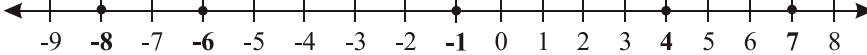
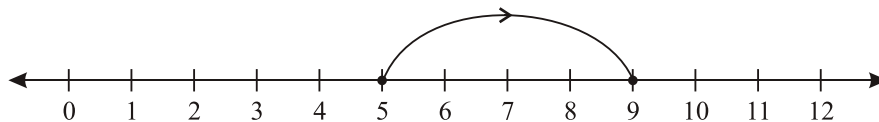


## Exercise 4.1

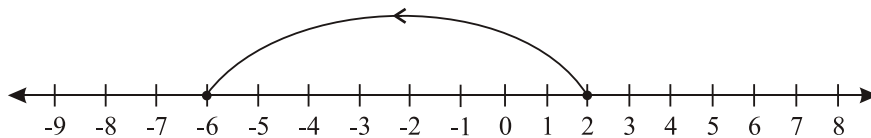
- Expenditure of ₹ 5000
  - profit of ₹ 300
  - Loss of 10 kg weight
  - 200 m below sea level
  - In crease of 10
  - 20°C above freezing point
  - 250 km towards west of Delhi
  - Early by 25 minutes
- + 2756 m
  - 10 m
  - 234
  - + ₹ 26,500
  - + ₹ 3000
  - ₹ 5000
  - + 100 m
  - 3000 m
- Integers between 0 and 8 are 1, 2, 3, 4, 5, 6, 7
  - Integers 0 and -8 are -1, -2, -3, -4, -5, -6, -7
  - Integers between -4 and 4 are -3, -2, -1, 0, 1, 2, 3
  - Integers between -10 and -19 are -11, -12, -13, -14, -15, -16, -17, -18
  - Integers between -111 and -115 are -112, -113, -114
- Five integers greater than -22 are -21, -20, -19, -18, -17
  - Five integers greater than -96 are -95, -94, -93, -92, -91
  - Five integers less than -32 are -33, -34, -35, -36, -37
  - Five integers less than -70 are -71, -72, -73, -74, -75
- There is no greatest negative integer  
There is no greater positive integer also
- 
- Ascending order  $-10 < -9 < -7 < -5 < 0 < 3 < 5$
  - Ascending order  $-84 < -48 < -45 < -33 < -30$
- Descending order  $0 > -37 > -68 > -73 > -86$
  - Descending order  $-157 > -175 > -517 > -715 > -751$
- 3°C is warmer
  - 6°C is colder
  - 8°C is lower
- 8, -6, -4, -2, 0, 2
  - 40, -35, -30, -25, -20, -15
  - 21, -18, -15, -12, -9, -6
  - 16, 13, 10, 7, 4, 1
  - 66, -60, -54, -48, -42, -36
  - 84, -72, -60, -48, -36, -24
- 4 more 5 is 9



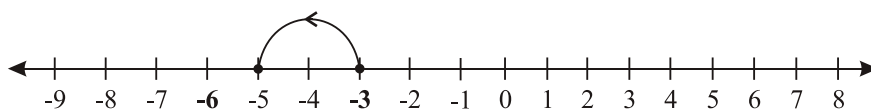
- 3 more than -7 is -4



(c) 8 less than 2 is  $-6$



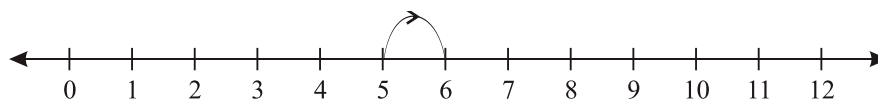
(d) 2 less than  $-3$  is  $-5$



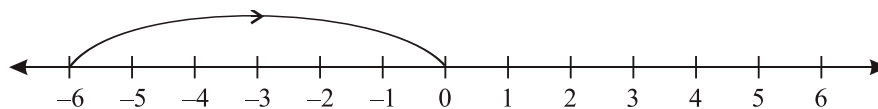
12. (a) False, 0 is neither positive nor negative  
(b) False, there is no smallest negative integer  
(c) True  
(d) True  
(e) True

### Exercise 4.2

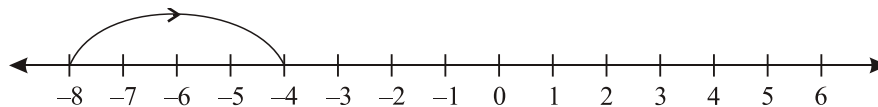
1. (a) 5 more than 1 is 6



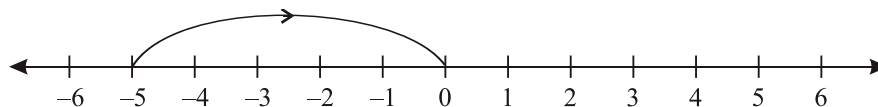
- (b) 6 more than  $-6$  is 0



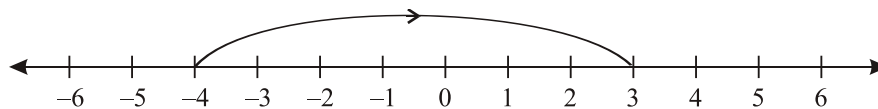
- (c) 4 less than  $-4$  is  $-8$



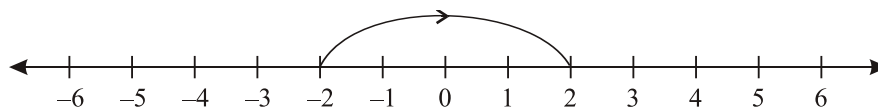
- (d) 5 less than 0 is  $-5$



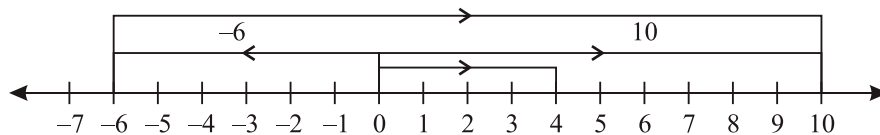
- (e) 7 less than 3 is  $-4$



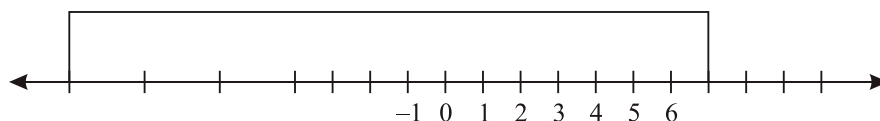
- (f) 4 more than  $-2$  is 2



2. (a)  $10 + (-6) = 10 - 6 = 4$   $10 - 6 = 4$

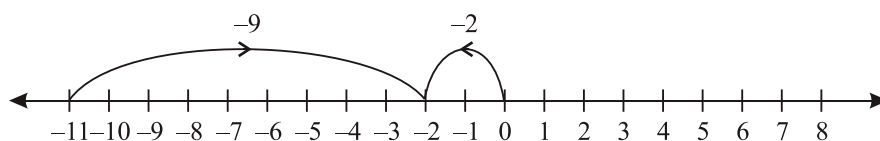


(b)  $-10 + 7 = -3$



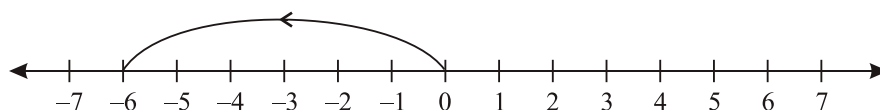
$\therefore -10 + 7 = -3$

(c)  $(-2) + (-9) = -11$



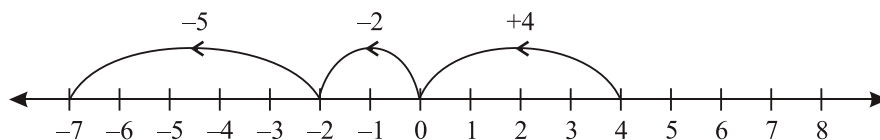
$\therefore (-2) + (-9) = -11$

(d)  $0 + (-6) = -6$



$\therefore 0 + (-6) = -6$

(e)  $(-2) + (-5) + 4 = -3$



3. (a)  $(-138) + (-122) = -138 - 122 = -260$

(b)  $(-269) + 169 = -269 + 169 = -100$

(c)  $(-965) + 400 = -965 + 400 = -565$

(d)  $(-139) + (-456) = -139 - 456 = -595$

(e)  $(-278) + 278 = -278 + 278 = 0$

(f)  $(-3) + 5 + (-2) = -2 - 2 + 5 = 0$

4. (a) 567 and -897

$\Rightarrow 567 + (-897)$   
 $\Rightarrow 567 - 897 = -330$

(c) -458 and 765  
 $\Rightarrow -458 + 765$   
 $= 307$

(e) 200, -56 and -240  
 $200 - 56 - 240$   
 $\Rightarrow 200 - 296 \Rightarrow -96$

(b) -764 and 674

$\Rightarrow -764 + 674 = -90$

(d) -56, -78 and -98

$\Rightarrow -56 - 78 - 98$   
 $= -232$

5. (a)  $(-6) + (-9) + (-12) + (-24)$   
 $\Rightarrow -15 - 36$   
 $\Rightarrow -51$
- (b)  $87 + 0 + (-9) + (-48) + (-23)$   
 $\Rightarrow 87 - 9 - 48 - 23$   
 $\Rightarrow 87 - 9 - 71$   
 $\Rightarrow 87 - 80 = 7$
- (c)  $(-56) + 65 - 34 - 23 + 34$   
 $\Rightarrow -56 + 65 - 23$   
 $\Rightarrow -56 - 23 + 65$   
 $\Rightarrow -79 + 65 = -14$
- (d)  $-23 - 45 - 39 + 25$   
 $\Rightarrow -107 + 25 = -82$
6. (a)  $-3 + 15 = 12$  (b)  $-8 + 3 = -5$  (c)  $-9 + -7 = -16$   
 (d)  $-4 + 27 = 23$  (e)  $-2 + (-10) = -12$  (f)  $-15 + 15 = 0$   
 (g)  $-1 + 6 = 5$  (h)  $29 + 16 = 45$
7. Temperature at night =  $4 - 7 = -3^\circ\text{C}$

### Exercise 4.3

1. (a)  $34 - x = 10$   
 $x = 34 - 10$   
 $x = 24$
- (b)  $x + 8 = -19$   
 $x = -19 - 8$   
 $x = -27$
- (c)  $-7 + x = 0$   
 $x = 7$
- (d)  $841 + x = 512$   
 $x = 512 - 841$   
 $x = -329$
- (e)  $-4 + x = -12$   
 $x = -12 + 4$   
 $x = -8$
- (f)  $-5 + x = -5$   
 $x = -5 + 5$   
 $x = 0$
2. (a)  $8 - 3 = 5$  (b)  $36 - 21 = 15$   
 (c)  $83 - 90 = -7$  (d)  $-10 - (-18) = -10 + 18 = 8$   
 (e)  $-25 - 15 = -40$  (f)  $-46 - (-50) = -46 + 50 = 4$
3. (a)  $-15 - (-16) = -15 + 16 = 1$   
 (b)  $-286 - (-451) = -286 + 451 = 165$   
 (c)  $-2154 - (5123) = -2154 - 5123 = -7277$   
 (d)  $-562 - (1040) = -562 + 1040 = +478$   
 (e)  $52 - (-52) = 52 + 52 = 104$
4. (a)  $-10 - 5 - (-35) = -10 - 5 + 35 = -15 + 35 = +20$   
 (b)  $-15 + 34 - 14 - 6 = -15 - 14 - 6 + 34 = -35 + 34 = -1$   
 (c)  $-8 + (-9) + (-80) = -8 - 9 - 80 = -97$   
 (d)  $100 - (-100) - (-100) = 100 + 100 + 100 = 300$   
 (e)  $-26 + (-13) + (-52) = -26 - 13 - 52 = -91$   
 (f)  $-13 + (-17) - (-22) - (-40) = -13 - 17 + 22 + 40$   
 $= -30 + 62 = +32$   
 (g)  $28 - (-26) - 3 - (-7) + 9 = 28 + 26 - 3 + 7 + 9$   
 $= 54 - 3 + 16 = 70 - 3 = 67$   
 (h)  $-55 - (-19) - 21 + 25 = -55 + 19 - 21 + 25$   
 $= -55 - 21 + 19 + 25$   
 $= -76 + 44 = -32$   
 (i)  $84 + (-99) + 33 - (-28) - 46 = 84 - 99 + 33 + 28 - 46$   
 $= 84 + 33 + 28 - 99 - 46$   
 $= 145 - 145 = 0$

$$(j) \quad -150 + 560 - (-420) = -150 + 560 + 420 \\ = -150 + 980 = +830$$

5. Temperature at night =  $2 - 5$   
 $= -3^\circ\text{C}$
6. Ist position of submarine =  $-700$  m  
 New position of sub marine =  $-700 + 250 = -450$  m
7. Total marks =  $35 + (-5) + (-10) + 20$   
 $= 35 - 5 - 10 + 20$   
 $= 35 + 20 - 5 - 10$   
 $= 55 - 15 = 40$  marks
8. Temperature on friday =  $-4^\circ\text{C}$   
 Temperature on saturday =  $(-4 - 3)^\circ\text{C} = -7^\circ\text{C}$   
 Temperature on Sunday =  $-7 + 5 = -2^\circ\text{C}$

