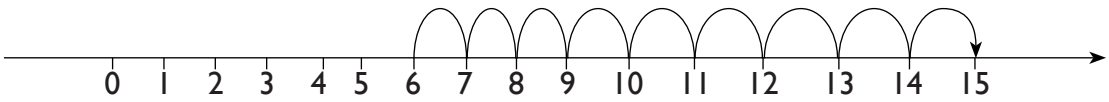
Whole numbers

WORKSHEET 1: WHOLE NUMBERS

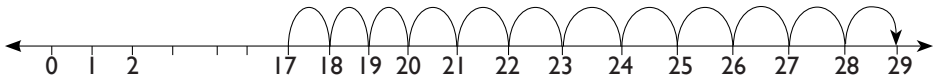
1. 0 is the smallest whole number. No, we can't write the greatest whole number.
2. (a) 2099 + 1 = 2100
   (b) 70,08,000 + 1 = 70,08,001
3. (a) 23,40,600 – 1 = 23,40,599
   (b) 3999 – 1 = 3, 998
4. 10,09,803, 10,09,804, 10,09,805, 10,09,806
5. 94,00,072, 94,00,071 94,00,070, 94,00,069
6. (a) 325 > 235 (b) 4000 = 4000 (c) 2107 > 1207
7. (a) F (b) F (c) F (d) T (e) F

WORKSHEET 2: NUMBER LINE

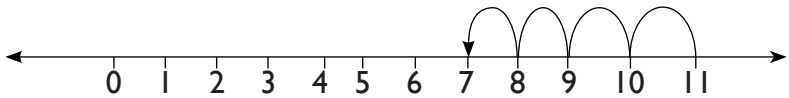
1. (a) 6 + 9 = 15



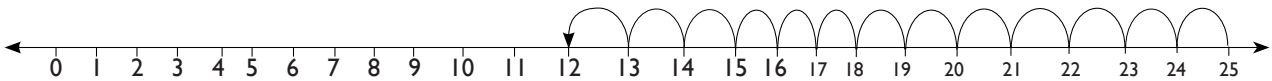
   (b) 17 + 12 = 29.



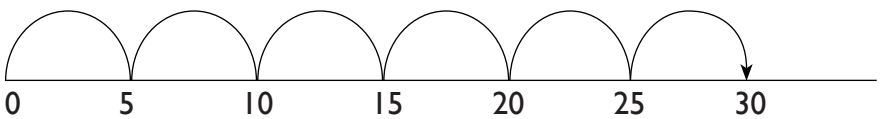
2. (a) 11– 4 = 7



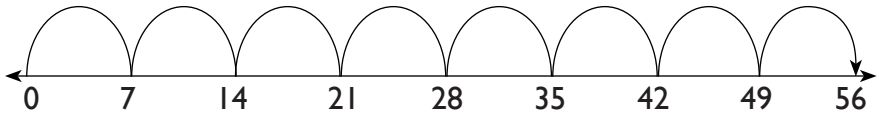
   (b) 25 – 13 = 12



3. (a) 5 × 6



(b) 7×8



4. (a) $2 + 2 + 2 + 2 + 2 + 2 = 2 \times 6 = 12$

(b) $4 + 3 + 3 = 10$

(c) $4 + 4 = 4 \times 2 = 8$

WORKSHEET 3: PROPERTIES OF WHOLE NUMBERS

1. (a) 0 (b) 1

(c) addition and multiplication

(d) 0 (e) Whole number itself

(f) Whole number (g) 0

(h) 542 (i) multiplied

2. (a) $545 \times 0 = 0$

(b) $45234 + 0 = 45234$

(c) $9 + 8211 = 8211 + 9$

(d) $9558 \times 1 = 9558$ (e) $440 \times 1 = 440$

(f) $5500 + 0 = 5500$ (g) $890 - 890 = 0$

(h) $900 - 900 = 0$

(i) $125 + (413 + 517) = (125 + 413) + 517$

3. (a) $637 + 363 + 908$

$= 1000 + 908 = 1908$

(b) $(2062 + 1238) + (453 + 647)$

$3300 + 1100 = 4400$

(c) $(187 + 313) + (576 + 424)$

$= 500 + 1000 = 1500$

4. (a) $(700 + 19) \times 276$

$= 700 \times 276 + 19 \times 276$

$= 193200 + 5244$

$= 198444$

(b) $(500 + 10) \times 98$

$= 500 \times 98 + 10 \times 98$

$= 49000 + 980 = 49980$

(c) $289 \times (625 \times 16)$

$= 289 \times 10000 = 2,890,000$

(d) $(625 \times 8) \times (20 \times 50)$

$= 5000 \times 1000 = 50,00,000$

5. (a) $408 (6 + 4) = 408 \times 10 = 4080$

(b) $6784 \times (196 - 96)$

$= 6784 \times 100 = 678400$

(c) $583 \times (36 + 17 - 48 - 5)$

$= 583 \times (53 - 53)$

$= 583 \times 0 = 0$

(d) $23,485 \times (79 + 21)$

$= 23,485 \times 100$

$= 2348500$

6. Largest number of six-digits = 999999

Largest number of four-digits = 9999

Difference = 9,99,999 – 9,999

= 9,90,000

7. 10,00,000 – 15,738

= 9,84,262

$$\begin{array}{r} 10,00,000 \\ -15,738 \\ \hline 984262 \end{array}$$

8. Total students in a class = 70

Students who play cricket = 37

Students who play hockey = 12

∴ Students who play neither hockey nor cricket = 70 – (37 + 12)

= 70 – 49 = 21.

9. Money donated by each student for the relief fund = ₹ 35

Strength of the school = 943

Total amount donated = ₹ 35 × 943

= ₹ 33,005

10. Total money in Radhika's bank account

= ₹ (2050 – 1505 + 405)

= ₹ (2050 + 405 – 1505)

= ₹ (2455 – 1505)

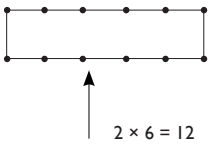
= ₹ 950

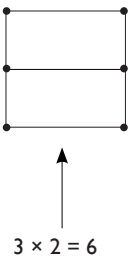
WORKSHEET 4: PROPERTIES OF WHOLE NUMBERS

1. (a) 4 and 9

(b) 6 and 10

(c) 3 and 6

2. 

3. 

4. 28, 36, 45, 55, 66 can be arranged as triangles.

5. 64, 81, 100, 121, 144 can be arranged as squares

6. (a) 9 × 9 + 7 = 88

98 × 9 + 6 = 888

987 × 9 + 5 = 8888

9876 × 9 + 4 = 88888

(b) 125 + 9 = 125 + 10 – 1 = 135 – 1 = 134

125 – 9 = 125 – 10 + 1 = 115 + 1 = 116

125 + 99 = 125 + 100 – 1 = 225 – 1

= 224

125 – 99 = 125 – 100 + 1 = 25 + 1 = 26

(c) 1 × 8 + 1 = 9

12 × 8 + 2 = 98

123 × 8 + 3 = 987

1234 × 8 + 4 = 9876

12345 × 8 + 5 = 98765

123456 × 8 + 6 = 987654

7. (a) 10 × 6 – 45 = 15

11 × 7 – 60 = 17

12 × 8 – 77 = 19

(b) $54 \times 25 = 54 \times \frac{50}{2} = 27 \times 50 = 270 \times 5$

$54 \times 35 = 54 \times \frac{70}{2} = 27 \times 70$

$= 270 \times 7$

$54 \times 45 = 54 \times \frac{90}{2} = 27 \times 90$

$= 270 \times 9$

WORKSHEET (BASED ON COMPLETE CHAPTER)

1. (a) i) (b) iii)

(c) iii) (d ii)

(e) ii) (f) i)

2. (a) T (b) T (c) T

(d) F (e) T

3. (a) line

(b) 96 x (120 + 5)

= 96 x 125

= 12000

(c) Patterns

(d) Whole number

(e) quotient

(f) 99998 - 10000 = 89998

4. (a) (537 + 463) + 807

= 1000 + 807

= 1807

(b) (i) (250 × 8) × (60 × 50)

= 2000 × 3000 = 60,00,000

(ii) (8 × 125) × (40 × 25)

= 1000 × 1000 = 10,00,000

(c) (i) 52,785 × (75 + 25)

= 52,785 × 100 = 52,78,500

(ii) 2,784 + (9213 × 0)

= 2784 + 0 = 2784

(iii) 738 × (145 – 45)

= 738 × 100 = 73800

(iv) 7842 × (100 – 1)

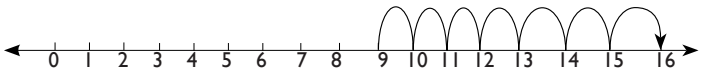
= 7842 × 100 – 7842

= 784200 – 7842 = 776358

(v) 5764 + (340 + 170)

= 5764 + 510 = 6274

5. 9 + 7 = 16



6. $500 = 10 \times 50 = 20 \times \frac{50}{2} = 20 \times 25$

$700 = 10 \times 70 = 20 \times \frac{70}{2} = 20 \times 35$

$900 = 10 \times 90 = 20 \times \frac{90}{2} = 20 \times 45$

7. Selling price of 6 books = ₹ 150

Selling price of 1 book $= \frac{150}{6}$

= ₹ 25

8. Least six digit number = 103579

Greatest six digit number = 986420

Now, 986420 – 103579

= 882841

So, 882841 must be added to the least number to get the greatest number.

9. Quotient = 132, Remainder = 55, Divisor = 67

∴ Dividend = Division × quotient + Remainder

= 67 × 132 + 55

= 8844 + 55 = 8899

10. Year's rent = ₹ 24,000

Monthly rent = ₹ 24,000 ÷ 12

= ₹ 2,000

11. Cost of a TV set = ₹ 2500

∴ Cost of 30 TV sets = ₹ 2500 × 30

= ₹ 75000

Cost of a washing machine = ₹ 5120

∴ Cost of 20 washing machines = 5120 × 20

= ₹ 102400

Total money spent by him

= ₹ 75000 + ₹ 102400

= ₹ 177400

12. Speed = 85 km /h

Time = 96 hours

Distance = S × T

= 85 × 96

= 8160 km.

13. Vendor supplies 62 litres of milk at ₹ 48 per litre

Vendor supplies milk = ₹ 48 × 62

= ₹ 2976

Vendor supplies 38 litres of milk = ₹ 52 per litre

Vendor supplies milk = ₹ 52 × 38 = ₹ 1976

Total money due to the vendor per day

= ₹ (2976 + 1976)

= ₹ 4952

Chapter
03 Playing with Numbers

WORKSHEET 1: FACTORS AND MULTIPLES

1. (a) prime number (b) infinite
   (c) finite (d) multiple
   (e) itself

2. (a) A number for which sum of all its factors is equal to twice the number is called a perfect number. For example : 6 and 28 are perfect number.

3. (a) $15 = 1 \times 15$; $15 = 3 \times 5$

   The factors of 15 are 1, 3, 5 and 15.

   (b) $17 = 1 \times 17$

   The factors of 17 are 1 and 17.

   (c) $42 = 1 \times 42$; $42 = 2 \times 21$; $42 = 3 \times 14$

   $42 = 6 \times 7$;

   The factors of 42 are 1, 2, 3, 6, 7, 14, 21 and 42.

   (d) $64 = 1 \times 64$; $64 = 2 \times 32$; $64 = 4 \times 16$

   $64 = 8 \times 8$;

   The factors of 64 are 1, 2, 4, 8, 16, 32 and 64.

4. (a) The required multiples are:

   $7 \times 1 = 7$; $7 \times 2 = 14$; $7 \times 3 = 21$; $7 \times 4 = 28$; $7 \times 5 = 35$
   i.e. 7, 14, 21, 28, 35

   (b) The required multiples are :

   $19 \times 1 = 19$; $19 \times 2 = 38$; $19 \times 3 = 57$; $19 \times 4 = 76$; $19 \times 5 = 95$
   i.e; 19, 38, 57, 76, 95

   (c) The required multiples are:

   $25 \times 1 = 25$; $25 \times 2 = 50$; $25 \times 3 = 75$; $25 \times 4 = 100$; $25 \times 5 = 125$
   i.e. 25, 50, 75, 100, 125

   (d) The required multiples are :

   $38 \times 1 = 38$; $38 \times 2 = 76$; $38 \times 3 = 114$; $38 \times 4 = 152$; $38 \times 5 = 190$
   i.e. 38, 76, 114, 152, 190

5. (a) 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96

   (b) 15, 30, 45, 60, 75, 90

6. (a) → (iii) (b) → (ii)
   (c) → (v) (d) → (i)
   (e) → (iv)

WORKSHEET 2: PRIME AND COMPOSITE NUMBERS

1. (a) F (b) T (c) F
   (d) F (e) F

2. Number having exactly two factors 1 and the number itself are called prime numbers.

   First Ten prime numbers = 2, 3, 5, 7, 11, 13, 17, 19, 23, 29

3. One even number is prime i.e. 2.

4. Three consecutive odd prime numbers are known as prime triplet. For ex. (3, 5, 7) is the only prime triplet.

5. Composite numbers are the numbers that have more than two factors. Yes, a composite number can be odd.

6. Two numbers are said to be co-prime if they do not have a common factor other than 1. For example : (2,3) (3, 4) (4,5)

7. (a) 7 + 11 (b) 11 + 23
   (c) 19 + 29 (d) 31 + 37

8. (a) 3 + 7

(b) 3 + 11

(c) 17 + 23

(d) 11 + 41

9. (a) 7 + 11 + 17

(b) 7 + 13 + 23

(c) 7 + 31 + 19

(d) 3 + 7 + 11

10. (a) 2 + 13

(b) 13 + 17

(c) 7 + 13

(d) 17 + 23

WORKSHEET 3: TEST FOR DIVISIBILITY OF NUMBER

1.

Number	2	4	8	5	10	3	7	6	9	11
2450	✓	×	×	✓	✓	×	✓	×	×	×
59,628	✓	✓	×	×	×	✓	×	✓	×	×
6250	✓	×	×	✓	✓	×	×	×	×	×
9,01,674	✓	×	×	×	×	✓	×	✓	✓	×
1,36,976	✓	✓	✓	×	×	×	✓	×	×	×
3,10,100	✓	✓	×	✓	✓	×	✓	×	×	×
4,38,750	✓	×	×	✓	✓	✓	×	✓	✓	×
10,20,531	×	×	×	×	×	✓	×	×	×	×
7,86,532	✓	✓	×	×	×	×	×	×	×	×
7,01,69,800	✓	✓	✓	✓	✓	×	×	×	×	×
6,69,216	✓	✓	✓	×	×	✓	×	✓	×	×
10,824	✓	✓	✓	×	×	✓	×	✓	×	✓

2. (a) (ii) 4896 is divisible by 8

(b) (i) 50391 is divisible by11.

3. (a) 157* by 2

A number is divisible by 2, it its units digit is 0, 2, 4, 6 or 8

$\Rightarrow$ 1570 by 2 = 785.

(b) 6511*2 by 9

A number is divisible by 9 if the sum of the digits is divisible by 9.

Sum of the digits = 6 + 5 + 1 + 1 + $\underline{3}$ + 2

= 18, which is divisible by 9.

$\Rightarrow$ 651132 by 9 = 72348

(c) 637*8 by 8

A number is divisible by 8 if the last three digits of the number are divisible by 8

$\Rightarrow$ 637 $\underline{2}$ 8 ÷ 8

$\therefore$ Its last three digits are divisible by 8

$\Rightarrow$ 728 ÷ 8 = 91
63728 ÷ 8 = 7966

(d) 215*173 by 11

A number is divisible by 11 if the difference of the sum of the digits at even places and the sum of the digits at odd places is divisible by 11.

Sum of digits at even places = Sum of digits at odd places

2 + 5 + 1 + 3 = 1 + ___ + 7

11 = 3 + 8

⇒ 2153173 by 11 = 195743

(e) 2*7* by 5

The last digit of the given number must be 0 or 5 to make it divisible by 5. As we need to fill the blanks with the smallest digits so, 0 will fill both the blanks to make it divisible by 5.

⇒ 2070 by 5 = 414.

(f) 4129* by 3.

A number is divisible by 3 if the sum of the digits is divisible by 3.

Sum of the digits = 4 + 1 + 2 + 9 + 2 = 18, divisible by 3

⇒ 41292 by 3 = 13764

(g) 7158* by 6

A number is divisible by 6 if the given number is divisible by both 2 and 3.

⇒ 71586 by 6 = 11931

(h) 260*2 by 4

A number is divisible by 4 if the last two digits of the number are divisible by 4.

26012 ÷ 4

As 12 is divisible by 4, 26012 is divisible by 4.

⇒ 26012 by 4 = 6503

(i) 1305* by 10

A number is divisible by 10 if the unit digit is 0.

13050 ÷ 10 = 1305

As the unit digit is 0, 13050 is divisible of 10.

⇒ 13050 by 10 = 1305

4. (a) T (b) T
(c) T (d) F

5. (d) All of these are prime numbers

WORKSHEET 4: COMMON FACTORS AND MULTIPLES

1. (a) co – prime (b) 24, 36, 48
(c) 1, 23 (d) co – prime
(e) 28, 56, 84

2.

Number	Common Factors
28 and 56	1, 2 and 4
14 and 2	1, 2 and 7
391, 425 and 527	1 and 17
12, 15, 20	1

3. 90, 91, 92, 93, 94, 95, 96

4. (b) and (c) have 15 as their factor

5. (a) T (b) F (c) F
(d) F (e) T

6. 12, 36 and 27

Factors of 12 are : 1, 2, 3, 4, 6 and 12
Factors of 36 are : 1, 2, 3, 4, 6, 9, 12 and 36
Factors of 27 are : 1, 3, 9 and 27
Common factors of 12, 36 and 27 are 1 and 3.

7. (a) 17 and 31
Factors of 17 are 1, 17
Factors of 31 are 1, 31
Since, their common factor is 1
Thus, 17 and 31 are co-prime numbers.

(b) 30 and 50
Factors of 30 are : 1, 2, 5, 6, 15 and 30
Factors of 50 are : 1, 2, 5, 10, 25 and 50
Since, their common factors are 1,2 and 5
Thus, 30 and 50 are not co-prime numbers.

(c) 48 and 60
Factors of 48 = 1, 2, 3, 4, 6, 8, 12, 24 and 48

Factors of 60 = 1, 2, 3, 4, 5, 6, 10, 15, 20, 30 and 60

Since, their common factors are 1, 2, 3, 4 and 6

Thus, 48 and 60 are not co-prime numbers.

(d) 25 and 87

Factors of 25 = 1, 5

Factors of 87 = 1, 3, 29

Since, their common factor is 1.

Thus, 25 and 87 are co-prime numbers.

(e) 53 and 33

Factors of 53 = 1, 53

Factors 33 = 1 3, 11

Since, their common factor is 1.

Thus, 53 and 33 are co-prime numbers.

(f) 18 and 81

Factors of 18 = 1, 2, 3, 6, 9 and 18

Factors of 81 = 1, 3, 9, 27 and 81

Since, their common factors are 1, 3 and 9

Thus, 18 and 81 are not co-prime numbers.

WORKSHEET 5: SOME MORE DIVISIBILITY RULES

1. (a) factors (b) divisible
   (c) product (d) 2 and 3

2. (a) Sum of two numbers = 45 + 60 = 115

   Difference of two numbers = 60 – 45 = 15

   ∴ 5 is a factor of 115 and 15.

   (b) Sum of two numbers = 84 + 112 = 196

   Difference of two numbers = 112 – 84 = 28

   ∴ 7 is a factor of 196 and 28.

   (c) Sum of two numbers = 625 + 500 = 1125

   Difference of two numbers = 625 – 500 = 125

   ∴ 25 is a factor of 1125 and 125

   (d) Sum of two numbers = 483 + 525 = 1008

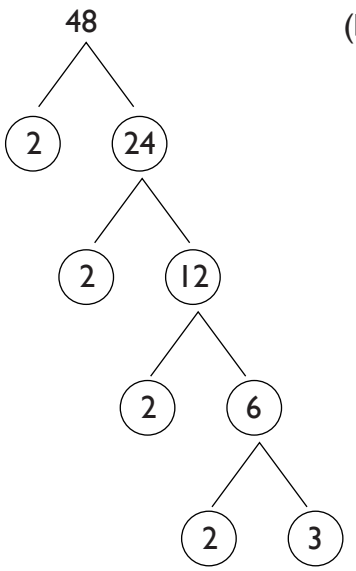
   Difference of two numbers = 525 – 483 = 42

   ∴ 21 is a factor of 483 and 42.

