Exercise 9(A)

(1) Write four fractions equivalent to each of the following

a) $\frac{1}{3} = \frac{2}{3} = \frac{3}{9} = \frac{4}{12} = \frac{10}{30}$

b) $\frac{4}{5} = \frac{8}{10} = \frac{12}{16} = \frac{16}{20} = \frac{20}{25}$

c) $\frac{1}{6} = \frac{2}{12} = \frac{4}{24} = \frac{5}{30} = \frac{6}{36}$

d) $\frac{2}{11} = \frac{4}{22} = \frac{10}{55} = \frac{12}{66} = \frac{16}{88}$

e) $\frac{4}{15} = \frac{8}{30} = \frac{24}{90} = \frac{32}{120} = \frac{44}{165}$

2. Fill in the blanks.

(a) $\frac{1}{5} = \frac{4}{20}$ (b) $\frac{3}{4} = \frac{18}{24}$ (c) $\frac{2}{3} = \frac{16}{24}$ (d) $\frac{2}{14} = \frac{1}{7}$

(e) $\frac{6}{7} = \frac{24}{28}$ (f) $\frac{18}{54} = \frac{4}{27}$ (g) $\frac{20}{31} = \frac{60}{93}$ (h) $\frac{11}{13} = \frac{33}{39}$

(i) $\frac{35}{40} = \frac{7}{8}$ (j) $\frac{11}{15} = \frac{44}{60}$ (k) $\frac{35}{50} = \frac{7}{10}$ (l) $\frac{16}{64} = \frac{1}{4}$

(m) $\frac{7}{11} = \frac{42}{66}$ (n) $\frac{11}{12} = \frac{55}{60}$ (o) $\frac{14}{15} = \frac{}{105}$

3. Reduce the following fraction to their lowest form:

(a) $\frac{68}{136} = \frac{\cancel{68}^{34}}{\cancel{136}_{68}} = \frac{\cancel{34}^{17}}{\cancel{68}_{34}} = \frac{\cancel{17}^{1}}{\cancel{34}_{2}} = \frac{1}{2}$

(b) $\frac{102}{119} = \frac{102 \div 17}{119 \div 17} = \frac{6}{7}$

(c) $\frac{153}{204} = \frac{\cancel{153}^{51}}{\cancel{204}_{63}} = \frac{\cancel{51}^{3}}{\cancel{63}_{4}} = \frac{3}{4}$

(d) $\frac{129}{243} = \frac{129 \div 3}{243 \div 3} = \frac{43}{81}$

(e) $\frac{154}{238} = \frac{\cancel{154}^{11}}{\cancel{238}_{119}} = \frac{\cancel{22}^{11}}{\cancel{119}_{17}} = \frac{11}{17}$

(f) $\frac{198}{297} = \frac{198 \div 9}{297 \div 9} = \frac{22 \div 11}{33 \div 11} = \frac{2}{3}$

(g) $\frac{117}{189} = \frac{117 \div 9}{189 \div 9} = \frac{13}{21}$

(h) $\frac{304}{368} = \frac{304 \div 4}{368 \div 4} = \frac{76 \div 4}{92 \div 4} = \frac{19}{23}$

4. Tick (✓) the fractions which are proper fractions:

(a) $\frac{13}{16}$ (b) $\frac{8}{7}$ (c) $\frac{12}{8}$ (d) $\frac{23}{23}$ (e) $\frac{28}{4}$

(f) $\frac{48}{50}$ (g) $\frac{29}{21}$ (h) $\frac{1}{7}$ (i) $\frac{45}{9}$ (j) $\frac{63}{63}$

5. Convert the following improper fractions into mixed fractions.

(a) $\frac{21}{6} = 21 \div 6$

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

$$\begin{array}{r} 3 \\ 6\overline{)21} \\ -\ 18 \\ \hline 3 \end{array}$$

(a) $\frac{21}{6} = \frac{3\times6+3}{6}$ $\frac{6\times3+3}{6}$

$= 3\frac{2}{6}$

(b) $\frac{112}{6} = \frac{6\times18+4}{6}$ $\frac{6\times18+4}{6}$

$= 6\frac{18}{6}$ $18\frac{4}{6}$

$$\begin{array}{r} 18 \\ 6\overline{)112} \\ -6\downarrow \\ \hline 52 \\ -\ 48 \\ \hline 4 \end{array}$$