### Multiple Choice Questions

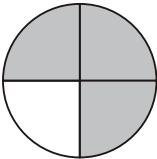

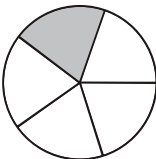
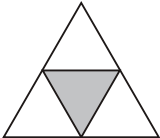
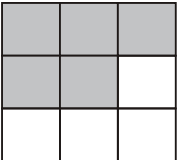
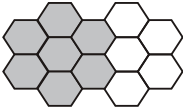
1. (c) 1 2. (b)  $-43$ . (c)  $-14$ . (a) 15. (c) 1 6. (a) 0 7. (b)  $-128$ . (c) 3 9. (c) temperature 10. (d)

5

# 5

## Fractions

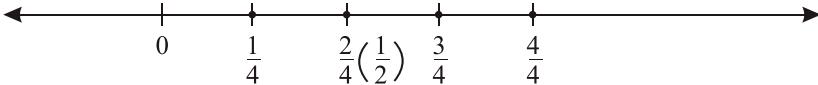
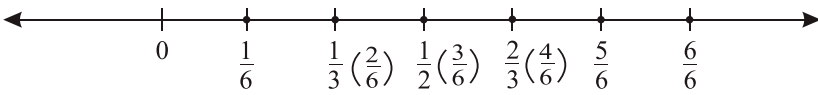
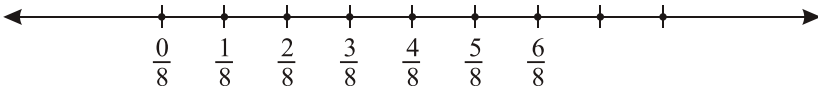
### Exercise 5.1

1. (a)  $\frac{1}{4}$  (b)  $\frac{3}{8}$  (c)  $\frac{1}{2}$  (d)  $\frac{3}{4}$
2. (a)  (b)  (c) 
- (d)  (e)  (f) 
3. 

	Fraction	Numerator	Denominator
(a)	$\frac{2}{5}$	2	5
(b)	$\frac{8}{15}$	8	15
(c)	$\frac{6}{17}$	6	17
(d)	$\frac{4}{9}$	4	9

- (e)  $\frac{12}{25}$                               12                              25
- (f)  $\frac{19}{43}$                               19                              43
4. (a)  $\frac{10}{24}$                               (b)  $\frac{30}{60}$                               (c)  $\frac{20}{60}$                               (d)  $\frac{10}{12}$
5. The number of students playing in the ground = 25  
The number of boys = 15  
Then the number of Girls =  $25 - 15 = 10$   
 $\therefore$  fraction of the student in the playground are girls =  $\frac{10}{25}$
6. Payal invited friends on her Birthday = 30  
Only friend turned up = 20  
Friend did not attend party = 10  
The fraction is total friend invited and not attend party =  $\frac{10}{30}$
7. 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 fraction of prime number =  $\frac{3}{10}$
8. 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 230,  
fraction of odd number =  $\frac{15}{30} = \frac{1}{2}$

### Exercise 5.2

1. (a) 
- (b) 
- (c) 

2. (a)  $\frac{18}{5} = 3\frac{3}{5}$                               (b)  $\frac{46}{7} = 6\frac{4}{7}$                               (c)  $\frac{25}{3} = 8\frac{1}{3}$   

$$\begin{array}{r} 5 \overline{) 18} \ 3 \\ -15 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 7 \overline{) 46} \ 6 \\ -42 \\ \hline 4 \end{array}$$

$$\begin{array}{r} 3 \overline{) 25} \ 8 \\ -24 \\ \hline 1 \end{array}$$
- (d)  $\frac{19}{8} = 2\frac{3}{8}$                               (e)  $\frac{16}{9} = 1\frac{7}{9}$   

$$\begin{array}{r} 8 \overline{) 19} \ 2 \\ -16 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 9 \overline{) 16} \ 1 \\ -9 \\ \hline 7 \end{array}$$

$$3. \quad \begin{array}{ll} \text{(a)} \quad 8\frac{2}{5} = \frac{8 \times 5 + 2}{5} = \frac{40 + 2}{5} = \frac{42}{5} & \text{(b)} \quad 6\frac{1}{2} = \frac{6 \times 2 + 1}{2} = \frac{12 + 1}{2} = \frac{13}{2} \\ \text{(c)} \quad 7\frac{3}{20} = \frac{7 \times 20 + 3}{20} = \frac{140 + 3}{20} = \frac{143}{20} & \text{(d)} \quad 11\frac{3}{8} = \frac{11 \times 8 + 3}{8} = \frac{88 + 3}{8} = \frac{91}{8} \\ \text{(e)} \quad 4\frac{6}{17} = \frac{4 \times 17 + 6}{17} = \frac{68 + 6}{17} = \frac{74}{17} \end{array}$$

### Exercise 5.3

1. Let the correct number is  $x$ .

$$\text{(a)} \quad \frac{2}{5} = \frac{x}{20}$$

$$x = \frac{2 \times 20}{5} = 8$$

$$\text{(c)} \quad \frac{10}{25} = \frac{x}{x}$$

$$x = \frac{10 \times 25}{25} = 10$$

$$\text{(e)} \quad \frac{15}{20} = \frac{x}{4}$$

$$x = \frac{15 \times 4}{20} = 3$$

$$\text{(g)} \quad \frac{15}{70} = \frac{3}{x}$$

$$x = \frac{3 \times 70}{15} = 14$$

$$\text{(b)} \quad \frac{4}{7} = \frac{8}{x}$$

$$x = \frac{8 \times 7}{4} = 14$$

$$\text{(d)} \quad \frac{18}{24} = \frac{x}{4}$$

$$x = \frac{18 \times 4}{24} = 3$$

$$\text{(f)} \quad \frac{8}{14} = \frac{40}{x}$$

$$x = \frac{40 \times 14}{8} = 70$$

$$\text{(h)} \quad \frac{45}{x} = \frac{15}{4}$$

$$x = \frac{45 \times 4}{15} = 12$$

2. Give a fraction of denominator = 36  
Let a fraction of numerator =  $x$

$$\text{Then} \quad \frac{x}{36} = \frac{3}{4} \Rightarrow x = 27$$

$$\therefore \text{ a fraction is } = \frac{27}{36}$$

3. Given a fraction of numerator = 27  
Let a fraction of denominator =  $x$

$$\text{Then} \quad \frac{27}{x} = \frac{9}{10} \Rightarrow x = 30$$

$$\therefore \text{ fraction is } \frac{27}{30}$$

4. (a)  $\frac{4}{10}, \frac{8}{14}, \frac{20}{50}$

The two equivalent fractions are  $\frac{4}{10}$  and  $\frac{20}{50}$

(b)  $\frac{9}{12}, \frac{45}{60}, \frac{20}{30}$

Two equivalent fraction are  $\frac{9}{12}$  and  $\frac{45}{60}$

(c)  $\frac{18}{24}, \frac{24}{36}, \frac{36}{48}$

Two equivalent fraction are  $\frac{18}{24}$  and  $\frac{36}{48}$

5. (a)  $\frac{2}{3}$  and  $\frac{5}{9}$

$$\Rightarrow \frac{2}{3} = \frac{5}{9}$$

$$= 2 \times 9 = 3 \times 5$$

$$\Rightarrow 18 \neq 15$$

Since there product are not equal then the fraction are not equivalent.

(b)  $\frac{3}{8}$  and  $\frac{9}{24}$

$$\Rightarrow \frac{3}{8} = \frac{9}{24}$$

$$\Rightarrow 3 \times 24 = 9 \times 8$$

$$\Rightarrow 72 = 72$$

Since there product are equal then the fraction are equivalent

(c)  $\frac{7}{13}$  and  $\frac{5}{11}$

$$\Rightarrow \frac{7}{13} = \frac{5}{11}$$

$$\Rightarrow 7 \times 11 = 13 \times 5$$

$$77 \neq 65$$

Since there product are not equal then the fraction are not equivalent

(d)  $\frac{4}{7}$  and  $\frac{8}{14}$

$$\Rightarrow \frac{4}{7} = \frac{8}{14}$$

$$\Rightarrow 4 \times 14 = 8 \times 7$$

$$\Rightarrow 56 = 56$$

Since there product are equal then the fraction are equivalent.

6.  $\frac{5}{8}, \frac{85}{91}$  and  $\frac{88}{117}$  the fraction are not simplest form.

7. (a)  $\frac{15}{25}$

HCF of 15 and 25 is 5

$$\text{So, } \frac{15 \div 5}{25 \div 5} = \frac{3}{5}$$

(b)  $\frac{80}{65}$

HCF of 80 and 65 is 5

$$\text{So, } \frac{80 \div 5}{65 \div 5} = \frac{16}{13}$$



(c)  $\frac{12}{52}$

HCF of 12 and 52 is 4

So,  $\frac{12 \div 4}{52 \div 4} = \frac{3}{13}$

(e)  $\frac{156}{60}$

HCF of 156 and 60 is 12

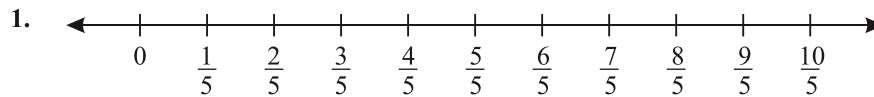
So,  $\frac{156 \div 12}{60 \div 12} = \frac{13}{5}$

(d)  $\frac{16}{90}$

HCF of 16 and 90 is 2

So,  $\frac{16 \div 2}{90 \div 2} = \frac{8}{45}$

### Exercise 5.4



2. (a)  $\frac{4}{7} < \frac{6}{7}$

(c)  $\frac{4}{5} > \frac{3}{5}$

(e)  $\frac{11}{67} = \frac{1 \times 7}{6 \times 7} \Rightarrow \frac{1 \times 6}{7 \times 6} \Rightarrow \frac{7}{42} > \frac{6}{42}$

(g)  $\frac{16}{11} > \frac{0}{11}$

3. (a)  $\frac{3}{4}$  and  $\frac{7}{8}$

$3 \times 8 = 24$  and  $4 \times 7 = 28$   
 $24 < 28$

$\therefore \frac{3}{4} < \frac{7}{8}$

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

$1 \times 4 = 4$  and  $1 \times 3 = 3$   
 $4 > 3$

$\therefore \frac{1}{3} > \frac{1}{4}$

(e)  $\frac{1}{4}$  and  $\frac{3}{8}$

$1 \times 8 = 8$  and  $3 \times 4 = 12$   
 $8 < 12$

$\therefore \frac{1}{4} < \frac{3}{8}$

(g)  $\frac{7}{10}$  and  $\frac{4}{5}$

$7 \times 5 = 35$  and  $4 \times 10 = 40$

(b)  $\frac{11}{94} = \frac{1 \times 4}{9 \times 4} \Rightarrow \frac{1 \times 9}{4 \times 9} \Rightarrow \frac{4}{36} < \frac{9}{36}$

