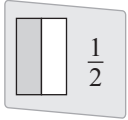
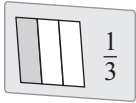
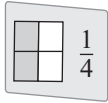
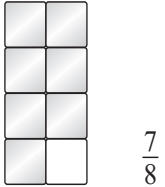
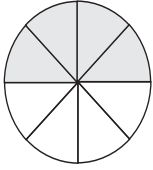
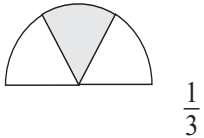


8. FRACTIONS

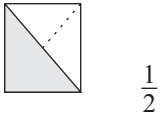

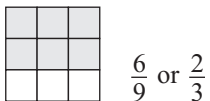
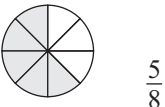
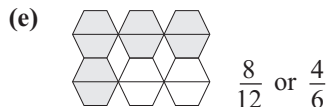
Exercise-8.1

1. (a)  $\frac{1}{2}$ (b)  $\frac{1}{3}$ (c)  $\frac{1}{4}$
2. (a)  $\frac{7}{8}$ (b)  $\frac{4}{8}$ (c)  $\frac{1}{3}$
3. (a) $\frac{3}{5}$ (b) $\frac{5}{11}$ (c) $\frac{4}{7}$ (d) $\frac{5}{10}$
4. (a) $\frac{1}{3}$ is written as **one third**. (b) $\frac{1}{4}$ is called **quarter** or **one fourth**.
 (c) $\frac{1}{2}$ is called **half**. (d) One-fifth is also written as $\frac{1}{5}$.
 (e) **3** one-thirds make a whole. (f) **4** one-fourths make a whole.

Exercise-8.2

1. (a) $\frac{2}{11}$ (b) $\frac{12}{19}$ (c) $\frac{6}{8}$ or $\frac{3}{4}$ (d) $\frac{3}{6}$ or $\frac{1}{2}$ (e) $\frac{5}{6}$

Exercise-8.3

1. (a)  $\frac{1}{2}$ (b)  $\frac{9}{9}$ or 1 (c)  $\frac{6}{9}$ or $\frac{2}{3}$
- (d)  $\frac{5}{8}$ (e)  $\frac{8}{12}$ or $\frac{4}{6}$
2. (a) $\frac{1}{5} = \frac{2}{10}$ (b) $\frac{3}{7} = \frac{6}{14}$ (c) $\frac{5}{6} = \frac{10}{12}$ (d) $\frac{10}{14} = \frac{20}{28}$
 (e) $\frac{38}{40} = \frac{19}{20}$ (f) $\frac{7}{9} = \frac{14}{18}$ (g) $\frac{35}{84} = \frac{70}{168}$ (h) $\frac{39}{52} = \frac{3}{4}$
 (i) $\frac{15}{20} = \frac{3}{4}$

$$\begin{array}{ll}
 \text{3. (a)} & \frac{3}{4}, \frac{6}{12} \\
 & 12 \times 3, 6 \times 4 \\
 & 36 \neq 24 \\
 & \therefore \frac{3}{4} \neq \frac{6}{12} \\
 \text{(c)} & \frac{8}{10}, \frac{40}{50} \\
 & 8 \times 50, 40 \times 10 \\
 & 400 = 400 \\
 & \therefore \frac{8}{10} = \frac{40}{50} \\
 \text{(b)} & \frac{2}{3}, \frac{8}{12} \\
 & 2 \times 12, 3 \times 8 \\
 & 24 = 24 \\
 & \therefore \frac{2}{3} = \frac{8}{12} \\
 \text{(d)} & \frac{2}{3}, \frac{42}{54} \\
 & 2 \times 54, 42 \times 3 \\
 & 108 \neq 126 \\
 & \therefore \frac{2}{3} \neq \frac{42}{54}
 \end{array}$$

$$\begin{array}{llll}
 \text{4. (a)} & \frac{5}{6} = \frac{60}{72} & \text{(b)} & \frac{1}{6} = \frac{7}{42} \\
 \text{(e)} & \frac{15}{21} = \frac{5}{7} & \text{(f)} & \frac{15}{20} = \frac{3}{4} \\
 \text{(c)} & \frac{13}{15} = \frac{26}{30} & \text{(g)} & \frac{3}{8} = \frac{9}{24} \\
 \text{(d)} & \frac{10}{50} = \frac{100}{500} & \text{(h)} & \frac{36}{66} = \frac{6}{11}
 \end{array}$$

Exercise-8.4

- (a) A fraction that has a value less than 1 whole is called a **proper** fraction.

