

## Chapter 5 Exercise 5.1

- Q. 1.** (i)  $\frac{3}{8}$  (iv)  $\frac{2}{5}$   
 (ii)  $\frac{2}{8} = \frac{1}{4}$  (v)  $\frac{2}{6} = \frac{1}{3}$   
 (iii)  $\frac{6}{32} = \frac{3}{16}$  (vi)  $\frac{3}{8}$
- Q. 2.** (i)  $\frac{3}{8} \neq \frac{6}{8}$  (ii)  $\frac{2}{8} \neq \frac{5}{16}$   
 as  $\frac{4}{16} \neq \frac{5}{16}$
- Q. 3.** (i)  $\frac{1}{2} = \frac{3}{6}$  (vi)  $\frac{17}{5} = \frac{68}{20}$   
 (ii)  $\frac{3}{4} = \frac{6}{8}$  (vii)  $\frac{3}{8} = \frac{6}{16} = \frac{12}{32} = \frac{48}{128}$   
 (iii)  $\frac{8}{7} = \frac{56}{49}$  (viii)  $\frac{36}{12} = \frac{18}{6} = \frac{12}{4} = \frac{6}{2}$   
 (iv)  $\frac{10}{11} = \frac{30}{33}$  (ix)  $\frac{100}{200} = \frac{10}{20} = \frac{5}{10} = \frac{1}{2}$   
 (v)  $\frac{6}{5} = \frac{18}{15}$  (x)  $\frac{50}{100} = \frac{25}{50} = \frac{10}{20} = \frac{1}{2}$
- Q. 4.** (i)  $4\frac{1}{2} = 4 + \frac{1}{2}$  (vi)  $\frac{94}{13}$   
 $= \frac{8}{2} + \frac{1}{2}$   
 $= \frac{9}{2}$   
 (ii)  $1\frac{3}{5} = 1 + \frac{3}{5}$  (vii)  $\frac{53}{6}$   
 $= \frac{5}{5} + \frac{3}{5}$   
 $= \frac{8}{5}$   
 (iii)  $4\frac{3}{8} = 4 + \frac{3}{8}$  (viii)  $\frac{102}{11}$   
 $= \frac{32}{8} + \frac{3}{8}$   
 $= \frac{35}{8}$   
 (iv)  $\frac{17}{3}$  (ix)  $\frac{117}{8}$   
 (v)  $\frac{55}{8}$
- Q. 5.** (i)  $1\frac{1}{3}$  (vi)  $2\frac{3}{6} = 2\frac{1}{2}$   
 (ii)  $1\frac{4}{5}$  (vii)  $4\frac{2}{4} = 4\frac{1}{2}$   
 (iii)  $1\frac{3}{7}$  (viii)  $3\frac{3}{4}$   
 (iv)  $1\frac{2}{21}$  (ix)  $1\frac{2}{3}$   
 (v)  $8\frac{1}{2}$

**Q. 6.** No. Nicole only has three books in her house; while Seán has 12 books. Nicole would have two biographies while Seán would have four.

- Q. 7.** (i)  $\left\{ \frac{3}{15}, \frac{1}{2}, \frac{2}{3}, \frac{5}{6} \right\}$  (iii)  $\left\{ \frac{7}{10}, \frac{11}{15}, \frac{3}{4}, \frac{23}{30} \right\}$   
 (ii)  $\left\{ \frac{1}{24}, \frac{5}{12}, \frac{1}{2}, \frac{5}{6} \right\}$  (iv)  $\left\{ \frac{13}{40}, \frac{7}{20}, \frac{3}{8}, \frac{2}{5} \right\}$

- Q. 8.** (i)  $\left. \begin{array}{l} \frac{13}{25} = \frac{26}{50} \\ \frac{1}{2} = \frac{25}{50} \\ \frac{23}{50} \\ \frac{12}{25} = \frac{24}{50} \end{array} \right\} \therefore \left\{ \frac{13}{25}, \frac{1}{2}, \frac{12}{25}, \frac{23}{50} \right\}$

- (ii)  $\left. \begin{array}{l} \frac{1}{2} = \frac{30}{60} \\ \frac{2}{3} = \frac{40}{60} \\ \frac{1}{4} = \frac{15}{60} \\ \frac{21}{30} = \frac{42}{60} \end{array} \right\} \therefore \left\{ \frac{21}{30}, \frac{2}{3}, \frac{1}{2}, \frac{1}{4} \right\}$

- (iii)  $\frac{3}{10} = \frac{6}{20}, \frac{1}{5} = \frac{4}{20}, \frac{7}{20}, \frac{1}{4} = \frac{5}{20}$   
 $\therefore \left\{ \frac{7}{20}, \frac{3}{10}, \frac{1}{4}, \frac{1}{5} \right\}$

- (iv)  $\frac{37}{50} = \frac{74}{100}, \frac{77}{100}, \frac{3}{4} = \frac{75}{100}, \frac{19}{25} = \frac{76}{100}$   
 $\therefore \left\{ \frac{77}{100}, \frac{19}{25}, \frac{3}{4}, \frac{37}{50} \right\}$