(d)  $\frac{8}{25} < \frac{11}{25}$

(f)  $\frac{4}{19} < \frac{8}{19}$

(h)  $\frac{18}{18} > \frac{17}{18}$

(b)  $\frac{6}{10}$  and  $\frac{12}{15}$

$6 \times 15 = 90$  and  $12 \times 10 = 120$   
 $90 < 120$

$\therefore \frac{6}{10} < \frac{12}{15}$

(d)  $\frac{5}{7}$  and  $\frac{4}{9}$

$5 \times 9 = 45$  and  $4 \times 7 = 28$   
 $45 > 28$

$\therefore \frac{5}{7} > \frac{4}{9}$

(f)  $\frac{5}{7}$  and  $\frac{15}{21}$

$5 \times 21 = 105$  and  $15 \times 7 = 105$   
 $105 = 105$

$\therefore \frac{5}{7} = \frac{15}{21}$

(h)  $\frac{5}{17}$  and  $\frac{6}{16}$

$5 \times 16 = 80$  and  $6 \times 17 = 102$

$$35 < 40$$

$$\therefore \frac{7}{10} < \frac{4}{5}$$

(i)  $\frac{9}{16}$  and  $\frac{5}{9}$

$$9 \times 9 \quad 5 \times 16$$

$$81 > 80$$

$$\therefore \frac{9}{16} > \frac{5}{9}$$

4. (a)  $\frac{9 \div 9}{45 \div 9} = \frac{1}{5}$

(d)  $\frac{84 \div 12}{96 \div 12} = \frac{7}{8}$

(g)  $\frac{9 \div 9}{18 \div 9} = \frac{1}{2}$

(j)  $\frac{105 \div 15}{120 \div 15} = \frac{7}{8}$

(m)  $\frac{45 \div 15}{60 \div 15} = \frac{3}{4}$

(p)  $\frac{36 \div 12}{48 \div 12} = \frac{3}{4}$

$$\therefore \frac{1}{5} = \frac{9}{45}, \frac{16}{80}, \frac{30}{150}, \frac{25}{125}$$

$$\frac{3}{4} = \frac{12}{16}, \frac{75}{100}, \frac{102}{136}, \frac{45}{60}, \frac{36}{48}$$

$$\frac{7}{8} = \frac{49}{56}, \frac{84}{96}, \frac{105}{120}, \frac{182}{208}$$

$$\frac{1}{2} = \frac{9}{18}, \frac{202}{204}, \frac{500}{1000}$$

5. Nalini took  $\frac{2}{3}$  minutes Parul took  $\frac{4}{8}$  minutes

$$\frac{2}{3} \text{ and } \frac{4}{8}$$

$$2 \times 8 \quad 4 \times 3$$

$$\therefore \frac{2}{3} > \frac{4}{8}$$

$\therefore$  Nalini took more time.

6. Fraction of book read by Ruhi =  $\frac{50}{200} = \frac{1}{4}$

Fractions of book read by Vidushi =  $\frac{1}{5}$

$$\frac{1}{4} \text{ and } \frac{1}{5}$$

$$1 \times 5 \quad 1 \times 4$$

$$\therefore \frac{5}{5} > \frac{4}{5}$$

$\therefore$  Vidushi read less book.

$$80 < 102$$

$$\therefore \frac{5}{17} < \frac{6}{16}$$

(j)  $\frac{1}{18}$  and  $\frac{8}{36}$

$$1 \times 36 \quad 8 \times 18$$

$$36 < 144$$

$$\therefore \frac{1}{18} < \frac{8}{36}$$

(b)  $\frac{12 \div 4}{16 \div 4} = \frac{3}{4}$

(e)  $\frac{75 \div 25}{100 \div 25} = \frac{3}{4}$

(h)  $\frac{102 \div 34}{136 \div 34} = \frac{3}{4}$

(k)  $\frac{202 \div 202}{404 \div 201} = \frac{1}{2}$

(n)  $\frac{500 \div 500}{1000 \div 500} = \frac{1}{2}$

(c)  $\frac{49 \div 7}{56 \div 7} = \frac{7}{8}$

(f)  $\frac{16 \div 16}{80 \div 16} = \frac{1}{5}$

(i)  $\frac{30 \div 30}{150 \div 30} = \frac{1}{5}$

(l)  $\frac{25 \div 25}{125 \div 25} = \frac{1}{5}$

(o)  $\frac{182 \div 26}{208 \div 26} = \frac{7}{8}$

7. Fractions of exercise of Rajast =  $\frac{50}{60} = \frac{5}{6}$

Now  $\frac{5}{6}$  and  $\frac{3}{4}$   
 $\frac{5 \times 4}{20} > \frac{3 \times 6}{18}$

∴ Rajat exercises longer.

8. Dinesh's fraction =  $\frac{8}{16}$

Shashi fraction =  $\frac{3}{4}$

Now,  $\frac{8}{16}$  and  $\frac{3}{4}$   
 $\frac{8 \times 4}{32} < \frac{3 \times 16}{48}$

∴ Saurabh took less time.

9. Fraction of students got more than 90 marks in VIA

$$\frac{10}{40} = \frac{1}{4}$$

Fraction of students got more than 90 marks in VIB

$$\frac{6}{36} = \frac{1}{6}$$

Now,  $\frac{1}{4}$  and  $\frac{1}{6}$   
 $\frac{1 \times 6}{6} > \frac{1 \times 4}{4}$

∴ In VIA more students got more than 90 marks in mathematics paper.

10. Fraction of biscuit ate by Isha =  $\frac{4}{8} = \frac{1}{2}$

Fraction of biscuit ate by Preeti =  $\frac{8}{12} = \frac{2}{3}$

Fraction of biscuit ate by Shinky =  $\frac{10}{15} = \frac{2}{3}$

Now  $\frac{1}{2}, \frac{2}{3}, \frac{2}{3}$   
 $\frac{1 \times 3}{2 \times 3}, \frac{2 \times 2}{3 \times 2}, \frac{2 \times 2}{3 \times 2}$   
 $\frac{3}{6}, \frac{4}{6}, \frac{4}{6}$

∴ Isha ate least number of biscuits.

11. (a) Ascending order  $\frac{1}{6} < \frac{5}{6} < \frac{7}{6} < \frac{9}{6} < \frac{17}{6}$

(b) Ascending order  $\frac{0}{11} < \frac{1}{11} < \frac{2}{11} < \frac{3}{11} < \frac{11}{11} < \frac{15}{11}$

(c) Ascending order  $\frac{1}{50} < \frac{1}{23} < \frac{1}{12} < \frac{1}{7} < \frac{1}{5} < \frac{1}{4}$

12. (a) Descending order  $\frac{5}{2} > \frac{5}{6} > \frac{5}{8} > \frac{5}{11} > \frac{15}{14} > \frac{5}{19}$

(b) LCM of 2, 5, 4 and 8 is 40

$$\therefore \frac{3}{2} = \frac{3 \times 20}{2 \times 20} = \frac{60}{40}; \quad \frac{1}{5} = \frac{1 \times 8}{5 \times 8} = \frac{8}{40};$$

$$\frac{1}{4} = \frac{1 \times 10}{4 \times 10} = \frac{10}{40}; \quad \frac{5}{8} = \frac{5 \times 5}{8 \times 5} = \frac{25}{40}$$

therefore descending order is

$$\frac{60}{40} > \frac{25}{40} > \frac{10}{40} > \frac{8}{40} \quad \text{Or} \quad \frac{3}{2} > \frac{5}{8} > \frac{1}{4} > \frac{1}{5}$$

(c) LCM of 7, 5, 7 and 10 is 70.

$$\therefore \frac{2}{7} = \frac{2 \times 10}{7 \times 10} = \frac{20}{70}; \quad \frac{2}{5} = \frac{2 \times 14}{5 \times 14} = \frac{28}{70}$$

$$\frac{0 \times 10}{7 \times 10} = \frac{0}{70}; \quad \frac{6}{10} = \frac{6 \times 7}{10 \times 7} = \frac{42}{70}$$

\(\therefore\) descending order is

$$\frac{42}{70} > \frac{28}{70} > \frac{20}{70} > \frac{0}{70} \quad \text{Or} \quad \frac{6}{10} > \frac{2}{5} > \frac{2}{7} > \frac{0}{7}$$

### Exercise 5.5

1. (a)  $\frac{5}{11} + \frac{6}{11}$

$$\Rightarrow \frac{5+6}{11}$$

$$\Rightarrow \frac{11}{11}$$

$$\Rightarrow 1$$

(c)  $\frac{7}{26} + \frac{5}{13}$

$$\Rightarrow \frac{7+10}{26} \quad \begin{array}{r|l} 2 & 26, 13 \\ \hline 13 & 13, 13 \end{array}$$

$$\Rightarrow \frac{17}{26} \quad \begin{array}{r|l} & \\ \hline & 1, 1 \end{array}$$

(e)  $1\frac{1}{13} + 2\frac{3}{39}$

$$\Rightarrow \frac{14}{13} + \frac{81}{39}$$

$$\Rightarrow \frac{14 \times 3 + 81}{39}$$

$$\Rightarrow \frac{42 + 81}{39} = \frac{123}{39} = \frac{41}{13}$$

$$\Rightarrow 3\frac{2}{13}$$

(b)  $\frac{3}{10} + \frac{7}{15}$

$$\Rightarrow \frac{3 \times 3 + 7 \times 2}{30}$$

$$\Rightarrow \frac{9+14}{30}$$

$$\Rightarrow \frac{23}{30}$$

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

$$\Rightarrow \frac{11}{4} + \frac{31}{6}$$

$$\Rightarrow \frac{11 \times 3 + 31 \times 2}{12}$$

$$\Rightarrow \frac{33+62}{12}$$

$$\Rightarrow \frac{95}{12} = 7\frac{11}{12}$$

(f)  $7\frac{1}{10} + 3\frac{7}{45}$

$$\Rightarrow \frac{71}{10} + \frac{142}{45}$$

$$\Rightarrow \frac{71 \times 9 + 14 \times 2}{90}$$

$$\Rightarrow \frac{639 + 284}{90} = \frac{923}{90}$$

$$\Rightarrow 10\frac{23}{90}$$

$$\begin{array}{r|l} 2 & 10, 15 \\ \hline 3 & 5, 15 \\ \hline 5 & 5, 5 \\ \hline & 1, 1 \end{array}$$

$$\begin{array}{r|l} 2 & 4, 6 \\ \hline 2 & 2, 3 \\ \hline 5 & 1, 3 \\ \hline & 1, 1 \end{array}$$

$$\begin{array}{r|l} 2 & 10, 45 \\ \hline 5 & 5, 45 \\ \hline 3 & 1, 9 \\ \hline 3 & 1, 3 \\ \hline & 1, 1 \end{array}$$

$$\begin{aligned}
 & \text{(g)} \quad 2\frac{1}{3} + 1\frac{3}{4} + 5\frac{5}{6} \\
 \Rightarrow & \frac{7}{3} + \frac{7}{4} + \frac{35}{6} \\
 \Rightarrow & \frac{7 \times 4 + 7 \times 3 + 35 \times 2}{12} \\
 \Rightarrow & \frac{28 + 21 + 70}{12} \\
 \Rightarrow & \frac{28 + 91}{12} \\
 \Rightarrow & \frac{119}{12} = 9\frac{11}{12}
 \end{aligned}$$

2	3, 4, 6
2	3, 2, 3
3	3, 1, 3
	1, 1, 1

$$\begin{aligned}
 & \text{(h)} \quad 3 + \frac{5}{14} + 3\frac{7}{24} \\
 \Rightarrow & 3 + \frac{5}{14} + \frac{79}{24} \\
 \Rightarrow & \frac{3 \times 168 + 5 \times 11 + 79 \times 7}{108} \\
 \Rightarrow & \frac{504 + 60 + 553}{168} \\
 \Rightarrow & \frac{1117}{168} \\
 \Rightarrow & 6\frac{109}{168}
 \end{aligned}$$

$$\begin{aligned}
 & \text{(i)} \quad 3 + \frac{1}{9} + 2 + 5\frac{7}{12} \\
 \Rightarrow & \frac{28}{9} + \frac{2}{1} + \frac{67}{12} \\
 \Rightarrow & \frac{28 + 4 + 2 + 36 + 67 \times 3}{36} \\
 \Rightarrow & \frac{112 + 72 + 201}{36} \\
 \Rightarrow & \frac{385}{36} = 10\frac{25}{36}
 \end{aligned}$$