(b) Fractions having a value greater than 1 whole are called **improper** fractions.

(c) **Like** fractions have the same denominator.
- (a) $\frac{3}{5}, \frac{4}{5}$ = like

(b) $\frac{1}{8}, \frac{1}{10}$ = unlike

(c) $\frac{5}{12}, \frac{6}{13}$ = unlike

(d) $\frac{5}{10}, \frac{5}{15}$ = unlike
- $\frac{4}{7}, \frac{9}{7}, \frac{6}{7}, \frac{15}{7}, \frac{1}{7}$

Exercise-8.5

- (a) $\frac{3}{9} < \frac{5}{9}$

(b) $\frac{2}{5} < \frac{3}{5}$

(c) $\frac{1}{2} > \frac{1}{7}$

(d) $\frac{1}{11} < \frac{3}{11}$

(e) $\frac{5}{6} > \frac{2}{6}$

(f) $\frac{1}{6} > \frac{1}{8}$

(g) $\frac{3}{9} > \frac{1}{9}$

(h) $\frac{4}{5} > \frac{2}{5}$

(i) $\frac{1}{9} < \frac{7}{9}$

(j) $\frac{5}{7} > \frac{5}{9}$
- (a) $\frac{5}{12} < \frac{6}{12} < \frac{8}{12}$

(b) $\frac{1}{5} < \frac{1}{4} < \frac{1}{3} < \frac{1}{2}$

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

(d) $\frac{2}{9} < \frac{2}{8} < \frac{2}{7} < \frac{2}{5}$

(e) $\frac{1}{8} < \frac{3}{8} < \frac{5}{8} < \frac{7}{8}$

(f) $\frac{1}{10} < \frac{1}{6} < \frac{1}{5} < \frac{1}{2}$

3. (a) $\frac{7}{2}, \frac{5}{6}, \frac{6}{5}$
 $\frac{7 \times 15}{2 \times 15}, \frac{5 \times 5}{6 \times 5}, \frac{6 \times 6}{5 \times 6}$
 $\frac{105}{30}, \frac{25}{30}, \frac{36}{30}$
 $\frac{105}{30} > \frac{36}{30} > \frac{25}{30}$
 or $\frac{7}{2} > \frac{6}{5} > \frac{5}{6}$

(b) $\frac{2}{3}, \frac{4}{5}, \frac{6}{7}, \frac{3}{4}$
 $\frac{2 \times 6}{3 \times 6}, \frac{4 \times 3}{5 \times 3}, \frac{6 \times 2}{7 \times 2}, \frac{3 \times 4}{4 \times 4}$
 $\frac{12}{18}, \frac{12}{15}, \frac{12}{14}, \frac{12}{16}$
 $\frac{12}{14} > \frac{12}{15} > \frac{12}{16} > \frac{12}{18}$
 or $\frac{6}{7} > \frac{4}{5} > \frac{3}{4} > \frac{2}{3}$

(c) $\frac{2}{5}, \frac{7}{6}, \frac{6}{5}, \frac{4}{7}$
 do your self

(d) $\frac{2}{3}, \frac{2}{5}, \frac{2}{7}, \frac{2}{9}$
 $\frac{2}{3} > \frac{2}{5} > \frac{2}{7} > \frac{2}{9}$

(e) $\frac{2}{7}, \frac{4}{7}, \frac{6}{7}, \frac{3}{7}$
 $\frac{6}{7} > \frac{4}{7} > \frac{3}{7} > \frac{2}{7}$

(f) $\frac{1}{9}, \frac{2}{9}, \frac{7}{9}, \frac{5}{9}$
 $\frac{7}{9} > \frac{5}{9} > \frac{2}{9} > \frac{1}{9}$

Exercise-8.6

(a) $\frac{5}{7} > \frac{2}{7}$

(b) $\frac{11}{15} < \frac{14}{15}$

(c) $\frac{1}{2}, \frac{1}{3}$
 $1 \times 3, 1 \times 2$
 $3, 2$
 $\therefore \frac{1}{2} > \frac{1}{3}$

(d) $\frac{2}{3}, \frac{2}{5}$
 $2 \times 5, 2 \times 3$
 $10, 6$
 $\therefore \frac{2}{3} > \frac{2}{5}$

(e) $\frac{3}{7}, \frac{3}{11}$
 $3 \times 11, 3 \times 7$
 $33, 21$
 $\therefore \frac{3}{7} > \frac{3}{11}$