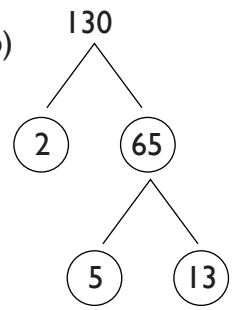
3. (a) T (b) T
   (c) F (d) T
   (e) F (f) T

WORKSHEET 6: PRIME FACTORISATION

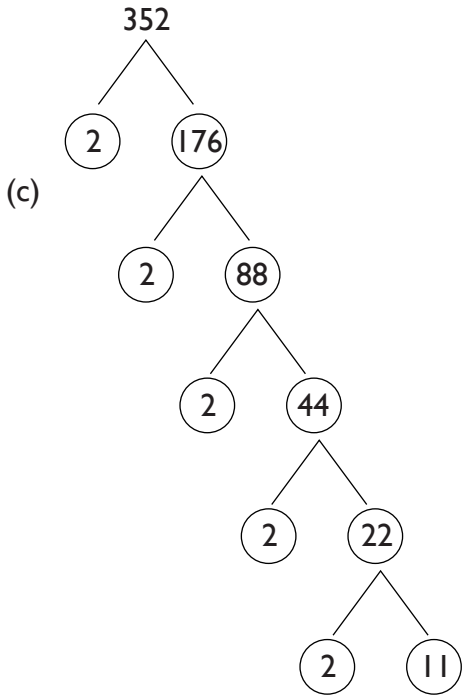
1. (a)



(b)



(c)



2. Greatest 4 – digit number = 9999

Prime factors of 9999 = 3 × 3 × 11 × 101

3	9999
3	3333
11	1111
101	101
	1

3. Smallest 5-digit number = 10000

2	10000
2	5000
2	2500
2	1250
5	625
5	125
5	25
5	5
	1

Prime factors of 10000 = 2 × 2 × 2 × 2 × 5 × 5 × 5 × 5

4. (a) 420

2	420
2	210
3	105
5	35
7	7
	1

Prime factorisation of 420
= 2 × 2 × 3 × 5 × 7

(b) 1836

2	1836
2	918
3	459
3	153
3	51
17	17
	1

Prime factorisation of 1836
= 2 × 2 × 3 × 3 × 3 × 17

(c) 980

2	980
2	490
5	245
7	49
7	7
	1

Prime factorisation of 980
= 2 × 2 × 5 × 7 × 7

WORKSHEET 7: HCF AND LCM

1. (a) 320, 480

Factors of 320
= 2 × 2 × 2 × 2 × 2 × 2 × 5

Factors of 480
= 2 × 2 × 2 × 2 × 2 × 3 × 5

∴ Common factors are:
2 × 2 × 2 × 2 × 2 × 5 = 160

∴ HCF of 320 and 480 = 160

2	320
2	160
2	80
2	40
2	20
2	10
5	5
	1

2	480
2	240
2	120
2	60
2	30
3	15
5	5
	1

(b) 289, 391

Factors of 289

= 17 × 17

17	289
17	17
	1

Factors of 391

= 17 × 23

17	391
23	23
	1

∴ Common factor is : 17

∴ HCF of 289, 391= 17

2	1440
2	720
2	360
2	180
2	90
3	45
3	15
5	5
	1

2	1800
2	900
2	450
3	225
3	75
5	25
5	5
	1

(c) 625, 3125, 15625

Factors of 625

= 5 × 5 × 5 × 5

Factors of 3125

= 5 × 5 × 5 × 5 × 5

Factors of 15625

= 5 × 5 × 5 × 5 × 5 × 5

Common factors are:

= 5 × 5 × 5 × 5 = 625

∴ HCF of 625, 3125 and 15625 = 625

5	3125
5	625
5	125
5	25
5	5
	1

5	15625
5	3125
5	625
5	125
5	25
5	5
	1

2. (a) 1045, 1520

HCF of 1045 and 1520 is 95

$$\begin{array}{r} 1045\overline{)1520}(1 \\ 1045 \\ \hline 475\overline{)1045}(2 \\ 950 \\ \hline 95\overline{)950}(10 \\ 950 \\ \hline \times \end{array}$$

(b) 252, 576

HCF of 252 and 576 is 36

$$\begin{array}{r} 252\overline{)576}(2 \\ 504 \\ \hline 72\overline{)252}(3 \\ 216 \\ \hline 36\overline{)72}(2 \\ 72 \\ \hline \times \end{array}$$

(c) 2241, 8217, 747

HCF of 2241, 8217 and 747 is 747.

$$\begin{array}{r} 2241\overline{)8217}(3 \\ 6723 \\ \hline 1494\overline{)2241}(1 \\ 1494 \\ \hline 747\overline{)1494}(2 \\ 1494 \\ \hline \times \end{array}$$

3. (a) 150, 180

Factors of 150

= 2 × 3 × 5 × 5

Factors of 180

= 2 × 2 × 3 × 3 × 5

LCM of 150 and 180

= 2 × 2 × 3 × 3 × 5 × 5

= 900

2	150
3	75
5	25
5	5
	1

2	180
2	90
3	45
3	15
5	5
	1

(b) 1440, 1800, 1920

Factors of 1440

= 2 × 2 × 2 × 2 × 2 × 3 × 3 × 5

Factors of 1800

= 2 × 2 × 2 × 3 × 3 × 5 × 5

Factors of 1920

= 2 × 2 × 2 × 2 × 2 × 2 × 3 × 5

LCM of 1440, 1800, 1920

= 2 × 2 × 2 × 5 × 5 × 3 × 3 × 2 × 2 × 2 × 2 × 2

= 28800

2	1920
2	960
2	480
2	240
2	120
2	60
2	30
3	15
5	5
	1

(c) 1102, 1421, 2436

Factors of 1102

= 2 × 19 × 29

Factors of 1421

= 7 × 7 × 29

Factors of 2436

= 2 × 2 × 3 × 7 × 29

HCF of 1102, 1421, 2436 is

= 29

LCM of 1102, 1421, 2436 is 323988

2	1102
19	551
29	29
	1

7	1421
7	203
29	29
	1

2	2436
2	1218
3	609
7	203
29	29
	1

4. (a) 108, 135

LCM of 108 and 135

= 2 × 2 × 3 × 3 × 3 × 5

2	108 – 135
2	54 – 135
3	27 – 135
3	9 – 45
3	3 – 15
5	1 – 5
	1 – 1

= 540

(b) 243, 351, 432, 486

2	243 – 351 – 432 – 486
2	243 – 351 – 216 – 243
2	243 – 351 – 108 – 243
2	243 – 351 – 54 – 243
3	243 – 351 – 27 – 243
3	81 – 117 – 9 – 81
3	27 – 39 – 3 – 27
3	9 – 13 – 1 – 9
3	3 – 13 – 1 – 3
13	1 – 13 – 1 – 1
	1 – 1 – 1 – 1

LCM of 243, 357, 432, 486 = 2 × 2 × 2 × 2 × 3 × 3 × 3 × 3 × 3 × 13 = 50544

(c) 108, 96, 72, 54, 36

2	108 – 96 – 72 – 54 – 36
2	54 – 48 – 36 – 27 – 18
2	27 – 24 – 18 – 27 – 9
2	27 – 12 – 9 – 27 – 9
2	27 – 6 – 9 – 27 – 9
3	27 – 3 – 9 – 27 – 9
3	9 – 1 – 3 – 9 – 3
3	3 – 1 – 1 – 3 – 1
	1 – 1 – 1 – 1 – 1

LCM of 108, 96, 72, 54, 36 = 2 × 2 × 2 × 2 × 2 × 3 × 3 × 3 = 864

5. (a) 1 (b) least (c) HCF

(d) product (e) a × b

6. (a) The common factor of two consecutive numbers is always 1.

∴ HCF of two consecutive numbers = 1

7. The common factor of two prime numbers is always 1.

HCF of two prime numbers = 1

8. 203 – 5 = 198

321 – 6 = 315

We know, the greatest number which divides 203 and 321 leaving remainder 5 and 6 respectively will be the HCF of 198 and 315.

198)315(1
198
117)198(1
117
81)117(1
81
36)81(2
72
9)36(4
36
×

∴ Greatest number which divides 203 and 321 leaving remainder 5 and 6 respectively is 9.

9. The longest tape must be the HCF of 276 cm, 1242 cm and 138 cm

∴ HCF of 1242 and 276

276)1242(4
1104
138)276(2
276
×

∴ The HCF of 1242 and 276 is 138

Next, the HCF of 138 and 138 is 138

∴ The length of the longest tape is 138 cm.

10. (a) Length of the room = 1155 cm

Breadth of the room = 735 cm

The largest tile will be the HCF of 1155 and 735

735)1155(1
735
420)735(1
420
315)420(1
315
105)315(3
315
×

Thus, the largest tile required is 105 cm.

11. The maximum capacity of container will be equal to the HCF of 391, 425 and 527.

= HCF of 425 and 527

$$425\overline{)527}(1$$
$$425$$
$$102\overline{)425}(4$$
$$408$$
$$17\overline{)102}(6$$
$$102$$
$$\times$$

HCF of 425 and 527 is 17

$\Rightarrow$ HCF of 17 and 391 is

$$17\overline{)391}(23$$
$$34$$
$$51$$
$$51$$
$$\times$$

The maximum capacity of container is 171.

12.

2	16 – 24 – 40
2	8 – 12 – 20
2	4 – 6 – 10
2	2 – 3 – 5
3	1 – 3 – 5
5	1 – 1 – 5
	1 – 1 – 1

LCM = 2 × 2 × 2 × 2 × 3 × 5 = 240

The lowest natural number which when divided by 16, 24 and 40 leaves remainder 8
= 240 +8
= 248

13. LCM = 2 × 2 ×5 × 7 = 140

∴ The next ring of four bells ringing together will be 140 seconds after 10 O'clock i.e. 10:02:20

2	5,7,20,28
2	5,7,10,14
5	5,7,5,7
7	1,7,1,7
	1,1,1,1

WORKSHEET (BASED ON COMPLETE CHAPTER)

1. (a) (i) (b) (iv) (c) (ii) (d) (i)
(e) (i) (f) (iii) (g) (ii)

2. (a) 1 (b) sum (c) 2, 4, 6, 8, 10
(d) 21 (e) 72

3. (a) 90,20,814

Sum of digits in odd places = 9 + 2 + 8 + 4 = 23

Sum of digits in even place = 0 + 0 + 1 = 1

Difference of the two sums = 23 – 1 = 22

Which is divisible by 11.

∴ 90,20,814 is divisible by 11

(b) 2241, 8217, 747

Sum of digits in odd places = 2 + 4 + 8 + 1 + 7 + 7 = 29

Sum of digits in even place = 2 + 1 + 2 + 7 + 4 = 16

Difference of the two sums = 29 - 16 = 13

∴ 2241, 8217, 747 is not divisible by 11.

4. (a) 216, 1176

216 = 2 × 2 × 2 × 3 × 3 × 3

1176 = 2 × 2 × 2 × 3 × 7 × 7

2	216
2	108
2	54
3	27
3	9
3	3
	1

2	1176
2	588
2	294
3	147
7	49
7	7
	1

common factors
= 2 × 2 × 2 × 3 = 24

∴ HCF = 24

(b) 2241, 8217, 747

2241 = 3 × 3 × 3 × 83

8217 = 3 × 3 × 11 × 83

3	2241
3	747
3	249
83	83
	1

3	8217
3	2739
11	913
83	83
	1

747 = 3 × 3 × 83

3	747
3	249
83	83
	1

Common factors
= 3 × 3 × 83 = 747

∴ HCF = 747

5. (a) 1, 01, 57, 31, 079

3	1 – 1 – 57 – 31 – 79
19	1 – 1 – 19 – 31 – 79
31	1 – 1 – 1 – 31 – 79
79	1 – 1 – 1 – 1 – 79
	1 – 1 – 1 – 1 – 1

$\therefore$ LCM = 3 × 19 × 13 × 79
= 1,39,393

(b) 24, 1, 68, 266

2	24 – 1 – 68 – 266
2	12 – 1 – 34 – 133
2	6 – 1 – 17 – 133
3	3 – 1 – 17 – 133
17	1 – 1 – 17 – 133
7	1 – 1 – 1 – 133
19	1 – 1 – 1 – 19
	1 – 1 – 1 – 1

$\therefore$ LCM = 2 × 2 × 2 × 3 × 17 × 7 × 19
= 54,264

6. Twin prime number = (41, 43) (43, 47) (41, 47)

7. 11 is a prime number greater then 10.
$\therefore$ Units place digit is 1.

8. To find LCM 8, 15 and 21 we have

2	8 – 15 – 21
2	4 – 15 – 21
2	2 – 15 – 21
3	1 – 15 – 21
5	1 – 5 – 7
7	1 – 1 – 7
	1 – 1 – 1

LCM = 2 × 2 × 2 × 3 × 5 × 7 = 840

Since all other multiples of 840 will also be divisible by 8, 15 and 21. But we need the greatest number which is a multiple of 840.

$$840\overline{)17576}\,(2$$
$$\underline{1680}$$
$$776$$

$\therefore$ 17576 + 840 - 776 = 17640.

The required number is 17640.

9. HCF = 16

LCM = 320

Let the other number = x

First number = 64

We know that product of two numbers
= HCF × LCM

$\Rightarrow$ 64 × x = 16 × 320

$\Rightarrow x = \frac{16 \times 320}{64} = 80$

Hence, other number = 80

10. LCM of 2, 4, 5 and 11

LCM = 2 × 2 × 5 × 11

= 4 × 55 = 220

2	2 – 4 – 5 – 11
2	1 – 2 – 5 – 11
5	1 – 1 – 5 – 11
11	1 – 1 – 1 – 11
	1 – 1 – 1 – 1

Since, 220 is the smallest number which is divisible by 2, 4, 5 and 11.

$\Rightarrow$ 100000 ÷ 220

$\Rightarrow$
$$220\overline{)100000}\,(454$$
$$\underline{880}$$
$$1200$$
$$\underline{1100}$$
$$1000$$
$$\underline{880}$$
$$120$$

$\therefore$ The multiple of 220 which is nearest to 100000 is 100000 – 120 + 220 = 100100

Second number = 100100 – 220
= 99880

Hence, the two numbers nearest to 100000 which are exactly divisible by each 2, 4, 5 and 11 are 100100 and 99880.

11. LCM of 106, 159 and 265

$= 2 \times 5 \times 3 \times 53$

$= 30 \times 53 = 1590$

$\therefore$ Minimum number of rooms required

$= 1590$

12. LCM of 35, 40 and 25

$= 2 \times 2 \times 2 \times 5 \times 5 \times 7$

$= 8 \times 25 \times 7 = 1400$

2	35 – 40 – 25
2	35 – 20 – 25
2	35 – 10 – 25
5	35 – 5 – 25
5	7 – 1 – 5
7	7 – 1 – 1
	1 – 1 – 1

13.

2	250 – 400 – 500
2	125 – 200 – 250
2	125 – 100 – 125
2	125 – 50 – 125
5	125 – 25 – 125
5	25 – 5 – 25
5	5 – 1 – 5
	1 – 1 – 1

$\therefore$ Least quantity of Basmati rice

$= 2 \times 2 \times 2 \times 2 \times 5 \times 5 \times 5$

$= 16 \times 125$

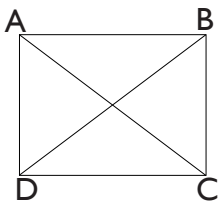
$= 2000$ g.

Chapter 04

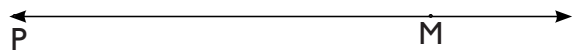
Basic Geometrical Ideas

WORKSHEET 1: POINTS, LINE SEGMENTS, LINES AND RAYS

1. (a) point (b) plane
   (c) parallel (d) same point
   (e) collinear
2. (a) F (b) T (c) T
   (d) T (e) F (f) T
3. Collinear points = B, D, I, J, M, R and S; No non collinear points are present in the given figure.
4. (a) Collinear points = B, C, D
   (b) Concurrent lines = Bm and Dn
   (c) Pair of interesting lines = $\overleftrightarrow{mB}$ and $\overrightarrow{nD}$
   (d) A
5. (a) l, m and n are parallel lines
   (b) l B, m C, and nO are interesting lines
   (c) ACO
   (d) AO
   (e) APQ
   (f) P, Q, R, A, C and O
6. (a) 6
   (b) AB, BC, CD, AB, AC, BD
   (c) CD, BC, AC



7. It is not possible for a line to have a mid point because lines extend indefinitely in both directions.
8. (a) Yes (b) Yes
9. Edges of a black board, the edges of a table, the edges of a scale.
10.



WORKSHEET 2: CURVES, POLYGONS AND ANGLES

1. (a) (i) and (iii) (b) (ii) and (iv)
2. (a) A, O and B (b) C and D
   (c) E and F
3.  The given figure is a polygon.

   The other two figures can never be a polygon as one figure is a circle & one is an open curve.
4. Quadrilateral, Pentagon and Octagon.
5. (a) Polygon (b) Square, Diagonal's and angles (c) adjacent vertices
6. Regular polygon : Regular polygon is a polygon that is equiangular and equilateral.

   Convex polygon : A convex polygon is defined as a polygon with all its interior angles less than 180°.
7. (a) Vertex = A, Arms = AB and AC
   (b) Vertex = P, Arms = PQ and PR
   (c) Vertex = U, Arms = UV and UW
8. (a) Q and W
   (b) V and U
   (c) S, R, P and B
9. (a) $\angle$ DOB (b) $\angle$ COB
   (c) $\angle$ COA (d) $\angle$ AOD
10. Figure a. has the greatest angle i.e. $\angle$ AOB. Figure c. has the smallest angle i.e. $\angle$ NXY.

WORKSHEET 3: TRIANGLES, QUADRILATERAL AND CIRCLES

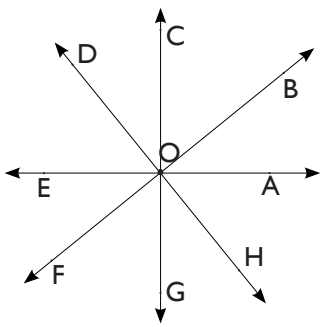
1. (a) T (b) F (c) T
   (d) F (e) T (f) T
   (g) T (h) T
2. (a) O, Z and X (b) S and D (c) L, J and M
3. (a) PQRS (b) Q R, R S and Q P, P S
   (c) PS, QR and PQ, SR (d) QS
   (e) $\angle$PSR and $\angle$RQP, $\angle$P, $\angle$R.
4. (a) The figure is quadrilateral Diagonals are BD and AC.
   (b) Yes, G is in the interior of ABCD.
   (c) L and X
   (d) E is in the interior of ΔAOB
5. (a) O is the centre of the circle.
   (b) OC, OB and OA
   (c) AB
   (d) AD
   (e) AOC, COB
   (f) CEB
6. (a) ABC, ADE, DEF, EFC, BFD
   (b) AEFB, ADFC, EDBF, EDFC, DEBC, ADFE

WORKSHEET (BASED ON COMPLETE CHAPTER)

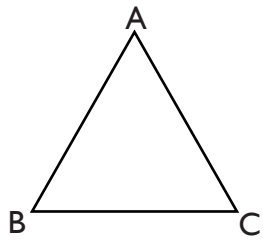
1. (d)
2. A line has no end points

   A line segment has two end points

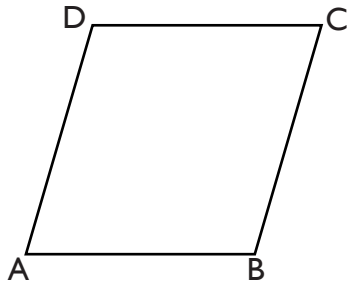
   A ray is a position of line starting at a point and extending in one direction endlessly.
3. There are 8 rays represented in the given figure namely OA, OB, OC, OD, OE, OF, OG, OH



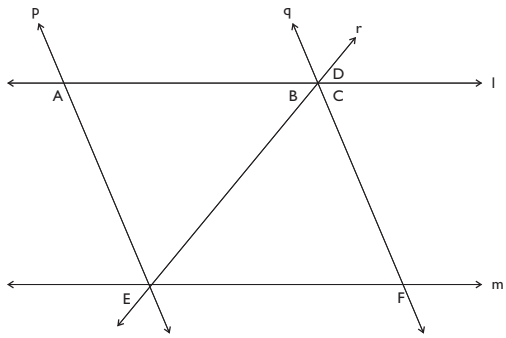
4. (a) Adjacent sides of a tennis court, Adjacent sides of a kite
   (b) Railway lines; Opposites sides of a football field
5. (a) The edge of a ruler, The length of a pencil
   (b) Table, Dice
6. (a) T (b) T
   (c) T (d) F
7. (a)



   (b)



8. (a) p and q; l and m
   (b) p and r; p and l; q and r; q and l
   (c) A, B and C ; E and F
   (d) r, q and l; l and p; r, m and p; m and q
   (e) D, A, E and F
   (f) l and p

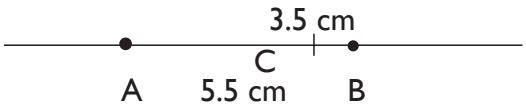


9. $\angle$CAB, $\angle$DBC, $\angle$EBC, $\angle$FBE, $\angle$FBA, $\angle$EBA, $\angle$DBA, $\angle$CBA, $\angle$FBD, $\angle$FBC, $\angle$EBD.

Chapter 05

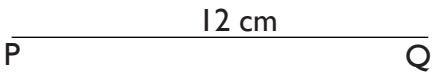
Understanding Elementary Shapes

WORKSHEET 1: MEASURING LINE SEGMENTS

1. (a) AB, BC and CD (b) AC, CD and DB
   (c) AB, BC and AC
   (d) AB, BC, CD, DE, EF and FA
2. AB = 5cm, CD = 7cm, EF =10cm
3. 

   AB = 5.5cm, CB = 3.5

   AC =AB – CB = (5.5 – 3.5) cm = 2 cm
4. PQ = AB + CD + EF



   = (4 + 4 + 4) cm = 12 cm

WORKSHEET 2: TYPES OF ANGLES AND THEIR MEASUREMENT

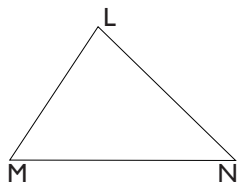
1. (a) (iv) (b) (ii) (c) (iv)
   (d) (i) (e) (iii)
2. (i) ∠ b is greater (ii) ∠ b is greater
   (iii) ∠ b is greater (iv) ∠ b is greater
3. (a) Obtuse angle (b) Right angle
   (c) Acute angle (d) Acute angle
4. (a) Obtuse angle (b) Acute angle
   (c) Acute angle (d) Complete angle
   (e) Obtuse angle
5. (a) 3:00 a.m is 90° (b) $\frac{360°}{12} \times 5 = 30° \times 5 = 150°$
   (c) $\frac{360°}{12} \times 8 = 30° \times 8 = 240°$
6. (a) 45° (b)45°
   (c) 120° (d)90°
7. (a) 1/2 x 90° = 45° (b) 3 x 90° = 270°
   (c) 4/3 x 90° = 120° (d) 4 x 90° = 360°

WORKSHEET 3: PERPENDICULAR LINES

1. (a) perpendicular lines (b) 90°
   (c) perpendicular
2. (a) P R ⊥ RS (b) R U ⊥ ST
   (c) L M ⊥ M N

WORKSHEET 4: CLASSIFICATION OF TRIANGLES

1. (a) (i) (b) (ii)
   (c) (i) (d) (i)
2. (a) acute angled triangle
   (b) obtuse angled triangle
   (c) right angled triangle
   (d) greater (e) less
3. (a) Acute angled triangle
   (b) Right angled triangle
   (c) Obtuse angled triangle
   (d) Obtuse angled triangle
4. (a) Scalene Triangle (b) Isosceles triangle
   (c) Scalene Triangle (d) Isosceles triangle
5. (a) Obtuse angled triangle
   (b) Right angled triangle
   (c) Acute angled triangle
   (d) Obtuse angled triangle
6. Triangle



   (a) LN
   (b) ∠ N (c) ∠ M (d) LM

WORKSHEET 5: CLASSIFICATION OF QUADRILATERALS

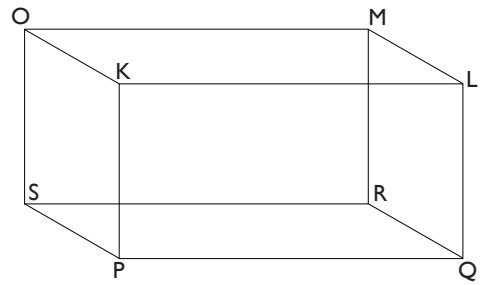
1. (a) T (b) F (c) T (d) T
2. (a) opposite sides (b) two (c) 90°
   (d) not equal / perpendicular (e) sides
3. In trapezium, one pair of opposite sides is parallel whereas in parallelogram, opposite sides are parallel and equal.

