Exercise 4.1

1. (a) Expenditure of ₹ 5000 (b) profit of ₹ 300
(c) Loss of 10 kg weight (d) 200 m below sea level
(e) In crease of 10 (f) 20°C above freezing point
(g) 250 km towards west of Delhi (h) Early by 25 minutes

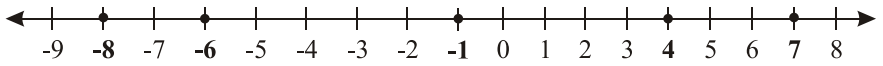
2. (a) + 2756 m (b) −10 m
(c) −234 (d) + ₹ 26,500
(e) + ₹ 3000 (f) ₹ 5000
(g) + 100 m (h) −3000 m

3. (a) Integers between 0 and 8 are 1, 2, 3, 4, 5, 6, 7
(b) Integers 0 and −8 are −1, −2, −3, −4, −5, −6, −7
(c) Integers between −4 and 4 are −3, −2, −1, 0, 1, 2, 3
(d) Integers between −10 and −19 are −11, −12, −13, −14, −15, −16, −17, −18
(e) Integers between −111 and −115 are −112, −113, −114

4. (a) Five integers greater than −22 are −21, −20, −19, −18, −17
(b) Five integers greater than −96 are −95, −94, −93, −92, −91
(c) Five integers less than −32 are −33, −34, −35, −36, −37
(d) Five integers less than −70 are −71, −72, −73, −74, −75

5. There is no greatest negative integer
There is no greater positive integer also

6.



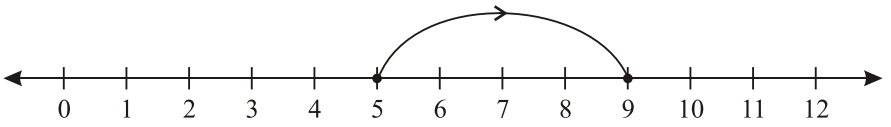
7. (a) Ascending order −10 < −9 < −7 < −5 < 0 < 3 < 5
(b) Ascending order −84 < −48 < −45 < −33 < −30

8. (a) Descending order 0 > −37 > −68 > −73 > −86
(b) Descending order −157 > −175 > −517 > −715 > −751

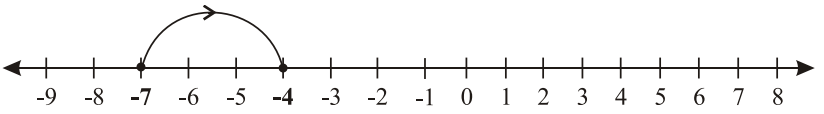
9. (a) 3°C is warmer (b) −6°C is colder (c) −8°C is lower

10. (a) −8, −6, −4, −2, 0, 2 (b) −40, −35, −30, −25, −20, −15
(c) −21, −18, −15, −12, −9, −6 (d) 16, 13, 10, 7, 4, 1
(e) −66, −60, −54, −48, −42, −36 (f) −84, −72, −60, −48, −36, −24

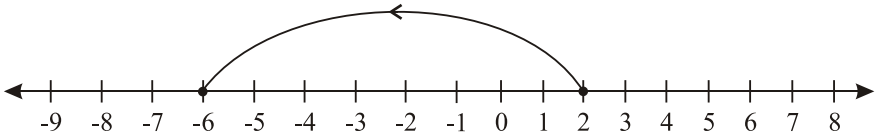
11. (a) 4 more 5 is 9



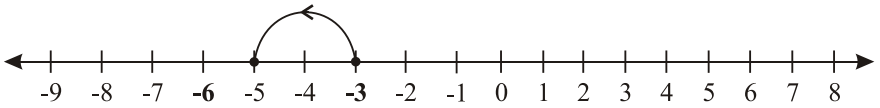
(b) 3 more than −7 is −4



(c) 8 less than 2 is – 6



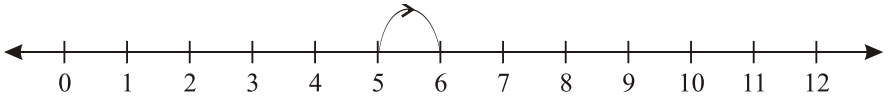
(d) 2 less than – 3 is – 5



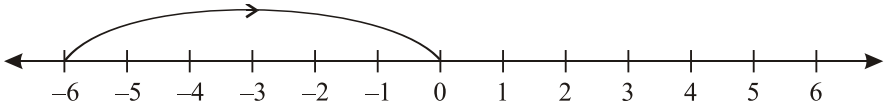
12. (a) False, 0 is neither positive more negative
(b) False, there is no smallest negative integer
(c) True
(d) True
(e) True