(f) $\frac{4}{9}, \frac{7}{9}$
 $4 \times 9, 7 \times 9$
 $36, 63$
 $\therefore \frac{4}{9} < \frac{7}{9}$

(g) $\frac{2}{4}, \frac{4}{13}$
 $2 \times 13, 4 \times 4$
 $26, 16$
 $\frac{2}{4} > \frac{4}{13}$

(h) $1, \frac{2}{5}$
 $1 \times 5, 2 \times 1$
 $5, 2$
 $\therefore 1 > \frac{2}{5}$

(i) $\frac{3}{5}, \frac{9}{14}$
 $3 \times 14, 9 \times 5$
 $42, 45$
 $\therefore \frac{3}{5} < \frac{9}{14}$

(j) $\frac{3}{12}, \frac{1}{2}$
 $3 \times 2, 1 \times 12$
 $\therefore \frac{3}{12} < \frac{1}{2}$



Exercise-8.7

$$\begin{array}{ll}
 \text{1. (a)} & 1\frac{7}{5} = \frac{1 \times 5 + 7}{5} = \frac{5 + 7}{5} = \frac{12}{5} \\
 \text{(c)} & 4\frac{4}{11} = \frac{4 \times 11 + 4}{11} = \frac{44 + 4}{11} = \frac{48}{11} \\
 \text{(e)} & 2\frac{3}{7} = \frac{2 \times 7 + 3}{7} = \frac{14 + 3}{7} = \frac{17}{7} \\
 \text{(g)} & 8\frac{13}{32} = \frac{8 \times 32 + 13}{32} = \frac{256 + 13}{32} = \frac{269}{32} \\
 \text{(b)} & 5\frac{1}{4} = \frac{5 \times 4 + 1}{4} = \frac{20 + 1}{4} = \frac{21}{4} \\
 \text{(d)} & 3\frac{7}{10} = \frac{3 \times 10 + 7}{10} = \frac{30 + 7}{10} = \frac{37}{10} \\
 \text{(f)} & 1\frac{1}{7} = \frac{1 \times 7 + 1}{7} = \frac{7 + 1}{7} = \frac{8}{7} \\
 \text{(h)} & 5\frac{4}{8} = \frac{5 \times 8 + 4}{8} = \frac{40 + 4}{8} = \frac{44}{8}
 \end{array}$$

Exercise-8.8

$$\begin{array}{lll}
 \text{1. (a)} & \frac{5}{9}, \frac{5}{10} & \text{(b)} \quad \frac{20}{25}, \frac{13}{25} & \text{(c)} \quad \frac{3}{8}, \frac{6}{16} \\
 & 5 \times 10, 5 \times 9 & 20 \times 25, 13 \times 25 & 3 \times 16, 6 \times 8 \\
 & 50, 45 & 500, 325 & 48, 48 \\
 & \therefore \frac{5}{9} > \frac{5}{10} & \therefore \frac{20}{25} > \frac{13}{25} & \therefore \frac{3}{8} = \frac{6}{16} \\
 \text{2. (a)} & \frac{6}{30}, \frac{2}{3} & \text{(b)} \quad \frac{1}{3}, \frac{5}{6} & \text{(c)} \quad \frac{4}{6}, \frac{1}{4} \\
 & 6 \times 3, 2 \times 30 & 1 \times 6, 5 \times 3 & 4 \times 4, 1 \times 6 \\
 & 18, 60 & 6, 15 & 16, 6 \\
 & \therefore \frac{6}{30} < \frac{2}{3} & \therefore \frac{1}{3} < \frac{5}{6} & \therefore \frac{4}{6} > \frac{1}{4} \\
 \text{(d)} & \frac{3}{6}, \frac{1}{5} & \text{(e)} \quad \frac{18}{45} = \frac{18}{45} & \text{(f)} \quad \frac{2}{12}, \frac{1}{3} \\
 & 3 \times 5, 1 \times 6 & & 2 \times 3, 1 \times 12 \\
 & 15, 6 & & 6, 12 \\
 & \therefore \frac{3}{6} > \frac{1}{5} & & \therefore \frac{2}{12} < \frac{1}{3} \\
 \text{(g)} & \frac{14}{42}, \frac{1}{3} & \text{(h)} \quad \frac{5}{6}, \frac{2}{6} & \\
 & 14 \times 3, 1 \times 42 & 5 \times 6, 2 \times 6 & \\
 & 42, 42 & 30, 12 & \\
 & \therefore \frac{14}{42} = \frac{1}{3} & \therefore \frac{5}{6} > \frac{2}{6} & \\
 \text{3. (a)} & \frac{2}{5}, \frac{3}{10}, \frac{18}{20} & \text{(b)} \quad \frac{1}{2}, \frac{1}{5}, \frac{17}{1} & \text{(c)} \quad \frac{1}{7}, \frac{1}{11}, \frac{1}{8} \\
 & \frac{2 \times 12}{5 \times 12}, \frac{3 \times 6}{10 \times 6}, \frac{18 \times 3}{20 \times 3} & \frac{1 \times 5}{2 \times 5}, \frac{1 \times 2}{5 \times 2}, \frac{17 \times 10}{1 \times 10} & \frac{1}{11} < \frac{1}{8} < \frac{1}{7} \\
 & \frac{24}{60}, \frac{18}{60}, \frac{54}{60} & \frac{5}{10}, \frac{2}{10}, \frac{170}{10} & \\
 & \frac{18}{60} < \frac{24}{60} < \frac{54}{60} & \frac{2}{10} < \frac{5}{10} < \frac{170}{10} &
 \end{array}$$