WORKSHEET 6: POLYGONS AND THREE-DIMENSIONAL SHAPES

1. (a) 6 (b) cube (c) edge
   (d) triangular prism (e) supplementary
   (f) rhombus
2. (a) T (b) T (c) F
   (d) T (e) T
3. In a cuboid, there are 6 rectangular faces whereas in a cube, there are 6 square faces.
4. a ⟶ (iii) b ⟶ (iv)
   c ⟶ (v) d ⟶ (i)
   e ⟶ (ii)
5. (a) DCE, DCBA, ABF, DAFE, ADCB and BFEC
   (b) A, B, C, D, E and F
   (c) DE, DC, DA, CE, CB, ED, EF, FA, FB, BC and AB.
   (d) BCAD and BCEF
   (e) AB, AF and AD
6. (a) L M Q P
   (b) L P S O, M N R Q , S P Q R and L M N O
   (c) P Q, P S and P L
   (d) P Q M L, P S O L, P Q R S
7. (a) A hexagon is a six-sided polygon formed by six equilateral triangles.
   (b) A heptagon is a seven sided polygon which has seven vertices and seven angles.
   (c) A three dimensional figure whose length, breadth and height are all equal is called cube.
   (d) A shape with a flat base and three or four sides in the shape of a triangle is called pyramid.
   (e) The bases of cylinder are circular and are always congruent and parallel to each other.
8. (a) Basketball, Globe
   (b) Party hat, Funnel
   (c) Bottle, Test tube
   (d) Book, Television

WORKSHEET (BASED ON COMPLETE CHAPTER)

1. (a) (i) (b) (ii) (c) (i)
   (d) (iii) (e) (ii) (f) (i)
   (g) (i) (h) (ii)
2. (a) Right angles: ∠ COB and ∠ AOC
   Straight angle: ∠ AOB
   (b) Right Angles: ∠ POS and ∠ SOQ.
   Straight Angle: ∠ POQ
3. (a) Paper, Pen lying on the table.
   (b) Walls of a room, Edges of a book.
   (c) Clock, Circular ring
4. (a) 3 : 30 is 90° (b)3 : 00 is 90°
   (c) 6 : 00 is 180° (d)9 : 00 is 90°
5. (a) Acute angle (b)Obtuse angle
   (c) Right angle (d)Acute angle
6. (a) T (b) T (c) F
7. Faces: KLMO, KLQP, QPSR, RMOS, PKOS, MRQL
   Edges: KL, LM, MO, OK, RQ, QP, PS, SR, KP, OS, MR, LQ



8. (a) F (b) T (c) F
   (d) T (e) T
9. (a) Quadrilateral; Diagonals AC and BD
   (b) Eight triangles Δ ODA, Δ OBC, Δ OBA, Δ OCD, Δ ACB, Δ BCD, Δ CDA and Δ DAB.
   (c) Yes, point G is in the interior of ABCD.

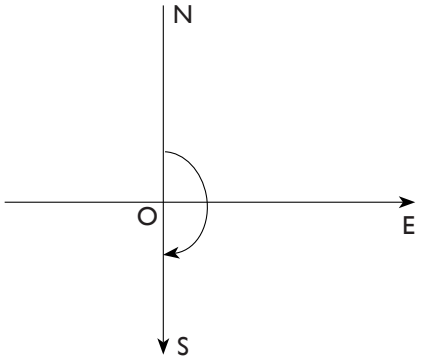
(d) L and X

(e) E

10. Shweta moves east to E

and Sohan moves south to S.

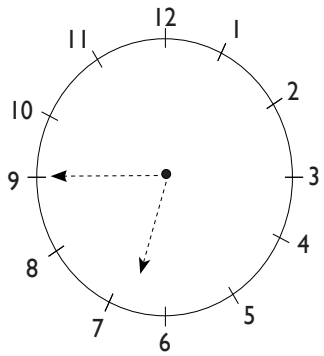
Paths OE and OS form an angle of 90°.



11. From 6 and making $\frac{3}{4}$ of a revolution clockwise we get,

3/4 of 60 minutes = 45 minutes.

The time shown will be 6:45.



12. There are 10 triangles namely: Δ ABC, Δ ABE, Δ ADE, Δ BDE, Δ BFD, Δ FED, Δ BFC, Δ CFE, Δ CED and Δ ADC.

(a) Δ ABC, Δ ABE, Δ ADE and Δ ADC.

(b) Δ ABC, Δ ABE, Δ BDE, Δ BFD and Δ BFC.

(c) Δ BFC, Δ CFE, Δ CED and Δ ADC.

(d) Δ ADE, Δ BDE, Δ BFD, Δ FED, Δ CED and Δ ADC.

(e) Δ ABE, Δ ADE, Δ BDE, Δ FED, Δ CFE and Δ CED.

(f) Δ BFD, Δ FED, Δ BFC and Δ CFE.

13. (a) PQRS

(b) QR and RS

(c) PQ and SR, PS and QR

(d) QS

(e) ∠Q, ∠S and ∠R, ∠P

14. (a) DFEB (b) DEFA
(c) WXUV (d) LONM
(e) PSFD

15. (a) Polygon (b) Solid
(c) Polygon (d) Solid
(e) Solid

16. (a) Pyramid (b) Cylinder
(c) Cuboid (d) Prism

17. Let the sides of parallelogram = 2x and 3x

Perimeter = 70 cm

2 (l + b) = 70 cm

$\Rightarrow$ l + b = 35 cm

$\Rightarrow$ 2x + 3x = 35 cm $\Rightarrow$ 5x = 35

$\therefore$ x = $\frac{35}{5}$ = 7 cm

Hence, sides of parallelogram
= 2 × 7 cm and 3 ×7 cm

= 14 cm and 21 cm.

18. Let the other two angles of an equilateral triangle be x

A.T.Q.

$\Rightarrow$ x + x + 60° = 180° (A.S.P.)

2x + 60° = 180°

2x = 180° – 60°

2x = 120°

x = 60°

$\therefore$ The other angles are 60° each.

Chapter 06

Integers

WORKSHEET 1: REPRESENTATION AND ORDERING OF INTEGERS

1. (a) + 30 km above sea level
   (b) – ₹ 2500 (c) + 10
   (d) 5 km to the West
   (e) + ₹ 530 (f) – ₹ 800 loss

2. (a) F (b) F (c) F (d) T
   (e) T

3. (a) (i) (b) (iii) (c) (ii) (d) (i)
   (e) (ii)

4. The greater integer is on the right of the smaller number

   (a) 5, 18

   The integer 18 is to the right of integer 5

   (b) 3, – 3

   The integer 3 is to the right of – 3

   (c) 0, – 5

   The integer 0 is to the right of – 5

   (d) – 16, – 20

   The integer – 16 is to the right of integer – 20

5. (a) – 6, – 5, – 4, – 3, –2, –1, 0, 1 and 2

   (b) –7, – 6, –5, – 4, – 3, – 2, – 1, 0, 1, 2, 3, 4, 5 and 6

   (c) – 3, – 2 and – 1

   (d) 3, 4, 5, 6 and 7

6. (a) –8 (b) –9 (c) – 40 (d) – 231

7. (a) | – 36| = 36 (b) |0| = 0
   (c) | – 128| = 128 (d) | 231| = 231

8. (a) 6 + 2 = 8 (b) 0 – 2 = – 2
   (c) 8 + 8 = 16 (d) 20 – 20 = 0

9. (a) > (b) < (c) > (d) <

10. (a) – 12, – 9, – 6, 0, 5, 7

    (b) – 8, – 2, 0, 2, 5, 7

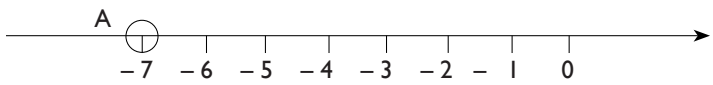
    (c) – 19, –7, – 2, 1, 8, 10, 15

    (d) – 10, –5, – 1, 3, 6, 7

11. (a) 8, 5, 0, – 1, – 2 (b) 7, 4, 0, – 3, – 4, – 10
    (c) 8, 6, 4, – 2, – 6, – 10 (d) 10, 8, 3, 0, – 7, – 15

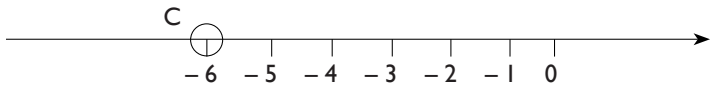
12. (a) –4, –3, – 2, – 1, 0 (b) – 5, – 4, – 3, – 2
    (c) 1, 2, 3, 4 and 5 (d) – 1

13. (a)

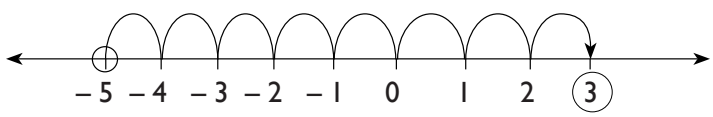


(b)

(c)

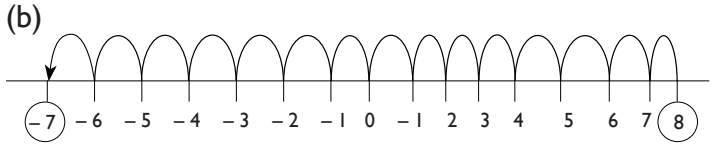


14. (a)



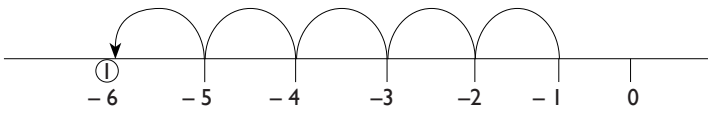
In right direction

(b)



In left direction

(c)



15. (a) D = 7, F = – 1, G = – 5

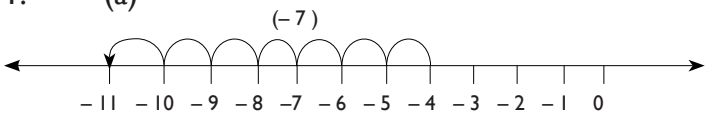
(b) Positive integer

(c) – 7, – 6, – 5, – 4, – 3, – 2, – 1, 0, 1

(d) G (e) E

WORKSHEET 2: ADDITION AND SUBTRACTION OF INTEGERS

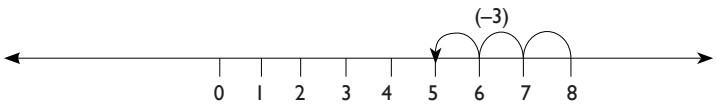
1. (a)



We move 7 units to the left of 4 and reach – 11

Thus, – 4 + (–7) = – 4 – 7 = – 11

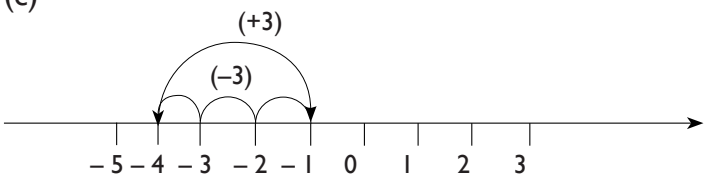
(b)



We move 3 units to the left of 8 and reach 5

Thus, 8 + (–3) = 8 – 3 = 5

(c)



We move 3 units to the left of 3 and reach 0

Again we move 1 unit to left and reach (–1)

∴ (– 1) + (–3) + 3 = – 1 – 3 +3

= – 4 + 3 = – 1

2. (a) T (b) F (c) F (d) F
(e) F

3. (a) 7 (b) – 54 (c) 324 (d) – 201
(e) + 1

4. (a) – 342 + 1 = – 341 (b) 475 + 1 = 476
(c) – 1020 + 1 = – 1019

5. (a) – 549 + 435 = – 114

(b) – 323 – 124 = – 447

(c) 405 + 323 = 728

(d) 362 – 623 = – 261

(e) – 109 + (–101) = 210

(f) – 10 + 10 = 0

(g) 232 + (–272) = – 40

(h) (– 250) + 215 = – 35

6. (a) (– 6) + (– 12) + 15 + (–8)

= – 6 – 12 + 15 – 8

= 15 – (6 + 12 + 8) = 15 – 26 = – 11

(b) 42 + (– 63) + 33 + 41

= (42 + 33 + 41) – 63 = 116 – 63 = 53

(c) 153 + (– 97) + 63 + (– 54)

= 153 – 97 + 63 – 54

= (153 + 63) – (97 + 54)

= 216 – 151 = 65

(d) 1095 + (– 98) + 20 + 33

= (1095 + 20 + 33) – 98

= 1148 – 98 = 1050

(e) 32 + [(– 20) – 40] – (– 10)

= 32 + [– 20 – 40] + 10

= 32 + [– 60] + 10

= 32 – 60 + 10

= 32 + 10 – 60 = 42 – 60 = – 18

(f) [76 – (–51)] + [(–31)] – 20]

= [76 + 51] + [–31 – 20]

= 127 – 51 = 76

(g) – 120 + [(– 89) – 92]

= – 120 + [– 89 – 92] = – 120 + [–181]

= – 120 – 181 = – 301

(h) $[-100 - (-25)] + 75$

$= [-100 + 25] + 75$

$= [-75] + 75 = -75 + 75 = 0$

7. (a) $30 - (-54) = 30 + 54 = 84$

$\therefore \quad (30) - (-54) \equiv 54 + 30$

(b) $-75 + (-30) = -75 - 30 = -105$

$(-100) + (-30) = -100 - 30 = -130$

$\therefore -105 > -130$

$\therefore (-175) + (-30) > (-100) + (-30)$

(c) $13 + (-8) = 13 - 8 = 5$

$13 + 8 = 21$

$\therefore 13 + (-8) < 13 + 8$

(d) $-35 + 395 = 360,$

$-35 - 395 = -430$

$\therefore (-35 + 395) > (-35) - 395$

(e) $(-5) + (5) = 0$

$9 + (-9) = 0$

$\therefore (-5) + (5) = (9) + (-9)$

8. Sum of two integers $= -20$

One integer $= -9$

Let the other integer $= x$

A.T.Q.

$-9 + x = -20 \Rightarrow x = -20 + 9 = -11$

$\therefore$ Other integer $= -11$

9. Distance above the sea level = 30 m

Distance below the sea level = 31 m

Distance between two places = 30 m + 31m

= 61 m

10. $200 - (-324) + (-46)$

$= 200 + 324 - 46$

$= 524 - 46 = 478$

WORKSHEET (BASED ON COMPLETE CHAPTER)

1. (a) (ii) (b) (ii)

(c) (ii) (d) (ii)

2. (a) $-9 + \underline{9} = 0$ (b) $12 + \underline{(-12)} = 0$

(c) $15 + (-15) = \underline{0}$ (d) $(-7) + \underline{(-7)} = -14$

(e) negative (f) 0

(g) positive (h) smaller

3. (a) Here $a = -3, b = -5$

$a - (b + 1) + (-2)$

$= -3 - (-5 + 1) + (-2)$

$= -3 - (-4) + (-2)$

$= -3 + 4 - 2 = -5 + 4 = -1$

(b) $a = 2, b = -3$

$a - (b + 1) + (-2)$

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

$= 2 - (-2) + (-2)$

$= 2 + 2 - 2 = 4 - 2 = 2$

(c) $a = -5, b = -3$

$a - (b + 1) + (-2)$

$= -5 - (-3 + 1) + (-2)$

$= -5 - (-2) + (-2)$

$= -5 + 2 - 2$

$= 2 - 7 = -5.$

(d) $a = -3, b = 2$

$a - (b + 1) + (-2)$

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

$= -3 - (3) - 2 = -3 - 3 - 2 = -8$

4. (a) $-132 - (-200) = -132 + 200 = 68$

(b) $419 - (-819) = 419 + 819 = 1238$

(c) $-325 - (785) = -325 - 785 = -1110$

5. (a) $1532 + (-5412) = 1532 - 5412 = -3880$

(b) $4657 + (-12) = 4657 - 12 = 4645$

(c) $-2548 + (-2452) = -2548 - 2452$
$= -5000$

6. (a) $2 + (-575) + (-575) + (-575) + (-575) + 2300$

$= 2 - 575 - 575 - 575 - 575 + 2300$

$= (2 + 2300) - (575 + 575 + 575 + 575)$

$= 2302 - 2300 = 2$

(b) $1372 + (-365) + (-878) + 679$

$= 1372 - 365 - 878 + 679$

$= (1372 + 679) - (365 + 878)$

$= 2051 - 1243 = 808$

(c) $(-13) + 32 + (-8) - 1$

$= -13 + 32 - 8 - 1$

$= 32 - (13 + 8 + 1)$

$= 32 - 22 = 10$

7. Total students of a school = 872

Students absent on Monday = 49

Students absent on Thursday = 65

A.T.Q.

Student present on two days $= 872 - (49 + 65)$
$= 872 - 114$
$= 758$

8. (i) Here, $a = -4, b = 3$

$-a + b - (-3) = -(-4) + 3 - (-3)$
$= 4 + 3 + 3 = 10$

(ii) Here $a = 3, b = -5$

$-a + b - (-3) = -(3) + (-5) - (-3)$

$= -3 - 5 + 3 = -5$

9. Given, $a = 34$

A.T.Q.

$b = 34 + 1 = 35.$

$\therefore a - b = 34 - 35 = -1.$

10. Let b is 8,

A.T.Q.

$a = 8 + 1 = 9$

$\therefore a - b = 9 - 8 = 1$

11. Sum of two integers = – 495

One integer = – 139

Let the other integer = x

$\therefore$ Sum of integers = $-139 + x$

$\Rightarrow -495 = -139 + x$

$\Rightarrow x = 495 - 139$

$x = 356$

12. $[1249 + (-1382)] - [(-1250) + 1238)]$

$= [1249 - 1382] - [-1250 + 1238]$

$= -133 - [-12] = -133 + 12 = -121$

13. Let a and b be the two integers

A.T.Q.