2	9, 12
2	9, 6
3	9, 3
3	3, 1
	1, 1

$$\begin{aligned}
 & \text{2. (a)} \quad \frac{7}{9} - \frac{2}{9} \\
 \Rightarrow & \frac{7-2}{9} \\
 \Rightarrow & \frac{5}{9}
 \end{aligned}$$

$$\begin{aligned}
 & \text{(b)} \quad \frac{9}{10} - \frac{2}{15} \\
 \Rightarrow & \frac{9 \times 3 - 2 \times 2}{30} \\
 \Rightarrow & \frac{27-4}{30} = \frac{23}{30}
 \end{aligned}$$

2	10, 15
3	5, 15
5	5, 5
	1, 1

$$\begin{aligned}
 & \text{(c)} \quad \frac{5}{8} - \frac{7}{12} \\
 \Rightarrow & \frac{5 \times 3 - 7 + 2}{24} \\
 \Rightarrow & \frac{15-14}{24} \\
 \Rightarrow & \frac{1}{24}
 \end{aligned}$$

2	8, 12
2	4, 6
2	2, 3
3	1, 3
	1, 1

$$\begin{aligned}
 & \text{(d)} \quad 3\frac{1}{4} - 1\frac{5}{6} \\
 \Rightarrow & \frac{13}{4} - \frac{11}{6} \\
 \Rightarrow & \frac{13 \times 3 - 11 \times 2}{12} \\
 \Rightarrow & \frac{39-22}{12} \\
 \Rightarrow & \frac{17}{12} = 1\frac{5}{12}
 \end{aligned}$$

2	4, 6
2	2, 3
3	1, 3
	1, 1

$$\begin{aligned}
 & \text{(e)} \quad 13\frac{1}{13} - 10\frac{3}{13} \\
 \Rightarrow & \frac{170}{13} - \frac{133}{13} \\
 \Rightarrow & \frac{170-133}{13}
 \end{aligned}$$

$$\begin{aligned}
 & \text{(f)} \quad 7\frac{1}{10} - 3\frac{11}{45} \\
 \Rightarrow & \frac{71}{10} - \frac{146}{45} \\
 \Rightarrow & \frac{71 \times 9 - 146 \times 2}{90}
 \end{aligned}$$

2	10, 45
3	5, 45
3	5, 15
5	5, 5
	1, 1

$$\Rightarrow \frac{37}{13} = 2\frac{11}{13}$$

$$(g) \quad 7 - \frac{5}{9}$$

$$\Rightarrow \frac{63-5}{9}$$

$$\Rightarrow \frac{58}{9}$$

$$\Rightarrow 6\frac{4}{9}$$

$$(h) \quad 3 - 2\frac{1}{2}$$

$$\Rightarrow 3 - \frac{5}{2}$$

$$\Rightarrow \frac{6-5}{2}$$

$$\Rightarrow \frac{1}{2}$$

$$\Rightarrow \frac{639-292}{90}$$

$$\Rightarrow \frac{347}{90} = 3\frac{77}{90}$$

$$(i) \quad 15 - 1\frac{7}{10}$$

$$\Rightarrow 15 - \frac{17}{10}$$

$$\Rightarrow \frac{150-17}{10}$$

$$\Rightarrow \frac{133}{10} = 13\frac{3}{10}$$

$$3. (a) \quad \frac{1}{2} + \frac{1}{3} + \frac{1}{4}$$

$$\Rightarrow \frac{6+4+3}{12}$$

$$\Rightarrow \frac{13}{12}$$

$$\Rightarrow 1\frac{1}{12}$$

$$(c) \quad \frac{1}{10} + \frac{1}{15} + \frac{1}{30}$$

$$\Rightarrow \frac{1 \times 3 + 1 \times 2 + 1}{30}$$

$$\Rightarrow \frac{3+2+1}{30}$$

$$\Rightarrow \frac{6}{30}$$

$$\Rightarrow \frac{1}{5}$$

2	10, 15, 3
3	5, 15, 15
5	5, 5, 5
	1, 1, 1

2	3, 4, 6
2	3, 2, 3
3	3, 1, 3
	1, 1, 1

$$(e) \quad 5\frac{1}{6} - 2 + 5\frac{2}{9}$$

$$\Rightarrow \frac{31}{6} - 2 + \frac{47}{9}$$

$$\Rightarrow \frac{32 \times 3 - 2 \times 18 + 47 \times 2}{18}$$

$$\Rightarrow \frac{93-36+94}{18}$$

$$\Rightarrow \frac{93+94-36}{18}$$

$$\Rightarrow \frac{187-36}{18}$$

$$\Rightarrow \frac{151}{18} = 8\frac{7}{18}$$

2	6, 4
3	3, 9
3	1, 3
	1, 1

$$(b) \quad \frac{1}{4} + \frac{1}{8} - \frac{1}{6}$$

$$\Rightarrow \frac{1 \times 6 + 1 \times 3 - 1 \times 4}{24}$$

$$\Rightarrow \frac{6+3-4}{24}$$

$$\Rightarrow \frac{5}{24}$$

2	4, 8, 6
2	2, 4, 3
2	1, 2, 3
3	1, 1, 3
	1, 1, 1

$$(d) \quad 7\frac{1}{3} + 2\frac{3}{4} - 3\frac{5}{6}$$

$$\Rightarrow \frac{22}{3} + \frac{11}{4} - \frac{23}{6}$$

$$\Rightarrow \frac{22 \times 4 + 11 \times 3 - 23 \times 2}{12}$$

$$\Rightarrow \frac{88+33-46}{12}$$

$$\Rightarrow \frac{121-46}{12}$$

$$\Rightarrow \frac{75^{25}}{124} = 6\frac{1}{4}$$

$$(f) \quad 7\frac{2}{3} + 2\frac{1}{9} + 3$$

$$\Rightarrow \frac{23}{3} + \frac{19}{9} + \frac{3}{1}$$

$$\Rightarrow \frac{23 \times 3 + 19 + 3 \times 9}{9}$$

$$\Rightarrow \frac{69+19+27}{9}$$

$$\Rightarrow \frac{115}{9}$$

$$\Rightarrow 12\frac{7}{9}$$

$$\begin{aligned}
 \text{(g)} \quad & 2 + 1\frac{1}{5} + \frac{2}{3} - \frac{2}{15} \\
 \Rightarrow & 2 + \frac{6}{5} + \frac{2}{3} - \frac{2}{15} \\
 \Rightarrow & \frac{2 \times 15 + 6 \times 3 + 2 \times 5 - 2}{15} \\
 \Rightarrow & \frac{30 + 18 + 10 - 2}{15} \\
 \Rightarrow & \frac{58 - 2}{15} \\
 \Rightarrow & \frac{56}{15} \\
 \Rightarrow & 3\frac{11}{15}
 \end{aligned}$$

$$\begin{aligned}
 \text{(i)} \quad & \frac{1}{2} + \frac{1}{3} + \frac{1}{6} - \frac{1}{9} \\
 \Rightarrow & \frac{1 \times 9 + 1 \times 6 + 1 \times 3 - 1 \times 2}{18} \\
 \Rightarrow & \frac{9 + 6 + 3 - 2}{18} \\
 \Rightarrow & \frac{18 - 2}{18} \\
 \Rightarrow & \frac{16}{18} = \frac{8}{9}
 \end{aligned}$$

$$\begin{aligned}
 \text{(h)} \quad & \frac{5}{7} + 2 - \frac{1}{14} \\
 \Rightarrow & \frac{5 \times 2 + 2 \times 14 - 1}{14} \\
 \Rightarrow & \frac{10 + 28 - 1}{14} \\
 \Rightarrow & \frac{38 - 1}{14} \\
 \Rightarrow & \frac{37}{14} \\
 \Rightarrow & 2\frac{9}{14}
 \end{aligned}$$

2	2, 3, 6, 9
3	1, 3, 3, 9
3	1, 1, 1, 3
	1, 1, 1, 1

4. Kavita bought 9 note book = ₹  $8\frac{1}{4}$  = ₹  $\frac{33}{4}$

Kavita bought 9 pen = ₹  $6\frac{2}{5}$  = ₹  $\frac{32}{5}$

$$\begin{aligned}
 \text{Total pay money} &= \frac{33}{4} + \frac{32}{5} \\
 &= \frac{33 \times 5 + 32 \times 4}{20} \\
 &= \frac{293}{20} = ₹ 14\frac{13}{20}
 \end{aligned}$$

5. First box weights =  $8\frac{3}{4}$  kg

Second box weights =  $13\frac{1}{2}$  kg

Third box weights =  $5\frac{1}{6}$  kg

$$\begin{aligned}
 \text{Total weight box} &= 8\frac{3}{4} + 13\frac{1}{2} + 5\frac{1}{6} \\
 &= \frac{35}{4} + \frac{27}{2} + \frac{31}{6} \\
 &= \frac{35 \times 3 + 27 \times 6 + 31 \times 2}{12}
 \end{aligned}$$

2	4, 2, 6
2	2, 1, 3
3	1, 1, 3
	1, 1, 1

$$\begin{array}{r}
 12 \overline{) 329} \left( 27 \right. \\
 \underline{24} \phantom{0} \\
 89 \phantom{0} \\
 \underline{84} \phantom{0} \\
 5
 \end{array}$$

$$\begin{aligned}
 &= \frac{105 + 162 + 62}{12} \\
 &= \frac{329}{12} = 27\frac{5}{12} \text{ kg}
 \end{aligned}$$

6. The weight of an empty gas cylinder =  $16\frac{1}{5}$  kg.

$$\text{The weight of gas} = 14\frac{1}{4} \text{ kg}$$

$$\begin{aligned}
 \text{The weight of the cylinder filled with gas} &= 16\frac{1}{5} + 14\frac{1}{4} \\
 &= \frac{81}{5} + \frac{55}{4} \\
 &= \frac{81 \times 4 + 55 \times 5}{20} \\
 &= \frac{324 + 285}{20} \\
 &= \frac{609}{20} = 30\frac{9}{20} \text{ kg.}
 \end{aligned}$$

7. Vikas studied of English =  $1\frac{1}{2}$  hours.

$$\text{Vikas study of Mathematics} = 2\frac{1}{4} \text{ hours.}$$

$$\text{and Vikas study of Science} = 1\frac{3}{4} \text{ hours.}$$

$$\begin{aligned}
 \text{Total time spend of three subjects} &= 1\frac{1}{2} + 2\frac{1}{4} + 1\frac{3}{4} \\
 &= \frac{3}{2} + \frac{9}{4} + \frac{7}{4} \\
 &= \frac{3 \times 2 + 9 + 7}{4} \\
 &= \frac{6 + 9 + 7}{4} \\
 &= \frac{6 + 16}{4} = \frac{22}{4} \\
 &= 5\frac{2}{4} \text{ hours} = 5\frac{1}{2} \text{ hours}
 \end{aligned}$$

8. Sarthak bought a pencil = ₹  $2\frac{1}{4}$

$$\text{Sarthak bought an eraser} = ₹ 1\frac{1}{2}$$

$$\begin{aligned}
 \text{Total spend money} &= 2\frac{1}{4} + 1\frac{1}{2} \\
 &= \frac{9}{4} + \frac{3}{2} = \frac{9 + 6}{4} \\
 &= \frac{15}{4} = ₹ 3\frac{3}{4}
 \end{aligned}$$



9. Mrs. Shama purchased potatoes =  $3\frac{1}{2}$  kg  
 Mrs. Shama purchased tomatoes =  $1\frac{3}{4}$  kg  
 and Mrs. Shama purchased =  $1\frac{1}{4}$  kg  
 total weight of vegetables purchased =  $3\frac{1}{2} + 1\frac{3}{4} + 1\frac{1}{4}$   
 $= \frac{7}{2} + \frac{7}{4} + \frac{5}{4} = \frac{7 \times 2 + 7 + 5}{4}$   
 $= \frac{14 + 7 + 5}{4} = \frac{21 + 5}{4}$   
 $= \frac{26}{4} = 6\frac{1}{2}$  kg

10. Seema bought of milk =  $5\frac{3}{4}$  litre  
 Consumed milk =  $2\frac{1}{4}$   
 The milk is left with her =  $5\frac{3}{4} - 2\frac{1}{4}$   
 $= \frac{23}{4} - \frac{9}{4} = \frac{23 - 9}{4}$   
 $= \frac{14}{4} = \frac{7}{2}$  litre =  $3\frac{1}{2}$  litre.