Exercise 4.2

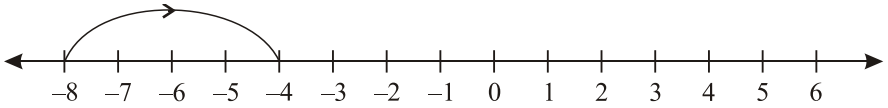
1. (a) 5 move than 1 is 6



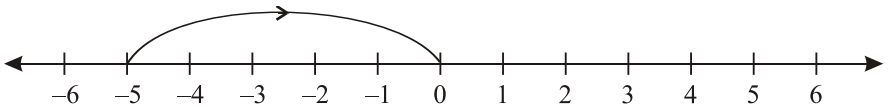
(b) 6 move than –6 is 0



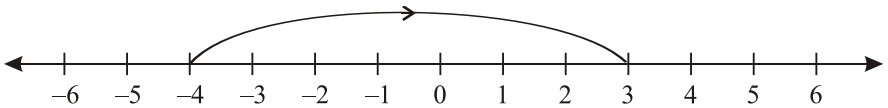
(c) 4 less than –4 is –8



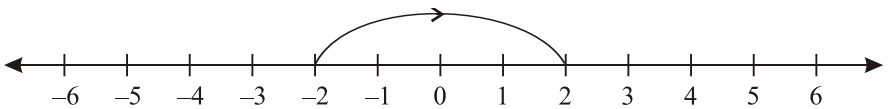
(d) 5 less than 0 is –5



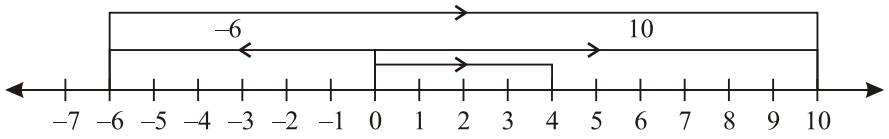
(e) 7 less than 3 is –4



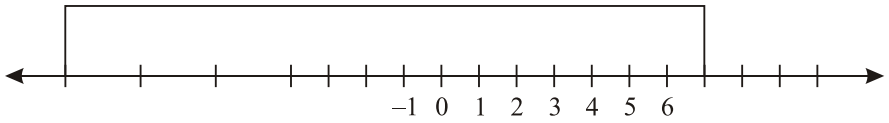
(f) 4 move than –2 is 2



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

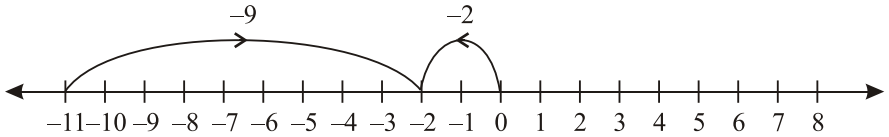


(b) $-10+7=-3$



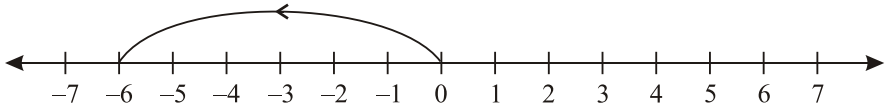
$\therefore \quad -10+7=-3$

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



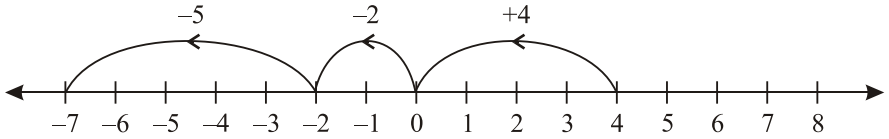
$\therefore \quad (-2)+(-9)=-11$

(d) $0+(-6)$



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

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



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

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

$\Rightarrow$ $567-897=-330$

(b) -764 and 674

$\Rightarrow$ $-764+674=-90$

(c) -458 and 765

$\Rightarrow$ $-458+765$

$=307$

(d) $-56, -78$ and -98

$\Rightarrow$ $-56-78-98$

$=-232$

(e) $200, -56$ and -240

$200-56-240$

$\Rightarrow$ $200-296 \Rightarrow -96$

5. (a) $(-6)+(-9)+(-12)+(-24)$
$\Rightarrow \quad -15-36$
$\Rightarrow \quad -51$

(b) $87+0+(-9)+(-48)+(-23)$
$\Rightarrow \quad 87-9-48-23$
$\Rightarrow \quad 87-9-71$
$\Rightarrow \quad 87-80=7$

(c) $(-56)+65-34-23+34$
$\Rightarrow \quad -56+65-23$
$\Rightarrow \quad -56-23+65$
$\Rightarrow \quad -79+65=-14$

(d) $-23-45-39+25$
$\Rightarrow \quad -107+25=-82$

6. (a) $-3+\mathbf{15}=12$ (b) $-8+\mathbf{3}=-5$ (c) $-9+\mathbf{-7}=-16$
(d) $-4+27=\mathbf{23}$ (e) $\mathbf{-2}+(-10)=-12$ (f) $-15+\mathbf{15}=0$
(g) $-1+\mathbf{6}=5$ (h) $\mathbf{29}+16=45$

7. Temperature at night $=4-7=-3$℃

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) $-150+560-(-420)=-150+560+420$
$=-150+980=+830$

5. Temperature at night $=2-5$
$=-3℃$

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 $=-4℃$
Temperature on saturday $=(-4-3)℃=-7℃$
Temperature on Sunday $=-7+5=-2℃$

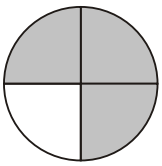
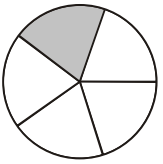
Multiple Choice Questions

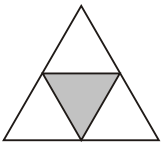
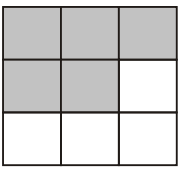
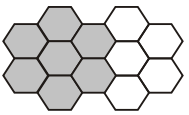
1. (c) 1 **2.** (b) -4 **3.** (c) -1 **4.** (a) 1 **5.** (c) 1 **6.** (a) 0 **7.** (b) -12 **8.** (c) 3 **9.** (c) temperature **10.** (d) 5

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

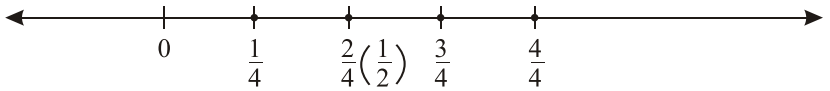
The fraction is total friend invited and not attend party = $\frac{10}{30}$

7. 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 fraction of prime number = $\frac{3}{10}$