$a + b = 4$ (i)

$a - b = 4$ (ii)

From (i) and (ii),

$2a = 8$

$a = 4$

From (i),

$a + b = 4$

$4 + b = 4$

$b = 4 - 4$

$b = 0$

14. Maximum temperature = 22.5°C

Temperature fell by = 24. 5° C

Minimum Temperature = 22°. 5 – 24°. 5
= – 2° C

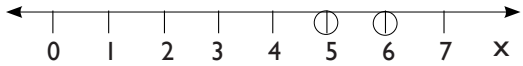
15. (a) –10 , –5 , 0 , 5

(b) 4 , 2 , 0 , –2

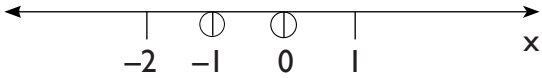
(c) 3 , –1 , –5 , –9

(d) –23 , –28 , –33 , –38

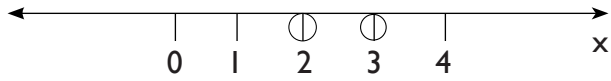
16. (a) x = 5, 6



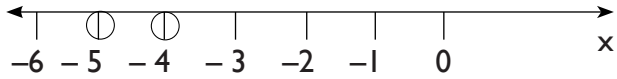
(b) x = 0, –1



(c) x = 2, 3



(d) x = –5 , – 4

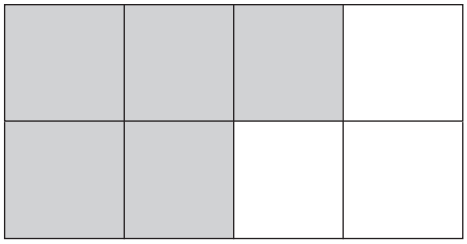


Chapter 07

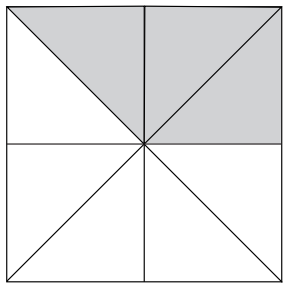
Fractions

WORKSHEET 1: FRACTIONS

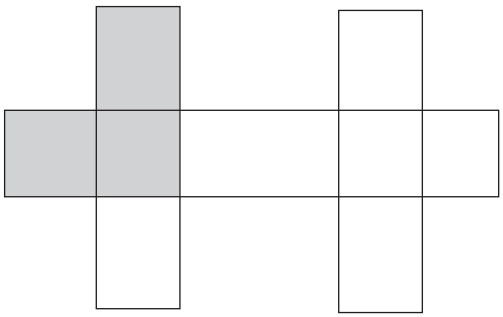
1. (a)



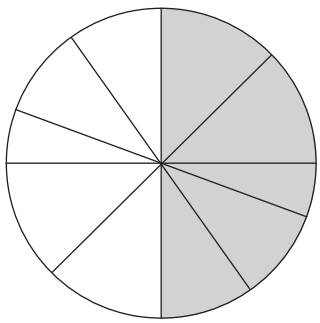
(b)



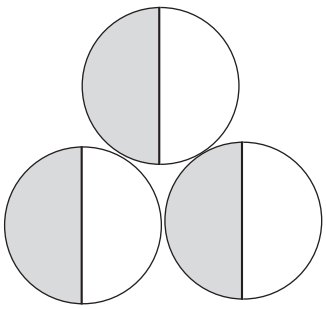
(c)



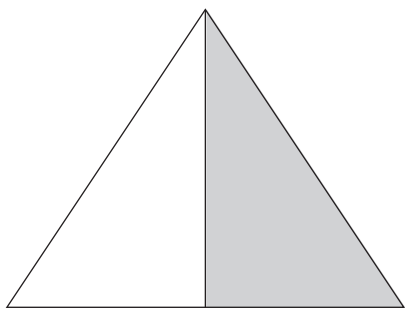
(d)



(e)



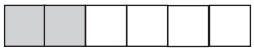
(f)



2. (a) $\frac{2}{4}$ (b) $\frac{8}{16}$ (c) $\frac{6}{16}$

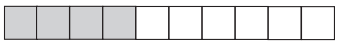
(d) $\frac{3}{5}$

3. (a) Fraction = $\frac{3}{5}$ 

(b) Fraction = $\frac{2}{6}$ 

(c) Fraction = $\frac{8}{11}$ 

(d) Fraction = $\frac{5}{9}$ 

(e) Fraction = $\frac{4}{10}$ 

4. Sanjana has oranges = 28

Part of oranges eaten by her = $\frac{1}{7}$

(a) Oranges she ate = $\frac{1}{7} \times 28 = 4$

(b) Oranges left = 28 – 4 = 24

5. Mary has toffees = 30

Sarika has = $\frac{1}{6} \times 30 = 5$

Srishiti has = $\frac{1}{5} \times 30 = 6$

Toffees left with Mary = 30 – (5 + 6)
= 30 – 11 = 19

6. There are 7 days in a week.

$\therefore$ A day represents = $\frac{1}{7}$

7. There are 60 minutes in an hour.

$\therefore$ 45 minutes of an hour represent = $\frac{45}{60} = \frac{3}{4}$

8. There are 24 hours in a day.

$\therefore$ 6 hours of a day represent = $\frac{6}{24} = \frac{1}{4}$

9. (a) $\frac{1}{3} \times 15 = 1 \times 5 = 5$

(b) $\frac{3}{7} \times 21 = 3 \times 3 = 9$

(c) $\frac{2}{5} \times 10 = 2 \times 2 = 4$

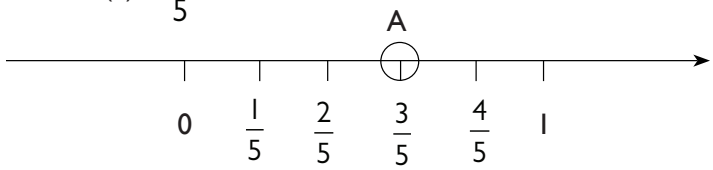
10. (a) Fraction = $\frac{N}{D} = \frac{5}{8}$

(b) Two-fifths of a cake = $\frac{2}{5}$

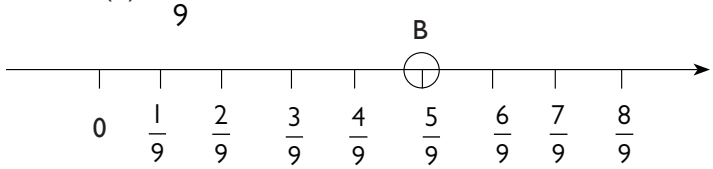
(c) Fraction = $\frac{6}{10}$

WORKSHEET 2: FRACTION ON THE NUMBER LINE AND THEIR TYPES

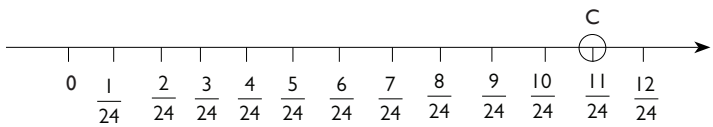
1. (a) $\frac{3}{5}$



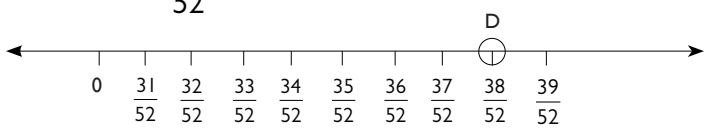
(b) $\frac{5}{9}$



(c) $\frac{11}{24}$



(d) $\frac{38}{52}$



2. (a) Unit (b) Proper (c) Mixed
(d) Proper (e) Improper (f) Proper
(g) Mixed (h) Proper (i) Mixed
(j) Proper (k) Proper (l) Unit
(m) Improper (n) Improper (o) Mixed
(p) Mixed

3. (a) $8\frac{1}{5} = \frac{8 \times 5 + 1}{5} = \frac{40 + 1}{5} = \frac{41}{5}$

(b) $5\frac{1}{3} = \frac{5 \times 3 + 1}{3} = \frac{15 + 1}{3} = \frac{16}{3}$

(c) $4\frac{8}{9}=\frac{4\times9+8}{9}=\frac{36+8}{9}=\frac{44}{9}$

(d) $6\frac{7}{11}=\frac{6\times11+7}{11}=\frac{66+7}{11}=\frac{73}{11}$

4. (a) $\frac{13}{3}=\frac{12+1}{3}=\frac{12}{3}+\frac{1}{3}=4\frac{1}{3}$

(b) $\frac{37}{8}=\frac{32+5}{8}=\frac{32}{8}+\frac{5}{8}=4\frac{5}{8}$

(c) $\frac{20}{7}=\frac{14+6}{7}=\frac{14}{7}+\frac{6}{7}=2\frac{6}{7}$

5. Improper fractions with number 6

$=\frac{6}{5},\ \frac{6}{4},\ \frac{6}{3}$

6. Improper fractions with denominator 11

$=\frac{13}{11},\ \frac{15}{11},\ \frac{17}{11}$

7. (a) less (b) proper
(c) 1 (d) proper

(e) $\frac{5\times6+1}{6}=\frac{31}{6}$

WORKSHEET 3: EQUIVALENT FRACTIONS

1. (a) LCM of 8 and 54 is 216

$\Rightarrow \frac{1}{8}=\frac{1\times27}{8\times27}=\frac{27}{216}$

$\frac{7}{54}=\frac{7\times4}{54\times4}=\frac{28}{216}$ Not equivalent

(b) $\frac{1}{2}=\frac{1\times5}{2\times5}=\frac{5}{10}=\frac{5}{10}$ Equivalent

(c) LCM of 11 and 31 is 341

$\frac{5}{11}=\frac{5\times31}{11\times31}=\frac{155}{341}$

$\frac{15}{31}=\frac{15\times11}{31\times11}=\frac{165}{341}$ Not equivalent

(d) $\frac{1}{3}$ and $\frac{11}{3}$ Not equivalent

2. (a) $\frac{1}{3}=\frac{1\times2}{3\times2}=\frac{1\times3}{3\times3}=\frac{1\times4}{3\times4}=\frac{1\times5}{3\times5}=\frac{1\times6}{3\times6}$

$\frac{1}{3}=\frac{2}{6}=\frac{3}{9}=\frac{4}{12}=\frac{5}{15}=\frac{6}{18}$

(b) $\frac{7}{11}=\frac{7\times2}{11\times2}=\frac{7\times3}{11\times3}=\frac{7\times4}{11\times4}=\frac{7\times5}{11\times5}=\frac{7\times6}{11\times6}$

$\frac{7}{11}=\frac{14}{22}=\frac{21}{33}=\frac{28}{44}=\frac{35}{55}=\frac{42}{66}$

(c)

$\frac{4}{5}=\frac{4\times2}{5\times2}=\frac{4\times3}{5\times3}=\frac{4\times4}{5\times4}=\frac{4\times5}{5\times5}=\frac{4\times6}{5\times6}$

$\frac{4}{5}=\frac{8}{10}=\frac{12}{15}=\frac{16}{20}=\frac{20}{25}=\frac{24}{30}$

(d) $\frac{-9}{11}=\frac{-9\times2}{11\times2}=\frac{-9\times3}{11\times3}=\frac{-9\times4}{11\times4}=\frac{-9\times5}{11\times5}=\frac{-9\times6}{11\times6}$

$\frac{-9}{11}=\frac{-18}{22}=\frac{-27}{33}=\frac{-36}{44}=\frac{-45}{55}=\frac{-54}{66}$

3. (a) $\frac{2}{3}=\frac{10}{\boxed{15}}=\frac{6}{\boxed{9}}=\frac{\boxed{12}}{18}$

(b) $\frac{5}{7}=\frac{10}{\boxed{14}}=\frac{\boxed{15}}{21}=\frac{20}{\boxed{28}}$

(c) $\frac{6}{9}=\frac{12}{\boxed{18}}=\frac{\boxed{18}}{27}=\frac{24}{\boxed{36}}$

(d) $\frac{1}{2}=\frac{5}{\boxed{10}}=\frac{3}{\boxed{6}}=\frac{\boxed{10}}{20}$

4. (a) $\frac{32}{56}=\frac{8\times4}{8\times7}=\frac{4}{7}$

(b) $\frac{39}{56}=\frac{39}{56}$

(c) $\frac{27}{63}=\frac{9\times3}{9\times7}=\frac{3}{7}$

(d) $\frac{56}{64}=\frac{8\times7}{8\times8}=\frac{7}{8}$

(e) $\frac{49}{63}=\frac{7\times7}{7\times9}=\frac{7}{9}$

(f) $\frac{18}{81}=\frac{9\times2}{9\times9}=\frac{2}{9}$

(g) $\frac{5}{75}=\frac{5\times1}{5\times15}=\frac{1}{15}$

(h) $\frac{33}{88}=\frac{11\times3}{11\times8}=\frac{3}{8}$

(i) $\frac{16}{54}=\frac{8\times2}{27\times2}=\frac{8}{27}$

(j) $\frac{51}{85}=\frac{17\times3}{17\times5}=\frac{3}{5}$

5. Fraction = $\frac{7}{3}$

(a) $\frac{7}{3}=\frac{7\times5}{3\times5}=\frac{35}{15}$

(b) $\frac{7}{3}=\frac{7\times6}{3\times6}=\frac{42}{18}$

(c) $\frac{7\times21}{3\times21}=\frac{147}{63}$

(d) $\frac{7\times18}{3\times18}=\frac{126}{54}$

6. (a) → (iv) (b) → (v)

(c) → (i) (d) → (ii)

(e) → (iii)

7. Fraction of oranges distributed by Radhika

$=\frac{15}{30}=\frac{1}{2}$

Fraction of oranges distributed by Geeta

$=\frac{25}{50}=\frac{1}{2}$

Fraction of oranges distributed by Sarita

$=\frac{40}{80}=\frac{1}{2}$

Yes, all of them distributed equal fractions of oranges i.e. $\frac{1}{2}$

WORKSHEET 4: LIKE AND UNLIKE FRACTIONS AND COMPARISON OF FRACTION

1. (a) same (b) different
(c) unlike (d) unlike

2. (a) $\frac{6}{7}$ or $\frac{5}{8}$

$\Rightarrow \frac{6}{7}=\frac{6\times8}{7\times8}=\frac{48}{56}$

$\Rightarrow \frac{5}{8}=\frac{5\times7}{8\times7}=\frac{35}{56}$

$\Rightarrow \frac{48}{56}>\frac{35}{56}$

$\therefore \frac{5}{8}$ is smaller

(b) $\frac{11}{12}$ or $\frac{5}{6}$

$\Rightarrow \frac{11}{12}=\frac{11\times1}{12\times1}=\frac{11}{12}$

$\Rightarrow \frac{5}{6}=\frac{5\times2}{6\times2}=\frac{10}{12}$

$\Rightarrow \frac{11}{12}>\frac{10}{12}$

$\therefore \frac{5}{6}$ is smaller

(c) $\frac{7}{8}$ or $\frac{5}{9}$

$\Rightarrow \frac{7}{8}=\frac{7\times9}{8\times9}=\frac{63}{72}$

$\Rightarrow \frac{5}{9}=\frac{5\times8}{9\times8}=\frac{40}{72}$

$\Rightarrow \frac{63}{72}>\frac{40}{12}$

$\therefore \frac{5}{9}$ is smaller

(d) $\frac{7}{15}$ or $\frac{13}{20}$

$\Rightarrow \frac{7}{15}=\frac{7\times20}{15\times20}=\frac{140}{300}$

$\Rightarrow \frac{13}{20}=\frac{13\times15}{20\times15}=\frac{195}{300}$

$\Rightarrow \frac{195}{300}>\frac{140}{300}$

$\therefore \frac{7}{15}$ is smaller

3. (a) $\frac{5}{7}$ or $\frac{7}{8}$

$\Rightarrow \frac{5}{7}=\frac{5\times8}{7\times8}=\frac{40}{56}$

$\Rightarrow \frac{7}{8}=\frac{7\times7}{8\times7}=\frac{49}{56}$

$\Rightarrow \frac{49}{56}>\frac{40}{56}$

$\therefore \frac{7}{8}>\frac{5}{7}$

(b) $\frac{5}{3}$ or $\frac{10}{6}$

$\Rightarrow \frac{5}{3}=\frac{5\times2}{3\times2}=\frac{10}{6}$

$\Rightarrow \frac{10}{6}=\frac{10}{6}$

$\therefore$ Both fractions are equal

(c) $\frac{4}{9}$ or $\frac{7}{11}$

$\Rightarrow \frac{4}{9}=\frac{4\times11}{9\times11}=\frac{44}{99}$

$\Rightarrow \frac{7}{11}=\frac{7\times9}{11\times9}=\frac{63}{99}$

$\therefore \frac{63}{99}>\frac{44}{99}$

(d) $\frac{5}{10}$ or $\frac{7}{10}$

$\Rightarrow$ As 7 > 5

$\Rightarrow \frac{7}{10}>\frac{5}{10}$

$\therefore \frac{7}{11}>\frac{4}{9}$

4. (a) $\frac{1}{15}\square\frac{9}{9}$ or $\frac{1}{15}\square\frac{1}{1}$

Here, the numerators are same,

$\therefore$ The fraction having the lesser denominator will be greater.

$\frac{1}{15} < \frac{9}{9}$

(b) $\frac{2}{17} \square \frac{15}{17}$

Here, the denominators are same.

$\therefore$ The fraction having the greater numerator will be greater.

$\therefore \quad \frac{2}{17} < \frac{15}{17}$

(c) $\frac{5}{6} \square \frac{3}{4} \quad \frac{5}{6} = \frac{5\times4}{6\times4} = \frac{20}{24}; \frac{3}{4} = \frac{3\times6}{4\times6} = \frac{18}{24}$

$\Rightarrow \quad \frac{5}{6} > \frac{3}{4} \quad \therefore \quad \frac{20}{24} > \frac{18}{24}$

(d) $\frac{3}{7} = \frac{6}{14}$

(e) $\frac{2}{7} \square \frac{3}{7}$

Here, the denominators are same.

$\therefore$ The fraction having the greater numerator will be greater.

$\therefore \quad \frac{2}{7} < \frac{3}{7}$

(f) $\frac{4}{9} = \frac{8}{18}$

5. (a) $\frac{8}{25}, \frac{9}{25}, \frac{11}{25}, \frac{12}{25}, \frac{16}{25}$ (b) $\frac{1}{17}, \frac{2}{17}, \frac{6}{17}, \frac{7}{17}, \frac{13}{17}$

6. (a) $\frac{39}{72}, \frac{31}{72}, \frac{17}{72}, \frac{15}{72}, \frac{10}{72}$ (b) $\frac{10}{18}, \frac{9}{18}, \frac{7}{18}, \frac{6}{18}, \frac{1}{18}$

7. (a) $\frac{4}{5}, \frac{3}{15}, \frac{1}{2}, \frac{9}{10}$ LCM of 5, 15, 2 and 10 = 30

$\Rightarrow \quad \frac{4}{5} = \frac{4\times6}{5\times6} = \frac{24}{30}; \quad \frac{3}{15} = \frac{3\times2}{15\times2} = \frac{6}{30};$

$\frac{1}{2} = \frac{1\times15}{2\times15} = \frac{15}{30}$ and $\frac{9}{10} = \frac{9\times3}{10\times3} = \frac{27}{30}$

$\frac{6}{30}, \frac{15}{30}, \frac{24}{30}, \frac{27}{30}$ i.e. $\frac{3}{15}, \frac{1}{2}, \frac{4}{5}, \frac{9}{10}$

8. (a) $\frac{1}{2}, \frac{1}{3}, \frac{7}{30}, \frac{2}{15}$ LCM of 2, 3, 30 and 15 = 30

$\frac{1}{2} = \frac{1\times15}{2\times15} = \frac{15}{30}; \quad \frac{1}{3} = \frac{1\times10}{3\times10} = \frac{10}{30};$

$\frac{2}{15} = \frac{2\times2}{15\times2} = \frac{4}{30}$

$\frac{15}{30}, \frac{10}{30}, \frac{7}{30}, \frac{4}{30}$

$\Rightarrow \quad \frac{1}{2}, \frac{1}{3}, \frac{7}{30}, \frac{4}{30}$

(b) $\frac{3}{8}, \frac{1}{16}, \frac{5}{32}, \frac{7}{4}$

LCM of 8, 16, 32 and 4 = 32

$\frac{3}{8} = \frac{3\times4}{8\times4} = \frac{12}{32}; \quad \frac{1}{16} = \frac{1\times2}{16\times2} = \frac{2}{32}$;

$\frac{5}{32}; \frac{7}{4} = \frac{7\times8}{4\times8} = \frac{56}{32}$

$\therefore \quad \frac{56}{32}, \frac{12}{32}, \frac{5}{32}, \frac{2}{32}$ i.e. $\frac{7}{4}, \frac{3}{8}, \frac{5}{32}, \frac{1}{16}$

9. Rajan exercised for $\frac{3}{6}$ an hour and Shivraj exercised for $\frac{3}{4}$ of an hour.

Converting these into like fractions

$\frac{3}{6} = \frac{3\times2}{6\times2} = \frac{6}{12}$ and $\frac{3}{4} = \frac{3\times3}{4\times3} = \frac{9}{12}$

$\frac{9}{12} > \frac{6}{12} \quad \Rightarrow \quad \frac{3}{4} > \frac{3}{6}$

Hence, Shivraj exercised for a longer time.

10. Journey covered by Sanjana on Monday = $\frac{2}{3}$

Journey covered by Sanjana on Tuesday = $\frac{1}{5}$

Journey covered by Sanjana on Wednesday = $\frac{2}{15}$

Converting these into like fractions.

$\frac{2}{3} = \frac{2\times5}{3\times5} = \frac{10}{15}; \quad \frac{1}{5} = \frac{1\times3}{5\times3} = \frac{3}{15}; \quad \frac{2}{15}$

On Monday, Sanjana covered the major part of the journey.