(c) $\frac{123}{6} = \frac{6 \times 20 + 3}{6} = 20\frac{3}{6}$

```
    20
6 | 123
  - 12
  ---
    03
  -  0
  ---
     3
```

(d) $\frac{98}{16} = \frac{16 \times 6 + 2}{16} = 6\frac{2}{16}$

```
     6
16 | 98
   - 96
   ----
     2
```

(e) $\frac{105}{14} = \frac{14 \times 7 + 7}{14} = 7\frac{7}{14}$

```
     7
14 | 105
   - 98
   ----
     7
```

(f) $\frac{223}{18} = \frac{18 \times 12 + 7}{18} = 12\frac{7}{18}$

```
     12
18 | 223
   - 18↓
   -----
     43
   - 36
   ----
      7
```

(g) $\frac{445}{15} = \frac{15 \times 29 + 10}{15} = 29\frac{10}{25}$

```
     29
15 | 445
   - 30↓
   -----
     145
   - 135
   -----
      10
```

(h) $\frac{614}{24} = \frac{24 \times 25 + 14}{24} = 25\frac{14}{24}$

```
      25
24 | 614
   - 48↓
     134
   - 120
      14
```

(i) $\frac{305}{85} = \frac{85 \times 3 + 50}{85} = 3\frac{50}{85}$

```
       3
85 | 305
   - 255
     50
```

(j) $\frac{1148}{32} = \frac{32 \times 35 + 28}{32} = 35\frac{28}{85}$

```
      35
32 | 1148
   - 96↓
     188
   - 160
      28
```

6. Convert the following mixed numbers into improper fractions.

(a) $1\frac{3}{4} = \frac{(1 \times 4 + 3)}{4} = \frac{4+3}{4} = \frac{7}{4}$

(b) $8\frac{6}{7} = \frac{(8 \times 7 + 6)}{7} = \frac{56+6}{7} = \frac{59}{7}$

(c) $24\frac{5}{7} = \frac{(24 \times 7 + 5)}{7} = \frac{168+5}{7} = \frac{173}{7}$

d) $25\frac{4}{5} = \frac{(25 \times 5 + 4)}{5} = \frac{125 + 4}{5} = \frac{129}{5}$

e) $48\frac{5}{8} = \frac{(48 \times 8 + 5)}{8} = \frac{384 + 5}{8} = \frac{389}{8}$

f) $17\frac{7}{9} = \frac{(17 \times 9 + 7)}{9} = \frac{125 + 7}{9} = \frac{132}{9}$

g) $28\frac{5}{6} = \frac{(28 \times 6 + 5)}{6} = \frac{168 + 5}{6} = \frac{173}{6}$

h) $71\frac{1}{8} = \frac{(71 \times 8 + 1)}{8} = \frac{568 + 1}{8} = \frac{569}{8}$

i) $100\frac{3}{4} = \frac{(100 \times 4 + 3)}{4} = \frac{400 + 3}{4} = \frac{403}{4}$

j) $33\frac{2}{3} = \frac{(33 \times 3 + 2)}{3} = \frac{99 + 2}{3} = \frac{101}{3}$

9. Fill in the blanks using > or < make correct statements:

a) $\frac{5}{14} \boxed{<} \frac{5}{8}$

b) $\frac{11}{16} \boxed{<} \frac{11}{12}$

c) $\frac{15}{19} \boxed{>} \frac{15}{23}$

d) $\frac{33}{40} \boxed{>} \frac{27}{40}$

e) $\frac{45}{70} \boxed{>} \frac{45}{85}$

f) $\frac{37}{85} \boxed{>} \frac{37}{90}$

g) $\frac{67}{79} \boxed{<} \frac{72}{79}$

h) $\frac{32}{39} \boxed{>} \frac{27}{39}$