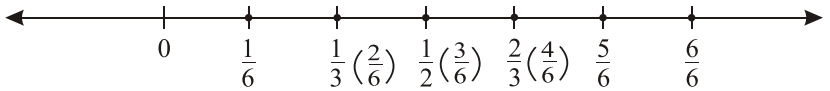
8. **101**, 102, **103**, 104, **105**, 106, **107**, 108, **109**, 110,
111, 112, **113**, 114, **115**, 116, **117**, 118, **119**, 120,
121, 122, **123**, 124, **125**, 126, **127**, 128, **129**, 230,
fraction of odd number = $\frac{15}{30} = \frac{1}{2}$

Exercise 5.2

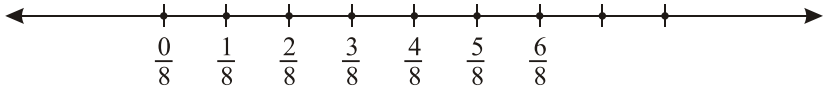
1. (a)



(b)



(c)



2. (a) $\frac{18}{5} = 3\frac{3}{5}$

$5\overline{)18}\,(3$
-15
3

(b) $\frac{46}{7} = 6\frac{4}{7}$

$7\overline{)46}\,(6$
-42
4

(c) $\frac{25}{3} = 8\frac{1}{3}$

$3\overline{)25}\,(8$
-24
1

(d) $\frac{19}{8} = 2\frac{3}{8}$

$8\overline{)19}\,(2$
-16
3

(e) $\frac{16}{9} = 1\frac{7}{9}$

$9\overline{)16}\,(1$
-9
7

3. (a) $8\frac{2}{5}=\frac{8\times 5+2}{5}=\frac{40+2}{5}=\frac{42}{5}$

(b) $6\frac{1}{2}=\frac{6\times 2+1}{2}=\frac{12+1}{2}=\frac{13}{2}$

(c) $7\frac{3}{20}=\frac{7\times 20+3}{20}=\frac{140+3}{20}=\frac{143}{20}$

(d) $11\frac{3}{8}=\frac{11\times 8+3}{8}=\frac{88+3}{8}=\frac{91}{8}$

(e) $4\frac{6}{17}=\frac{4\times 17+6}{17}=\frac{68+6}{17}=\frac{74}{17}$

Exercise 5.3

1. Let the correct number is x.

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

$x=\frac{2\times \cancel{20}^{4}}{\cancel{5}_{1}}$

$x=8$

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

$x=\frac{\cancel{8}^{2}\times 7}{\cancel{4}_{1}}$

$x=14$

(c) $\frac{10}{25}=\frac{2}{x}$

$x=\frac{\cancel{2}^{1}\times \cancel{25}^{5}}{\cancel{10}_{5}}$

$x=5$

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

$x=\frac{\cancel{18}^{3}\times \cancel{4}^{1}}{\cancel{24}_{6}}$

$x=3$

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

$x=\frac{\cancel{15}^{3}\times 4^{1}}{\cancel{20}_{5}}$

$x=3$

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

$x=\frac{\cancel{40}^{5}\times 14}{\cancel{8}_{1}}$

$x=70$

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

$x=\frac{\cancel{5}^{1}\times \cancel{70}^{14}}{\cancel{15}_{5}}$

$x=14$

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

$x=\frac{\cancel{45}^{3}\times 4}{\cancel{15}_{1}}$

$x=12$

2. Give a fraction of denominator = 36

Let a fraction of numerator = x

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

$x=27$

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

3. Given a fraction of numerator = 27

Let a fraction of denominator = x

Then $\frac{27}{x}=\frac{9}{10}$

$x=\frac{27\times 10}{9}$

$x=30$

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

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

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

$\Rightarrow \quad 18 \neq 15$

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

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

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

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

$\Rightarrow \quad 72 = 72$

Since there product are equal then the fraction are equivalent

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

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

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

$77 \neq 65$

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

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

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

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

$\Rightarrow \quad 56 = 56$

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 from.

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

HCF of 15 ane 25 is 5

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

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

HCF of 80 and 65 is 5

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

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

HCF of 12 and 52 is 4

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

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

HCF of 16 and 90 is 2

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

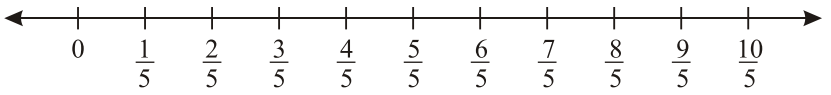
(e) $\frac{156}{60}$

HCF of 156 and 60 is 12

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

Exercise 5.4

1.



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

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

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

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

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

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

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

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

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

$3\times 8 \quad 4\times 7$

$24 \quad < \quad 28$

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

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

$6\times 15 \quad 12\times 10$

$90 \quad < \quad 120$

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

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

$1\times 4 \quad 1\times 3$

$4 \quad > \quad 3$

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

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

$5\times 9 \quad 4\times 7$

$45 \quad > \quad 28$

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

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

$1\times 8 \quad 3\times 4$

$8 \quad < \quad 12$

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

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

$5\times 21 \quad 15\times 7$

$105 \quad = \quad 105$

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

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

$7\times 5 \quad 4\times 10$

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

$5\times 16 \quad 6\times 17$

$35 < 40$

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

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

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

$81 > 80$

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

$80 < 102$

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

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

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

$36 < 144$

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

4. (a) $\frac{9 \div 9}{45 \div 9} = \frac{1}{5}$ (b) $\frac{12 \div 4}{16 \div 4} = \frac{3}{4}$ (c) $\frac{49 \div 7}{56 \div 7} = \frac{7}{8}$