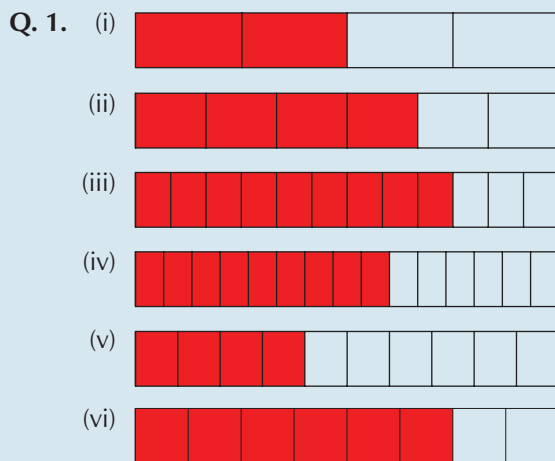
- Q. 9.** (i)  $\frac{1}{6}$  is bigger  
 $\frac{1}{6} = \frac{7}{42}$  whereas  $\frac{1}{7} = \frac{6}{42}$   
 (ii)  $\frac{1}{6} = \frac{14}{84}$  ,  $\frac{1}{7} = \frac{12}{84}$   
 (iii)  $\frac{13}{84}$   
 (iv)  $\frac{14}{84} = \frac{28}{168}$  and  $\frac{12}{84} = \frac{24}{168}$   
 So,  $\frac{25}{168}$  and  $\frac{27}{168}$  are two other fractions between  $\frac{1}{6}$  and  $\frac{1}{7}$   
 (Note:  $\frac{13}{84} = \frac{26}{168}$ )

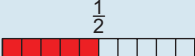
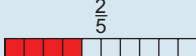
**Q. 10.** (i)  $\frac{1}{8}$  is bigger  
 $\frac{1}{8} = \frac{9}{72}$  while  $\frac{1}{9} = \frac{8}{72}$   
(ii)  $\frac{1}{8} = \frac{18}{144}$  ,  $\frac{1}{9} = \frac{16}{144}$   
(iii)  $\frac{17}{144}$   
(iv)  $\frac{18}{144} = \frac{72}{576}$  and  $\frac{16}{144} = \frac{64}{576}$   
 $\therefore$  Other fractions:  $\frac{65}{576}$ ,  $\frac{66}{576}$ ,  $\frac{67}{576}$   
 $\frac{69}{576}$ ,  $\frac{70}{576}$ ,  $\frac{71}{576}$   
[Note:  $\frac{17}{144} = \frac{68}{576}$ ]


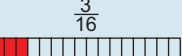
**Q. 11.**  $\frac{7}{10} = \frac{42}{60}$  ,  $\frac{3}{4} = \frac{45}{60}$  ,  $\frac{2}{3} = \frac{40}{60}$   
 $\therefore \frac{7}{10}$  is closer to  $\frac{2}{3}$   
(first  $\frac{2}{60}$  away, where as  $\frac{7}{10}$  is  $\frac{3}{60}$  away from  $\frac{3}{4}$ )

**Q. 12.** (i)  $\frac{5}{20} = \frac{1}{4}$  shaded       $\frac{3}{4}$  not shaded  
(ii)  $\frac{5}{16}$  shaded  
 $\frac{11}{16}$  not shaded  
(iii)  $\frac{3}{12} = \frac{1}{4}$  shaded      (iv)  $\frac{2}{8} = \frac{1}{4}$  shaded  
 $\frac{3}{4}$  not shaded       $\frac{3}{4}$  not shaded.

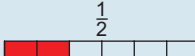
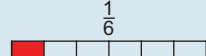
## Exercise 5.2





**Q. 2.** (i)   $\frac{1}{2}$  +   $\frac{2}{5}$   
 $\frac{5}{10}$  +  $\frac{4}{10}$   
=  $\frac{9}{10}$

(ii)   $\frac{3}{4}$  +   $\frac{3}{16}$   
 $\frac{12}{16}$  +  $\frac{3}{16}$   
=  $\frac{15}{16}$

(iii)  $\frac{2}{3} + \frac{1}{2} = \frac{4}{6} + \frac{3}{6} = \frac{7}{6} = 1\frac{1}{6}$   
(iv)  $\frac{5}{8} + \frac{3}{4} = \frac{5}{8} + \frac{6}{8} = \frac{11}{8} = 1\frac{3}{8}$   
(v)  $\frac{2}{7} + \frac{3}{14} = \frac{4}{14} + \frac{3}{14} = \frac{7}{14} = \frac{1}{2}$   
(vi)  $\frac{1}{4} + \frac{1}{3} = \frac{3}{12} + \frac{4}{12} = \frac{7}{12}$

**Q. 3.** (i)   $\frac{1}{2}$  -   $\frac{1}{6}$   
 $\frac{2}{6}$  -  $\frac{1}{6}$   
=  $\frac{1}{6}$

(ii)   $\frac{3}{4}$  -   $\frac{1}{2}$   
 $\frac{3}{4}$  -  $\frac{2}{4}$   
=  $\frac{1}{4}$

(iii)  $\frac{3}{5} - \frac{2}{15} = \frac{9}{15} - \frac{2}{15} = \frac{7}{15}$   
(iv)  $\frac{7}{8} - \frac{3}{4} = \frac{7}{8} - \frac{6}{8} = \frac{1}{8}$   
(v)  $\frac{2}{5} - \frac{3}{10} = \frac{4}{10} - \frac{3}{10} = \frac{1}{10}$   
(vi)  $\frac{5}{6} - \frac{2}{3} = \frac{5}{6} - \frac{4}{6} = \frac{1}{6}$

**Q. 4.** (i) Because LCM (3, 4) = 12

(ii)  $\frac{1}{4} + \frac{2}{3} = \frac{3}{12} + \frac{8}{12} = \frac{11}{12}$

**Q. 5.** (i)  $\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$

(ii)  $\frac{12}{30} + \frac{5}{30} = \frac{17}{30}$

(iii)  $\frac{8}{36} + \frac{15}{36} = \frac{23}{36}$

(iv)  $\frac{12}{20} + \frac{15}{20} = \frac{27}{20}$

(v)  $\frac{27}{63} + \frac{28}{63} = \frac{55}{63}$

(vi)  $\frac{15}{24} + \frac{14}{24} = \frac{29}{24}$

(vii)  $\frac{24}{56} + \frac{21}{56} = \frac{45}{56}$

$$(viii) \frac{18}{20} + \frac{13}{20} = \frac{31}{20}$$

$$(ix) \frac{15}{100} + \frac{38}{100} = \frac{53}{100}$$

$$(x) \frac{10}{64} + \frac{7}{64} = \frac{17}{64}$$

**Q. 6.** (i)  $\frac{4}{8} + \frac{2}{8} + \frac{1}{8} = \frac{7}{8}$

$$(ii) \frac{12}{20} + \frac{14}{20} + \frac{2}{20} = \frac{28}{20} = \frac{7}{5}$$

