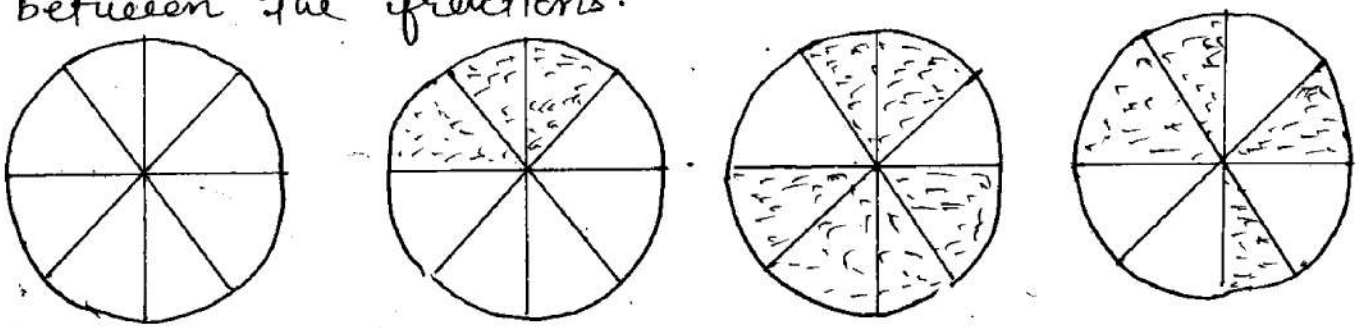
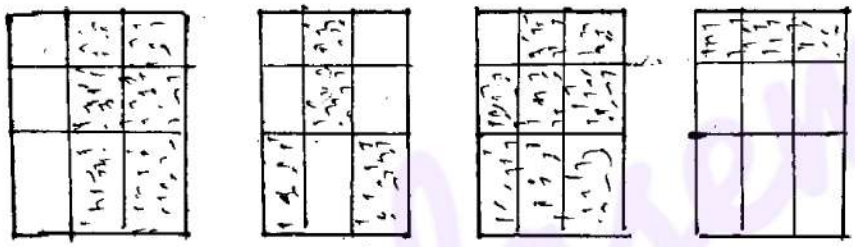
Exercise 6.7

Q1 Write each fraction. Arrange them in ascending and descending order using correct sign '<', '=', '>' between the fractions.

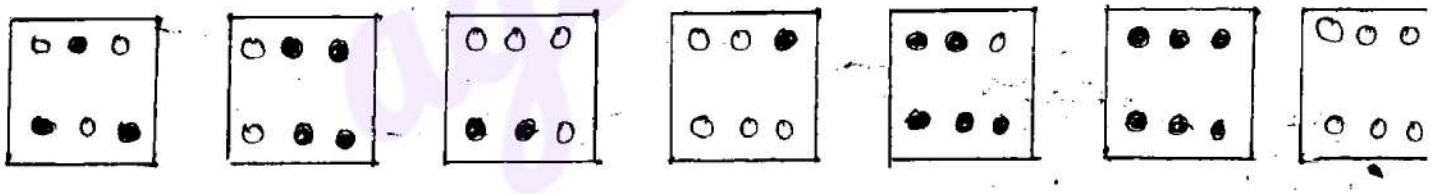
(i)



(ii)



(iii)



Solution (i) Fractions representing shaded region are:

$$\frac{0}{8}, \frac{3}{8}, \frac{6}{8}, \frac{4}{8}$$

$\therefore$ Ascending order: $\frac{0}{8} < \frac{3}{8} < \frac{4}{8} < \frac{6}{8}$

Descending order: $\frac{6}{8} > \frac{4}{8} > \frac{3}{8} > \frac{0}{8}$

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(ii) Fractions representing shaded region are:

$\frac{6}{9}, \frac{4}{9}, \frac{8}{9}, \frac{3}{9}$

Ascending order: $\frac{3}{9} < \frac{4}{9} < \frac{6}{9} < \frac{8}{9}$

Descending order: $\frac{8}{9} > \frac{6}{9} > \frac{4}{9} > \frac{3}{9}$

(iii) Fractions representing shaded region are

$\frac{3}{6}, \frac{4}{6}, \frac{2}{6}, \frac{1}{6}, \frac{5}{6}, \frac{6}{6}, \frac{0}{6}$

Ascending order: $\frac{0}{6} < \frac{1}{6} < \frac{2}{6} < \frac{3}{6} < \frac{4}{6} < \frac{5}{6} < \frac{6}{6}$.