11. Karim earned in a day = ₹  $87\frac{1}{2}$   
 he spent of money on food = ₹  $37\frac{3}{4}$   
 The money is left with him =  $87\frac{1}{2} - 37\frac{3}{4}$   
 $= \frac{175}{2} - \frac{151}{4}$   
 $= \frac{175 \times 2 - 151}{4} = \frac{350 - 151}{4}$   
 $= ₹ \frac{199}{4} = ₹ 49\frac{3}{4}$

12. A tin contains oil =  $15\frac{3}{4}$  litre  
 Leaked oil =  $2\frac{1}{2}$  litre.  
 $\therefore$  oil is left in the tin =  $15\frac{3}{4} - 2\frac{1}{2}$   
 $= \frac{63}{4} - \frac{5}{2} = \frac{63 - 5 \times 2}{4}$   
 $= \frac{63 - 10}{4} = \frac{53}{4}$  litre =  $13\frac{1}{4}$  litre

13. Let the other number is  $x$

$$\begin{aligned}\text{then } x + \frac{3}{4} &= \frac{7}{8} \\ x &= \frac{7}{8} - \frac{3}{4} \\ &= \frac{7-3 \times 2}{8} = \frac{7-6}{8} \\ x &= \frac{1}{8}\end{aligned}$$

$\therefore$  the other number is  $\frac{1}{8}$

14. Let added to the number of  $x$

$$\begin{aligned}\text{then } x + 13\frac{1}{2} &= 18 \\ x + \frac{27}{2} &= 18 \\ x &= 18 - \frac{27}{2} = \frac{36-27}{2} = \frac{9}{2} \\ x &= 4\frac{1}{2}\end{aligned}$$

15.  $\frac{7}{9} - \frac{3}{5}$

$$\begin{aligned}\Rightarrow & \frac{7 \times 5 - 3 \times 9}{45} \\ \Rightarrow & \frac{35-27}{45} = \frac{8}{45}\end{aligned}$$

16. Let the other piece is  $x$

$$\begin{aligned}\text{Then } x + \frac{1}{4} &= 2\frac{1}{3} \\ \Rightarrow x &= \frac{7}{3} - \frac{1}{4} \\ &= \frac{7 \times 4 - 3 \times 1}{12} \\ &= \frac{28-3}{12} = \frac{25}{12} \\ x &= 2\frac{1}{12} \text{ metre}\end{aligned}$$

$\therefore$  the other piece is  $2\frac{1}{12}$  metre

17. Pallari bought more cloth than Deepa

and pallari bought of cloth =  $3\frac{2}{3}$  m

Deepa bought of cloth =  $2\frac{1}{3}$  m

Difference of cloth =  $3\frac{1}{3} - 2\frac{1}{3}$

$$= \frac{11}{3} - \frac{7}{3}$$

$$= \frac{11-7}{3} = \frac{4}{3} = 1\frac{1}{3} \text{ m}$$

18. Mukest vivised of the book =  $\frac{1}{5}$  more on his own.

$$= \frac{1}{5} + \frac{1}{5} = \frac{2}{5} \text{ of the book.}$$

The teacher taught of the book is  $\frac{3}{5}$ .

Then the still have to vivise =  $\frac{3}{5} - \frac{2}{5}$

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

=  $\frac{1}{5}$  of the book.

19. Najma's hours from her school =  $\frac{10}{11}$  km

Let she walk the distance =  $n$  km

then she a bus is distance =  $\frac{5}{6}$  km

Then  $x + \frac{5}{6} = \frac{10}{11}$  km

$$\Rightarrow x = \frac{110}{11} - \frac{5}{6}$$

$$x = \frac{10 \times 6 - 55}{60}$$

$$x = \frac{60 - 55}{66}$$

$$x = \frac{5}{66} \text{ km}$$

$\therefore$  She walk the distance is  $\frac{5}{66}$  km.

### Multiple Choice Questions

1. (d)  $\frac{5}{16}$  2. (b)  $\frac{35}{4}$  3. (a)  $5\frac{1}{2}$  4. (a)  $\frac{15}{4}$  5. (b) 3 6. (c)  $\frac{16}{36}$  7. (b)  $\frac{1}{3}$  8. (b)  $\frac{18}{4}$  9. (c)  $\frac{5}{15}$

## 6

## Decimals

### Exercise 6.1

1. (a) 2.3 (b) 0.30 (c) 0.2 (d) 0.45
2. (a)  $\frac{5}{10} = 0.5$  (b)  $\frac{7}{10} = 0.7$  (c)  $\frac{3}{100} = 0.03$
- (d)  $\frac{57}{100} = 0.57$  (e)  $\frac{75}{1000} = 0.075$

3. (a) 35.6 = thirty five point six  
 (b) 14.25 = fourteen point two five  
 (c) 127.13 = one hundred twenty-seven point one three  
 (d) 103.22 = one hundred three point two two  
 (e) 715.104 = seven hundred fifteen point one zero four
4. (a) 0.12                      (b) 23.05                      (c) 9.009                      (d) 167.307
5. (a)  $6.23 = 6 + \frac{2}{10} + \frac{3}{100}$   
 (b)  $10.049 = 10 + 0 + \frac{0}{10} + \frac{4}{100} + \frac{9}{1000} = 10 + \frac{4}{100} + \frac{9}{1000}$   
 (c)  $44.444 = 40 + 4 + \frac{4}{10} + \frac{4}{100} + \frac{4}{1000}$   
 (d)  $193.26 = 100 + 90 + 3 + \frac{2}{10} + \frac{6}{100}$   
 (e)  $205.19 = 200 + 0 + 5 + \frac{1}{10} + \frac{9}{100} = 200 + 5 + \frac{1}{10} + \frac{9}{100}$
6. (a)  $3.69 = 3 + \frac{6}{10} + \frac{9}{100}$                       (b)  $25.309 = 20 + 5 + \frac{3}{10} + \frac{9}{1000}$   
 (c)  $47.906 = 40 + 7 + \frac{9}{10} + \frac{6}{1000}$                       (d)  $83.708 = 80 + 3 + \frac{7}{10} + \frac{8}{1000}$   
 (e)  $123.658 = 100 + 20 + 3 + \frac{6}{10} + \frac{5}{100} + \frac{8}{1000}$
7. (a)  $0.8 + 0.07 + 0.009 = 0.879$   
 (b)  $3 + .008 + 0.0005 = 3.0085$   
 (c)  $30 + 1 + 0.2 + 0.08 = 31.28$   
 (d)  $10 + 7 + 0.5 + 0.02 + 0.006 = 17.526$   
 (e)  $30 + 9 + 0.008 + 0.0005 = 39.0085$
8. (a) 1.1, 1.2, 1.3 **1.4, 1.5 1.6**  
 (b) 6.123, 6.124, 6.125, **6.126, 6.127, 6.128**  
 (c) 11.8, 11.9, 12.0, **12.1, 12.2, 12.3**  
 (d) 9.001, 9.02, 9.003, **9.004, 9.005, 9.006**  
 (e) 27.14, 27.15, 27.16, **27.17, 27.18, 27.19**
9. (a)  $0.6 = 0.60 = 0.600 = 0.6000$   
 (b)  $2.6 = 2.60 = 2.600 = 2.6000$   
 (c)  $130.5 = 130.50 = 130.500 = 130.5000$   
 (d)  $129.6 = 129.60 = 129.600 = 129.6000$
10. (a) (iii) (b) (iv) (c) (ii) (d) (i).

### Exercise 6.2

1. (a)  $0.3 < 2.34$                       (b)  $0.5 > 0.15$                       (c)  $6.6 > 6.066$   
 (d)  $7.3 = 7.30$                       (e)  $6.359 < 6.4$                       (f)  $0.81 > 0.18$   
 (g)  $9.099 < 9.99$                       (h)  $70.08 < 70.7$                       (i)  $96.550 = 96.55$
2. (a) 1.200, 2.150, 5.123 are like decimals  
 (b) 6.050, 6.600, 6.007 are like fractions  
 (c) 8.600, 8.060, 8.006 are like decimals  
 (d) 3.150, 3.000, 3.627 are like decimals

3. (a)  $0.04 < 0.14 < 1.04 < 1.14$  (b)  $19.09 < 19.9 < 20 < 20.001$   
 (c)  $6 < 6.23 < 6.32 < 6.4$  (d)  $1.945 < 19.4 < 19.45 < 194.5$
4. (a)  $1.8 = \frac{18}{10} = 1\frac{8}{10} = 1\frac{4}{5}$  (b)  $0.05 = \frac{5}{100} = \frac{1}{20}$   
 (c)  $0.55 = \frac{55}{100} = \frac{11}{20}$  (d)  $1.66 = \frac{166}{100} = \frac{83}{50} = 1\frac{33}{50}$   
 (e)  $0.125 = \frac{125}{1000} = \frac{1}{8}$  (f)  $0.038 = \frac{38}{1000} = \frac{19}{500}$   
 (g)  $21.26 = \frac{2126}{100} = 21\frac{26}{100} = 21\frac{13}{50}$  (h)  $87.001 = \frac{87001}{1000} = 87\frac{1}{1000}$
5. (a)  $\frac{7}{10} = 0.7$  (b)  $\frac{23}{10} = 2.3$  (c)  $\frac{153}{10} = 15.3$   
 (d)  $\frac{12}{100} = 0.12$  (e)  $\frac{8}{100} = 0.08$  (f)  $\frac{1030}{100} = 10.30$   
 (g)  $\frac{30}{1000} = 0.030$  (h)  $\frac{87}{1000} = 0.087$  (i)  $\frac{9}{1000} = 0.009$   
 (j)  $\frac{255}{1000} = 0.255$
6. (a)  $\frac{3}{5} = \frac{3 \times 2}{5 \times 2} = \frac{6}{10} = 0.6$  (b)  $\frac{5}{2} = \frac{5 \times 5}{2 \times 5} = \frac{25}{10} = 2.5$   
 (c)  $\frac{7}{4} = \frac{7 \times 25}{4 \times 25} = \frac{175}{100} = 1.75$  (d)  $\frac{1}{8} = \frac{1 \times 125}{8 \times 125} = \frac{125}{1000} = 0.125$   
 (e)  $\frac{3}{25} = \frac{3 \times 4}{25 \times 4} = \frac{12}{100} = 0.12$  (f)  $\frac{17}{20} = \frac{17 \times 5}{20 \times 5} = \frac{85}{100} = 0.85$   
 (g)  $\frac{33}{30} = \frac{33 \div 3}{30 \div 3} = \frac{11}{10} = 1.1$  (h)  $\frac{8}{125} = \frac{8 \times 8}{125 \times 8} = \frac{64}{1000} = 0.064$   
 (i)  $1\frac{5}{10} = \frac{10 \times 1 + 5}{10} = \frac{10 + 5}{10} = \frac{15}{10} = 1.5$   
 (j)  $2\frac{3}{5} = \frac{2 \times 3 + 3}{5} = \frac{13}{5} = \frac{13 \times 2}{5 \times 2} = \frac{26}{10} = 2.6$
7. (a)  $1\frac{1}{4} = \frac{5}{4} = 1.25$   $4 \overline{) 5} \begin{array}{r} 1.25 \\ -4 \\ \hline 10 \\ -8 \\ \hline 20 \\ -20 \\ \hline \times \end{array}$  (b)  $\frac{5}{8} = 0.625$   $8 \overline{) 50} \begin{array}{r} 0.625 \\ -48 \\ \hline 20 \\ -16 \\ \hline 40 \\ -40 \\ \hline \times \end{array}$   
 (c)  $\frac{3}{5} = 0.6$   $5 \overline{) 30} \begin{array}{r} 0.6 \\ -30 \\ \hline \times \end{array}$  (d)  $\frac{12}{25} = 0.48$   $25 \overline{) 120} \begin{array}{r} 0.48 \\ -100 \\ \hline 200 \\ -200 \\ \hline \times \end{array}$