$$(iii) \frac{9}{27} + \frac{6}{27} + \frac{1}{27} = \frac{16}{27}$$

$$(iv) \frac{18}{24} + \frac{3}{24} + \frac{10}{24} = \frac{31}{24}$$

$$(v) \frac{4}{36} + \frac{14}{36} + \frac{1}{36} = \frac{19}{36}$$

$$(vi) \frac{8}{12} + \frac{3}{12} + \frac{6}{12} = \frac{17}{12}$$

$$(vii) \frac{9}{12} + \frac{6}{12} + \frac{4}{12} = \frac{19}{12}$$

$$(viii) \frac{12}{30} + \frac{5}{30} + \frac{20}{30} = \frac{37}{30}$$

$$(ix) \frac{25}{60} + \frac{45}{60} + \frac{12}{60} = \frac{82}{60} = \frac{41}{30}$$

$$(x) \frac{45}{30} + \frac{25}{30} + \frac{24}{30} = \frac{94}{30} = \frac{47}{15}$$

**Q. 7.** (i)  $\frac{4}{8} - \frac{3}{8} = \frac{1}{8}$

$$(ii) \frac{25}{30} - \frac{12}{30} = \frac{13}{30}$$

$$(iii) \frac{40}{130} - \frac{39}{130} = \frac{1}{130}$$

$$(iv) \frac{16}{120} - \frac{15}{120} = \frac{1}{120}$$

$$(v) \frac{54}{99} - \frac{22}{99} = \frac{32}{99}$$

$$(vi) \frac{3}{4} - \frac{2}{4} = \frac{1}{4}$$

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

$$(viii) \frac{5}{60} - \frac{4}{60} = \frac{1}{60}$$

$$(ix) \frac{28}{35} - \frac{10}{35} = \frac{18}{35}$$

$$(x) \frac{7}{9} - \frac{3}{9} = \frac{4}{9}$$

**Q. 8.** (i)  $2\frac{1}{2} + 3\frac{1}{4}$

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

$$= 5 + \frac{3}{4} = 5\frac{3}{4}$$

$$(ii) 5 - 3 + \frac{3}{4} - \frac{1}{8}$$

$$= 2 + \frac{6}{8} - \frac{1}{8}$$

$$= 2 + \frac{5}{8} = 2\frac{5}{8}$$

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

$$= 11 + \frac{4}{24} + \frac{9}{24}$$

$$= 11 + \frac{13}{24}$$

$$= 11\frac{13}{24}$$

$$(iv) 6 + \frac{7}{8} - \frac{7}{12}$$

$$= 6 + \frac{21}{24} - \frac{14}{24}$$

$$= 6 + \frac{7}{24}$$

$$= 6\frac{7}{24}$$

$$(v) \frac{7}{2} - \frac{7}{4}$$

$$= \frac{14}{4} - \frac{7}{4}$$

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

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

$$(vi) \frac{23}{5} - \frac{17}{6}$$

$$= \frac{138}{30} - \frac{85}{30}$$

$$= \frac{53}{30}$$

$$= 1\frac{23}{30}$$

$$(vii) 11 + 3 - 4 + \frac{1}{4} + \frac{1}{6} - \frac{7}{8}$$

$$= 10 + \frac{6}{24} + \frac{4}{24} - \frac{21}{24}$$

$$= 10 + \frac{10}{24} - \frac{21}{24}$$

$$= 9 + 1 + \frac{10}{24} - \frac{21}{24}$$

$$= 9 + \frac{34}{24} - \frac{21}{24}$$

$$= 9 + \frac{13}{24}$$

$$= 9\frac{13}{24}$$

$$(viii) \frac{15}{4} + \frac{29}{5} - \frac{91}{20} - \frac{7}{10}$$

$$= \frac{75}{20} + \frac{116}{20} - \frac{91}{20} - \frac{14}{20}$$

$$= \frac{86}{20}$$

$$= \frac{43}{10}$$

$$= 4\frac{3}{10}$$

$$\begin{aligned} \text{(ix)} \quad & \frac{1600}{16} - \frac{14}{16} - \frac{7}{16} \\ &= \frac{1579}{16} \\ &= 98 \frac{11}{16} \end{aligned}$$

$$\begin{aligned} \text{(x)} \quad & \frac{200}{4} - \frac{2}{4} + \frac{3}{4} \\ &= \frac{201}{4} \\ &= 50 \frac{1}{4} \end{aligned}$$

**Q. 9.** (i)  $A = \frac{1}{16}$                       (iii)  $J = 1 \frac{1}{36}$   
 $B = \frac{1}{4}$                                        $K = \frac{3}{4}$   
 $C = \frac{1}{2}$                                        $L = \frac{1}{2}$   
 $D = \frac{5}{8}$                                        $M = -\frac{1}{4}$

(ii)  $J = 0$                                       (iv)  $J = \frac{1}{12}$   
 $K = \frac{1}{4}$                                        $K = \frac{1}{12}$   
 $L = \frac{3}{8}$                                        $L = \frac{5}{24}$   
 $M = -\frac{1}{4}$                                        $M = \frac{1}{2}$

**Q. 10.** (i)  $\frac{2}{5} + \frac{1}{4} = \frac{8}{20} + \frac{5}{20} = \frac{13}{20}$   
 $1 - \frac{13}{20} = \frac{7}{20}$