WORKSHEET 5: ADDITION AND SUBTRACTION OF FRACTIONS

1. (a) $\frac{2}{8}+\frac{3}{8}=\frac{2+3}{8}=\frac{5}{8}$

(b) $\frac{4}{7}+\frac{1}{7}=\frac{4+1}{7}=\frac{5}{7}$

(c) $\frac{8}{16}+\frac{0}{16}=\frac{8+0}{16}=\frac{8}{16}$

(d) $\frac{9}{15}+\frac{7}{15}=\frac{9+7}{15}=\frac{16}{15}$

2. (a) $\frac{4}{25}+\frac{7}{50}=\frac{4\times2}{25\times2}+\frac{7}{50}=\frac{8}{50}+\frac{7}{50}$

$=\frac{8+7}{50}=\frac{15}{50}$

(b) $\frac{3}{21}+\frac{6}{7}=\frac{3}{21}+\frac{6\times3}{7\times3}=\frac{3}{21}+\frac{18}{21}$

$\frac{3+18}{21}=\frac{21}{21}=1$

(c) $\frac{12}{15}+\frac{13}{20}+\frac{3}{5}$ LCM of 15, 20 and 5 = 60

$\frac{12}{15}=\frac{12\times4}{15\times4}=\frac{48}{60}$; $\frac{13}{20}=\frac{13\times3}{20\times3}=\frac{39}{60}$

and $\frac{3}{5}=\frac{3\times12}{5\times12}=\frac{36}{60}$

$\Rightarrow \frac{12}{15}+\frac{13}{20}+\frac{3}{5}=\frac{48}{60}+\frac{39}{60}+\frac{36}{60}$

$=\frac{48+39+36}{60}=\frac{123}{60}$

(d) $\frac{7}{9}+\frac{4}{12}+\frac{8}{15}$ LCM of 9, 12 and 15 = 180

$\frac{7}{9}=\frac{7\times20}{9\times20}=\frac{140}{180}$; $\frac{4}{12}=\frac{4\times15}{12\times15}=\frac{60}{180}$

and $\frac{8}{15}=\frac{8\times12}{15\times12}=\frac{96}{180}$

$\Rightarrow \frac{7}{9}+\frac{4}{12}+\frac{8}{15}=\frac{140}{180}+\frac{60}{180}+\frac{96}{180}=\frac{296}{180}$

3. (a) $\frac{9}{18}-\frac{7}{18}=\frac{9-7}{18}=\frac{2}{18}=\frac{1}{9}$

(b) $\frac{11}{16}-\frac{2}{16}=\frac{11-2}{16}=\frac{9}{16}$

(c) $\frac{5}{9}-\frac{3}{9}=\frac{5-3}{9}=\frac{2}{9}$

(d) $\frac{16}{36}-\frac{9}{36}=\frac{16-9}{36}=\frac{7}{36}$

4. (a) $\frac{9}{14}-\frac{2}{21}$ LCM of 14 and 21 = 42

$\frac{9}{14}=\frac{9\times3}{14\times3}=\frac{27}{42}$ and $\frac{2}{21}=\frac{2\times2}{21\times2}=\frac{4}{42}$

$\frac{27}{42}-\frac{4}{42}=\frac{27-4}{42}=\frac{23}{42}$

(b) $\frac{12}{17}-\frac{1}{2}$ LCM of 17 and 2 = 34

$\frac{12}{17}=\frac{12\times2}{17\times2}=\frac{24}{34}$; $\frac{1}{2}=\frac{1\times17}{2\times17}=\frac{17}{34}$

$\Rightarrow \frac{24}{34}-\frac{17}{34}=\frac{24-17}{34}=\frac{7}{34}$

(c) $\frac{16}{35}-\frac{9}{20}$ LCM of 35 and 20 = 140

$\Rightarrow \frac{16}{35}=\frac{16\times4}{35\times4}=\frac{64}{140}$; $\frac{9}{20}=\frac{9\times7}{20\times7}=\frac{63}{140}$

$\Rightarrow \frac{64}{140}-\frac{63}{140}=\frac{64-63}{140}=\frac{1}{140}$

(d) $\frac{14}{15}-\frac{3}{5}=\frac{14}{15}-\frac{3\times3}{5\times3}=\frac{14}{15}-\frac{9}{15}=\frac{14-9}{15}=\frac{5}{15}$

5. (a) $3\frac{4}{5}+13\frac{2}{7}=\frac{3\times5+4}{5}+\frac{13\times7+2}{7}$

$=\frac{19}{5}+\frac{93}{7}$ LCM of 5 and 7 = 35

$\Rightarrow \frac{19}{5}=\frac{19\times7}{5\times7}=\frac{133}{35}$ and $\frac{93}{7}=\frac{93\times5}{7\times5}=\frac{465}{35}$

$\therefore \frac{133}{35}+\frac{465}{35}=\frac{133+465}{35}=\frac{598}{35}=17\frac{3}{35}$

(b) $1\frac{2}{5}+7\frac{2}{8}=\frac{1\times5+2}{5}+\frac{7\times8+2}{8}$

$= \frac{7}{5}+\frac{58}{8}$ LCM of 5 and 8 = 40

$\Rightarrow \frac{7}{5}=\frac{7\times8}{5\times8}=\frac{56}{40}$ and $\frac{58}{8}=\frac{58\times5}{8\times5}=\frac{290}{40}$

$\Rightarrow \frac{56}{40}+\frac{290}{40}=\frac{56+290}{40}=\frac{346}{40}=8\frac{26}{40}$

(c) $4\frac{1}{3}+4\frac{1}{5}+8\frac{1}{6}$

$= \frac{13}{3}+\frac{21}{5}+\frac{49}{6}$ LCM of 3, 5 and 6 = 30

$\Rightarrow \frac{13}{3}=\frac{13\times10}{3\times10}=\frac{130}{30}$; $\frac{21}{5}=\frac{21\times6}{5\times6}=\frac{126}{30}$

and $\frac{49}{6}=\frac{49\times5}{6\times5}=\frac{245}{30}$

$\Rightarrow \frac{130}{30}+\frac{126}{30}+\frac{245}{30}=\frac{130+126+245}{30}=\frac{501}{30}=16\frac{21}{30}$

6. (a) $9\frac{5}{8}-7\frac{4}{9}=\frac{9\times8+5}{8}-\frac{7\times9+4}{9}$

$= \frac{77}{8}-\frac{67}{9}$ LCM of 8 and 9 = 72

$\Rightarrow \frac{77}{8}=\frac{77\times9}{8\times9}=\frac{693}{72}$ and $\frac{67}{9}=\frac{67\times8}{9\times8}=\frac{536}{72}$

$\Rightarrow \frac{693}{72}-\frac{536}{72}=\frac{693-536}{72}=\frac{157}{72}=2\frac{13}{72}$

(b) $3\frac{2}{9}-1\frac{7}{8}=\frac{3\times9+2}{9}-\frac{1\times8+7}{8}$

$= \frac{29}{9}-\frac{15}{8}$ LCM of 9 and 8 = 72

$\Rightarrow \frac{29}{9}=\frac{29\times8}{9\times8}=\frac{232}{72}$; $\frac{15}{8}=\frac{15\times9}{8\times9}=\frac{135}{72}$

$\Rightarrow \frac{232}{72}-\frac{135}{72}=\frac{232-135}{72}=\frac{97}{72}=1\frac{25}{72}$

7. (a) $4\frac{1}{10}-2\frac{3}{5}+3\frac{1}{8}$

$\Rightarrow \frac{4\times10+1}{10}-\frac{2\times5+3}{5}+\frac{3\times8+1}{8}$

$= \frac{41}{10}-\frac{13}{5}+\frac{25}{8}$ LCM of 10, 5 and 8 = 40

$= \frac{41\times4}{10\times4}-\frac{13\times8}{5\times8}+\frac{25\times5}{8\times5}$

$= \frac{164}{40}-\frac{104}{40}+\frac{125}{40}$

$= \frac{164-104+125}{40}=\frac{185}{40}$

$= \frac{37}{8}=4\frac{5}{8}$

(b) $6\frac{1}{2}+2\frac{2}{3}+1\frac{1}{4}$

$= \frac{13}{2}+\frac{8}{3}+\frac{5}{4}$ LCM of 2, 3, 4 = 12

$= \frac{13\times6}{2\times6}+\frac{8\times4}{3\times4}+\frac{5\times3}{4\times3}$

$= \frac{78}{12}+\frac{32}{12}+\frac{15}{12}=\frac{78+32+15}{12}=\frac{125}{12}=10\frac{5}{12}$

(c) $9\frac{1}{5}-2\frac{3}{4}+2\frac{7}{10}$

$= \frac{46}{5}-\frac{11}{4}+\frac{27}{10}$ LCM of 5, 4 and 10 = 20

$= \frac{46\times4}{5\times4}-\frac{11\times5}{4\times5}+\frac{27\times2}{10\times2}$

$= \frac{184}{20}-\frac{55}{20}+\frac{54}{20}$

$= \frac{184-55+54}{20}=\frac{184+54-55}{20}=\frac{238-55}{20}$

$= \frac{183}{20}=9\frac{3}{20}$

8. Piece of cake given to Paran

$= 1\frac{1}{2}=\frac{1\times2+1}{2}=\frac{3}{2}$

Piece of cake given to Saloni

$= 2\frac{1}{3}=\frac{2\times3+1}{3}=\frac{7}{3}$

Total amount of cake = $\frac{3}{2}+\frac{7}{3}$

$= \frac{3\times3}{2\times3}+\frac{7\times2}{3\times2}=\frac{9}{6}+\frac{14}{6}=\frac{9+14}{6}$

$= \frac{23}{6}=3\frac{5}{6}$

9. Rajneet swims during school week

$= 8\frac{1}{2}\text{hrs}=\frac{17}{2}\text{hrs}$

Rajneet swims on weekends

$= \quad 6\frac{3}{4}\text{hrs} = \frac{27}{4}\text{hrs}$

Total time spent by Rajneet in swimming in a week $= \left(\frac{17}{2}+\frac{27}{4}\right)\text{hrs}$

$= \frac{17\times 2}{2\times 2}+\frac{27}{4} = \left(\frac{34}{4}+\frac{27}{4}\right)\text{hrs}$

$= \frac{34+27}{4} = \frac{61}{4}\text{hrs} = 15\frac{1}{4}\text{hrs}$

10. Ribbon bought by Kareena $= 2\frac{2}{5}\text{m} = \frac{12}{5}\text{m}$

Ribbon bought by Amina $= 3\frac{1}{4}\text{m} = \frac{13}{4}\text{m}$

Total length of the ribbon $= \left(\frac{12}{5}+\frac{13}{4}\right)\text{m}$

$= \frac{12\times 4+13\times 5}{20}\text{m} = \frac{48+65}{20}$

$= \frac{113}{20} = 5\frac{13}{20}\text{m}$

11. Total length of rope $= 9\frac{1}{2}\text{m}$

One piece $= 6\frac{3}{4}\text{m}$

Length of other piece $= 9\frac{1}{2}\text{m} - 6\frac{3}{4}\text{m}$

$= \left(\frac{19}{2}-\frac{27}{4}\right)\text{m}$

$= \frac{19\times 2-27}{4} = \frac{38-27}{4}\text{m} = \frac{11}{4}\text{m} = 2\frac{3}{4}\text{m}$

12. Part of money spent by Ketan in buying chocolates $= \frac{1}{2}$

Part of money spent by Ketan in buying pencils and erasers $= \frac{1}{3}$

Money left with Ketan $= 1-\left(\frac{1}{2}+\frac{1}{3}\right)$

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

13. $\frac{3}{7}-\frac{1}{3} = \frac{3\times 3-7}{21} = \frac{9-7}{21} = \frac{2}{21}$

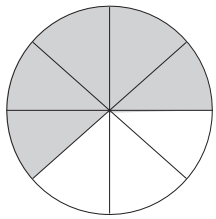
$\therefore$ Fraction $= \frac{2}{21}$

WORKSHEET (BASED ON COMPLETE CHAPTER)

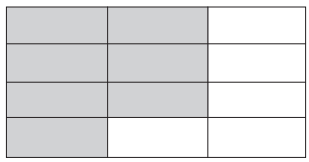
1. (a) (ii) (b) (ii) (c) (iii) (d) (iii) (e) (i)

2. (a) $\frac{9}{20}$ (b) $\frac{3}{10}$ (c) $\frac{8}{21}$

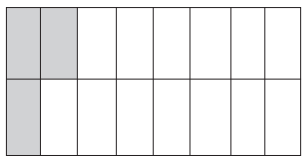
3. (a)



(b)



(c)



4. (a) $\frac{128}{5} = \frac{125+3}{5} = \frac{125}{5}+\frac{3}{5} = 25\frac{3}{5}$

(b) $\frac{145}{105} = \frac{105+35}{105} = \frac{105}{105}+\frac{35}{105} = 1\frac{35}{105}$

(c) $\frac{317}{220} = \frac{220+97}{220} = \frac{220}{220}+\frac{97}{220} = 1\frac{97}{220}$

5. (a) $4\frac{7}{11} = \frac{4\times 11+7}{11} = \frac{44+7}{11} = \frac{51}{11}$

(b) $12\frac{9}{16} = \frac{12\times 16+9}{16} = \frac{192+9}{16} = \frac{201}{16}$

(c) $75\frac{1}{4} = \frac{75\times 4+1}{4} = \frac{300+1}{4} = \frac{301}{4}$

6. (a) $\frac{4}{9} = \frac{4\times 4}{9\times 4} = \frac{16}{36}$

(b) $\frac{4}{9} = \frac{4\times 114}{9\times 114} = \frac{456}{1026}$

7. (a) $\frac{8}{13}, \frac{6}{11}$

$\Rightarrow \frac{8}{13} = \frac{8\times11}{13\times11} = \frac{88}{143}$

$\frac{6}{11} = \frac{6\times13}{11\times13} = \frac{78}{143}$ Not equivalent

(b) $\frac{5}{12}, \frac{25}{60}$

$\frac{5}{12}$ and $\frac{25}{60} = \frac{25\div5}{60\div5} = \frac{5}{12}$

$\therefore$ Equivalent fraction.

8. (a) $\frac{126}{90} = \frac{9\times14}{9\times10} = \frac{14}{10} = \frac{7}{5}$

(b) $\frac{169}{289} = \frac{169}{289}$

9. $\frac{3}{5}$ and $\frac{5}{7}$

$\frac{3}{5} = \frac{3\times7}{5\times7} = \frac{21}{35}$ and $\frac{5}{7} = \frac{5\times5}{7\times5} = \frac{25}{35}$

$\frac{25}{35} > \frac{21}{35} \quad \therefore \quad \frac{5}{7} > \frac{3}{5}$

10. $\frac{3}{4}$ of $56 \quad = \frac{3}{4}\times56 = 3\times14 = 42$

11. (a) $\frac{2}{3}, \frac{3}{9}, \frac{5}{7}, \frac{7}{12}, \frac{1}{21}$

LCM of 3, 9, 7, 12, and 21 = 252

$\frac{2}{3} = \frac{2\times84}{3\times84} = \frac{168}{252}; \quad \frac{3}{9} = \frac{3\times28}{9\times28} = \frac{84}{252};$

$\frac{5}{7} = \frac{5\times36}{7\times36} = \frac{180}{252}; \quad \frac{7}{12} = \frac{7\times21}{12\times21} = \frac{147}{252};$

$\frac{1}{21} = \frac{1\times12}{21\times12} = \frac{12}{252}$

$\frac{12}{252}, \frac{84}{252}, \frac{147}{252}, \frac{168}{252}, \frac{180}{252}$

$\Rightarrow \frac{1}{21}, \frac{3}{9}, \frac{7}{12}, \frac{2}{3}, \frac{5}{7}$

(b) $\frac{5}{9}, \frac{3}{12}, \frac{1}{3}, \frac{4}{15}, \frac{7}{18}$

LCM of 9, 12, 3, 15 and 18 = 180

$\frac{5}{9} = \frac{5\times20}{9\times20} = \frac{100}{180}; \quad \frac{3}{12} = \frac{3\times15}{12\times15} = \frac{45}{180};$

$\frac{1}{3} = \frac{1\times60}{3\times60} = \frac{60}{180};$

$\frac{4}{15} = \frac{4\times12}{15\times12} = \frac{48}{180}; \quad \frac{7}{18} = \frac{7\times10}{18\times10} = \frac{70}{180}$

$\frac{45}{180}, \frac{48}{180}, \frac{60}{180}, \frac{70}{180}$

$\Rightarrow \frac{3}{12}, \frac{4}{15}, \frac{1}{3}, \frac{7}{18}, \frac{5}{9}$

12. (a) $\frac{4}{5}, \frac{5}{10}, \frac{6}{15}, \frac{7}{20}, \frac{8}{25}$

LCM of 5, 10, 15, 20 and 25 = 300

$\frac{4}{5} = \frac{4\times60}{5\times60} = \frac{240}{300}; \quad \frac{5}{10} = \frac{5\times30}{10\times30} = \frac{150}{300};$

$\frac{6}{15} = \frac{6\times20}{15\times20} = \frac{120}{300};$

$\frac{7}{20} = \frac{7\times15}{20\times15} = \frac{105}{300}; \quad \frac{8}{25} = \frac{8\times12}{25\times12} = \frac{96}{300};$

$\frac{240}{300}, \frac{150}{300}, \frac{120}{300}, \frac{105}{300}, \frac{96}{300}$

$\Rightarrow \frac{4}{5}, \frac{5}{10}, \frac{6}{15}, \frac{7}{20}, \frac{8}{25}$

(b) $\frac{11}{13}, \frac{1}{39}, \frac{2}{13}, \frac{10}{26}, \frac{5}{65}$

LCM of 13, 39, 26, 65 = 390

$\frac{11}{13} = \frac{11\times30}{13\times30} = \frac{330}{390}, \quad \frac{1}{39} = \frac{1\times10}{39\times10} = \frac{10}{390},$

$\frac{2}{13} = \frac{2\times30}{13\times30} = \frac{60}{390}$

$\frac{10}{26} = \frac{10\times15}{26\times15} = \frac{150}{390}; \quad \frac{5}{65} = \frac{5\times6}{65\times6} = \frac{30}{390}$

$\Rightarrow \frac{330}{390}, \frac{150}{390}, \frac{60}{390}, \frac{30}{390}, \frac{10}{390}$

$\Rightarrow \quad \frac{11}{13}, \frac{10}{26}, \frac{2}{13}, \frac{5}{65}, \frac{1}{39}$

13 (a) $3\frac{2}{7}+\frac{1}{7}-2\frac{3}{7}=\frac{23}{7}+\frac{1}{7}-\frac{17}{7}$

$= \quad \frac{23+1-17}{7}=\frac{7}{7}=1$

(b) $6-\frac{1}{3}-3\frac{3}{5}+5\frac{1}{6}=6-\frac{1}{3}-\frac{18}{5}+\frac{31}{6}$

$= \quad \frac{6\times30-1\times10-18\times6+31\times5}{30}$

$= \quad \frac{180-10-108+155}{30}=\frac{335-118}{30}$

$= \quad \frac{217}{30}=7\frac{7}{30}$

14. Petrol bought by Arjun = 8 l

Petrol used in his car = $3\frac{1}{2}l=\frac{7}{2}l$

Petrol used in his bike = $2\frac{1}{9}l=\frac{19}{9}l$

Total petrol used = $\left(\frac{7}{2}+\frac{19}{9}\right)l=\frac{63+38}{18}=\frac{101}{18}l$

Petrol left = $\left(8-\frac{101}{18}\right)l$

$= \frac{144-101}{18}l=\frac{43}{8}l=5\frac{3}{8}l$

15. Total students in class = 40

Students who like Pepsi = $\frac{1}{8}$ × 40 = 5

Students who like Coke = $\frac{3}{4}$ × 40 = 30

Students who do not like any drink
= 40 – (30 + 5)

= 40 – 35

= 5

$\therefore$ 5 students do not like any drink.

16. Height of Rama = $1\frac{1}{2}$m

Height of Archana = $2\frac{3}{5}m+1\frac{1}{2}m$

$= \frac{13}{5}m+\frac{3}{2}m=\left(\frac{13}{5}+\frac{3}{2}\right)m$

$= \frac{26+15}{10}=\frac{41}{10}m=4\frac{1}{10}m$

Chapter

08 Decimals

WORKSHEET 1: TENTHS, HUNDREDTHS AND THOUSANDTHS

1. (a) Whole part = 0 Decimal part = 49
   (b) Whole part =1 Decimal part = 36
   (c) Whole part = 0 Decimal part = 857
   (d) Whole part = 21 Decimal part = 546
   (e) Whole part = 9999 Decimal part = 89
   (f) Whole part = 98101 Decimal part = 291
   (g) Whole part = 33 Decimal part = 13847

2. (a) 0.638 = Thousandths
   (b) 0.95 = Hundredths
   (c) 131.4 = Ones
   (d) 15.906 = Thousandths
   (e) 3627.697 = Thousandths
   (f) 56954.81 = Hundredths

3. (a) Seven point three four
   (b) One hundred twenty seven point four five
   (c) Five thousand nine
   (d) One point eight four six
   (e) Four thousand nine hundred twenty seven point one six
   (f) Four hundred forty four point three zero three

4. (a) 55000 (b) 78000.69
   (c) 0.43 (d) 622.362

5. (a) 0.3 (b) 1.6
   (c) 11.5 (d) 0.11
   (e) 1.36 (f) 18.91
   (g) 42.975 (h) 3.126
   (i) 999.99

6. (a) $116.75 = \frac{11675}{100} = \frac{2335}{20} = \frac{467}{4}$

   (b) $5.7832 = \frac{57832}{10000}$

   $= \frac{57832 \div 8}{10000 \div 8}$

   $= \frac{7229}{1250}$

   (c) $1.56 = \frac{156}{100} = \frac{156 \div 4}{100 \div 4} = \frac{39}{25}$

   (d) $105.7 = \frac{1057}{10}$

   (e) $60.5 = \frac{605}{10} = \frac{605 \div 5}{10 \div 5} = \frac{121}{2}$

   (f) $15.2835 = \frac{152835}{10000} = \frac{152835 \div 5}{10000 \div 5} = \frac{30567}{2000}$

   (g) $576.8458 = \frac{5768458}{10000} = \frac{5768458 \div 2}{10000 \div 2}$

   $= \frac{2884229}{5000}$

   (h) $0.38572 = \frac{38572}{100000} = \frac{38572 \div 16}{100000 \div 16} = \frac{3657}{6250}$

   (i) $6.785 = \frac{6785}{1000} = \frac{6785 \div 5}{1000 \div 5} = \frac{1357}{200}$

7. Place Value Chart

	Decimal	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
(a)	169.128	1	6	9	1	2	8
(b)	967.736	9	6	7	7	3	6
(c)	12.35		1	2	3	5	
(d)	19.543		1	9	5	4	3

8. (a) $32.817 = 30 + 2 + \frac{8}{10} + \frac{1}{100} + \frac{7}{1000}$

(b) $252.106 = 200 + 50 + 2 + \frac{1}{10} + \frac{6}{1000}$

(c) $8.432 = 8 + \frac{4}{10} + \frac{3}{100} + \frac{2}{1000}$

(d) $19.543 = 10 + 9 + \frac{5}{10} + \frac{4}{100} + \frac{3}{1000}$

9. (a) 5.000 (b) 0.04

(c) 0.8 and 0.006 (d) 6, 0.09, 0.005

10. (a) 0.7 lies between 0 and 1. Nearest Whole number = 1

(b) 3.5 lies between 3 and 4 . Nearest Whole number = 4

(c) 4.8 lies between 4 and 5. Nearest Whole number = 5

(d) 5.2 lies between 5 and 6. Nearest Whole number = 5

11. (a) $8.790 = 8 + \frac{7}{10} + \frac{9}{100}$

(b) $572.009 = 500 + 70 + 2 + \frac{0}{10} + \frac{0}{100} + \frac{9}{1000}$

(c) $41.868 = 40 + 1 + \frac{8}{10} + \frac{6}{100} + \frac{8}{1000}$

(d) $255.848 = 200 + 50 + 5 + \frac{8}{10} + \frac{4}{100} + \frac{8}{1000}$

12. (a) 459.34 (b) 670.458
(c) 104.007

13. (a) 307.25 (b) 6431.008

(c) 2009.489 (d) 350.86

14. (a) 1000 (b) 9

(c) $\frac{96}{100}$ (d) 0.15

(e) $\frac{6}{100}$ (f) 50

15. (a) $\frac{40}{100}$ (b) $\frac{25}{100}$

(c) $\frac{24}{100}$ (d) 1.10

(e) 0.80

WORKSHEET 2: COMPARE USING DECIMALS

1. (a) The whole parts of these numbers are same.

Hence, 0.8 > 0.5

(b) The whole parts of these numbers are same.

Hence, 2.087 > 2.078

(c) The whole parts of these numbers are not same but 27 > 17.

Hence, 27.841 > 17.841

(d) The whole parts of these numbers are same.