$$\begin{aligned} \text{(e)} \quad & 9\frac{3}{5} \\ & = \frac{9 \times 5 + 3}{5} \\ & = \frac{48}{5} \\ & = 9.6 \end{aligned}$$

$$\begin{array}{r} 5 \overline{) 48} \quad 9.6 \\ \underline{-45} \phantom{0} \\ 30 \\ \underline{-30} \\ \phantom{0} \times \end{array}$$

$$\begin{aligned} \text{(f)} \quad & 7\frac{3}{4} \\ & = \frac{7 \times 4 + 3}{4} \\ & = \frac{31}{4} \\ & = 7.75 \end{aligned}$$

$$\begin{array}{r} 4 \overline{) 31} \quad 7.75 \\ \underline{-28} \phantom{0} \\ 30 \\ \underline{-28} \\ \phantom{0} 20 \\ \underline{-20} \\ \phantom{0} \times \end{array}$$

$$\begin{aligned} \text{(g)} \quad & 4\frac{1}{8} \\ & = \frac{4 \times 8 + 1}{8} \\ & = \frac{33}{8} \\ & = 4.125 \end{aligned}$$

$$\begin{array}{r} 8 \overline{) 33} \quad 4.125 \\ \underline{-32} \phantom{0} \\ 10 \\ \underline{-8} \phantom{0} \\ 20 \\ \underline{-16} \\ \phantom{0} 40 \\ \underline{-40} \\ \phantom{0} \times \end{array}$$

$$\begin{aligned} \text{(h)} \quad & 8\frac{6}{10} \\ & = \frac{8 \times 10 + 6}{10} \\ & = \frac{86}{10} \\ & = 8.6 \end{aligned}$$

$$\begin{array}{r} 10 \overline{) 86} \quad 8.6 \\ \underline{-80} \phantom{0} \\ 60 \\ \underline{-60} \\ \phantom{0} \times \end{array}$$

8. Numbers  $> \frac{1}{2} = 0.125, 0.449, 0.3, 0.089, 0.007$   
 Numbers  $> \frac{1}{2} = 0.9, 0.506, 0.867$

### Exercise 6.3

1. (a) 
$$\begin{array}{r} 0.3 \\ + 0.8 \\ \hline 1.1 \end{array}$$
 (b) 
$$\begin{array}{r} 7.0 \\ + 0.5 \\ \hline 7.5 \end{array}$$
 (c) 
$$\begin{array}{r} 6.5 \\ + 4.5 \\ \hline 11.0 \end{array}$$
 (d) 
$$\begin{array}{r} 2.167 \\ + 3.640 \\ \hline 5.807 \end{array}$$
- (e) 
$$\begin{array}{r} 6.30 \\ + 12.37 \\ \hline 18.67 \end{array}$$
 (f) 
$$\begin{array}{r} 7.16 \\ + 3.14 \\ \hline 10.30 \end{array}$$
 (g) 
$$\begin{array}{r} 14.354 \\ + 19.109 \\ \hline 33.463 \end{array}$$
 (h) 
$$\begin{array}{r} 106.778 \\ + 27.653 \\ \hline 134.431 \end{array}$$
- (i) 
$$\begin{array}{r} 3.58 \\ 8.90 \\ + 4.13 \\ \hline 16.61 \end{array}$$
 (j) 
$$\begin{array}{r} 16.50 \\ 26.47 \\ + 3.90 \\ \hline 46.87 \end{array}$$
2. (a) 
$$\begin{array}{r} 2.00 \\ - 1.15 \\ \hline 0.85 \end{array}$$
 (b) 
$$\begin{array}{r} 12.00 \\ - 7.89 \\ \hline 4.11 \end{array}$$
 (c) 
$$\begin{array}{r} 6.00 \\ - 0.66 \\ \hline 5.34 \end{array}$$
 (d) 
$$\begin{array}{r} 8.74 \\ - 6.21 \\ \hline 2.53 \end{array}$$
- (e) 
$$\begin{array}{r} 11.1110 \\ - 1.1111 \\ \hline 9.9999 \end{array}$$
 (f) 
$$\begin{array}{r} 11.1110 \\ - 1.1111 \\ \hline 9.9999 \end{array}$$
 (g) 
$$\begin{array}{r} 91.001 \\ - 72.900 \\ \hline 18.101 \end{array}$$
 (h) 
$$\begin{array}{r} 100.000 \\ - 99.9999 \\ \hline 00.001 \end{array}$$
- (i) 
$$\begin{array}{r} 300.600 \\ - 197.715 \\ \hline 102.885 \end{array}$$
 (j) 
$$\begin{array}{r} 108.032 \\ - 86.800 \\ \hline 21.232 \end{array}$$

3. (a)  $3 - 3.3 + 2.8$

$$\begin{array}{r} 3.00 \\ + 2.80 \\ \hline 5.80 \end{array} \quad \begin{array}{r} 5.80 \\ - 3.3 \\ \hline 2.50 \end{array}$$

$\therefore 3 - 3.3 + 2.8 = 2.50$

(c)  $3.28 + 6.23 - 4.9$

$$\begin{array}{r} 3.25 \\ + 6.23 \\ \hline 9.51 \end{array} \quad \begin{array}{r} 9.51 \\ - 4.90 \\ \hline 4.61 \end{array}$$

$\therefore 3.28 + 6.23 - 4.9 = 4.61$

(e)  $6.3 + 4 - 3.5$

$$\begin{array}{r} 6.3 \\ + 4.0 \\ \hline 10.3 \end{array} \quad \begin{array}{r} 10.3 \\ - 3.5 \\ \hline 6.8 \end{array}$$

$\therefore 6.3 + 4 - 3.5 = 6.8$

(g)  $12.121 + 121.21 - 121.12$

$$\begin{array}{r} 12.121 \\ + 121.210 \\ \hline 133.331 \end{array} \quad \begin{array}{r} 133.331 \\ - 121.120 \\ \hline 12.211 \end{array}$$

$\therefore 12.121 + 121.21 - 121.12 = 12.211$

(i)  $43.16 + 493.28 - 507.34$

$$\begin{array}{r} 43.16 \\ + 493.28 \\ \hline 536.44 \end{array} \quad \begin{array}{r} 536.44 \\ - 507.34 \\ \hline 29.10 \end{array}$$

$\therefore 43.16 + 493.28 - 507.34 = 29.10$

4.  $10.000$

$$\begin{array}{r} 10.000 \\ - 6.125 \\ \hline 3.875 \end{array}$$

$\therefore 3.875$  should be added to  $6.125$  to get  $10$

6.

$$\begin{array}{r} 0.0016 \\ + 993.4500 \\ \hline 993.4516 \end{array} \quad \begin{array}{r} 1000.0000 \\ - 993.4516 \\ \hline 6.5484 \end{array}$$

7.

$$\begin{array}{r} 31.60 \\ + 42.35 \\ + 22.75 \\ \hline 96.70 \end{array}$$

$\therefore$  total snowfall during three winter months was  $96.70$  cm

(b)  $2.9 + 1.2 - 3.5$

$$\begin{array}{r} 2.9 \\ + 1.2 \\ \hline 4.1 \end{array} \quad \begin{array}{r} 4.1 \\ - 3.5 \\ \hline 0.6 \end{array}$$

$\therefore 2.9 + 1.2 - 3.5 = 0.6$

(d)  $2.36 - 3.24 + 4.57$

$$\begin{array}{r} 2.36 \\ + 4.57 \\ \hline 6.93 \end{array} \quad \begin{array}{r} 6.93 \\ - 3.24 \\ \hline 3.69 \end{array}$$

$\therefore 2.36 - 3.24 + 4.57 = 3.69$

(f)  $6 - 12.237 + 8.46$

$$\begin{array}{r} 6.00 \\ + 8.46 \\ \hline 14.46 \end{array} \quad \begin{array}{r} 14.460 \\ - 12.237 \\ \hline 2.223 \end{array}$$

$\therefore 6 - 12.237 + 8.46 = 2.223$

(h)  $24 - 27.047 + 15.26$

$$\begin{array}{r} 24.00 \\ + 15.26 \\ \hline 39.26 \end{array} \quad \begin{array}{r} 39.260 \\ - 27.047 \\ \hline 12.213 \end{array}$$

$\therefore 24 - 27.047 + 15.26 = 12.213$

(j)  $101.28 + 29.19 - 30.27$

$$\begin{array}{r} 101.28 \\ + 29.19 \\ \hline 130.47 \end{array} \quad \begin{array}{r} 130.47 \\ - 30.27 \\ \hline 100.20 \end{array}$$

$\therefore 101.28 + 29.19 - 30.27 = 100.20$

5. greatest two-digit number =  $99$

$$\begin{array}{r} 102.55 \\ - 99.00 \\ \hline 3.55 \end{array}$$

$\therefore 3.55$  should be subtracted from  $102.55$  to get greatest two-digit number

8. New temperature = 102.60  
 Normal temperature =  $\underline{-98.60}$   
 Temperature above normal =  $\underline{4.00}$
9. Height of pea plant on Saturday = 6.50 cm  
 Increment in height =  $\underline{0.55}$  cm  
 $\therefore$  height of pea plant on Monday =  $\underline{7.05}$  cm
10. Money spend on notebook = ₹ 25.75  
 Money spend on pen =  $\underline{-₹ 107.60}$   
 Total money spend =  $\underline{₹ 133.35}$
11. 
$$\begin{array}{r} 5.39 \\ + 8.06 \\ \hline 13.45 \end{array} \quad \begin{array}{r} 16.00 \\ - 13.45 \\ \hline 2.55 \end{array}$$
12. Sum                      Difference                       $\therefore$
- $$\begin{array}{r} 68.01 \\ + 58.60 \\ \hline 126.61 \end{array} \quad \begin{array}{r} 68.01 \\ - 58.60 \\ \hline 9.41 \end{array} \quad \begin{array}{r} 126.61 \\ - 9.41 \\ \hline 117.20 \end{array}$$
13. Temperature on thursday = 39.2°C  
 Temperature on wednesday =  $\underline{-37.6^\circ\text{C}}$   
 difference =  $\underline{1.6^\circ\text{C}}$
14. Capacity of two containers = 145.75 l  
 =  $\underline{+250.50 l}$   
 =  $\underline{396.25 l}$
- Capacity of drum = 725.00 l  
 Capacity of two containers =  $\underline{-396.25 l}$   
 Oil left in drum =  $\underline{328.75 l}$

### Multiple Choice Questions

1. (b) 2. (a) 3. (c) 4. (c) 5. (d) 6. (d) 7. (c) 8. (b) 9. (c) 10. (b)

## 7

## Introduction to Algebra

### Exercise 7.1

1. (a) 1, 4, 7, 10... (b) adding 3 to previous number (c)  $3n - 2$
2.  $\therefore$   $n$ th shape is  $5n + 1$   
 (a) 6th shape is  $5(6) + 1 = 31$  (b) 21th shape is  $5(21) + 1 = 106$   
 (c)  $n$ th shape is  $5n + 1$

3. Number of triangles	1	2	3	4	5	6	11	$n$
Number of matchsticks	3	5	7	9	11	13	23	$2n + 1$



4. Number of squares	1	2	3	4	7	15	$n$
Number of matchsticks	4	8	12	16	28	60	$4n$
Number o dot	4	7	10	13	22	46	$3n + 1$

6. (a) 25th term =  $3(25) + 13 = 75 + 13 = 88$   
 (b) 100th term =  $7(100 - 2) = 700 - 2 = 698$   
 (c) 31th term =  $3(31) - 4 = 93 - 4 = 89$
7. (a)  $L = 2n$             (b)  $W = 4n$             (c)  $T = 2n$             (d)  $Z = 3n$

### Exercise 7.2

1. (c)  $(8 - 12)5 + 7 \times 2$             (d)  $8 \times 14$             (e) 5
2. (a)  $x - 10$             (b)  $2y + 11$             (c)  $(y + z) + \frac{1}{4}x$   
 (d)  $x - y$  (e)  $(x + y) + xy$
3. (a) seven more than  $x$             (b) twice of  $x$  decreased by  $y$   
 (c) thrice of product of  $x$  and  $y$             (d)  $x$  divided by  $y$
4. (a)  $5x + 3$             (b)  $6n - 5$
5.  $x + x + x$  or  $3 \cdot x$
6.  $10m + n$
7. Age of Ashok after 5 years is  $K + 5$
8. Age of Amit  $m$  years ago  $K - m$