(d) $\frac{84 \div 12}{96 \div 12} = \frac{7}{8}$ (e) $\frac{75 \div 25}{100 \div 25} = \frac{3}{4}$ (f) $\frac{16 \div 16}{80 \div 16} = \frac{1}{5}$

(g) $\frac{9 \div 9}{18 \div 9} = \frac{1}{2}$ (h) $\frac{102 \div 34}{136 \div 34} = \frac{3}{4}$ (i) $\frac{30 \div 30}{150 \div 30} = \frac{1}{5}$

(j) $\frac{105 \div 15}{120 \div 15} = \frac{7}{8}$ (k) $\frac{202 \div 202}{404 \div 201} = \frac{1}{2}$ (l) $\frac{25 \div 25}{125 \div 25} = \frac{1}{5}$

(m) $\frac{45 \div 15}{60 \div 15} = \frac{3}{4}$ (n) $\frac{500 \div 500}{1000 \div 500} = \frac{1}{2}$ (o) $\frac{182 \div 26}{208 \div 26} = \frac{7}{8}$

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

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

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

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

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

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

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

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

$\because \quad \frac{2}{3} > \frac{4}{8}$

$\therefore$ Nalini took more time.

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

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

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

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

$\because \quad 5 > 4$

$\therefore$ Vidushi read less book.

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

Now $\frac{5}{6}$ and $\frac{3}{4}$

$5 \times 4, \quad 3 \times 6$

$20 > 18$

$\therefore$ Rajat exercises longer.

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

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

Now, $\frac{8}{16}$ and $\frac{3}{4}$

$8 \times 4 \quad 3 \times 16$

$32 < 48$

$\therefore$ 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 $\frac{1}{6}$

$1 \times 6 \quad 1 \times 4$

$6 > 4$

$\therefore$ 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 $\frac{1}{2}, \frac{2}{3}, \frac{2}{3}$

$\frac{1 \times 3}{2 \times 3}, \frac{2 \times 2}{3 \times 2}, \frac{2 \times 2}{3 \times 2}$

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

$\therefore$ 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 orderd $\frac{5}{2} > \frac{5}{6} > \frac{5}{8} > \frac{5}{11} > \frac{15}{14} > \frac{5}{19}$

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

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

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

therefore descending order is

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

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

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

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

$\therefore$ descending order is

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

Exercise 5.5

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

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

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

$\Rightarrow 1$

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

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

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

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

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

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

$\Rightarrow \frac{7+10}{26}$

$\Rightarrow \frac{17}{26}$

2	26, 13
13	13, 13
	1, 1

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

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

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

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

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

2	4, 6
2	2, 3
5	1, 3
	1, 1

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

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

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

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

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

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

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

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

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

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

2	10, 45
5	5, 45
3	1, 9
3	1, 3
	1, 1

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

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

$\Rightarrow \frac{7}{3}+\frac{7}{4}+\frac{35}{6}$

$\Rightarrow \frac{7\times4+7\times3+35\times2}{12}$

$\Rightarrow \frac{28+21+70}{12}$

$\Rightarrow \frac{28+91}{12}$

$\Rightarrow \frac{119}{12}=9\frac{11}{12}$

(h) $3+\frac{5}{14}+3\frac{7}{24}$

$\Rightarrow 3+\frac{5}{14}+\frac{79}{24}$

$\Rightarrow \frac{3\times168+5\times11+79\times7}{108}$

$\Rightarrow \frac{504+60+553}{168}$

$\Rightarrow \frac{1117}{168}$

$\Rightarrow 6\frac{109}{168}$

(i) $3+\frac{1}{9}+2+5\frac{7}{12}$

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

$\Rightarrow \frac{28}{9}+\frac{2}{1}+\frac{67}{12}$

$\Rightarrow \frac{28+4+2+36+67\times3}{36}$

$\Rightarrow \frac{112+72+201}{36}$

$\Rightarrow \frac{385}{36}=10\frac{25}{36}$

2. (a) $\frac{7}{9}-\frac{2}{9}$

$\Rightarrow \frac{7-2}{9}$

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

(b) $\frac{9}{10}-\frac{2}{15}$

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

$\Rightarrow \frac{9\times3-2\times2}{30}$

$\Rightarrow \frac{27-4}{30}=\frac{23}{30}$

(c) $\frac{5}{8}-\frac{7}{12}$

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

$\Rightarrow \frac{5\times3-7+2}{24}$

$\Rightarrow \frac{15-14}{24}$

$\Rightarrow \frac{1}{24}$

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

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

$\Rightarrow \frac{13}{4}-\frac{11}{6}$

$\Rightarrow \frac{13\times3-11\times2}{12}$

$\Rightarrow \frac{39-22}{12}$

$\Rightarrow \frac{17}{12}=1\frac{5}{12}$

(e) $13\frac{1}{13}-10\frac{3}{13}$

$\Rightarrow \frac{170}{13}-\frac{133}{13}$

$\Rightarrow \frac{170-133}{13}$

(f) $7\frac{1}{10}-3\frac{11}{45}$

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

$\Rightarrow \frac{71}{10}-\frac{146}{45}$

$\Rightarrow \frac{71\times9-146\times2}{90}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\Rightarrow \quad \frac{75^{25}}{12_4} = 6\frac{1}{4}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(g) $2+1\frac{1}{5}+\frac{2}{3}-\frac{2}{15}$