Hence, 17.602 > 17.062

2. (a) 0.8 > 0.008 (b) 0.03 < 0.09

(c) 0.007 < 0.17 (d) 2.34 > 2.30

3. (a) Like decimals because decimal numbers have same number of decimal places.

(b) Unlike decimals because decimal numbers have different number of decimal places.

(c) Like decimals because decimal numbers have same number of decimal places.

(d) Unlike decimals because decimal numbers have different number of decimal places.

4. (a) 3.722, 14.570, 150.800

(b) 4.85, 60.60, 3.80

(c) 7.900, 32.680, 43.895

5. (a) 11.51, 13.61, 18.338, 21.163

(b) 14.135, 14.315, 14.341, 19.315

(c) 68.478, 71.512, 684.478, 715.12

(d) 3.17, 3.7, 3.912, 4.2

6. (a) 7.01, 2.78, 1.528, 0.389

(b) 13.560, 12.868, 12.584, 12.548

(c) 918.82, 819.28, 189.3, 169.33

(d) 4.63, 4.62, 4.610, 4.06

7. (a) 48.25 (b) 0.06

(c) 0.85 (d) 90.50

8. (a) 50 Paise (b) 8 Paise

(c) 5 rupees 90 paise (d) 45 rupees 25 paise

9. (a) $62\text{mm} = \frac{62}{10}\text{cm} = 6.2\text{cm}$ $\left[1\text{mm} = \frac{1}{10}\text{cm}\right]$

(b) $295\text{mm} = \frac{295}{10}\text{cm} = 29.5\text{cm}$

(c) 6m 80 mm

$\Rightarrow$ $6 \times 100\text{cm} = 600\text{cm}$ [1m = 100cm]

$80\text{mm} = \frac{80}{10}\text{cm} = 8\text{cm}$ $\left[1\text{mm} = \frac{1}{10}\text{cm}\right]$

$\Rightarrow$ $(600 + 8)\text{cm} = 608\text{cm}$

10. (a) $0.5\text{cm} = \frac{5}{10}\text{cm} = \frac{1}{2}\text{cm}$

(b) $18.6\text{cm} = \frac{186}{10}\text{cm} = \frac{93}{5}\text{cm}$

(c) $4.68\text{cm} = \frac{468}{10}\text{cm} = \frac{234}{5}\text{cm}$

11. (a) $45\text{cm} = 45 \times \frac{1}{100}\text{m}$ $\left[1\text{cm} = \frac{1}{100}\text{m}\right]$

$= 0.45\text{m}$

(b) 8m 50cm = 8m + 50cm

$= 8\text{m} + 50 \times \frac{1}{100}\text{m} = 8\text{m} + 0.5\text{m}$

$= 8.5\text{m}$

(c) 9m 9cm = 9m + 9cm

$= 9\text{m} + \frac{9}{100}\text{m} = (9 + 0.09)\text{m}$

$= 9.09\text{m}$

12. (a) $7\text{m} = 7 \times \frac{1}{1000}\text{km}$ $\left[1\text{m} = \frac{1}{1000}\text{km}\right]$

$= 0.007\text{km}$

(b) $309\text{m} = 309 \times \frac{1}{1000}\text{km} = 0.309\text{km}$

(c) $79550\text{m} = 79550 \times \frac{1}{1000}\text{km} = 79.550\text{km}$

(d) $57\text{ km }320\text{m} = 57\text{km} + \frac{320}{1000}\text{km}$

$= 57\text{km} + 0.320\text{km}$

$= 57.320\text{km}$

13. (a) 63kg 425g

$63\text{kg} + 425 \times \frac{1}{1000}\text{kg}$ $\left[1\text{g} = \frac{1}{1000}\text{kg}\right]$

$= (63 + 0.425)\text{kg}$

$= 63.425\text{kg}$

(b) $465\text{kg }45\text{g} = 465\text{kg} + 45 \times \frac{1}{1000}\text{kg}$

$= (465 + 0.045)\text{kg}$

$= 465.045\text{kg}$

(c) $680\text{g} = 68 \times \frac{1}{1000}\text{kg} = 0.680\text{kg}$

(d) $5\text{g} = 5 \times \frac{1}{1000}\text{kg} = 0.005\text{kg}$

14. (a) $96\text{ml} = 96 \times \frac{1}{1000}\text{l}$ $\left[1\text{ml} = \frac{1}{1000}\text{l}\right]$

$= 0.960\text{ l}$

(b) $354\text{ ml} = 354 \times \frac{1}{1000}\text{l}$

= 0.354 l

(c) 16 l 20 ml = 16 l + 20 ml

$= 16\,l + \frac{20}{1000}\,l$

= 16 l + 0.020 l

= 16.020 l

(d) 56 l 360 ml = 56 l + 360 ml

$= 56\,l + 360 \times \frac{1}{1000}\,l$

= (56 + 0.360) l

= 56.360 l

15. (a) $\frac{7635}{1000}$ km (b) $\frac{5008}{1000}$ km

(c) $\frac{78045}{1000}$ km (d) $\frac{53550}{1000}$ kg

(e) $\frac{456057}{1000}$ kg (f) $\frac{8}{1000}\,l$

(g) $\frac{6798}{1000}\,l$ (h) $\frac{304200}{1000}\,l$

(i) $\frac{853009}{1000}$ kg

WORKSHEET 3: ADDITION AND SUBTRACTION OF DECIMALS

1. (a) 6.51 (b) 7.18

(c) 416.21 (d) 2339.53

2. (a) 142.8 (b) 58.625

3. (a) 60.48 – 38.16 = 22.32

(b) 100.71 – 42.66 = 58.05

(c) 180 – 116.75 = 63.25

(d) 200.29 – 175.09 = 25.2

4. (a) 771.80 – 338.28 = 432.52

(b) 338.75 – 178.80 = 159.95

(c) 475 – 298.46 = 176.54

(d) 136.75 – 29.704 = 107.046

5. Rukhsar travelled by bus = 5 km 62 m

Rukhsar travelled by car = 2 km 385 m

Rukhsar travelled by walking = 3 km 30 m

Total distance travelled by Rukhsar

= (5.062 + 2.385 + 3.030) km

= 10.477 km

6. Raghav's mother gave him = $ 48.50

Raghav's father gave him = $ 22.60

Total amount given to Raghav by his parents
= $ 48.50 + $ 22.60

= $ 71.10

7. Total distance walked in three days = 23.03 km
Akansha walked on Monday = 6.42 km

Akansha walked on Tuesday = 8.28 km

Distance she walked on Wednesday
= 23.03 – (6.42 + 8.28)

= 23.03 – (14.7)

= 8.33 km

8. Petrol filled in a car = 23 l 400 ml

Petrol filled in two wheeler = 6 l 250 ml

Petrol filled in auto rickshaw = 9 l 375 ml

Total Petrol sold = (23 l 400 ml + 6 l 250 ml + 9 l 375 ml)

= 39 l 25 ml

9. (a) Difference between temperature on Sunday and Tuesday = 37.5°C – (32.4°C)

= 5.1°C

(b) Sum of temperature for the three days
= 32.4°C + 42.2°C + 37.5°C

= 112.1°C

10. Kamini had money = 801.40

Kokila had money = 801.40 + $ 59.60

= 861

11. (a) Cost of Book = 40.38

Cost of Geometry box = 80.50

Cost of one dozen Pencils = 120

Money given to shopkeeper = 500

Money that Kiran will get back
= 500 – (40.38 + 80.50 + 120)

= 500 – (240.88)

= (500 – 240.88) = 259.12

12. Place value of 4 = 400, 4, $\frac{4}{1000}$

$= 400 + 4 + \frac{4}{1000}$

$= 404 + 0.004$

$= 404.004$

13. Ajay bought milk = 8.2 l

Vijay bought milk = 3.25 l

Shravan bought milk= 4.60 l

They buy milk in all = 8.2 l + 3.25 l + 4.60 l

= (8.2 + 3.25 + 4.60) l

=16.05 l

Total milk in booth = 40 l

Milk left = (40 – 16.05) l = 23.95 l

WORKSHEET (BASED ON COMPLETE CHAPTER)

1. (a) (ii) (b) (iii) (c) (iii)
(d) (ii) (e) (i)

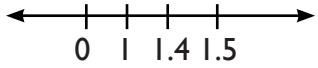
2. (a) $\frac{5\times 8+1}{8}=\frac{40+1}{8}=\frac{41}{8}$ (b) 1.51
(c) less (d) $4+\frac{9}{100}$
(e) 29.05 (f)4.004 l (g) 1.16

3. (a) F (b) F (c) F
(d) F (e) T

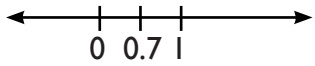
4. (a) 0.444, 4.04, 4.404, 4.44, 4.444
(b) 0.02, 0.079, 3.78, 3.97, 4.061, 6.43

5. (a) 9.37, 7.39, 6.042, 4.65, 0.098, 0.007
(b) 7.01, 2.807, 2.78, 1.528, 0.389

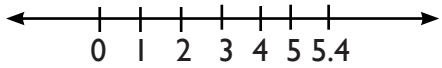
6. (a) 1.4 is nearer to 0



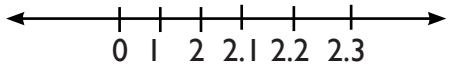
(b) 0.7 is nearer to 1



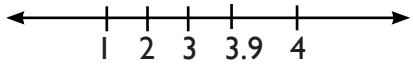
(c) 5.4 is nearer to 5



(d) 2.3 is nearer to 2



(e) 3.9 is nearer to 4



7. (a) 47.013, 3.040, 235.300, 441.140

8. (a) Thirty three point zero zero eight
(b) Five hundred forty two point eight six six seven
(c) Forty four point one two

9. (a) 5009.27 (b)3.006

10. (a) $\frac{1525}{100}=\frac{1525\div 5}{100\div 5}=\frac{305}{20}=\frac{305\div 5}{20\div 5}=\frac{61}{4}$

(b) $\frac{4008}{1000}=\frac{4008\div 8}{1000\div 8}=\frac{501}{125}$

(c) $\frac{7250}{1000}=\frac{725}{100}=\frac{725\div 25}{100\div 25}=\frac{29}{4}$

11. Abhinay carries bag = 2.80 kg

His father carries bag = 10.25 kg

Total Mass of both bags = (2.80 + 10.25) kg

= 13.05 kg

12. Muskan bought fabric for her dress = 5.75 m

Used fabric = 4.25 m

Left fabric =5.75 m – 4.25 m = (5.75 – 4.25) m

= 1.5 m

13. Sum of two numbers =16.25

One number = 9.28

$\therefore$ Other number =16.25 – 9.28

= 6.97

14. Cost of wallet = 110.50

Cost of medicines= 235.45

Money that Rakesh had = 2000

Money left with Rakesh
= 2000 – (110.50 + 235.45)

= (2000 – 345.95) = 1654.05

$\therefore$ Rakesh was left with 1654.05

15. Distance ran by Sangeeta = 5.25 km

Distance ran by Smantha = 7.05 km

$\Rightarrow$ (7.05 – 5.25) km = 1.8 km

$\therefore$ Smantha ran 1.8 km more distance than Sangeeta

16. Total distance covered by ant
= 40.2 cm + 75.63 cm + 15.225 cm

= (40.2 + 75.63 + 15.225) cm

= 131.055 cm

$\therefore$ Ant covered a total distance of 131.055 cm

Chapter

09 Data Handling

WORKSHEET 1: RECORDING AND ORGANISATION OF DATA

1. (a) **Data:–** A data is a collection of numbers gathered to give some information.

   (b) **Frequency:–** It is the number of times a particular entry occurs.

   (c) **Observation:–** Each numerical fact of the data is called an observation.

   (d) **Arrayed Data:–** Arranging the numerical figures of a set of data in ascending or descending order is called an arrayed data.

2.

Scores	Tally Marks	Frequency
14	𝍸	5
15	IIII	4
16	I	I
18	𝍸 I	6
20	𝍸 II	7
22	II	2
23	II	2
25	𝍸	5
27	III	3
28	III	3
29	I	I
30	I	I
Total		40

3.

Marks	Tally Marks	Number of Students
2	II	2
3	III	3
4	III	3
5	𝍸 II	7
6	𝍸 I	6

7	𝍸 II	7
8	𝍸	5
9	IIII	4
10	III	3
Total		40

(a) 5 + 4 + 3 =12 students

(b) 2 + 3 + 3 = 8 students

4.

Dice	Tally Marks	Number Appearing
2	𝍸 II	7
3	𝍸 I	6
4	𝍸	5
5	𝍸 𝍸	10
6	𝍸 𝍸 II	12
Total		40

5.

Marks	Tally Marks	Number of Students
30 – 39	I	I
40 – 49	IIII	4
50 – 59	𝍸 III	8
60 – 69	𝍸 III	8
70 – 79	IIII	4
80 – 89	II	2
90 – 99	III	3
		30

(b) 99 (c) 38 (d) one student

(e) 8 + 8 + 4 + 2 + 3 = 25 students

6. (a) Weights in descending order:

3.1, 3.0, 2.9, 2.9, 2.8, 2.8, 2.7, 2.7, 2.6, 2.5, 2.5, 2.4, 2.3, 2.2, 2.1

(b) Highest weight = 3.1

(c) Lowest weight = 2.1

(d) 6 babies (e) 3 babies

7.

Score	Tally Marks	Total Students
11 – 20	II	2
21 – 30	IIII	4
31 – 40	𝍸	5
41 – 50	𝍸 𝍸 IIII	14
51 – 60	𝍸 𝍸 I	11
61 – 70	𝍸 𝍸 I	11
71 – 80	III	3
		50

8.

S. No.	Tally Marks	Number of Observation
a	IIII	4
b	II	2
c	𝍸 𝍸 III	13
d	𝍸 𝍸	10
e	𝍸 𝍸 𝍸 𝍸 II	22

WORKSHEET 2: INTERPRETATION AND DRAWING OF A PICTOGRAPH

1. (a) $4 \times 75 = 300$ (b) Friday
   (c) $6 \times 75 = 450$ (d) Wednesday
2. (a) $8 \times 6 = 48$
   (b) II^{nd} week $= 8 \times 8 = 64$
   IV^{th} week $= 3 \times 8 = 24$
   Total number of T–shirts = $64 + 24 = 88$
   (c) I^{st} week
   (d) Total number of T–shirts in the month of June
   $= 5 \times 8 + 8 \times 8 + 6 \times 8 + 3 \times 8$
   $= 40 + 64 + 48 + 24 = 176$
3. (a) Rose plants $= 5 \times 6 = 30$
   (b) Total number of Jasmine flowers $= 5 \times 5 = 25$
   (c) Rose

(d) Total number of Plants = $6 \times 5 + 4 \times 5 + 5 \times 5 + 3 \times 5$
= $30 + 20 + 25 + 15 = 90$

4.

Days	No. of TV sets
Monday	☺ ☺ ☺ ☺ ☺ ☺
Tuesday	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺
Wednesday	☺ ☺ ☺
Thursday	☺ ☺ ☺ ☺ ☺
Friday	☺ ☺
Saturday	☺ ☺ ☺ ☺ ☺ ☺ ☺
Sunday	☺ ☺ ☺ ☺
	1 ☺ = 50

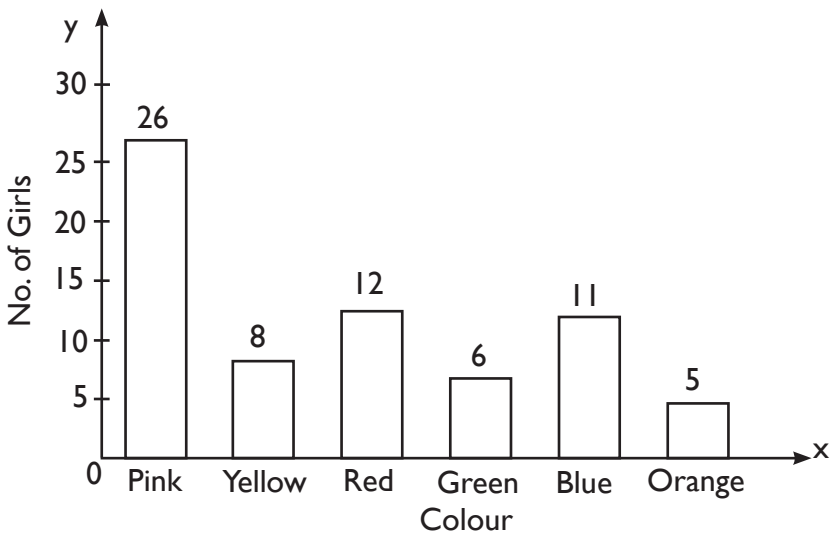
5.

Favourite TV Channels	Students
National Geographic	YYYYYYY
Sony TV	YYYYYYYYY
Star TV	YYYYYYYYYYYYYYY
NDTV	YYYYYYYY
Discovery	YYYYYYYYYYY
	1 Y = 1

WORKSHEET 3: INTERPRETATION AND DRAWING OF A BAR GRAPH

1. (a) No. of students and Shoe size.
(b) Shoe No. 4, 5, 6, 7, 8, 9 and 10.
(c) Shoe No. 7 (d) Shoe No. 9
(e) False

2.

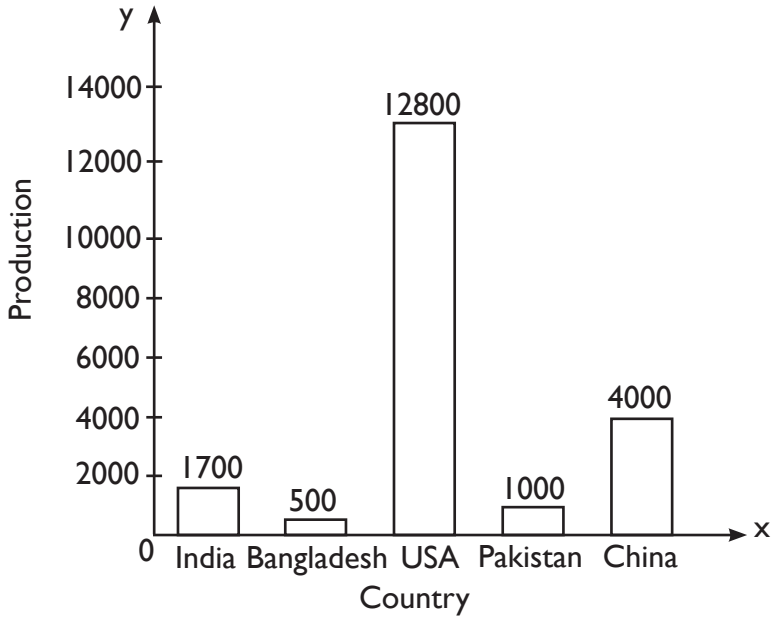


3. (a) Number of Students in class VI of a school during the academic years 1996 – 97 to 1999 – 2000.

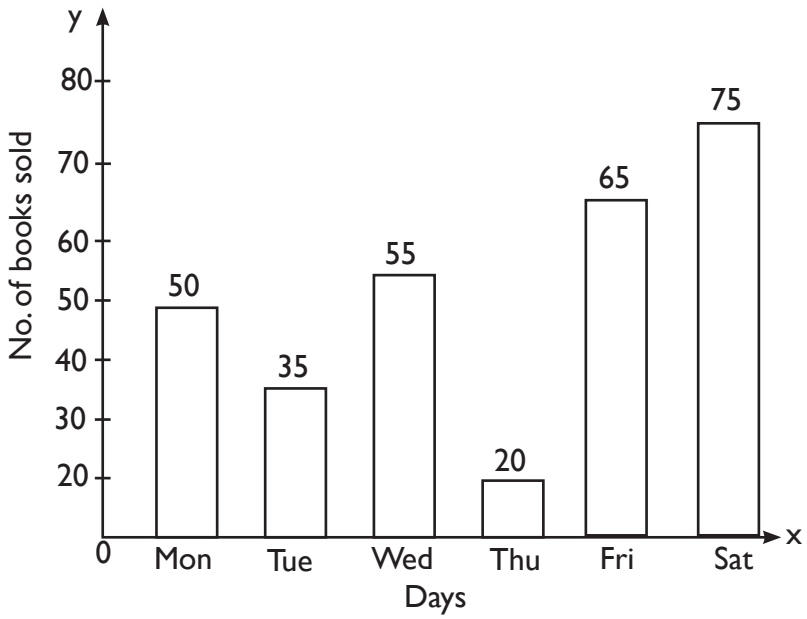
(b) With each passing year, 50 students were increased except for the year 1999-2000 in which there was an increase of 100 students.

(c) False

4.



5.



6. (a) 1 unit length = 10 students

(b) 10 students (c) Yes

WORKSHEET (BASED ON COMPLETE CHAPTER)

1. (a) (ii) (b) (i) (c) (iii) (d) (i) (e) (iii)

2. (a) Between 3 to 8 (b) 2 families (c) 8

3.

Dice	Tally Marks	Result
1	𝍸	5
2	𝍸	5
3	IIII	4
4	IIII	4
5	III	3
6	IIII	4

4.

Height	Tally Marks	Total Students
130 – 135	𝍸 I	6
135 – 140	𝍸 𝍸 𝍸	15
140 – 145		
145 – 150	III	3
150 – 155	𝍸 I	6
Total		30

(a) 6 students (b)130 cm (c) one student (d) 21 students

5. Number of students = 12, 5, 8, 17

6. 1 scale Y = 5 units

Cricket	Y Y Y Y Y Y YYYYYYYY
Football	Y Y Y Y YY Y Y Y
Volley Ball	Y Y Y YY Y Y
Chess	Y Y YY Y
Badminton	Y Y Y Y YYY Y YY

7. (a) 7 × 10 = 70 books (b) Saturday

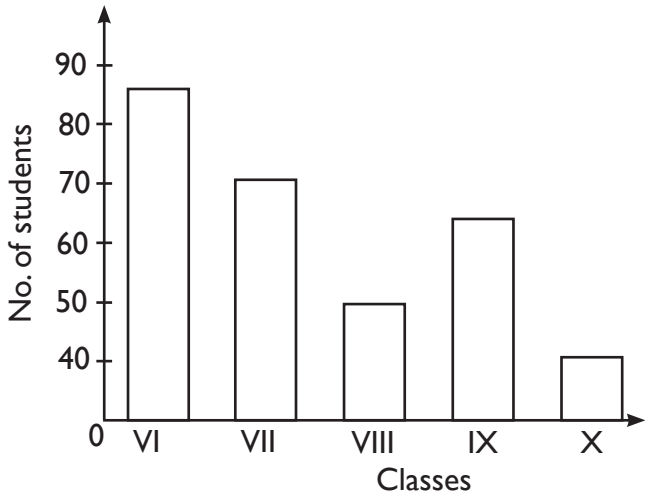
(c) Friday (d) 6 x 10 + 2 x 10 + 8 x 10

= 60 + 20 + 80

= 160 books

(e) Saturday

8.