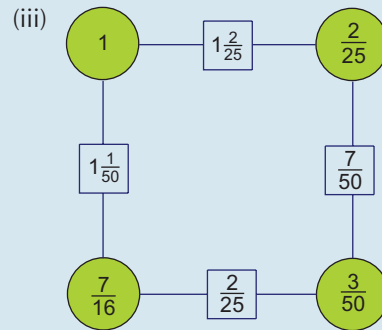
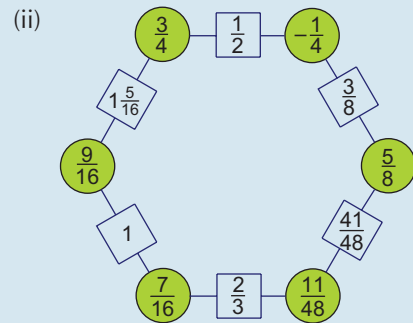
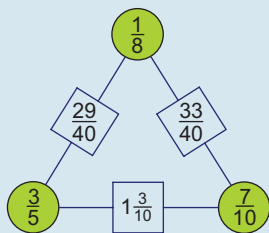
(ii)  $\frac{7}{20} \times 30 = \text{€}10.50$

**Q. 11.** (i)  $\frac{7}{50} + \frac{8}{25} + \frac{27}{100} + \frac{1}{10} + \frac{9}{100} + \frac{1}{25}$   
 $= \frac{14}{100} + \frac{32}{100} + \frac{27}{100} + \frac{10}{100} + \frac{9}{100}$   
 $+ \frac{4}{100}$   
 $= \frac{96}{100}$   
 $1 - \frac{96}{100} = \frac{4}{100} = \frac{1}{25}$

(ii) Fine Gael ( $\frac{32}{100}$  is the largest fraction)

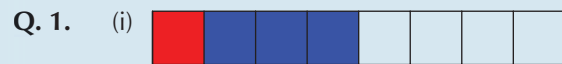
(iii) Green Party  
( $\frac{4}{100}$  is the smallest fraction).

**Q. 12.** (i)

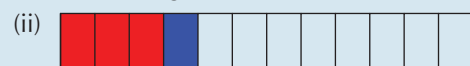


**Q. 13.**  $4 \frac{2}{5} + \frac{3}{8} + 5 \frac{1}{2}$   
 $= 4 + 5 + 5 + \frac{2}{5} + \frac{3}{8} + \frac{1}{2}$   
 $= 14 + \frac{16}{40} + \frac{15}{40} + \frac{20}{40}$   
 $= 14 + \frac{51}{40}$   
 $= 14 + 1 + \frac{11}{40}$   
 $= 15 \frac{11}{40} \text{ km}$

### Exercise 5.3



$$\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$$



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

(iii)  $\frac{2}{5} \times \frac{2}{3} = \frac{4}{15}$

(iv)  $\frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$



$$\frac{3}{4} \times \frac{1}{5} = \frac{3}{20}$$



$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{20} = \frac{3}{10}$$

$$(iii) \frac{1}{3} \times \frac{2}{5} = \frac{2}{15}$$

$$(iv) \frac{1}{6} \times \frac{1}{2} = \frac{1}{12}$$



$$\frac{1}{3} \times \frac{2}{3} = \frac{2}{9}$$



$$\frac{1}{4} \times \frac{3}{4} = \frac{3}{16}$$

$$(iii) \frac{2}{5} \times \frac{3}{5} = \frac{6}{25}$$

$$(iv) \frac{1}{6} \times \frac{5}{6} = \frac{5}{36}$$

**Q. 4.** (i)  $\frac{2}{15}$  (vi)  $\frac{3}{15} = \frac{1}{5}$

(ii)  $\frac{1}{6}$  (vii)  $\frac{2}{12} = \frac{1}{6}$

(iii)  $\frac{5}{24}$  (viii)  $\frac{3}{20}$

(iv)  $\frac{16}{45}$  (ix)  $\frac{7}{36}$

(v)  $\frac{9}{20}$  (x)  $\frac{1}{10}$

**Q. 5.** (i)  $\frac{2^1}{2} \times \frac{14}{2^1} = 7$

(ii)  $\frac{2^3}{4^2} \times \frac{10^5}{7^1} = \frac{15}{2} = 7\frac{1}{2}$

(iii)  $\frac{7}{2} \times \frac{33}{4} = \frac{231}{8}$

(iv)  $\frac{5}{2} \times \frac{5}{1} = \frac{25}{2} = 12\frac{1}{2}$

(v)  $\frac{9}{8^2} \times \frac{4^1}{1} = \frac{9}{2}$

(vi)  $\frac{29}{3} \times \frac{5}{4} = \frac{145}{12} = 12\frac{1}{12}$

(vii)  $\frac{12^6}{5^1} \times \frac{15^3}{2^1} = 18$

(viii)  $\frac{25^5}{4^2} \times \frac{2^1}{8^1} = \frac{5}{2}$

(ix)  $\frac{7}{4^2} \times \frac{2^1}{1} = \frac{7}{2}$

(x)  $\frac{3}{1} \times \frac{31}{5} = \frac{93}{5}$

**Q. 6.** (i) LHS =  $\frac{3}{4} \left(\frac{5}{5}\right) = \frac{3}{4}(1) = \frac{3}{4}$

RHS =  $\frac{6}{20} + \frac{9}{20} = \frac{15}{20} = \frac{3}{4}$

∴ LHS = RHS

(ii) LHS =  $\frac{3}{8} \left(\frac{2}{6} + \frac{1}{6}\right) = \frac{3}{8} \left(\frac{3}{6}\right)$

=  $\frac{3}{8} \left(\frac{1}{2}\right) = \frac{3}{16}$

RHS =  $\frac{1}{8} + \frac{1}{16} = \frac{2}{16} + \frac{1}{16} = \frac{3}{16}$

∴ LHS = RHS

(iii)  $\frac{1}{3}(1) = \frac{1}{3} = \text{LHS}$

$\frac{1}{12} + \frac{3}{12} = \frac{4}{12} = \frac{1}{3} = \text{RHS}$

∴ LHS = RHS

(iv)  $\frac{2}{3} \left(\frac{8}{40} + \frac{25}{40}\right) = \frac{2}{3} \left(\frac{33}{40}\right) = \frac{11}{20} = \text{LHS}$

$\frac{2}{15} + \frac{10}{24} = \frac{16}{120} + \frac{50}{120}$

=  $\frac{66}{120} = \frac{11}{20} = \text{RHS}$

∴ LHS = RHS.