9. (a)

$x$	3	2	0	-1	-4
$x + 5$	8	7	5	4	1

(b)

$x$	8	10	-1	9	2
$10 - x$	2	0	11	1	8

### Exercise 7.3

1. (a)  $x^2y + x^2y^2 - xy^2 = (1)^2(2) + (1)^2(2)^2 - (1)(2)^2$   
 $= 1 \times 2 + 1 \times 4 - 1 \times 4$   
 $= 2 + 4 - 4 = 2$
- (b)  $4a - 3b + c = 4(2) - 3(3) + 5$   
 $= 8 - 9 + 5$   
 $= 13 - 9 = 4$
- (c)  $a^2 - 2b^2 \times 3c^2 = 0^2 - 2(1)^2 + 3(1)^2$   
 $= 0 - 2 + 3 = 1$
- (d)  $x^2 - y^2 - z^2 = 1^2 - (-2)^2 - (3)^2$   
 $= 1 - 4 - 9$   
 $= 1 - 13 = -12$
- (e)  $4xyz - 2xy + 3xyz = 4(-1)(2)(1) - 2(-1)(2) + 3(-1)(2)(1)$   
 $= -8 + 4 - 6$   
 $= -8 - 6 + 4$   
 $= -14 + 4 = -10$

$$\begin{aligned}
 \text{(f) } 5 + 4x^3 - 4x + 2a &= 5 + 4(3)^3 - 4(3) + 2(5) \\
 &= 5 + 4(27) - 12 + 10 \\
 &= 5 + 108 - 12 + 10 \\
 &= 123 - 12 = 111
 \end{aligned}$$

$$2. \frac{m^2}{3n} = \frac{6^2}{3(3)} = \frac{36}{9} = 4$$

$$\begin{aligned}
 3. \frac{xy}{w} - (x + w) &= \frac{25 \times 36}{20} - (25 + 20) \\
 &= 5 \times 9 - 45 = 45 - 45 = 0
 \end{aligned}$$

$$\begin{aligned}
 4. 3x + (2y \times z) &= 3(7) + (2 \times 6 \times 4) \\
 &= 21 + (12 \times 4) = 21 + 48 = 69
 \end{aligned}$$

### Multiple Choice Questions

1. (c) 2. (a) 3. (c) 4. (b) 5. (a) 6. (c) 7. (d) 8. (a) 9. (b) 10. (c)

## 8

### Linear Equation in One Variable

#### Exercise 8.1

1. (a)  $5a = 40$  (b)  $x + 8 = 15$  (c)  $25 - a = 1$  (d)  $x - 5 = 3$   
 (e)  $3x - 5 = 16$  (f)  $x - 12 = 24$  (g)  $19 - 2x = 11$  (h)  $x \div 8 = 7$   
 (i)  $4x - 3 = 17$  (j)  $6x - 5 = x$
2. (a) 7 more than  $x$  is 10 (b)  $x$  less than 3 is 7 (c) 7 less than  $x$  is 5  
 (d)  $x$  divided by 5 is 7 (e) 4 more than twice (f) 11 more than  $x$  in 17
3. (a) LHS RHS (b) LHS RHS  
 $3(4) - 5$  7  $3 + 2(3)$  9  
 $= 12 - 5 = 7$   $= 3 + 6 = 9$   
 $\therefore$  LHS = RHS  $\therefore$  LHS = RHS  
 $\therefore x = 4$  is the root of  $3x - 5 = 7$   $\therefore x = 3$  is the root of  $3 + 2x = 9$
- (c) LHS RHS (d) LHS RHS  
 $5x - 8$   $2x - 2$   $8 - 7y$  1  
 $5(2) - 8$   $2(2) - 2$   $8 - 7(1)$  1  
 $10 - 8$   $4 - 2$   $8 - 7(1)$  1  
 $2 = 2$   $1 = 1$   
 $\therefore$  LHS = RHS  $\therefore$  LHS = RHS  
 $\therefore x = 2$  is the root of  $5x - 8 = 2x - 2$   $\therefore y = 1$  is the root of  $8 - 7y = 1$
- (e) LHS RHS  
 $\frac{z}{7}$  8  
 $\frac{56}{7} = 8$   
 $\therefore$  LHS = RHS  
 $\therefore z = 56$  is the root of  $\frac{z}{7} = 8$

4. (a)  $x+5=8$   
 $x=8-5$   
 $x=3$

$x$	LHS	RHS
1	6	8
2	7	8
3	8	8

(b)  $x-3=7$   
 $\Rightarrow x=7+3$   
 $x=10$

$x$	LHS	RHS
8	5	7
9	6	7
10	7	7

(c)  $3x=9$   
 $x=\frac{9}{3}$   
 $x=3$

$x$	LHS	RHS
1	3	9
2	6	9
3	9	9

(d)  $x+7=7$   
 $x=7-7$   
 $x=0$

$x$	LHS	RHS
1	8	7
2	9	7
0	7	7

(e)  $\frac{x}{2}=3$   
 $\Rightarrow x=6$

$x$	LHS	RHS
2	1	3
4	2	3
6	3	3

(f)  $2x+4=3x$   
 $\Rightarrow 4=3x-2x$   
 $4=x$

$x$	LHS	RHS
1	6	3
2	8	6
3	10	9
4	12	12

(g)  $10-n=6$   
 $\Rightarrow x=10-6$   
 $x=4$

$x$	LHS	RHS
1	9	6
2	8	6
3	7	6
4	6	6

(h)  $x-4=2x-6$   
 $-4+6=2x-x$   
 $x=2$

$x$	LHS	RHS
0	-4	-6
1	-3	-4
2	-2	-2

(i)  $2x+3=3x$   
 $\Rightarrow 3x-2x=3$   
 $\Rightarrow x=3$

$x$	LHS	RHS
1	5	3
2	7	6
3	9	9

## Exercise 8.2

1. (a)  $x+2=7$   
 $x=7-2$   
 $x=5$

(b)  $x+5=-7$   
 $x=-7-5$   
 $x=-12$

$\therefore$  LHS = RHS  
 $\therefore$  Verified

(c)  $3-x=1$   
 $x=3-1$   
 $x=2$

(d)  $x-2=-5$   
 $x=-5-2$   
 $x=-7$

$\therefore$  LHS = RHS  
 $\therefore$  Verified

(e)  $3x-3=12$   
 $\Rightarrow 3x=12+3$   
 $\Rightarrow 3x=15$   
 $x=\frac{15}{3}$

$x=5$   
 (f)  $4x-4=16$   
 $\Rightarrow 4x=16+4$   
 $\Rightarrow 4x=20$   
 $x=\frac{20}{4}$   
 $x=5$

(g)  $\frac{3x}{5}=18$   
 $3x=18 \times 5$   
 $x=\frac{18 \times 5}{3}$

**Verification**  
 LHS                      RHS  
 $x=2$                        $=7$   
 $5+2=7$

**Verification**  
 LHS                      RHS  
 $=x+5$                        $=-7$   
 $=-12+5$   
 $=-7$

$\therefore$  LHS = RHS  
 $\therefore$  Verified

**Verification**  
 LHS                      RHS  
 $=3-x$                        $=1$   
 $=3-2$   
 $=1$

**Verification**  
 LHS                      RHS  
 $=x-2$                        $=-7$   
 $=-5-2$   
 $=-7$

$\therefore$  LHS = RHS  
 $\therefore$  Verified

**Verification**  
 LHS                      RHS  
 $=3x-3$                        $=12$   
 $=3 \times 5-3$   
 $=15-3=12$

**Verification**  
 LHS                      RHS  
 $=4x-4$                        $=16$   
 $=4 \times 5-4$   
 $=20-4=16$   
 $\therefore$  LHS = RHS  
 $\therefore$  Verified

**Verification**  
 LHS                      RHS  
 $=\frac{3x}{5}$                        $=18$   
 $=\frac{3 \times 30}{5}$

$$x = 30$$

$$(h) \quad 6x - 5 = 2x + 11$$

$$6x - 2x = 11 + 5$$

$$4x = 16$$

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

$$x = 4$$

$$(i) \quad \frac{x}{2} = \frac{x}{3} + 5$$

$$\Rightarrow \frac{x}{2} - \frac{x}{3} = 5$$

$$\Rightarrow \frac{3x - 2x}{6} = 5$$

$$\Rightarrow \frac{x}{6} = 5$$

$$\Rightarrow x = 30$$

$$2. \quad (a) \quad 3(x+2) - 2(x-3) = 5$$

$$\Rightarrow 3x + 6 - 2x + 6 = 5$$

$$\Rightarrow x = 5 - 12$$

$$(b) \quad \frac{m}{4} - \frac{1}{2} = \frac{m}{3} + 1$$

$$\Rightarrow \frac{m}{4} - \frac{m}{3} = 1 + \frac{1}{2}$$

$$\Rightarrow \frac{-m}{12} = \frac{3}{2}$$

$$\Rightarrow -m = 18$$

$$(c) \quad \frac{3y}{10} - 4 = 11$$

$$\Rightarrow \frac{3y}{10} = 11 + 4$$

$$y = 50$$

$$(d) \quad \frac{2x}{3} + 8 = \frac{x}{2} - 1$$

$$\Rightarrow \frac{2x}{3} - \frac{x}{2} = -1 - 8$$

$$\Rightarrow \frac{x}{6} = -9$$

$$x = -54$$

$$= \frac{3 \times 30}{5}$$

$$= 18$$

**Verification**

LHS

$$= 6x - 5$$

$$= 6 \times 4 - 5$$

$$= 24 - 5$$

$$= 19$$

$\therefore$  LHS = RHS

$\therefore$  **Verified**

**Verification,**

LHS

$$= \frac{x}{2}$$

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

$$= 15$$

$\therefore$  LHS = RHS

$\therefore$  **Verified**

RHS

$$= 2x + 11$$

$$= 2 \times 4 + 11$$

$$= 8 + 11$$

$$= 19$$

RHS

$$= \frac{x}{3} + 5$$

$$= \frac{30}{3} + 5$$

$$= 10 + 5 = 15$$

$$\begin{aligned}
 \text{(e)} \quad & 3(x+6) = 2(x+3) = 54 \\
 \Rightarrow & 3x+18+2x+6=54 \Rightarrow 5x+24=54 \Rightarrow 5x=54-24 \\
 \Rightarrow & 5x=30 \Rightarrow x=\frac{30}{5} \Rightarrow x=6
 \end{aligned}$$

$$\begin{aligned}
 \text{(f)} \quad & \frac{m}{4} + 8 = 12 \\
 \Rightarrow & \frac{m}{4} = 12 - 8 \Rightarrow \frac{m}{4} = 4 \Rightarrow m = 16
 \end{aligned}$$

$$\begin{aligned}
 \text{(g)} \quad & 6x + 5 = 3x + 20 \\
 \Rightarrow & 6x - 3x = 20 - 5 \Rightarrow 3x = 15 \\
 \Rightarrow & x = \frac{15}{3} \Rightarrow x = 5
 \end{aligned}$$

$$\begin{aligned}
 \text{(h)} \quad & 12m - 3 = 5(2m + 1) \\
 \Rightarrow & 12m - 3 = 10m + 5 \Rightarrow 12m - 10m = 5 + 3 \Rightarrow 2m = 8 \\
 \Rightarrow & m = \frac{8}{2} \Rightarrow m = 4
 \end{aligned}$$

$$\begin{aligned}
 \text{(i)} \quad & 2(x-2) - 3(x-3) = 5(x-5) \\
 \Rightarrow & 2x - 4 - 3x + 9 = 5x - 25 \Rightarrow -x + 5 = 5x - 25 \\
 \Rightarrow & -x - 5x = -25 - 5 \Rightarrow -6x = -30 \\
 \Rightarrow & x = \frac{30}{6} \Rightarrow x = 5
 \end{aligned}$$

$$\begin{aligned}
 \text{3. (a)} \quad & 3(2-5x) - 2(1-6x) = 1 \\
 & 6 - 15x - 2 + 12x = 1 \\
 & -15x + 12x + 6 - 2 = 1 \\
 & \quad -3x + 4 = 1 \\
 & \quad -3x = 1 - 4 \\
 & \quad -3x = -3 \\
 & \quad x = +1
 \end{aligned}$$