Chapter
10 Mensuration

WORKSHEET 1: DIAGRAMMATIC PROBLEM RELATED TO PERIMETER

1. (a) Perimeter of rectangle = 2(l + b)
= 2(15 +4)
= 2(19)
= 38 cm.

(b) Perimeter of rectangle = 2(l + b)
= 2(15 +12)
= 2(27)
= 54 cm.

(c) Perimeter of rectangle = 2(l + b)
= 2 (0.5 + 0.2) m [$\because$ 20 cm = $\frac{20}{100}$m]
= 2(0.7) m = 1.4 m

(d) Perimeter of square = 4 x 15
= 60 cm

2. (a) Perimeter of triangle
= 1 cm + 1.5 cm + 2.5 cm
= 5 cm

(b) Perimeter of triangle
= 7 cm + 6 cm + 9 cm
= 22 cm

(c) Perimeter of triangle
= 8 cm + 8 cm + 8 cm
= 24 cm

(d) Perimeter of triangle
= 12 cm + 12 cm + 6 cm
= 30 cm

3. (a) Perimeter of the given figure
= (8 + 5 + 6 + 7 + 9 +6 +6) cm
= 47 cm

(b) Perimeter of the given figure
= (2 + 1 + 4 + 4 + 2 + 1 + 2 + 2 + 2+ 2) cm = 22 cm

(c) Perimeter of the given figure
= (3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3) cm
= 36 cm

(d) Perimeter of the given figure
= (2+2+2+2+1+1+1+1+4+8) cm
= 24 cm

WORKSHEET 2: WORD PROBLEM RELATED PERIMETER

1. (a) Perimeter of rectangle = 2 (l + b)
= 2(6 + 5) cm
= 2(11) cm
= 22 cm

(b) Perimeter of rectangle = 2 (l + b)
= 2(25 + 19) cm
= 2 × 44 cm
= 88 cm

2. (a) Perimeter of square = 4 × side
= 4 × 9.5 cm =38 cm

(b) Perimeter of square = 4 × side
= 4 × 42 cm =168cm

3. (a) Perimeter of triangle = 5cm + 7cm + 9cm
= 21 cm

(b) Two sides of isosceles triangle
= 8 cm, 8 cm
Third side of isosceles triangle = 9 cm

Perimeter of isosceles triangle
= 8 cm + 8 cm + 9 cm
= 25 cm

(c) Perimeter of an equilateral triangle
= 12 cm + 12 cm + 12 cm
= 36 cm

4. (a) Perimeter = 120 cm

Perimeter of square = 4 × side

$\Rightarrow$ 120 = 4 × side

$\Rightarrow$ side = $\frac{120}{4}$ = 30 cm

(b) Perimeter of square = 4 × side

$\Rightarrow$ 56 cm = 4 × side

$\Rightarrow$ side = $\frac{56}{4}$ cm = 14 cm

(c) Perimeter of square = 4 × side

$\Rightarrow$ 24 = 4 × side

$\Rightarrow$ side = $\frac{24}{4}$ cm = 6 cm

(d) Perimeter of square = 4 × side

$\Rightarrow$ 48 = 4 × side

$\Rightarrow$ side = $\frac{48}{4}$ cm = 12cm

5. (a) Perimeter of rectangle = 2(l + b)

$\Rightarrow$ 420 = 2(60 + b)

$\Rightarrow$ $\frac{420}{2}$ = 60 + b

$\Rightarrow$ 60 + b = 210

$\Rightarrow$ b = 210 – 60 = 150

hence, breadth =150cm

(b) Perimeter of rectangle = 2(l + b)

$\Rightarrow$ 420 = 2(70 + b)

$\Rightarrow$ $\frac{420}{2}$ = 70 + b

$\Rightarrow$ 210 = 70 + b

$\Rightarrow$ b = 210 – 70 = 140

hence, breadth = 140cm

(c) Perimeter of rectangle = 2(l + b)

$\Rightarrow$ 420 = 2(21 + b)

$\Rightarrow$ 210 = 21 + b

$\Rightarrow$ b = 210 – 21 = 189

hence, breadth = 189cm

(d) Perimeter of rectangle = 2(l + b)

$\Rightarrow$ 420 = 2(42 + b)

$\Rightarrow$ $\frac{420}{2}$ = 42 + b

$\Rightarrow$ b = 210 – 42

b = 168cm

hence, breadth = 168cm

6. Length of the strip =25cm

Breadth of the strip = 14cm

Length of strip required = Perimeter of Photograph

$\Rightarrow$ 2 × (l + b) = 2 × (25 + 14) cm
= 2 × 39 cm
= 78 cm

7. Length of land = 0.5 km

Breadth of land = 0.9 km

Perimeter = 2 × (l + b)
= 2 × (0.5 + 0.9) km
= 2 × 1.4 km = 2.8 km

Length of the wire required = 2.8 km

8. Length of ribbon = 56 cm

(a) Perimeter of a regular hexagon = 6 × side

$\Rightarrow$ 56 = 6 × side

$\Rightarrow$ side = $\frac{56}{6}$ cm = 9.3 cm

(b) Perimeter of an equilateral triangle
= 3 × side

$\Rightarrow$ 56 = 3 × side

$\Rightarrow$ side = $\frac{56}{3}$ = 18.6 cm

(c) Perimeter of a square = 4 × side

$\Rightarrow$ 56 = 4 × side

$\Rightarrow$ side = $\frac{56}{4}$ cm = 14 cm

9. Side of square park = 40m

Length of fence required = Perimeter of the square park

= 4 × side

= 4 × 40m =160m

Total cost of fencing = 22.50

Cost for fencing 160m of square park
= $ 160 × 22.50

= $ 3600

10. Side of square park = 40m

Perimeter of square park = 4 x side

= 4 x 40

= 160 m

A.T.Q.

Madhav runs the square park three times so,

Total distance covered = 3 x 160

= 480 m

WORKSHEET 3: DIAGRAMMATIC PROBLEMS RELATED TO AREA

1. (a) Total squares = 13

Area of figure = (1 × 13)m^2 = 13 m^2

(b) Total squares = 12

Half square = 1

Area of figure = (1 × 12 + 0.5) m^2
= 12.5 m^2

(c) Total squares = 10

Area of figure = (1 × 10) m^2 = 10 m^2

2. (a) Area of 1st rectangle = (10 × 1) m^2
= 10 m^2

Area of 2nd rectangle = (8 × 2)m^2 = 16m^2

Total area of figure
= (10 + 16) m^2

= 26 m^2

(b) Area of Ist rectangle = 10 × 2 = 20 m^2

Area of 2nd rectangle = 6 × 1 = 6 m^2

Area of 3rd rectangle = 7 x 1 = 7 m^2

Total area of figure = (20 + 6 + 7) m^2

= 33 m^2

3. (a) Area of shaded region = (6 x 2 + 6 x 2 + 6 x 2 + 6 x 2 + 2 x 2) cm^2

= (12 + 12 + 12 + 12 + 4) cm^2

= 52 cm^2

(b) Number of shaded squares = 8.

As 1 square = 1 m^2.

Area of shaded region = 8 m^2

(c) Area of shaded region = 4 x 4 = 16 cm^2

(d) Area of shaded region
= (5 x 2 + 6 x 2) cm^2

= (10 + 12) cm^2

WORKSHEET (BASED ON COMPLETE CHAPTER)

1. (a) (i) (b) (ii)

(c) (iii) (d) (iii)

2. (a) T (b) F (c) F

(d) T (e) T

3. (i) (a) l = 9 cm, b = 3.5 cm

Area of rectangle = l × b = (9 × 3.5)cm^2

= 31.5 cm^2

Perimeter of rectangle = 2(l + b)

= 2(9 + 3.5) cm
= 2 × 12.5 cm
= 25 cm

(b) l = 4 cm, b = 3 cm

Area = l × b = (4 × 3) cm^2 = 12 cm^2

Perimeter of rectangle = 2(l + b)
= 2(4 + 3) = 14cm

(c) b = 12 cm, Area = 240 cm^2, l = ?

Area = l × b

$\Rightarrow$ 240 = l × 12

$\Rightarrow$ $l = \frac{240}{12}$ = 20 cm

Perimeter = 2(l + b) = 2(12 + 20)

= 2 × 32 cm

= 64 cm

(d) l = 5 cm and b = 8.5 cm

Area = l x b = (5 x 8.5) cm^2

= 42.5 cm^2

Perimeter = 2(l+b)

= 2 (5+8.5)

= 2 x 13.5

= 27 cm

(ii) (a) l = 3.5 cm, b = 5 cm

Area = l × b = (3.5 × 5) cm^2

= 17.5 cm^2

Perimeter = 2(l + b) = 2(3.5 + 5) cm

= 2 × 8.5

= 17 cm

(b) b = 2 cm, Perimeter = 20 cm

Perimeter = 2(l + b)

$\Rightarrow$ 20 = 2(l + 2)

$\Rightarrow$ 10 = l + 2

$\Rightarrow$ l = 10 – 2 = 8 cm

Area = l × b cm^2

= (8 × 2) cm^2 = 16 cm^2

(c) b = 4 cm, Area = 16 cm^2

Area = l × b

$\Rightarrow$ 16 = l × 4

$\Rightarrow$ l = 16 / 4

l = 4 cm

Perimeter = 2(l + b)

$\Rightarrow$ = 2(4 + 4)

= 2 × 8

= 16 cm

(d) l = 6 cm, Area = 324 cm^2

Area = l × b

$\Rightarrow$ 324 = 6 × b

$\Rightarrow$ b = $\frac{324}{6}$ cm = 54 cm

Perimeter = 2(l + b)

$\Rightarrow$ = 2(6 + 54) = 2(60) = 120cm

4. Length (l) = 16 m

Breadth (b) = 4 m

Area of the floor = l × b = 16 × 4 = 64 m^2

Side of square tile = 2 m

Area of square tile = $(2)^2$ = 4m^2

Number of tiles required to cover the floor

= $\frac{64}{4}$ = 16

5. Length =100m

Breadth = 42m

Perimeter = 2(l + b) = 2(100 + 42)

= 2(142) = 284 m

Cost of fencing = 284 × $ 3.5 = $ 994

6. Let breadth = x

Length of window = $1\frac{1}{2}x = \frac{3}{2}x = \frac{3}{2} \times 1.20$

= 1.80 m

Area= l × b

= 1.20 × 1.80

= 2.16m^2

Cost of the glass plate = $ 40 × 2.16

= $ 86.4

7. Length of a room = 8m

Breadth of a room = 5.2m

Area of room = l x b

= 8 x 5.2

= 41.6m^2

Length of carpet required = 41.6/0.8

= 52m

Total cost of carpeting the room = 52 x 20

= $ 1040

8. Length of playground = 172m

Area = 860m^2

$$\text{Breadth} = \frac{\text{Area}}{\text{length}} = \frac{860}{172} = 5\text{m}$$

Perimeter of the ground = 2(l + b)m

= 2(172 + 5)m

= 2 × 177m = 354m

Cost of fencing = $ 3.5 × 354

= $ 1239

9. Length of covering the floor = 100m

Breadth of covering the floor = 6.24m

Area = l × b

= (100 × 6.24)m^2 = 624m^2

Length of square carpet required

$$= \frac{624}{3}\text{ m} = 208\text{ m}$$

Cost of covering the floor = $ 28 × 208

= $ 5824

10. Perimeter of square = 48m

4 × side = 48

$$\Rightarrow \quad \text{side} = \frac{48}{4} = 12\text{m}$$

Area of square = side × side

= (12 × 12)m^2 = 144m^2

Given length of rectangle = 14m

b = ?

Area = 14 × b

$\Rightarrow$ 144 – 4 = 14 × b

$$\Rightarrow \quad b = \frac{140}{14} = 10\text{m}$$

hence, breadth = 10m

11. Area of the rectangular envelopes = l × b

= 72cm × 48cm

= 3456 cm^2

Area of paper = 18cm × 12cm

= 216 cm^2

$$\text{Number of envelopes} = \frac{3456}{216}$$

= 16 envelopes

12. Length of board = 2 m 50 cm = 2.5 m

Breadth = 2 m

Total boards = 20

∴ Perimeter of one board= 2(l + b)

= 2(2.5 + 2)

= 9 m

Total length = 9 x 20 = 180 m

No. of framed boards =180/9

=20 boards

∴ No aluminium strip will be required for the remaining boards.

13. Length of outer boundary
= (200 + 300 + 80 + 300 + 200 + 260)m

= 1340 m

Total cost of fencing = 1340 x 20 = $ 26800

Area of flower bed = 80 x 100

= 8000 m^2

Cost of manuring the flower bed = 8000 x 50

= $ 400000.

14. Perimeter of square garden = 48m

Side of square garden = 48/4

= 12m

Area of square garden = 12 x 12

= 144 m^2

Uncovered area = (144 - 18) m^2

= 126 m^2

Fraction of ground covered by flower bed = 18/144

= 1/8.

Ratio of area covered by the flower bed and the remaining area = 18/126

= 1/7

15. Area of square = side × side

= 4cm × 4cm = 16cm^2

Area of small squares = 16cm^2

Total area of the small squares = 96 sq.cm

No. of pieces = 96/16

= 6 pieces

Perimeter of each piece = 4 x 4

= 16 cm

Length of original wire = 16 x 6

= 96 cm

16. Length of newspaper = 30 cm

Breadth of newspaper = 48 cm

For a half page advertisement,

Area will be = 30 x 48 / 2

= 720 cm^2

Amount that company will have to pay

= 720 / 20 x 500

= $ 18000

17. Perimeter of regular hexagon = 60 cm

$\Rightarrow$ 6 × side = 60 cm

$\Rightarrow$ side $= \frac{60}{6}$cm = 10cm

18. Perimeter of regular pentagon = 540 m

$\Rightarrow$ 5 × side = 540

$\Rightarrow$ side $= \frac{540}{5}$ m = 108 m

Chapter
11 Algebra

WORKSHEET 1: MATCHSTICK PATTERNS AND BASIC IDEA OF VARIABLE

1. (a) 22
   (b) 37
2. (a)

No. of dots	4	6	8	12	n
No. of Trapezium	1	2	3	5	n/2 – 1

(b)

No. of dots	2	3	4	5	6	9	n
No. of line segments	1	3	6	10	15	36	n(n –1)/2

(c)

No. of Square	1	2	3	4	8	19	n
No. of Matchsticks	4	8	12	16	32	76	4n
No. of dots	4	7	10	13	25	58	3n+1

3. (a) nth term = 8n-3
   22nd term = 8 x 22 -3
   = 173
   36th term = 8 x 36 -3
   = 285
   45th term = 8 x 45 -3
   = 357
   (b) nth term = 7n + 2
   22nd term = 7 x 22 + 2
   = 156
   36th term = 7 x 36 + 2
   = 254
   45th term = 7 x 45 + 2
   = 317
4. (a) 2n-1
   (b) 5n+1
5. (a) Number of dots in a row = 4 x total rows
   = 9 x 11 = 99 dots
   (b) 12 x 11 = 132 rows
6. (a) Distance in two hours = $2 \times 35 = 70$ km
   (b) Cost of x kg potato = $ 55
   Cost of 1 kg potato = $ $\frac{55}{x}$
   (c) 8x
   (d) $4x = 21 - 9 = 12 \Rightarrow x = 3$
   (e) 500 – t
7. (a) 20n
8. (a) x + 3
   (b) x + 35
   (c) x + 35 – 15 = x + 20
   (d) 18x
   (e) x + 3 + 1 = x + 4

WORKSHEET 2: USE OF VARIABLES

1. (a) Commutative
   (b) Associative
   (c) Distributive
   (d) Commutative
2. (a) Perimeter of Square (P) = 4 × side (S)
   $\Rightarrow$ P = 4S
   (b) D = 2 × r
   (c) Area of rectangle = l × b
   (d) Perimeter of rectangle (P) = 2 (length + breath)
   $\Rightarrow$ P = 2(l + b)

3. (a) The perimeter of rectangle is two times the sum of its length and breadth.
   (b) The area of rectangle is the product of its length and breadth.
4. Let breadth be 'b'
   According to question, $l = (2b - 4)m$
5. Score in Social Science = x
   Score in English = $\frac{4}{5}x + 30$
6. Bus travels at x km per hour
   A.T.Q.
   Bus travelled 7 hrs and still Lucknow is 25 km away
   So, distance from Jaipur to Lucknow = 7x + 25

WORKSHEET 3: EXPRESSIONS WITH VARIABLES

1. (b) and (e) are expressions with numbers only.
2. (a) 9 + a
   (b) x – 7
   (c) $5 \times n = 5n$
   (d) $\frac{q}{8}$
   (e) $\frac{-3}{x}$
3. (a) 6x + 15
   (b) 5x – 18
   (c) $x \times (-9) + 6 = -9x + 6$
   (d) $20 - x \times 10 = 20 - 10x$
   (e) 5x + 4

WORKSHEET 4: EQUATIONS AND THEIR SOLUTIONS

1. (a) (i)
   (b) (i)
   (c) (iii)
   (d) (i)
2. (a) $x + 15 = 50 \Rightarrow x = 50 - 15 = 35$
   (b) $q - 8 < 9 \Rightarrow q < 9 + 8 = 17$
   (c) $6x < 50 \Rightarrow x < \frac{50}{6}$
   (d) $80 = 6x + 2 \Rightarrow 80 - 2 = 6x$
   $\Rightarrow 78 = 6x$
   $\Rightarrow x = \frac{78}{6} = 13$
   (e) It is not an equation with variable.
3. (a) LHS = 7x – 4
   When x = 2, 7 (2) – 4 = 14 – 4 = 10 = RHS.
   Yes, LHS = RHS.
   (b) LHS = 3x + 10
   When x = 5, 3(5) + 10 = 15 + 10 = 25 = RHS.
   Yes, LHS = RHS.
   (c) LHS = p – 7
   When p = 17, $17 - 7 = 10 \neq 7$
   No, LHS ≠ RHS.
   (d) LHS = 3x + 4
   When x = 4, 3 (4) + 4 = 12 + 4 = 16 = RHS
   Yes, LHS = RHS.
   (e) LHS = 5x
   When x = 17, $5 \times 17 = 85 \neq$ RHS
   No, LHS ≠ RHS.
4. (a)

x	x + 10
1	1 + 10 = 11
2	2 + 10 = 12
3	3 + 10 = 13
4	4 + 10 = 14
5	5 + 10 = 15
6	6 + 10 = 16
7	7 + 10 = 17
8	8 + 10 = 18
9	9 + 10 = 19

$\therefore$ x = 7 is the solution of x + 10 = 17

(b)

y	8	9	10	11	12	13	14	15	16
$\frac{y}{3}$	$2\frac{2}{3}$	3	$3\frac{1}{3}$	$3\frac{2}{3}$	4	$4\frac{1}{3}$	$4\frac{2}{3}$	5	$5\frac{1}{3}$

$\therefore$ y = 12 is the solution of $\frac{y}{3} = 4$

(c)

a	5	6	7	8	9	11	12	13
a – 7	–2	–1	0	1	2	4	5	6

a – 7 = 3

a = 7 + 3

$\therefore$ a = 10

5. (i) x – 7 = 2

$\Rightarrow$ x = 2 + 7 = 9

$\therefore$ x = 9

(ii) y + 3 = 18

$\Rightarrow$ y = 18 – 3 = 15

$\therefore$ y = 15

(iii) $7x = 420 \quad \Rightarrow x = \frac{420}{7} = 60$

$\therefore$ x = 60

(iv) $\frac{x}{5} = 20 \Rightarrow x = 20 \times 5 = 100$

WORKSHEET (BASED ON COMPLETE CHAPTER)

1.

No. of houses	1	2	3	5	8	n
No. of matchsticks	6	11	16	26	41	5n + 1

The generalized pattern is 5n+1.

2. (a) 15 + 3x

(b) $\frac{1}{2}(a+b)$

(c) $\frac{x}{y} + xy$

(d) 9m = p – n

3. (a) Subtracting 16 from x gives the result 9.

(b) x is multiplied by 5 and 9 is added to the result.

(c) 20 times d gives result t.

(d) p divided by q gives result 6 times s.

4. (a) x + 60 = 90 $\Rightarrow$ x = 90 – 60 = 30

(b) $\frac{x}{5} = 24 \quad \Rightarrow$ x = 24 $\times$ 5 = 120

5. (a) 103, 107, 111, 115, 119, 123, 127

General expression is 99 + 4n

(b) 3n = 3 $\times$ 1 = 3, 3 $\times$ 2 = 6, 3 $\times$ 3 = 9, 3 $\times$ 4 = 12, 3 $\times$ 5 = 15

6. Vinit's present age = x years

(a) x + 5

(b) x – 3

(c) Grandfather's age = 8 $\times$ x = 8x

(d) Grandmother's age = 8x – 2

(e) Vinit's father's age = 4x + 3

7. Car travels at x km per hour

After the car has travelled 6 hrs, distance travelled = 6x km

Distance from Yamuna Nagar to Haridwar

= 6x + 25 km.