$\Rightarrow 2+\frac{6}{5}+\frac{2}{3}-\frac{2}{15}$

$\Rightarrow \frac{2\times15+6\times3+2\times5-2}{15}$

$\Rightarrow \frac{30+18+10-2}{15}$

$\Rightarrow \frac{58-2}{15}$

$\Rightarrow \frac{56}{15}$

$\Rightarrow 3\frac{11}{15}$

(h) $\frac{5}{7}+2-\frac{1}{14}$

$\Rightarrow \frac{5\times2+2\times14-1}{14}$

$\Rightarrow \frac{10+28-1}{14}$

$\Rightarrow \frac{38-1}{14}$

$\Rightarrow \frac{37}{14}$

$\Rightarrow 2\frac{9}{14}$

(i) $\frac{1}{2}+\frac{1}{3}+\frac{1}{6}-\frac{1}{9}$

$\Rightarrow \frac{1\times9+1\times6+1\times3-1\times2}{18}$

$\Rightarrow \frac{9+6+3-2}{18}$

$\Rightarrow \frac{18-2}{18}$

$\Rightarrow \frac{16}{18}=\frac{8}{9}$

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 $= ₹\ 6\frac{2}{5} = ₹\ \frac{32}{5}$

Total pay money $= \frac{33}{4}+\frac{32}{5}$

$= \frac{33\times5+32\times4}{20}$

$= \frac{293}{20} = ₹\ 14\frac{13}{20}$

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

Total weight box $= 8\frac{3}{4}+13\frac{1}{2}+5\frac{1}{6}$

$= \frac{35}{4}+\frac{27}{2}+\frac{31}{6}$

$= \frac{35\times3+27\times6+31\times2}{12}$

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

$12\overline{)329}(27$

24

89

84

5

$$= \frac{105 + 162 + 62}{12}$$

$$= \frac{329}{12} = 27\frac{5}{12} \text{ kg}$$

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

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

The weight o the cylinder filled with gas $= 16\frac{1}{5} + 14\frac{1}{4}$

$$= \frac{81}{5} + \frac{55}{4}$$

$$= \frac{81 \times 4 + 57 \times 5}{20}$$

$$= \frac{324 + 285}{20}$$

$$= \frac{609}{20} = 30\frac{9}{20} \text{ kg.}$$

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

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

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

Total time spend of three subjects $= 1\frac{1}{2} + 2\frac{1}{4} + 1\frac{3}{4}$

$$= \frac{3}{2} + \frac{9}{4} + \frac{7}{4}$$

$$= \frac{3 \times 2 + 9 + 7}{4}$$

$$= \frac{6 + 9 + 7}{4}$$

$$= \frac{6 + 16}{4} = \frac{22}{4}$$

$$= 5\frac{2^{1}}{4_{2}} \text{ hours} = 5\frac{1}{2} \text{ hours}$$

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

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

Total speed money $= 2\frac{1}{4} + 1\frac{1}{2}$

$$= \frac{9}{4} + \frac{3}{2} = \frac{9 + 6}{4}$$

$$= \frac{15}{4} = ₹\ 3\frac{3}{4}$$

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 $= 3\frac{1}{2} + 1\frac{3}{4} + 1\frac{1}{4}$

$$= \frac{7}{2} + \frac{7}{4} + \frac{5}{4} = \frac{7\times 2+7+5}{4}$$

$$= \frac{14+7+5}{4} = \frac{21+5}{4}$$

$$= \frac{26}{4} = 6\frac{1}{2}\text{ kg}$$

10. Seema bought of milk $= 5\frac{3}{4}$ litre

Consumed milk $= 2\frac{1}{4}$

The milk is left with her $= 5\frac{3}{4} - 2\frac{1}{4}$

$$= \frac{23}{4} - \frac{9}{4} = \frac{23-9}{4}$$

$$= \frac{14}{4} = \frac{7}{2}\text{ litre} = 3\frac{1}{2}\text{ litre.}$$

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 $011 = 15\frac{3}{4}$ litre

Leaked oil $= 2\frac{1}{2}$ litre.

$\therefore$ oil is left in thetin $= 15\frac{3}{4} - 2\frac{1}{2}$

$$= \frac{63}{4} - \frac{5}{2} = \frac{63-5\times 2}{4}$$

$$= \frac{63-10}{4} = \frac{53}{4}\text{ lite} = 13\frac{1}{4}\text{ litre}$$

13. Let the other number is x

then $x+\frac{3}{4}=\frac{7}{8}$

$x=\frac{7}{8}-\frac{3}{4}$

$=\frac{7-3\times 2}{8}=\frac{7-6}{8}$

$x=\frac{1}{8}$

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

14. Let added to the number of x

then $x+13\frac{1}{2}=18$

$x+\frac{27}{2}=18$

$x=18-\frac{27}{2}=\frac{36-27}{2}=\frac{9}{2}$

$x=4\frac{1}{2}$

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

$\Rightarrow \quad \frac{7\times 5-3\times 9}{45}$

$\Rightarrow \quad \frac{35-27}{45}=\frac{8}{45}$

16. Let the other piece is x

Then $x+\frac{1}{4}=2\frac{1}{3}$

$\Rightarrow \quad x=\frac{7}{3}-\frac{1}{4}$

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

$=\frac{28-3}{12}=\frac{25}{12}$

$x=2\frac{1}{12}$ metre

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

17. Pallari bought more cloth then Deepa

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

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

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

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

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

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) $123.658 = 100 + 20 + 3 + \frac{6}{10} + \frac{5}{100} + \frac{8}{100}$

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) $1\frac{1}{4} = \frac{5}{4} = 1.25$