or $\frac{3}{10} < \frac{2}{5} < \frac{18}{20}$

(d) $\frac{2}{3}, \frac{2}{7}, \frac{3}{5}$

$$\frac{2 \times 3}{3 \times 3}, \frac{2 \times 3}{7 \times 3}, \frac{3 \times 2}{5 \times 2}$$

$$\frac{6}{9}, \frac{6}{21}, \frac{6}{10}$$

$$\frac{6}{21} < \frac{6}{10} < \frac{6}{9}$$

or $\frac{2}{7} < \frac{3}{5} < \frac{2}{3}$

(g) $\frac{1}{8}, \frac{2}{5}, \frac{1}{4}$

$$\frac{1 \times 2}{8 \times 2}, \frac{2 \times 1}{5 \times 1}, \frac{1 \times 2}{4 \times 2}$$

$$\frac{2}{16}, \frac{2}{5}, \frac{2}{8}$$

$$\frac{2}{16} < \frac{2}{8} < \frac{2}{5}$$

or $\frac{1}{8} < \frac{1}{4} < \frac{2}{5}$

4. (a)

$$\frac{2}{3}, \frac{7}{9}, \frac{3}{7}$$

$$\frac{2 \times 21}{3 \times 21}, \frac{7 \times 6}{9 \times 6}, \frac{3 \times 14}{7 \times 14}$$

$$\frac{42}{63}, \frac{42}{54}, \frac{42}{98}$$

$$\frac{42}{54} > \frac{42}{63} > \frac{42}{98}$$

or $\frac{7}{9} > \frac{2}{3} > \frac{3}{7}$

(c) $\frac{3}{4}, \frac{1}{2}, \frac{4}{5}$

$$\frac{3 \times 4}{4 \times 4}, \frac{1 \times 12}{2 \times 12}, \frac{4 \times 3}{5 \times 3}$$

$$\frac{12}{16}, \frac{12}{24}, \frac{12}{15}$$

$$\frac{12}{15} > \frac{12}{16} > \frac{12}{24}$$

or $\frac{4}{5} > \frac{3}{4} > \frac{1}{2}$

or $\frac{1}{5} < \frac{1}{2} < 17$

(e) $\frac{1}{2}, \frac{1}{32}, \frac{4}{32}$

$$\frac{1 \times 4}{2 \times 4}, \frac{1 \times 4}{32 \times 4}, \frac{4 \times 1}{32 \times 1}$$

$$\frac{4}{8}, \frac{4}{128}, \frac{4}{32}$$

$$\frac{4}{28} < \frac{4}{32} < \frac{4}{8}$$

or $\frac{1}{32} < \frac{4}{32} < \frac{1}{2}$

(h) $\frac{1}{4}, \frac{7}{8}, \frac{3}{16}$

$$\frac{1 \times 12}{4 \times 12}, \frac{7 \times 6}{8 \times 6}, \frac{3 \times 3}{16 \times 3}$$

$$\frac{12}{48}, \frac{42}{48}, \frac{9}{48}$$

$$\frac{9}{48} < \frac{12}{48} < \frac{42}{48}$$

or $\frac{3}{16} < \frac{1}{4} < \frac{7}{8}$

(b) $\frac{2}{3}, \frac{5}{7}, \frac{2}{5}$

$$\frac{2 \times 5}{3 \times 5}, \frac{5 \times 2}{7 \times 2}, \frac{2 \times 5}{5 \times 5}$$