Chapter
12 Ratio and Proportion

WORKSHEET 1: BASIC PROBLEM RELATED TO RATIO

1. (a) T (b) F (c) T (d) T

2. (a) $5x$ (b) $\frac{4}{5}x$ (c) $\frac{1}{3}$

   (d) $\frac{4x}{x}$ (e) $\frac{1}{2}$

3. (a) $\frac{35}{140} = \frac{5}{20} = \frac{1}{4}$

   (b) $\frac{90}{360} = \frac{9}{36} = \frac{1}{4}$

   (c) $\frac{425}{350} = \frac{85}{70} = \frac{17}{14}$

   (d) $\frac{200}{625} = \frac{40}{125} = \frac{8}{25}$

4. (a) $\frac{350}{745} = \frac{70}{149}$

   (b) $\frac{54m}{189m} = \frac{2}{7}$

   (c) $\frac{360\text{ km}}{12\text{ km}} = \frac{30}{1}$

   (d) $\frac{21\,300\text{ ml}}{31\,220\text{ ml}} = \frac{2300\text{ ml}}{3220\text{ ml}} = \frac{115}{161}$

   (e) $\frac{24\text{ hours}}{120\text{ hours}} = \frac{1}{5}$

   (f) $\frac{34\text{ minutes}}{96\text{ seconds}} = \frac{34\times 60}{96} = \frac{2040}{96} = \frac{85}{4}$

5. (a) ₹ 3 = 3 × 100 P = 300 P

   $= \frac{300\text{ paise}}{120\text{ paise}} = \frac{5}{2}$

   (b) $\frac{8\text{ dozens}}{24\text{ dozens}} = \frac{1}{3}$

   (c) 3 years = 3 × 12 = 36 months

   $= \frac{36\text{ months}}{4\text{ months}} = \frac{9}{1}$

   (d) 5 months = 5 × 4 = 20 weeks

   $= \frac{20\text{ weeks}}{6\text{ weeks}} = \frac{10}{3}$

6. (a) 2 hours = 2 × 60 = 120 min.

   lowest form = $\frac{60}{120} = \frac{1}{2}$

   (b) 1 kg = 1000 g

   lowest form = $\frac{250}{1000} = \frac{1}{4}$

   (c) ₹ 50 = 50 × 100 P = 5000 P.

   = 5000 P to 200 P or 5000 : 200

   lowest form = $\frac{5000}{200} = \frac{50}{2} = \frac{25}{1}$

   (d) 14 km = 14× 1000 m = 14000 m to 5600 m

   or 14000 : 5600; lowest form = $\frac{14000}{5600} = \frac{5}{2}$

   (e) 4 m = 4 × 100 cm = 400 cm to 45 cm

   or 400 to 45; lowest form = $\frac{400}{45} = \frac{80}{9}$

7. (a) The required ratio is 36 : 40

   $= \frac{36\div 4}{40\div 4} = \frac{9}{10}$.

   (b) Total bulbs = 70

   Defective bulbs = 25

   Good bulbs = 70 – 25 = 45

Ratio = 25 : 45 = $\frac{25}{45} = \frac{25 \div 5}{45 \div 5} = \frac{5}{9}$

(c) The required ratio is AB : CD

= 9 : 7 = $\frac{9}{7}$

WORKSHEET 2: WORD PROBLEMS RELATED TO RATIO

1. Length of room = 13 m

Breadth of room = 7.8 m

The required ratio 13 m : 7.8 m = $\frac{13}{7.8}$ = 5/3

2. Rakesh earns = ₹ 25,000

His wife earns = ₹ 30,000

(a) The required ratio = $\frac{25,000}{30,000} = \frac{25}{30} = \frac{5}{6}$

(b) Total Income = ₹ (25000 + 30000)
= ₹ 55,000

The required ratio = 25000 : 55000

= $\frac{25000}{55000} = \frac{25}{55} = \frac{5}{11}$

3. Anu earns in a month = ₹ 5950

She saves in a month = ₹ 870

(a) Required ratio = 870 : 5950 = $\frac{870}{5950}$

= $\frac{87}{595}$

(b) Her expenditure = 5950 – 870 = 5080

The required ratio 5950 : 5080 = $\frac{5950}{5080}$

= $\frac{595}{508}$

(c) The required ratio = 870 : 5080 = $\frac{870}{5080}$

= $\frac{87}{508}$

4. Perimeter = 88 m

Let the length of the field = 7x

Width of the field = 4x

Perimeter = 2 (l + b)

$\Rightarrow$ 88 = 2 (7x + 4x)

$\Rightarrow \frac{88}{2} = 11x \Rightarrow 11x = 44 \therefore x = 4.$

Hence, width = 4 × 4 = 16 m.

5. Total ratio = 5 + 3 = 8

$\therefore$ Kajal's share = $\frac{5}{8} \times 872$ = ₹ 5 × 109
= ₹ 545

Priyanka's share = $\frac{3}{8} \times 872$ = ₹ 3 × 109
= ₹ 327

6. Ratio of income to expenditure = 11:7

Savings = ₹ 480

Let income be 11x and expenditure be 7x

So, Savings = Income - expenditure
= 11x – 7x
= 4x

As Savings = ₹ 480

4x = 480

x = 480/4

x = ₹120

Income = 11 x 120
= ₹ 1320.

7. Defective bulbs = $\frac{3}{12} = \frac{1}{4}$

Daily production = 7500 bulbs

Defective bulbs = $\frac{1}{4} \times 7500$ = 1875

Non defective bulbs = 7500 – 1875 = 5625

$\therefore$ The required ratio = $\frac{1875}{5625} = \frac{375}{1125}$

= $\frac{15}{45} = \frac{1}{3}$

8. Total students = 135

Passed student = 45

Failed students = 135 – 45 = 90

(a) The required ratio = $\frac{\text{Failed students}}{\text{Passed students}}$

$= \frac{90}{45} = \frac{2}{1}$

(b) The required ratio = $\frac{45}{135} = \frac{9}{27} = \frac{1}{3}$

9. Let the number = x

Two numbers = 2x and 5x

Sum of numbers = 63

$\Rightarrow$ 2x + 5x = 63

$\Rightarrow$ 7x = 63

$\Rightarrow x = \frac{63}{7} = 9$

$\therefore$ Numbers = 2 × 9, 5 × 9 = 18, 45

WORKSHEET 3: PROPORTION

1. (a) 60/300 = $\frac{1}{5}$ and $\frac{10}{40} = \frac{1}{4}$ False

(b) $\frac{15}{20} = \frac{3}{4}$ and $\frac{30}{60} = \frac{1}{2}$ False

(c) $\frac{16}{24} = \frac{4}{6} = \frac{2}{3}$ and $\frac{20}{30} = \frac{2}{3}$ True

(d) $\frac{21}{6} = \frac{7}{2}$ and $\frac{35}{10} = \frac{7}{2}$ True

2. (a) Ratio of 39 and 65 = $\frac{39}{65} = \frac{39 \div 13}{65 \div 13}$

$= \frac{3}{5}$

Ratio of 141 and 235 = $\frac{141}{235} = \frac{141 \div 47}{235 \div 47}$

$= \frac{3}{5}$

$\therefore$ 39 : 65 :: 141 : 235

39, 65, 141 and 235 are in proportion.

(b) Ratio of 5 and 25 = 5 : 25 = $\frac{5}{25} = \frac{1}{5}$

Ratio of 30 and 150 = 30 : 150 = $\frac{30}{150}$

$= \frac{1}{5}$

$\therefore$ 5 : 25 :: 30 : 150

5, 25, 30 and 150 are in proportion.

(c) Ratio of 33 and 44 = 33 : 44 = $\frac{33}{44} = \frac{3}{4}$

Ratio of 66 and 88 = 66 : 88 = $\frac{66}{88} = \frac{6}{8}$

$= \frac{3}{4}$

Since 33 : 44 = 66 : 88

$\therefore$ 33, 44, 66 and 88 are in proportion.

(d) Ratio of 24 and 96 = 24 : 96 = $\frac{24}{96} = \frac{1}{4}$

Ratio of 16 and 54 = 16 : 54 = $\frac{16}{54} = \frac{8}{27}$

Since 24 : 96 $\neq$ 16 : 54

$\therefore$ 24, 96, 16 and 54 are not in proportion.

(e) Ratio of 108, 170 = 108 : 170 = $\frac{108}{170}$

$= \frac{54}{85}$

Ratio of 721, 86 = 721 : 86 = $\frac{721}{86}$

$\therefore$ 108 : 170 $\neq$ 721 : 86

108, 170, 721 and 86 are not in proportion.

3. (a) $\frac{169}{x} = \frac{x}{1}$ $\Rightarrow x^2 = 169$

$\therefore x = 13$

(b) $\frac{16}{18} = \frac{x}{96}$ $\Rightarrow 18 \times x = 16 \times 96$

$\Rightarrow x = \frac{16 \times 96}{18} = \frac{1536}{18} = 85.33$

$\therefore$ x = 85.33

(c) $\frac{x}{3} = \frac{57}{19} \Rightarrow x \times 19 = 57 \times 3$

$\Rightarrow x = \frac{57 \times 3}{19} = 3 \times 3 \quad \therefore x = 9.$

(d) $\frac{7}{14} = \frac{15}{x} \Rightarrow 7 \times x = 14 \times 15$

$\Rightarrow x = \frac{14 \times 15}{7} = 2 \times 15 = 30$

$\therefore x = 30$

(e) $\frac{x}{18} = \frac{14}{21} \Rightarrow 21 \times x = 14 \times 18$

$\Rightarrow x = \frac{14 \times 18}{21} = \frac{2 \times 18}{3} = 2 \times 6 = 12$

$\therefore x = 12.$

(f) $\frac{11}{121} = \frac{x}{231} \Rightarrow 121 \times x = 11 \times 231$

$\Rightarrow x = \frac{11 \times 231}{121} = \frac{231}{11} = 21$

$\therefore x = 21$

4. (a) $125 : x :: x : 5$

$\Rightarrow \frac{125}{x} = \frac{x}{5} \Rightarrow x^2 = 5 \times 125 = 625$

$\therefore x = \sqrt{625} = 25$

(b) $4 : x :: x : 16$

$\Rightarrow \frac{4}{x} = \frac{x}{16} \Rightarrow x^2 = 4 \times 16 = 64$

$\Rightarrow x = \sqrt{64} = 8.$

(c) $3 : x : x : 27 = \frac{3}{x} = \frac{x}{27}$

$\Rightarrow x^2 = 3 \times 27 = 81$

$\therefore x = \sqrt{81} = 9.$

5. Let the mean numbers = x

(a) $36 : x : x : 16$

$\frac{36}{x} = \frac{x}{16} \Rightarrow x^2 = 36 \times 16 = 576$

$\Rightarrow x = \sqrt{576} = 24$

(b) $4 : x :: x : 9 \Rightarrow \frac{4}{x} = \frac{x}{9} \Rightarrow x^2 = 36$

$\therefore x = 6$

(c) $121 : x :: x : 100 \Rightarrow \frac{121}{x} = \frac{x}{100}$

$\Rightarrow x^2 = 12100$

$\therefore x = 110$

(d) $125 : x :: x : 5 \Rightarrow \frac{125}{x} = \frac{x}{5}$

$\Rightarrow x^2 = 125 \times 5$

$\Rightarrow x^2 = 625 \quad \therefore x = 25.$

6. (a) $20 : 18 :: 40 : x$

$\Rightarrow \frac{20}{18} = \frac{40}{x} \Rightarrow 20 \times x = 18 \times 40$

$\Rightarrow x = \frac{18 \times 40}{20} = 9 \times 4 = 36$

$\therefore x = 36$

(b) $15 : 45 :: x : 135$

$\Rightarrow \frac{15}{45} = \frac{x}{135} \Rightarrow 45x = 15 \times 135$

$\Rightarrow x = \frac{15 \times 135}{45} = 45$

$\therefore x = 45$

7. (a) 45, 30, 24, 16

$\Rightarrow$ The required ratio = $45 : 30 :: 24 : 16$

$\frac{45}{30} = \frac{24}{16} \Rightarrow 45 \times 16 = 30 \times 24$

$\Rightarrow 720 = 720$

(b) $21 : 6 :: 35 : 10 \Rightarrow \frac{21}{6} = \frac{35}{10}$

$\Rightarrow 21 \times 10 = 6 \times 35$

$\Rightarrow 210 = 210.$

8. Let the third number = x

A.T.Q.

$6 : 18 :: x : 25$

$\Rightarrow \quad \frac{6}{18} = \frac{x}{25} \qquad \Rightarrow 18x = 6 \times 25$

$\Rightarrow \quad x = \frac{6 \times 25}{18} = \frac{25}{3}$

9. Let length be 5x and width be 2x

Given, Length of school ground = 60 m

So, 5x =60

$x = 60/5$

$x = 12$ m

Width $= 2x = 2 \times 12$

$= 24$ m

WORKSHEET 4: UNITARY METHOD

1. Cost of 30 m of cloth = ₹ 900

Cost of 1 m of cloth = ₹ $\frac{900}{30}$ = ₹ 30

$\therefore$ Cost of 15 m cloth = ₹ (30 × 15) = ₹ 450

2. Cost of 12 kg sugar = ₹ 264

Cost of 1 kg sugar = ₹ $\frac{264}{12}$ = ₹ 22

Cost of 31 kg sugar = ₹ 22 × 31 = ₹ 682

3. Iron rod of 80 m weighs = 720 kg

Iron rod of 1 m weighs = $\frac{720}{80}$ kg = 9 kg

Iron rod of 22 m weighs = 9 × 22 kg = 198 kg

4. Car travels 180 km in = 4 hours

Car travels 1 km in = $\frac{4}{180}$ hours

Car travels 400 km in = $\frac{4}{180} \times 400$ hours

= $\frac{160}{18}$ hours = $\frac{80}{9}$ hours

Distance travelled by car in 4 hours = 180 km

Distance travelled by car in 1 hour = $\frac{180}{4}$ km

Distance travelled by car in 12 hours

= $\frac{180}{4} \times 12$ km = 180 × 3 km = 540 km

5. Cost of fifteen postcards = ₹ 22.50

Cost of one postcard = ₹ $\frac{22.50}{15}$

Cost of 32 postcards = ₹ $\frac{2250}{1500} \times 32$ = ₹ 48

Cost of 20 postcards = ₹ $\frac{2250}{1500} \times 20$ = ₹ 30

6. (a) Bus travels 90 km in = $2\frac{1}{2}$ hours

= $\frac{5}{2}$ hours

Bus travels 1 km in = $\frac{5}{2} \times \frac{1}{90} = \frac{1}{36}$ hours

Time required to cover 30 km

= $\frac{1}{36} \times 30$ hours = $\frac{15}{18} = \frac{5}{6}$ hours

(b) Bus travels 90 km in $2\frac{1}{2}$ hours

So, speed = $\frac{90}{\frac{5}{2}}$ = 36 km/hr

Distance covered in 2 hours = 36 × 2

= 72 km

7. Cost of $\frac{3}{5}$ th quintal of rice = ₹ 180

Cost of 1 quintal of rice = $\frac{180 \times 5}{3}$ = 60 x 5

= ₹ 300

Cost of $\frac{5}{6}$ th quintal of rice = 300 × $\frac{5}{6}$

= ₹ 250.

8. A worker earns ₹ 300 in = 5 days

A worker earns ₹ 1 in = $\frac{5}{300}$ days

A worker earns ₹ 750 in = $\frac{5}{300} \times 750$ days

= $\frac{1}{6} \times 75 = \frac{75}{6}$ days = $\frac{25}{2}$ days

9. Consumption of cereals by 400 students = 5200 kg

Consumption of cereals by 1 student

$= \frac{5200}{400}$ kg

Consumption of cereals by 65 students

$= \frac{5200}{400} \times 65$

$= \frac{52}{4} \times 65 = 13 \times 65 = 845$ kg

10. Men required to assemble 8 machines in a day = 20 men

Men required to assemble 1 machine in a day

$= \frac{20}{8}$ men

Men required to assemble 12 machines in a day $= \frac{20}{8} \times 12$

$= 10 \times 3 = 30$ men.

11. Cost of one dozen pens = ₹ 48

Cost of 1 pen = ₹ $\frac{48}{12}$ = ₹ 4

Number of pens that can be bought for ₹ 64

= ₹ $\frac{64}{4}$ = 16.

∴ 16 pens can be bought for ₹ 64.

12. Time taken by train to cover 320 km = 3 hour 20 min. = 3 × 60 + 20 = 200 min.

Time taken by train to cover 1 km = $\frac{200}{320}$ min.

Time taken by train to cover 80 km

$= \frac{200}{320} \times 80$ min.

= 50 min.

13. Number of tables weighing 36 kg = 55 tables

Number of tables weighing 1 kg = $\frac{55}{36}$ tables

Number of tables weighing 4200 kg

$= \frac{55}{36} \times 4200$

∴ Required tables = 6416.66

= 6417 tables (approx)

WORKSHEET (BASED ON COMPLETE CHAPTER)

1. (a) (i) (b) (i) (c) (ii) $\frac{28}{35} = \frac{4}{35}$

(d) (i) $\frac{20}{20 \times 60} = \frac{20}{1200} = \frac{1}{60}$

(e) (iii)

(f) (i) $\frac{4}{x} = \frac{32}{40} \Rightarrow 4 \times 40 = x \times 32$

$\Rightarrow x = \frac{4 \times 40}{32} = 5.$

2. (a) ₹ 8 = 8 × 100 P = 800 P

∴ Required Ratio = $\frac{800}{20} = 40.$

(b) $2 : 3 :: 6 : x = \frac{2}{3} = \frac{6}{x} \Rightarrow 3 \times 6 = 2x$

$\Rightarrow x = \frac{18}{2} = 9$

∴ Fourth term = 9

(c) 6 men can do work in = 20 days

1 man can do the same work in

$= \frac{20}{6}$ days

15 men can do the same work in

$= \frac{20}{6} \times 15 = \frac{20}{2} \times 5 = 50$ days

(d) $\frac{15}{13} = \frac{225}{x} \Rightarrow 15x = 13 \times 225$

$\Rightarrow x = \frac{13 \times 225}{15} = 13 \times 15 = 195.$

(e) Let $x : y = 10 : 3$

$300 : y = 10 : 3$

$\Rightarrow \frac{300}{y} = \frac{10}{3} \Rightarrow 10y = 3 \times 300 = 90.$

3. (a) T (b) F (c) T (d) F (e) T

4. (a) Let breadth = x

Length = 2 x

The required ratio = $\frac{x}{2x} = \frac{1}{2}$

(b) Let total number of students appeared = x

Number of students passed in mathematics test = $\frac{3}{4}x$

The required ratio = $\frac{x}{\frac{3}{4}x} = \frac{4}{3}$

5. (a) $\frac{44}{132} = \frac{44 \div 2}{132 \div 2} = \frac{22}{66} = \frac{22 \div 11}{66 \div 11} = \frac{2}{6}$

$= \frac{1}{3}$

(b) $\frac{27}{54} = \frac{27 \div 9}{54 \div 9} = \frac{3}{6} = \frac{1}{2}$

6. (a) 1 hour = 60 minutes

so, 1.5 hour = 1.5 × 60 = 90 min.

The required ratio = $\frac{30}{90} = \frac{1}{3}$

(b) 1 l = 1000 ml

2 l = 2000 ml

The required ratio = $\frac{500}{2000} = \frac{5}{20} = \frac{1}{4}$.

7. Total students = 1800

Students who opted basketball = 750

Students who opted cricket = 800

Students who opted Table Tennis

= 1800 – (750 + 800)

= 1800 – 1550 = 250

(i) Required Ratio = $\frac{750}{250} = \frac{3}{1}$

(ii) Required Ratio = $\frac{800}{750} = \frac{80}{75} = \frac{16}{15}$

(iii) Required Ratio = $\frac{750}{1800} = \frac{75}{180}$

$= \frac{15}{36} = \frac{5}{12}$

8. Weight of copper in 5.5 g alloy = 3.5 g

Weight of copper in 1 g alloy = 3.5/5.5

= 7/11 g

Weight of copper in 22 g alloy = 7/11 x 22

= 14 g.

9. Mahesh earns in a year = ₹ 1,50,000

Savings = ₹ 50,000

Expenditure = ₹ 1,50,000 – ₹ 50,000

= ₹ 100000

(a) The required ratio = $\frac{1,50,000}{50,000} = \frac{15}{5} = \frac{3}{1}$

(b) The required ratio = $\frac{50000}{100000} = \frac{5}{10} = \frac{1}{2}$

10. Water pipe can fill 500 litre tank in
= 2 hour 30 min.

= 2 × 60 + 30 = 150 min.

Water pipe can fill 1/10th of the tank in

= $\frac{1}{10}$ x 150 = 15 min.

Water pipe can fill $\frac{7}{10}$ th of the tank in

= 7 x 15 = 105 min.

11. Rent paid by Radhika for 5 months = ₹ 6500

Rent paid by Radhika for 1 month = ₹ $\frac{6500}{5}$

= ₹ 1300

Rent paid by Radhika for 12 months
= ₹ 12 × 1300

= ₹ 15600

12. Number of meals for 150 boys = 6 meals

Number of meals for 1 boy = $\frac{6}{150}$ meals

Number of meals for 180 boys

$= \frac{6}{15\cancel{0}} \times 18\cancel{0}$ meals

$= \frac{6}{5} \times 6$ meals $= \frac{36}{5}$ meals

13. Number of male teachers = 40

Ratio of the number of male teachers to female teachers = $\frac{3}{2}$

Sum of terms of the given ratio = 3 + 2 = 5

Number of female teachers = $\frac{2}{5} \times 40$

$= 2 \times 8 = 16$

14. Ratio of height of two brothers = 8 : 7

Height of shorter brother = 161 cm

Let height of taller brother be x

8 : 7 :: x : 161

$x = \frac{8 \times 161}{7}$

x = 184 cm

15. a = 16, c = 30

$b^2 = a \times c = 16 \times 30$

$b^2 = 480$

$b = 4\sqrt{30}$

16. Length of classroom = 18.6 m

Breadth of classroom = 6.2 m

Required Ratio = $\frac{18.6}{6.2} = \frac{186}{62} = \frac{93}{31}$

$= \frac{93 \div 31}{31 \div 31} = \frac{3}{1}$