$4\overline{)\,5\,(\,1.25}$
-4
10
-8
20
-20
$\times$

(b) $\frac{5}{8} = 0.625$

$8\overline{)\,50\,(\,0.625}$
-48
20
-16
40
-40
$\times$

(c) $\frac{3}{5} = 0.6$

$5\overline{)\,30\,(\,0.6}$
-30
$\times$

(d) $\frac{12}{25} = 0.48$

$25\overline{)\,120\,(\,0.48}$
-100
200
-200
$\times$

(e) $9\frac{3}{5} = \frac{9\times 5+3}{5} = \frac{48}{5} = 9.6$

$5\overline{)48}\,(9.6$, -45, 30, -30, $\times$

(f) $7\frac{3}{4} = \frac{7\times 4+3}{4} = \frac{31}{4} = 7.75$

$4\overline{)31}\,(7.75$, -28, 30, -28, 20, -20, $\times$

(g) $4\frac{1}{8} = \frac{4\times 8+1}{8} = \frac{33}{8} = 4.125$

$8\overline{)33}\,(4.125$, -32, 10, -8, 20, -16, 40, -40, $\times$

(h) $8\frac{6}{10} = \frac{8\times 10+6}{10} = \frac{86}{10} = 8.6$

$10\overline{)86}\,(8.6$, -80, 60, -60, $\times$

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) $0.3 + 0.8 = 1.1$ (b) $7.0 + 0.5 = 7.5$ (c) $6.5 + 4.5 = 11.0$ (d) $2.167 + 3.640 = 5.807$

(e) $6.30 + 12.37 = 18.67$ (f) $7.16 + 3.14 = 10.30$ (g) $14.354 + 19.109 = 33.463$ (h) $106.778 + 27.653 = 134.431$

(i) $3.58 + 8.90 + 4.13 = 16.61$ (j) $16.50 + 26.47 + 3.90 = 46.87$

2. (a) $2.00 - 1.15 = 0.85$ (b) $12.00 - 7.89 = 4.11$ (c) $6.00 - 0.66 = 5.34$ (d) $8.74 - 6.21 = 2.53$

(e) $11.1110 - 1.1111 = 9.9999$ (f) $11.1110 - 1.1111 = 9.9999$ (g) $91.001 - 72.900 = 18.101$ (h) $100.000 - 99.9999 = 00.001$

(i) $300.600 - 197.715 = 102.885$ (j) $108.032 - 86.800 = 21.232$

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

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

$\therefore \quad 3 - 3.3 + 2.8 = 2.50$

(b) $2.9 + 1.2 - 3.5$

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

$\therefore \quad 2.9 + 1.2 - 3.5 = 0.6$

(c) $3.28 + 6.23 - 4.9$

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

$\therefore \quad 3.28 + 6.23 - 4.9 = 4.61$

(d) $2.36 - 3.24 + 4.57$

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

$\therefore \quad 2.36 - 3.24 + 4.57 = 3.69$

(e) $6.3 + 4 - 3.5$

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

$\therefore \quad 6.3 + 4 - 3.5 = 6.8$

(f) $6 - 12.237 + 8.46$

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

$\therefore \quad 6 - 12.237 + 8.46 = 2.223$

(g) $12.121 + 121.21 - 121.12$

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

$\therefore \quad 12.121 + 121.21 - 121.12 = 12.211$

(h) $24 - 27.047 + 15.26$

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

$\therefore \quad 24 - 27.047 + 15.26 = 12.213$

(i) $43.16 + 493.28 - 507.34$

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

$\therefore \quad 43.16 + 493.28 - 507.34 = 29.10$

(j) $101.28 + 29.19 - 30.27$

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

$\therefore \quad 101.28 + 29.19 - 30.27 = 100.20$

4.

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

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

5. greatest two-digit number = 99

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

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

6.

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

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

8. New temperature = 102.60
Normal temperature = – 98.60
Temperature above normal = 4.00

9. Height of pea plant on Saturday = 6.50 cm
Increament in height = 0.55 cm
∴ height of pea plant an Monday = 7.05 cm

10. Money spend on notebook = ₹ 25.75
Money spend on pen = – ₹ 107.60
Total money spend = ₹ 133.35

11.

5.39	16.00
+8.06	–13.45
13.45	2.55

12. Sum

68.01
+58.60
126.61

Difference

68.01
–58.60
9.41

∴

126.61
–9.41
117.20

13. Temperature on thursday = 39.2°C
Temperature on wednesday = –37.6°C
difference = 1.6° C

14. Capacity of two containers = 145.75 *l*
= + 250.50 *l*
= 396.25 *l*

Capacity of drum = 725.00 *l*
Capacity of two containers = – 396.25 *l*
Oil left in drum = 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. ∵ $n$thshape is $5n+1$

(a) 6th shape is $5(6)+1=31$ (b) 21th shape is $5(21)+1=106$

(c) nth 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 8×14 (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 $3.x$

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) $4xyz-2xy+3xyz = 4(-1)(2)(1)-2(-1)(2)+3(-1)(2)(1)$

$= -8+4-6$

$= -8-6+4$

$= -14+4 = -10$

(f) $5+4x^3-4x+2a = 5+4(3)^3-4(3)+2(5)$

$= 5+4(27)-12+10$

$= 5+108-12+10$

$= 123-12 = 111$

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

3. $\frac{xy}{w} - (x+w) = \frac{\overset{5}{25}\times\overset{9}{36}}{\underset{4}{20}} - (25+20)$

$= 5\times 9 - 45 = 45-45 = 0$

4. $3x+(2y\times z) = 3(7)+(2\times 6\times 4)$

$= 21+(12\times 4) = 21+48 = 69$

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 then 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
$3(4)-5$	7
$=12-5=7$	

$\because$ LHS = RHS

$\therefore$ $x = 4$ is the root of $3x-5 = 7$

(b)

LHS	RHS
$3+2(3)$	9
$=3+6=9$	

$\because$ LHS = RHS

$\therefore$ $x = 3$ is the root of $3+2x = 9$

(c)

LHS		RHS
$5x-8$		$2x-2$
$5(2)-8$		$2(2)-2$
$10-8$		$4-2$
2	=	2

$\because$ LHS = RHS

$\therefore$ $x = 2$ is the root of $5x-8 = 2x-2$

(d)