$$\frac{2 \times 5}{3 \times 5}, \frac{5 \times 2}{7 \times 2}, \frac{2 \times 5}{5 \times 5}$$

$$\frac{10}{14} > \frac{10}{15} > \frac{10}{25}$$

or $\frac{5}{7} > \frac{2}{3} > \frac{2}{5}$

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

$$\frac{1}{3} > \frac{1}{5} > \frac{1}{10}$$

(f) $\frac{6}{7}, \frac{3}{5}, \frac{5}{7}$

$$\frac{6 \times 5}{7 \times 5}, \frac{3 \times 7}{5 \times 7}, \frac{5 \times 5}{7 \times 5}$$

$$\frac{30}{35}, \frac{21}{35}, \frac{25}{35}$$

$$\frac{21}{35} < \frac{25}{35} < \frac{30}{35}$$

or $\frac{3}{5} < \frac{5}{7} < \frac{6}{7}$

$$(e) \frac{1}{6}, \frac{1}{8}, \frac{1}{9}$$

$$\frac{1}{6} > \frac{1}{8} > \frac{1}{9}$$

$$(f) \frac{1}{7}, \frac{2}{21}, \frac{2}{3}$$

$$\frac{1 \times 2}{7 \times 2}, \frac{2}{21}, \frac{2}{3}$$

$$\frac{2}{14}, \frac{2}{21}, \frac{2}{3}$$

$$\frac{2}{3} > \frac{2}{14} > \frac{2}{21}$$

or $\frac{2}{3} > \frac{1}{7} > \frac{2}{21}$

$$(g) \frac{2}{3}, \frac{4}{5}, \frac{7}{9}$$

$$\frac{2 \times 14}{3 \times 14}, \frac{4 \times 7}{5 \times 7}, \frac{7 \times 4}{9 \times 4}$$

$$\frac{28}{42}, \frac{28}{35}, \frac{28}{36}$$

$$\frac{28}{35} > \frac{28}{36} > \frac{28}{42}$$

$$\frac{4}{5} > \frac{7}{9} > \frac{2}{3}$$

$$(h) \frac{2}{3}, \frac{1}{2}, \frac{7}{11}$$

$$\frac{2 \times 7}{3 \times 7}, \frac{1 \times 14}{2 \times 4}, \frac{7 \times 2}{11 \times 2}$$

$$\frac{14}{21}, \frac{14}{28}, \frac{14}{22}$$

$$\frac{14}{21} > \frac{14}{22} > \frac{142}{283} > \frac{7}{11} > \frac{1}{2}$$

9. THE METRIC SYSTEM

Exercise-9.1

1. (a) 1 m = 100 cm True (b) 1 km = 100 m False
 (c) 100 mL = 1 L False (d) 1000 mL = 1 L True
 (e) 1 kg = 1000 g True (f) 100 g = 1 kg False
 (g) 10 cm = 1 dm True (h) 10 dm = 1 km False

2. (a) 100mm < 1000 cm (b) 1000 mL = 1L
 (c) 1000g < 10 kg (d) 23g = 230 mg
 (e) 600mL < 6 L (f) 15 m > 150 mm
 (g) 45 kg = 45000 g (h) 800 m > 8000 cm

3. (a)
$$\begin{array}{r} 320 \text{ km } 50 \text{ m} \\ + 410 \text{ km } 10 \text{ m} \\ \hline 730 \text{ km } 60 \text{ m} \end{array}$$

(b)
$$\begin{array}{r} 520 \text{ l } 110 \text{ ml} \\ - 100 \text{ l } 10 \text{ ml} \\ \hline 420 \text{ l } 100 \text{ ml} \end{array}$$

(c)
$$\begin{array}{r} 520 \text{ cm} \\ 22 \text{ cm} \\ + 10 \text{ cm} \\ \hline 87 \text{ cm} \end{array}$$

(d)
$$\begin{array}{r} 550 \text{ kg } 100 \text{ g} \\ - 220 \text{ kg } 50 \text{ g} \\ \hline 330 \text{ kg } 50 \text{ g} \end{array}$$

(e)
$$\begin{array}{r} 96 \text{ l} \\ - 23 \text{ l} \\ \hline 77 \text{ l} \end{array}$$

(f)
$$\begin{array}{r} 194 \text{ kg } 600 \text{ g} \\ + 50 \text{ kg } 320 \text{ g} \\ \hline 244 \text{ kg } 920 \text{ g} \end{array}$$