**Verification**

LHS	RHS
$3(2-5x) - 2(1-6x)$	1
$3[2-5(+1)] - 2[1-6(+1)]$	
$3[2-5] - 2[1-6]$	
$3(-3) - 2(-5)$	
$-9 + 10$	
$1 = 1$	

$\therefore$  LHS = RHS

$\therefore$  **Verified**

$$\begin{aligned}
 \text{(b)} \quad & \frac{n}{4} - 5 = \frac{n}{6} + \frac{1}{2} \\
 & \frac{n}{4} - \frac{n}{6} = 5 + \frac{1}{2} \\
 & \frac{3n - 2n}{12} = \frac{10 + 1}{2} \\
 & \frac{n}{12} = \frac{11}{2} \\
 & n = \frac{12 \times 11}{2} \\
 & n = 66
 \end{aligned}$$

**Verification**

LHS	RHS
$\frac{n}{4} - 5$	$\frac{n}{6} + \frac{1}{2}$
$\frac{66}{4} - 5$	$\frac{66}{6} + \frac{1}{2}$
$\frac{66-20}{4}$	$11 + \frac{1}{2}$
$\frac{46}{4}$	$\frac{11 \times 2 + 1}{2}$
$\frac{23}{2}$	$\frac{23}{2}$

$\therefore$  LHS = RHS

$\therefore$  **Verified**



$$(c) \frac{2m}{3} + 8 = \frac{m}{2} - 1$$

$$\frac{2m}{3} - \frac{m}{2} = -1 - 8$$

$$\frac{4m - 3m}{6} = -9$$

$$\frac{m}{6} = -9$$

$$m = -9 \times 6$$

$$m = -54$$

**Verification**

LHS

$$\frac{2m}{3} + 8$$

$$\frac{2(-54)}{3} + 8$$

$$2(-18) + 8$$

$$-36 + 8$$

$$-28 = -28$$

$\therefore$  LHS = RHS

$\therefore$  **Verified**

RHS

$$\frac{m}{2} - 1$$

$$\frac{-54}{2} - 1$$

$$-27 - 1$$

$$-28$$

$$(d) \frac{2x}{5} - \frac{3}{2} = \frac{x}{2} + 1$$

$$\frac{2x}{5} - \frac{x}{2} = 1 + \frac{3}{2}$$

$$\frac{2x \times 2 - x \times 5}{10} = \frac{2 \times 1 + 3}{2}$$

$$\frac{4x - 5x}{10} = \frac{2 + 3}{2}$$

$$\frac{-x}{10} = \frac{5}{2}$$

$$x = -\frac{5}{2} \times 10$$

$$x = -25$$

**Verification**

LHS

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

$$\frac{2(-25)}{5} - \frac{3}{2}$$

$$\frac{-50}{5} - \frac{3}{2}$$

$$-10 - \frac{3}{2}$$

$$\frac{-20 - 3}{2}$$

$$\frac{-23}{2} = \frac{-23}{2}$$

$\therefore$  LHS = RHS

$\therefore$  **Verified**

RHS

$$\frac{x}{2} + 1$$

$$\frac{-25}{2} + 1$$

$$\frac{-25 + 2}{2}$$

$$\frac{-23}{2}$$

$$(f) \frac{3x}{10} - 4 = 14$$

$$\frac{3x}{10} = 14 + 4$$

$$\frac{3x}{10} = 18$$

$$x = \frac{18 \times 10}{3}$$

$$x = 60$$

**Verification**

LHS

$$\frac{3x}{10} - 4$$

$$3(60) - 4$$

$$180 - 4$$

$$176 = 176$$

$\therefore$  LHS = RHS

$\therefore$  **Verified**

RHS

$$\frac{3(60)}{10} - 4$$

$$18 - 4$$



### Exercise 8.3

- Let number be  $x$   
 $\therefore 5x - x = 80$   
 $4x = 80 \quad \Rightarrow \quad x = 80 \div 4$   
 $x = 20$   
 $\therefore$  number is 20.
- Let Ist number =  $x$   
 $\therefore$  IInd number =  $x + 1$   
 $\therefore$  IIIrd number =  $x + 2$   
 $\therefore x + (x + 1) + (x + 2) = 114 \quad \Rightarrow \quad 3x + 3 = 114$   
 $3x = 114 - 3 \quad \Rightarrow \quad 3x = 111$   
 $x = 37$   
 $\therefore$  numbers are 37, 37 + 1, 37 + 2 *i.e.*, 37, 38, 39.
- Let number be  $x$   
 $\therefore 17x + 4 = 225 \quad \Rightarrow \quad 17x = 225 - 4$   
 $17x = 221 \quad \Rightarrow \quad x = 13$   
 $\therefore$  number is 13.
- Let the number be  $x$   
 $\therefore 3x + 5 = 50 \quad \Rightarrow \quad 3x = 50 - 5$   
 $3x = 45 \quad \Rightarrow \quad x = 15$   
 $\therefore$  number is 15.
- Let Ist number =  $x$   $\therefore$  IInd number  $x + 18$   
 $\therefore x + (x + 18) = 92 \quad \Rightarrow \quad 2x + 18 = 92$   
 $2x = 92 - 18 \quad \Rightarrow \quad 2x = 74$   
 $\Rightarrow \quad x = 37$   
 $\therefore$  numbers are 37 and 37 + 18  
 37 and 55
- Let breadth =  $x$   $\therefore$  length =  $3x$   
 Perimeter =  $2(l + b) \quad \Rightarrow \quad 168 = 2[3x + x]$   
 $168 = 2(4x) \quad \Rightarrow \quad 168 = 8x$   
 $168 \div 8 = x \quad \Rightarrow \quad 21 = x$   
 $\therefore$  breadth = 21 cm and length  $3 \times 21 = 63$  cm
- Let breadth =  $x$   $\therefore$  length =  $x + 5$   
 $\therefore$  Perimeter =  $2(l + b) \quad \Rightarrow \quad 74 = 2[(x + 5) + x]$   
 $74 = 2[2x + 5] \quad \Rightarrow \quad 74 = 4x + 10$   
 $74 - 10 = 4x \quad \Rightarrow \quad 64 = 4x$   
 $64 \div 4 = x \quad \Rightarrow \quad 16 = x$   
 $\therefore$  breadth = 16 m  
 length =  $16 + 5 = 21$  m
- Let breadth =  $x$   $\therefore$  length =  $x + 7$   
 $\therefore$  length of wire = Perimeter of Rectangle  
 $86 = 2(l + b) \quad \Rightarrow \quad 86 = 2[(x + 7) + x]$   
 $86 = 2(2x + 7) \quad \Rightarrow \quad 86 = 4x + 14$   
 $86 - 14 = 4x \quad \Rightarrow \quad 72 = 4x$   
 $72 \div 4 = x \quad \Rightarrow \quad 18 = x$   
 $\therefore$  breadth of Rectangle = 18 m  
 length of Rectangle =  $18 + 7 = 25$  m



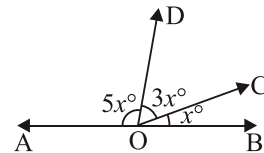
9. Let age of Ajay =  $x$  years  
 $\therefore$  Let age of Reena =  $(x + 6)$  years  
 $\therefore \quad x + (x + 6) = 28 \quad \Rightarrow \quad 2x + 6 = 28$   
 $\quad \quad \quad 2x = 28 - 6 \quad \Rightarrow \quad x = 22 \div 2$   
 $\Rightarrow \quad \quad \quad x = 11$  years  
 $\therefore$  Age of Ajay = 11 years  
and Age of Reena =  $11 + 6 = 17$  years
10. Let Age of Vikas =  $x$  years  
 $\therefore$  Age of Deepak =  $2x$  years  
 $\therefore \quad \quad \quad 2x - x = 11$   
 $\quad \quad \quad \quad \quad x = 11$   
 $\therefore$  Age of Vikas = 11 years  
 $\therefore$  Age of Deepak =  $2(11) = 22$  years
11. Let Age of Rekha =  $x$  years  
 $\therefore$  Age of Mrs. Goel =  $(x + 27)$  years  
After 8 years  
Age of Rekha =  $(x + 8)$   
Age of Mrs. Goel =  $(x + 27) + 8$   
 $\quad \quad \quad = x + 35$   
 $\therefore$  Age of Mrs. Goel = 2 (Age of Rekha)  
 $\quad \quad \quad x + 35 = 2(x + 8)$   
 $\quad \quad \quad x + 35 = 2x + 16$   
 $\quad \quad \quad 35 - 16 = 2x - x$   
 $\quad \quad \quad 19 = x$   
 $\therefore$  Age of Reena = 19 years  
Age of Rekha =  $(19 + 27) = 46$  years
12. Let present age of son =  $x$  years  
 $\therefore$  present age of man =  $4x$  years  
After 16 years  
Age of son =  $x + 16$   
Age of man =  $4x + 16$   
 $\therefore$  Age of man = 2 (Age of son)  
 $\quad \quad \quad 4x + 16 = 2(x + 16)$   
 $\quad \quad \quad 4x + 16 = 2x + 32$   
 $\quad \quad \quad 2x = 16 \quad \Rightarrow \quad x = 8$   
 $\therefore$  Present age of son = 8 years  
Present age of man =  $4 \times 8 = 32$  years.
13. Let present age of son =  $x$  years  
 $\therefore$  present age of man =  $3x$  years  
3 years ago  
Age of son =  $x - 3$   
Age of man =  $3x - 3$   
Age of man = 4 (Age of son)  
 $\quad \quad \quad 3x - 3 = 4(x - 3)$   
 $\quad \quad \quad 3x - 3 = 4x - 12$   
 $\quad \quad \quad -3 + 12 = 4x - 3x$   
 $\quad \quad \quad 9 = x$

∴ Age of son = 9 years  
 Age of man = 3(9) = 27 years.

14. Let number of 50 paise coins =  $x$   
 ∴ Number of 25-paise coins =  $4x$   
 ∴ Value of 50 paise coins + value of 25 paise coins of 25 = ₹ 30  
 $50 \times x + 25(4x) = 3000$  paise  
 $50x + 100x = 3000$   
 $150x = 3000 \Rightarrow x = 20$   
 ∴ 50-paise coins = 20  
 25-paise coins = 80

15. Let number of girls =  $x$   
 ∴ Number of boys =  $x + 334$   
 ∴ No. of girls + no. of boys = 572  
 $x + (x + 334) = 572$   
 $2x + 334 = 572$   
 $2x = 572 - 334$   
 $2x = 238$   
 $x = 119$   
 ∴ Number of girls = 119  
 Number of boys =  $119 + 334 = 453$

16. Then  $\angle AOD + \angle DOC + \angle BOC = 180^\circ$   
 $\Rightarrow 5x^\circ + 3x^\circ + x^\circ = 180^\circ$   
 $\Rightarrow 9x^\circ = 180^\circ$   
 $\Rightarrow x^\circ = \frac{180^\circ}{9}$   
 $x^\circ = 20^\circ$   
 ∴  $\angle AOD = 5 \times 20^\circ = 100^\circ$   
 $\angle DOC = 3 \times 20^\circ = 60^\circ$   
 $\angle BOC = 20^\circ = 20^\circ$



17. Do it your self  
 18. Given length of figure =  $(4a + 3)$  cm  
 Breadth of figure =  $(2a + 1)$  cm  
 Given perimeter of figure =  $10a + 12$   
 Then  $10a + 12 = 2[(4a + 3) + (2a + 1)]$   
 $= 2[4a + 3 + 2a + 1]$   
 $10a + 12 = 2 \times (6a + 4)$   
 $10a + 12 = 12a + 8$   
 $12 - 8 = 12a - 10a$   
 $2a = 4$   
 $a = \frac{4}{2}$   
 $a = 2$

### Multiple Choice Question

1. (b) 8 2. (a) 13 3. (a) 20 4. (b) 3 5. (a) 11 years