LHS		RHS
$8-7y$		1
$8-7(1)$		1
$8-7(1)$		1
1	=	1

$\because$ LHS = RHS

$\therefore$ $y = 1$ is the root of $8-7y = 1$

(e)

LHS		RHS
$\frac{z}{7}$		8
$\frac{56}{7}$	=	8

$\because$ 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	3	3

(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) $x+2=7$

$x=7-2$

$x=5$

Verification

LHS $x=2$

$5+2=7$

RHS $=7$

(b) $x+5=-7$

$x=-7-5$

$x=-12$

Verification

LHS $=x+5$

$=-12+5$

$=-7$

RHS $=-7$

$\therefore$ LHS = RHS

$\therefore$ Verified

$\therefore$ LHS = RHS

$\therefore$ Verified

(c) $3-x=1$

$x=3-1$

$x=2$

Verification

LHS $=3-x$

$=3-2$

$=1$

RHS $=1$

(d) $x-2=-5$

$x=-5-2$

$x=-7$

Verification

LHS $=x-2$

$=-5-2$

$=-7$

RHS $=-7$

$\therefore$ LHS = RHS

$\therefore$ **Verified**

$\therefore$ LHS = RHS

$\therefore$ **Verified**

(e) $3x-3=12$

$\Rightarrow 3x=12+3$

$\Rightarrow 3x=15$

$x=\frac{15}{3}$

$x=5$

Verification

LHS $=3x-3$

$=3\times 5-3$

$=15-3=12$

RHS $=12$

(f) $4x-4=16$

$\Rightarrow 4x=16+4$

$\Rightarrow 4x=20$

$x=\frac{20}{4}$

$x=5$

Verification

LHS $=4x-4$

$=4\times 5-4$

$=20-4=16$

$\therefore$ LHS = RHS

$\therefore$ **Verified**

RHS $=16$

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

$3x=18\times 5$

$x=\frac{18\times 5}{3}$

Verification

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

RHS $=18$

$x = 30$

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

$= 18$

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

$6x - 2x = 11 + 5$

$4x = 16$

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

$x = 4$

Verification

LHS	RHS
$= 6x - 5$	$= 2x + 11$
$= 6 \times 4 - 5$	$= 2 \times 4 + 11$
$= 24 - 5$	$= 8 + 11$
$= 19$	$= 19$

$\therefore$ LHS = RHS

$\therefore$ **Verified**

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

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

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

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

$\Rightarrow x = 30$

Verification,

LHS	RHS
$= \frac{x}{2}$	$= \frac{x}{3} + 5$
$= \frac{30}{2}$	$= \frac{30}{3} + 5$
$= 15$	$= 10 + 5 = 15$

$\therefore$ LHS = RHS

$\therefore$ **Verified**

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

$\Rightarrow 3x + 6 - 2x + 6 = 5$ $\Rightarrow x + 12 = 5$

$\Rightarrow x = 5 - 12$ $\Rightarrow x = -7$

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

$\Rightarrow \frac{m}{4} - \frac{m}{3} = 1 + \frac{1}{2}$ $\Rightarrow \frac{3m - 4m}{12} = \frac{3}{2}$

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

$\Rightarrow -m = 18$ $\Rightarrow m = -18$

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

$\Rightarrow \frac{36}{10} = 11 + 4$ $\Rightarrow y = \frac{5 \times 10}{3}$

$y = 50$

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

$\Rightarrow \frac{2x}{3} - \frac{x}{2} = -1 - 8$ $\Rightarrow \frac{2 \times 2x - 3x}{6} = -9$

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

$x = -54$

(e) $3(x+6) = +2(x+3) = 54$

$\Rightarrow \quad 3x + 18 + 2x + 6 = 54 \quad \Rightarrow \quad 5x + 24 = 54 \quad \Rightarrow \quad 5x = 54 - 24$

$\Rightarrow \quad 5x = 30 \quad \Rightarrow \quad x = \frac{30}{5} \quad \Rightarrow \quad x = 6$

(f) $\frac{m}{4} + 8 = 12$

$\Rightarrow \quad \frac{m}{4} = 12 - 8 \quad \Rightarrow \quad \frac{m}{4} = 4 \quad \Rightarrow \quad x = 16$

(g) $6x + 5 = 3x + 20$

$\Rightarrow \quad 6x - 3x = 20 - 5 \quad \Rightarrow \quad 3x = 15$

$\Rightarrow \quad x = \frac{15}{3} \quad \Rightarrow \quad x = 5$

(h) $12m - 3 = 5(2m + 1)$

$\Rightarrow \quad 12m - 3 = 10m + 5 \quad \Rightarrow \quad 12m - 10m = 5 + 3 \quad \Rightarrow \quad 2m = 8$

$\Rightarrow \quad m = \frac{8}{2} \quad \Rightarrow \quad m = 4$

(i) $2(x-2) - 3(x-3) = 5(x-5)$

$\Rightarrow \quad 2x - 4 - 3x + 9 = 5x - 25 \quad \Rightarrow \quad -x + 5 = 5x - 25$