**Q. 7.**  $\frac{7}{8^1} \times \frac{96^{12}}{1} = 84$

**Q. 8.**  $\frac{88^{11}}{1} \times \frac{7}{16^2} = \frac{77}{2} = 38\frac{1}{2}$  hectares

**Q. 9.**  $\frac{3}{4}$  of  $\frac{4}{5}$ : 

Ans =  $\frac{12}{20} = \frac{3}{5}$

**Q. 10.**  $\left. \begin{aligned} \frac{2^1}{5} \times \frac{3}{4^2} &= \frac{3}{10} \\ \frac{1}{4} + \frac{3}{10} &= \frac{10}{40} + \frac{12}{40} \\ &= \frac{22}{40} = \frac{11}{20} \end{aligned} \right\} \therefore \text{Answer} = 1 - \frac{11}{20} = \frac{9}{20}$

**Q. 11.**  $\frac{3}{4} \times \frac{5}{2} = \frac{15}{8}$        $\frac{2^1}{5} \times \frac{13}{2^1} = \frac{13}{5}$

=  $\frac{75}{40}$       =  $\frac{104}{40}$

∴  $\frac{2}{5}$  of  $6\frac{1}{2}$  is bigger

**Q. 12.** (i)  $-\frac{1}{6}$

(ii)  $-\frac{9}{20}$

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

(iv)  $-\frac{12^3}{5} \times -\frac{3}{4^1} = \frac{9}{5}$

$$(v) \frac{5}{2} \times -\frac{5}{1}$$

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

$$(vi) -\frac{9}{2} \times \frac{15}{2}$$

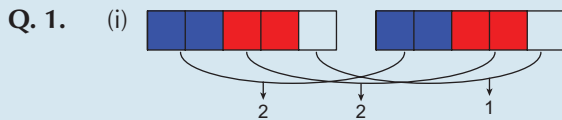
$$= -\frac{135}{4}$$

$$(vii) -\frac{3^1}{2} \times \frac{14}{3^1}$$

$$= -7$$

$$(viii) -\frac{5}{144}$$

### Exercise 5.4

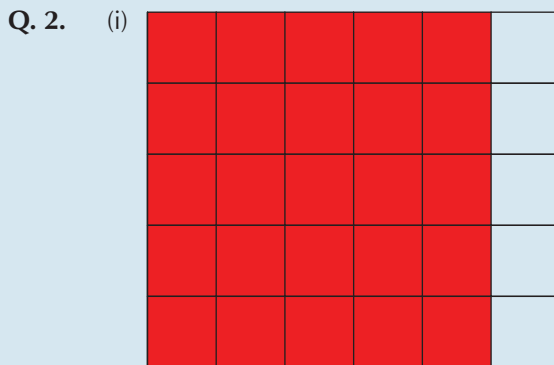


$$2 + 2 + 1 = 5$$

(ii) 8

(iii) 22

(iv) 7



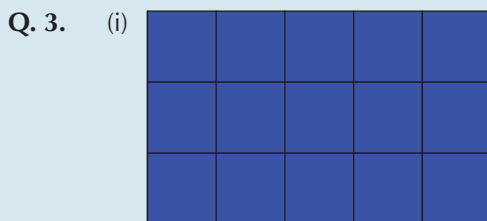
$$5 + 1$$

$$= 6$$

(ii) 8

(iii) 8

(iv) 6

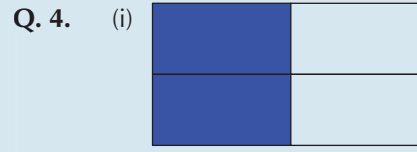


$$5$$

(ii) 10

(iii) 9

(iv) 5



$$2 + 2$$

$$= 4$$

(ii) 2

(iii) 2

(iv) 2

Q. 5. (i)  $\frac{1}{8_2} \times \frac{3^1}{2} = \frac{1}{4}$

(ii)  $\frac{1}{4} \times \frac{3}{2} = \frac{3}{8}$

(iii)  $\frac{3}{5} \times \frac{4}{1} = \frac{12}{5} = 2 \frac{2}{5}$

(iv)  $\frac{6^2}{25_5} \times \frac{16^2}{9_3} = \frac{4}{15}$

(v)  $\frac{7}{8_2} \times \frac{4^1}{3} = \frac{7}{6} = 1 \frac{1}{6}$

(vi)  $\frac{1}{9_3} \times \frac{3^1}{1} = \frac{1}{3}$

(vii)  $\frac{2}{8_1} \times \frac{10^2}{1} = 4$

(viii)  $\frac{1}{2_1} \times \frac{8^4}{3} = \frac{4}{3} = 1 \frac{1}{3}$

(ix)  $\frac{4}{5} \times \frac{7}{1} = \frac{28}{5} = 5 \frac{3}{5}$

Q. 6. (i)  $\frac{28^4}{9_3} \times \frac{3^1}{7_1} = \frac{4}{3} = 1 \frac{1}{3}$

(ii)  $\frac{62^2}{5_1} \times \frac{10^2}{31_1} = 4$

(iii)  $\frac{57^3}{2_1} \times \frac{8^4}{19_1} = 12$

(iv)  $\frac{24^3}{5} \times \frac{7}{8_1} = \frac{21}{5} = 4 \frac{1}{5}$

(v)  $\frac{5}{2_1} \times \frac{4^2}{1} = 10$

(vi)  $\frac{13^1}{3} \times \frac{5}{13_1} = \frac{5}{3} = 1 \frac{2}{3}$

(vii)  $\frac{27}{5} \times \frac{27}{111} = \frac{729}{565} = 1 \frac{58}{185}$

(viii)  $\frac{57^3}{8_1} \times \frac{16^2}{19_1} = 6$

(ix)  $\frac{7^1}{4_1} \times \frac{12^3}{7_1} = 3$

$$\begin{aligned} \text{Q. 7. } 70 \div 2\frac{4}{5} \\ &= \frac{70^5}{1} \times \frac{5}{14_1} \\ &= 25 \end{aligned}$$

$$\begin{aligned} \text{Q. 8. } 32\frac{1}{2} \div 2\frac{1}{2} \\ &= \frac{65^{13}}{2_1} \times \frac{2^1}{5_1} \\ &= 13 \end{aligned}$$

$$\begin{aligned} \text{Q. 9. } 35 \div 1\frac{1}{4} \\ &= \frac{35^7}{1} \times \frac{4}{5_1} \\ &= 28 \end{aligned}$$

$$\text{Q. 10. (i) } \frac{52^{13}}{1} \times \frac{3}{4_1} = 39 \text{ kg}$$

$$\begin{aligned} \text{(ii) } 30 \div \frac{3}{4} \\ &= \frac{30^{10}}{1} \times \frac{4}{3_1} = 40 \text{ weeks} \end{aligned}$$

$$\text{Q. 11. (i) } 12 \times 2 = 24 \text{ pieces}$$

$$\text{(ii) } 12 \times 4 = 48 \text{ pieces}$$

$$\text{(iii) } 12 \times 3 = 36 \text{ pieces}$$

## Exercise 5.5

$$\text{Q. 1. (i) } 1 : 3$$

(ii)	<b>Yellow</b>	3	15	6	24	9	36	15
	<b>Red</b>	1	5	2	8	3	12	5

$$\text{Q. 2. (i) } 1 : 5$$

$$\text{(vii) } 4 : 2 : 1$$

$$\text{(ii) } 1 : 5$$

$$\text{(viii) } 2 : 3 : 5$$

$$\text{(iii) } 2 : 3$$

$$\text{(ix) } 6 : 2 : 1$$

$$\text{(iv) } 1 : 4$$

$$\text{(x) } 6 : 3 : 1$$

$$\text{(v) } 3 : 2$$

$$\text{(xi) } 7 : 9 : 6$$

$$\text{(vi) } 17 : 2$$

$$\text{(xii) } 2 : 1 : 5$$

$$\begin{aligned} \text{Q. 3. (i) } 4 \times \frac{1}{4} : 4 \times \frac{1}{2} \\ &1 : 2 \end{aligned}$$

$$\begin{aligned} \text{(ii) } 15 \times \frac{1}{5} : 15 \times \frac{1}{3} \\ &3 : 5 \end{aligned}$$

$$\begin{aligned} \text{(iii) } 30 \times \frac{1}{6} : 30 \times \frac{1}{5} \\ &5 : 6 \end{aligned}$$

$$\begin{aligned} \text{(iv) } 12 \times \frac{1}{2} : 12 \times \frac{1}{4} : 12 \times \frac{1}{6} \\ &6 : 3 : 2 \end{aligned}$$

$$\text{(v) } 10 \times 2 : 10 \times \frac{1}{5} : 10 \times \frac{1}{10}$$

$$20 : 2 : 1$$

$$\begin{aligned} \text{(vi) } 2 \times 3\frac{1}{2} : 2 \times 4\frac{1}{2} \\ &7 : 9 \end{aligned}$$

$$\begin{aligned} \text{(vii) } 3 \times \frac{4}{3} : 3 \times \frac{4}{3} \\ &4 : 11 \end{aligned}$$

$$\begin{aligned} \text{(viii) } 4 \times \frac{5}{4} : 4 \times \frac{7}{4} \\ &5 : 7 \end{aligned}$$

$$\begin{aligned} \text{(ix) } 2 \times 4\frac{1}{2} : 2 \times 7\frac{1}{2} \\ &9 : 15 \end{aligned}$$

$$\begin{aligned} \text{(x) } 60 \times \frac{1}{3} : 60 \times \frac{1}{4} : 60 \times \frac{1}{5} \\ &20 : 15 : 12 \end{aligned}$$

$$\text{Q. 4. (i) } 0.2 : 5$$

$$1 : 25$$

$$\text{(ii) } 10 : 300$$

$$1 : 30$$

$$\text{(iii) } 300 : 2000$$

$$3 : 20$$

$$\text{(iv) } 2000 : 0.5$$

$$4000 : 1$$

$$\text{(v) } 10 : 6 \times 60 \times 60$$

$$10 : 21600$$

$$1 : 2160$$

$$\text{(vi) } 10 : 0.5$$

$$20 : 1$$

$$\text{(vii) } 3 : 650$$

$$\text{(viii) } 3000 : 200$$

$$30 : 2$$

$$15 : 1$$

$$\text{(ix) } 3 : 2 \times 24 \times 60$$

$$3 : 2880$$

$$1 : 960$$

$$\text{Q. 5. } \frac{5}{6} \times 6 = 5 \text{ m} = 500 \text{ cm}$$

$$\text{Q. 6. } 1 : 2 \Rightarrow 3 \text{ parts}$$

$$60 \text{ g} \div 3 = 20 \text{ g}$$

$$\therefore 20 \text{ g} : 40 \text{ g}$$

$$\text{Q. 7. } \frac{4}{9} \times \text{€}45,000 = 4 \times \text{€}5,000 = \text{€}20,000$$