$\Rightarrow \quad -x - 5x = -25 - 5 \quad \Rightarrow \quad -6x = -30$

$\Rightarrow \quad x = \frac{30}{6} \quad \Rightarrow \quad x = 5$

3. (a) $3(2-5x) - 2(1-6x) = 1$

$6 - 15x - 2 + 12x = 1$

$-15x + 12x + 6 - 2 = 1$

$-3x + 4 = 1$

$-3x = 1 - 4$

$-3x = -3$

$x = +1$

Verification

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

$\because$ LHS = RHS

$\therefore$ **Verified**

(b) $\frac{n}{4} - 5 = \frac{n}{6} + \frac{1}{2}$

$\frac{n}{4} - \frac{n}{6} = 5 + \frac{1}{2}$

$\frac{3n - 2n}{12} = \frac{10 + 1}{2}$

$\frac{n}{12} = \frac{11}{2}$

$n = \frac{12 \times 11}{2}$

$n = 66$

Verification

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

$\because$ 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	RHS
$\frac{2m}{3}+8$	$\frac{m}{2}-1$
$\frac{2(-54)}{3}+8$	$\frac{-54}{2}-1$
$2(-18)+8$	$-27-1$
$-36+8$	-28

$-28=-28$

$\because$ LHS = RHS

$\therefore$ **Verified**

(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	RHS
$\frac{2x}{5}-\frac{3}{2}$	$\frac{x}{2}+1$
$\frac{2(-25)}{5}-\frac{3}{2}$	$\frac{-25}{2}+1$
$\frac{-50}{5}-\frac{3}{2}$	$\frac{-25+2}{2}$
$-10-\frac{3}{2}$	$\frac{-23}{2}$
$\frac{-20-3}{2}$	

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

$\because$ LHS = RHS

$\therefore$ **Verified**

(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	RHS
$\frac{3x}{10}-4$	$\frac{3(60)}{10}-4$
$3(6)-4$	14
$18-4$	

$14=14$

$\because$ LHS = RHS

$\therefore$ **Verified**

Exercise 8.3

1. Let number be x

$\therefore \quad 5x - x = 80$

$4x = 80 \quad \Rightarrow \quad x = 80 \div 4$

$x = 20$

$\therefore$ number is 20.

2. Let Ist number $= x$

$\therefore$ IInd number $= x + 1$

$\therefore$ IIIrd number $= x + 2$

$\therefore \quad x + (x + 1) + (x + 2) = 114 \quad \Rightarrow \quad 3x + 3 = 114$

$3x = 114 - 3 \quad \Rightarrow \quad 3x = 111$

$x = 37$

$\therefore$ numbers are 37, 37 + 1, 37 + 2 *i.e.,* 37, 38, 39.

3. Let number be x

$\therefore \quad 17x + 4 = 225 \quad \Rightarrow \quad 17x = 225 - 4$

$17x = 221 \quad \Rightarrow \quad x = 13$

$\therefore$ number is 13.

4. Let the number be x

$\therefore \quad 3x + 5 = 50 \quad \Rightarrow \quad 3x = 50 - 5$

$3x = 45 \quad \Rightarrow \quad x = 15$

$\therefore$ number is 15.

5. Let Ist number $= x \quad \therefore$ IInd number $x + 18$

$\therefore \quad x + (x + 18) = 92 \quad \Rightarrow \quad 2x + 18 = 92$

$2x = 92 - 18 \quad \Rightarrow \quad 2x = 74$

$\Rightarrow \quad x = 37$

$\therefore$ numbers are 37 and 37 + 48

37 and 55

6. Let breadth $= x \quad \therefore$ 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

7. Let breadth $= x \quad \therefore$ length $= x + 5$

$\because$ 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

8. Let breadth $= x \quad \therefore$ length $= x + 7$

$\because$ 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

$\therefore$ $x + (x + 6) = 28 \quad \Rightarrow \quad 2x + 6 = 28$

$2x = 28 - 6 \quad \Rightarrow \quad x = 22 \div 2$

$\Rightarrow$ $x = 11$ 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

$\therefore$ $2x - x = 11$

$x = 11$

$\therefore$ 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 $= (x + 27) + 8$

$= x + 35$

$\therefore$ Age of Mrs. Goel = 2 (Age of Rekha)

$x + 35 = 2(x + 8)$

$x + 35 = 2x + 16$

$35 - 16 = 2x - x$

$19 = x$

$\therefore$ 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)

$4x + 16 = 2(x + 16)$

$4x + 16 = 2x + 32$

$2x = 16 \quad \Rightarrow \quad x = 8$

$\therefore$ 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)

$3x - 3 = 4(x - 3)$

$3x - 3 = 4x - 12$

$-3 + 12 = 4x - 3x$

$9 = x$

$\therefore$ Age of son = 9 years

Age of man $= 3(9) = 27$ years.

14. Let number of 50 paise coins $= x$

$\therefore$ Number of 25-paise coins $= 4x$

$\therefore$ Value of 50 paise coins + value of 25 paise coins of 25 = ₹ 30

$$50 \times x + 25(4x) = 3000 \text{ paise}$$
$$50x + 100x = 3000$$
$$150x = 3000 \quad \Rightarrow \quad x = 20$$

$\therefore$ 50-paise coins = 20

25-paise coins = 80

15. Let number of girls $= x$

$\therefore$ Number of boys $= x + 334$

$\therefore$ No. of girls + no. of boys = 572

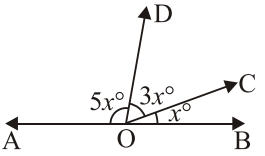
$$x + (x + 334) = 572$$
$$2x + 334 = 572$$
$$2x = 572 - 334$$
$$2x = 238$$
$$x = 119$$

$\therefore$ Number of girls = 119

Number of boys $= 119 + 334 = 453$

16. Then $\angle AOD + \angle DOC + \angle BOC = 180°$

$$\Rightarrow \quad 5x° + 3x° + x° = 180°$$
$$\Rightarrow \quad 9x° = 180°$$
$$\Rightarrow \quad x° = \frac{180°}{9}$$
$$x° = 20°$$



$\therefore$ $\angle AOD = 5 \times 20° = 100°$

$\angle DOC = 3 \times 20° = 60°$

$\angle BOC = 20° = 20°$

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