**Q. 8.** (i)  $\frac{5}{8} \times 48 = 5 \times 6 = 30$

(ii)  $48 - 30 = 18$

$$\frac{18}{48} = \frac{3}{8}$$

**Q. 9.**  $\frac{3}{8} = 15$  sweets     $\frac{1}{8} = 5$  sweets

40 sweets = total

**Q. 10.** (i)  $1:6 \Rightarrow 7$  parts  $70 \div 7 = 10$  litres

(ii)  $5 \times 7 = 35$  litres

**Q. 11.** (i)  $6:4 = 3:2 \Rightarrow 5$  parts

Monica :  $\frac{3}{5} \times \$500 = \$300$

Naomi :  $\frac{2}{5} \times \$500 = \$200$

Answer: Monica \$300; Naomi \$200

(ii)  $11:9 \Rightarrow 20$  parts

Monica :  $\frac{11}{20} \times \$500 = \$275$

Naomi :  $\$500 - \$275 = \$225$

Monica \$275; Naomi \$225

## Exercise 5.6

**Q. 1.** (i)  $\frac{1}{8} - \frac{1}{3}$   
 $= \frac{3}{24} - \frac{8}{24}$   
 $= -\frac{5}{24}$

(ii)  $\frac{1}{3} + \frac{9}{32}$   
 $= \frac{32}{96} + \frac{27}{96}$   
 $= \frac{59}{96}$

(iii)  $\frac{3}{25} + \frac{1}{8}$   
 $= \frac{24}{200} + \frac{25}{200}$   
 $= \frac{49}{200}$

(iv)  $\frac{3}{8} - \frac{1}{8}$   
 $= \frac{2}{8}$   
 $= \frac{1}{4}$

**Q. 2.** (i)  $\frac{2}{4} + \frac{1}{4} - \frac{1}{8}$   
 $= \frac{3}{4} - \frac{1}{8}$   
 $= \frac{6}{8} - \frac{1}{8}$   
 $= \frac{5}{8}$

(ii)  $\frac{3}{5} - \left(\frac{3}{30} + \frac{2}{30}\right)$   
 $= \frac{3}{5} - \frac{5}{30}$   
 $= \frac{18}{30} - \frac{5}{30}$   
 $= \frac{13}{30}$

(iii)  $\frac{3}{8} - \frac{1}{4}$   
 $= \frac{3}{8} - \frac{2}{8}$   
 $= \frac{1}{8}$

(iv)  $\frac{4}{5} - \left(\frac{2}{50} + \frac{15}{50}\right)$   
 $= \frac{4}{5} - \frac{17}{50}$   
 $= \frac{40}{50} - \frac{17}{50}$   
 $= \frac{23}{50}$

**Q. 3.** (i)  $\frac{1}{8} + \frac{1}{18}$   
 $= \frac{9}{72} + \frac{4}{72}$   
 $= \frac{13}{72}$

(ii)  $\frac{3}{50} + \frac{3}{16}$   
 $= \frac{24}{400} + \frac{75}{400}$   
 $= \frac{99}{400}$

(iii)  $\frac{1}{10} - \frac{7}{20}$   
 $= \frac{2}{20} - \frac{7}{20}$   
 $= -\frac{5}{20}$   
 $= -\frac{1}{4}$

(iv)  $\frac{3}{32} - \frac{3}{100}$   
 $= \frac{75}{800} - \frac{24}{800}$   
 $= \frac{57}{800}$

**Q. 4.** (i)  $\frac{1}{4} \times \frac{2}{9} - \frac{25}{36}$   
 $= \frac{2}{36} - \frac{25}{36}$   
 $= -\frac{23}{36}$



$$\begin{aligned}
 \text{(ii)} \quad & \frac{1}{2} \times \frac{5}{8} - \frac{9}{16} \\
 &= \frac{5}{16} - \frac{9}{16} \\
 &= -\frac{4}{16} \\
 &= -\frac{1}{4} \\
 \text{(iii)} \quad & \frac{1}{16} - \frac{1}{16} \\
 &= 0 \\
 \text{(iv)} \quad & \frac{3}{8} \times \frac{2^1}{5} - \frac{9}{16} \\
 &= \frac{3}{20} - \frac{9}{16} \\
 &= \frac{12}{80} - \frac{45}{80} \\
 &= -\frac{33}{80}
 \end{aligned}$$

**Q. 5.**

$$\begin{aligned}
 \text{(i)} \quad & \frac{3}{10} + \frac{1}{8} - \frac{1}{9} \\
 &= \frac{113}{360} \\
 \text{(ii)} \quad & \frac{4}{15} - \frac{1}{8} + \frac{9}{25} \\
 &= \frac{301}{600} \\
 \text{(iii)} \quad & \frac{1}{18} + \frac{1}{12} - \frac{1}{25} \\
 &= \frac{89}{900} \\
 \text{(iv)} \quad & \frac{1}{6} - \frac{1}{10} + \frac{1}{100} \\
 &= \frac{23}{300}
 \end{aligned}$$

**Q. 6.**

$$\begin{aligned}
 \text{(i)} \quad & 4 + \frac{3}{4} \times \frac{2}{1} + \frac{1}{9} \times \frac{3}{4} \\
 &= 4 + \frac{3}{2} + \frac{1}{12} \\
 &= 5\frac{7}{12} \\
 \text{(ii)} \quad & \frac{1}{2} \times \frac{4}{1} + \frac{1}{16} + \frac{1}{6} \times \frac{3}{1} \\
 &= 2 + \frac{1}{16} + \frac{1}{2} \\
 &= 2\frac{9}{16} \\
 \text{(iii)} \quad & \frac{1}{3} + \frac{5}{6} \times \frac{3^1}{2} - \frac{1}{4} \\
 &= \frac{1}{3} + \frac{5}{4} - \frac{1}{4} = 1\frac{1}{3} \\
 \text{(iv)} \quad & \frac{1}{2} \times \frac{8}{1} - \frac{1}{9} + \frac{1}{6} \times \frac{3}{1} \\
 &= 4 - \frac{1}{9} + \frac{1}{2} \\
 &= 4\frac{7}{18}
 \end{aligned}$$

**Q. 7.**

$$\begin{aligned}
 \text{(i)} \quad & \frac{25}{36} - \frac{1}{16} \\
 &= \frac{91}{144} \\
 \text{(ii)} \quad & \frac{1}{4} - \frac{1}{100} \\
 &= \frac{6}{25} \\
 \text{(iii)} \quad & \frac{9}{16} - \frac{1}{64} \\
 &= \frac{35}{64} \\
 \text{(iv)} \quad & \frac{529}{400} - 2 \\
 &= \frac{-271}{400}
 \end{aligned}$$

## Revision Exercises

**Q. 1.** (i)  $\frac{4}{5}$  (ii)  $\frac{1}{2}$  (iii)  $\frac{7}{9}$  (iv)  $\frac{5}{8}$

**Q. 2.** (i)  $\frac{11}{14}$  (ii)  $\frac{-1}{10}$  (iii)  $\frac{5}{8}$  (iv)  $\frac{2}{5}$

**Q. 3.** (i)  $1\frac{1}{8}$  (ii)  $1\frac{1}{10}$  (iii)  $1\frac{1}{15}$  (iv)  $\frac{5}{8}$

**Q. 4.** (i)  $\frac{1}{2}$  (ii)  $2\frac{5}{8}$  (iii)  $\frac{2}{9}$  (iv)  $\frac{9}{16}$

**Q. 5.** (i)  $\frac{7}{16}$  (ii)  $\frac{229}{400}$  (iii)  $\frac{3}{8}$  (iv)  $\frac{9}{32}$

**Q. 6.** (a)  $\frac{4}{6}, \frac{6}{9}, \frac{8}{12}, \frac{10}{15}, \frac{12}{18}$ .

(b)  $\frac{3}{10}, \frac{1}{3}, \frac{7}{20}, \frac{2}{5}, \frac{4}{9}$

(c)  $\frac{9}{10} = \frac{36}{40}, \frac{19}{20} = \frac{38}{40}$

$\frac{9}{10}$  is closer to  $\frac{37}{40}$

(a distance of  $\frac{1}{40}, \frac{19}{20}$  is  $\frac{2}{40}$  away)

**Q. 7.** (i)  $1\frac{1}{4}, 6\frac{1}{3}, 2\frac{2}{7}, 1\frac{1}{5}$

(ii)  $\frac{1}{5} = \frac{6}{30} = \frac{30}{150}$   
 $\frac{1}{6} = \frac{5}{30} = \frac{25}{150}$

$\therefore \frac{26}{150}, \frac{27}{150}, \frac{28}{150}, \frac{29}{150}$

(iii)  $\frac{5}{9} = 150 \text{ ml}$   $\frac{1}{9} = 30 \text{ ml}$   $\frac{4}{9} = 120 \text{ ml}$

**Q. 8.** (a) (i)  $\frac{1}{12}$  (ii)  $\frac{1}{15}$  (iii)  $1\frac{3}{8}$  (iv)  $\frac{2}{15}$

(b) (i)  $\frac{31}{40}$  (ii)  $\frac{13}{16}$  (iii)  $5\frac{5}{6}$  (iv)  $5\frac{26}{35}$

(c) (i)  $<$  (ii)  $<$  (iii)  $>$  (iv)  $<$

Q. 9. (i) 20

(ii)  $\frac{8}{20} = \frac{2}{5}$

Q. 10. (i) 60

(ii)  $\frac{24}{60} = \frac{2}{5}$

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

Q. 11. (i)  $\frac{1}{5} + \frac{1}{2} = \frac{7}{10}$

$\frac{7}{10} - \frac{1}{10} = \frac{6}{10} = \frac{3}{5}$

(ii)  $3\frac{3}{4} + \frac{1}{2} = 4\frac{1}{4}$  cm

(iii)  $\frac{1}{2} + \frac{1}{2} \times \frac{1}{2} = \frac{1}{2} + \frac{1}{4} = \frac{3}{4}$   $1 - \frac{3}{4} = \frac{1}{4}$

Q. 12. (a) (i)  $\frac{1}{6}$

(ii)  $\frac{1}{10}$

(iii)  $\frac{6}{25}$

(iv)  $\frac{5}{42}$

(b) 38

(c) (i)  $35\frac{1}{2} + 7\frac{7}{8} = 43\frac{3}{8}$  acres

(ii)  $43\frac{3}{8} \div 5 = 8\frac{27}{40}$  acres

Q. 13. (a) (i) 16

(ii) 20

(iii) 18

(iv) 5

(b)  $\frac{3\frac{11}{15}}{2\frac{1}{2}} = 1\frac{37}{75}$

(c)  $60 \div 1\frac{1}{2} = 40$  times

Q. 14. (i)  $3\frac{2}{3}$

(ii)  $5\frac{49}{64}$

(iii)  $\frac{21}{32}$

Q. 15. (a)  $\frac{3}{4} \times 2500 = 1875$  shares

(b)  $\frac{1}{2} + \frac{2}{5} = \frac{9}{10}$

$1 - \frac{9}{10} = \frac{1}{10}$  travelled by car

(c)  $\frac{1}{3} = \frac{3}{9} =$  black

$\frac{2}{9} =$  white

6 = yellow

2 = red

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

$1 - \frac{5}{9} = \frac{4}{9}$

6 + 2 = 8

$\frac{4}{9} = 8$

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

∴ There are 18 balls altogether

(i)  $\frac{1}{3} \times 18 = 6$  (black)

(ii)  $\frac{2}{9} \times 18 = 4$  (white)

Answer: 6 black; 4 white