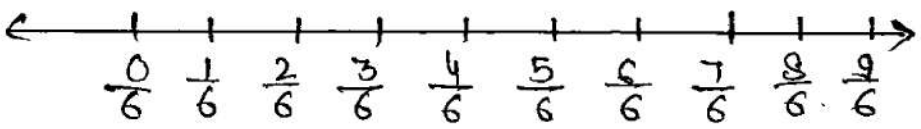
Descending order = $\frac{6}{6} > \frac{5}{6} > \frac{4}{6} > \frac{3}{6} > \frac{2}{6} > \frac{1}{6} > \frac{0}{6}$

Q2: Mark $\frac{2}{6}, \frac{4}{6}, \frac{8}{6}$ and $\frac{6}{6}$ on number line and put appropriate signs between fractions given below

(i) $\frac{5}{6} \ldots \frac{2}{6}$ (ii) $\frac{3}{6} \ldots \frac{0}{6}$ (iii) $\frac{1}{6} \ldots \frac{6}{6}$

(iv) $\frac{8}{6} \ldots \frac{5}{6}$

Solutions:



∴ (i) $\frac{5}{6} > \frac{2}{6}$ (ii) $\frac{3}{6} > \frac{0}{6}$ (iii) $\frac{1}{6} < \frac{6}{6}$

(iv) $\frac{8}{6} > \frac{5}{6}$

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Q3 Complete the following fractions and put an appropriate sign.

(i) $\frac{3}{6} \ldots \frac{5}{6}$ (ii) $\frac{4}{5} \ldots \frac{0}{5}$ (iii) $\frac{3}{20} \ldots \frac{4}{20}$

(iv) $\frac{1}{7} \ldots \frac{1}{4}$

Solution: (i) As, if the denominators of fractions are same, then a fraction having greater numerator is larger. so

(i) $\frac{3}{6} < \frac{5}{6}$ (As $3<5$)

(ii) $\frac{4}{5} > \frac{0}{5}$ (As $4>0$)

(iii) $\frac{3}{20} < \frac{4}{20}$ (As $3<4$)

(iv) In case of $\frac{1}{7}$ and $\frac{1}{4}$, if numerators are same, then a fraction having smaller denominator is larger, and larger denominator is smaller. so

$$\frac{1}{7} < \frac{1}{4} \quad (\because 7>4)$$

Q4 Compare the following fractions using the symbol $>$ or $<$.

(i) $\frac{6}{7}$ and $\frac{6}{11}$ (ii) $\frac{3}{7}$ and $\frac{5}{7}$ (iii) $\frac{2}{3}$ and $\frac{8}{12}$

(iv) $\frac{1}{5}$ and $\frac{4}{15}$ (v) $\frac{8}{3}$ and $\frac{8}{13}$ (vi) $\frac{4}{9}$ and $\frac{15}{8}$

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Solution:

(i) $\frac{6}{7} > \frac{6}{11}$ as fraction having Small denominator is larger, (If Same numerator)

(ii) $\frac{3}{7} < \frac{5}{7}$ as $3 < 5$, and the Same denominater

(iii) $\because \frac{8}{12} = \frac{8 \div 4}{12 \div 4} = \frac{2}{3}$

here $\frac{2}{3} = \frac{8}{12}$

(iv) $\frac{1}{5}$ and $\frac{4}{15}$

In this case, for making denominator same

$\frac{1}{5}$ can be written as:

$$\frac{1 \times 3}{5 \times 3} = \frac{3}{15}$$

$\because 3 < 4$

$\therefore \frac{3}{15} < \frac{4}{15}$ and here $\frac{1}{5} < \frac{4}{15}$

(v) $\frac{8}{3} > \frac{8}{13}$ as fraction having small denominator is larger

(vi) $\frac{4}{9}$ and $\frac{15}{8}$

$\because$ LCM $(9, 8) = 72$, then fractions can be written as

$\frac{4}{9} \times \frac{8}{8} = \frac{32}{72}$

$\frac{15}{8} \times \frac{9}{9} = \frac{135}{72}$

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$\because \quad 32 < 135$

$\therefore \quad \frac{4}{9} < \frac{15}{8}$

Q.5 The following fractions represent just three different numbers. Separate them into three groups of equal fractions by changing each one to its lowest form.

~~Solution~~ (i) $\frac{2}{12}$ (ii) $\frac{3}{15}$ (iii) $\frac{8}{50}$ (iv) $\frac{16}{100}$

(v) $\frac{10}{60}$ (vi) $\frac{15}{75}$ (vii) $\frac{12}{60}$ (viii) $\frac{16}{96}$

(ix) $\frac{12}{75}$ (x) $\frac{12}{72}$ (xi) $\frac{3}{18}$ (xii) $\frac{4}{25}$

Solution: (i) $\frac{2}{12} = \frac{2 \div 2}{12 \div 2} = \frac{1}{6}$ ($\because$ HCF (2, 12) = 2

(ii) $\frac{3}{15} = \frac{3 \div 3}{15 \div 3} = \frac{1}{5}$ ($\because$ HCF of 3 and 15 is 3)

(iii) $\frac{8}{50} = \frac{8 \div 2}{50 \div 2} = \frac{4}{25}$ ($\because$ HCF of 8 and 50 is 2)

(iv) $\frac{16}{100} = \frac{16 \div 4}{100 \div 4} = \frac{4}{25}$ ($\because$ HCF of 16 and 100 is 4)

(v) $\frac{10}{60} = \frac{10 \div 10}{60 \div 10} = \frac{1}{6}$ ($\because$ HCF of 10 and 60 is 10)

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(vi) $\frac{15}{75} = \frac{15 \div 5}{75 \div 5} = \frac{3}{25}$ (∵ HCF of 75 and 75 is 5)

(vii) $\frac{12}{60} = \frac{12 \div 12}{60 \div 12} = \frac{1}{5}$ (∵ HCF of 12 and 60 are 12)

(viii) $\frac{16}{96} = \frac{16 \div 16}{96 \div 16} = \frac{1}{6}$. (∵ HCF of 16 and 96 is 16)

(ix) $\frac{12}{75} = \frac{12 \div 3}{75 \div 3} = \frac{4}{25}$ (∵ HCF of 12 and 75 is 3)

(x) $\frac{12}{72} = \frac{12 \div 12}{72 \div 12} = \frac{1}{6}$ (∵ HCF of 12 and 72 is 12)

(xi) $\frac{3}{18} = \frac{3 \div 3}{18 \div 3} = \frac{1}{6}$ (∵ HCF of 3 and 18 is 3)

(xii) $\frac{4}{25} = \frac{4}{25}$ (∵ HCF of 4 and 25 is 1)

Therefore, the groups of equal fractions are:

$\frac{2}{12}, \frac{10}{60}, \frac{16}{96}, \frac{12}{72}, \frac{3}{18}$; $\frac{3}{15}, \frac{15}{75}, \frac{12}{60}$

and $\frac{8}{50}, \frac{16}{100}, \frac{12}{75}, \frac{4}{25}$.

Q.6 Isha read 25 Pages of a book containing 100 Pages. Nagma read $\frac{1}{2}$ of the same book. who read less.

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Solution: Fraction of Pages read by Isha $= \frac{25}{100}$

$= \frac{1}{4}$

Nagma read $= \frac{1}{2}$

$\therefore \frac{1}{2} > \frac{1}{4}$ (A fraction having Smaller denominator is larger)

there Isha read less pages.

Q7 Arrange the following fractions in ascending order.

(i) $\frac{2}{9}, \frac{7}{9}, \frac{3}{9}, \frac{4}{9}, \frac{1}{9}, \frac{6}{9}, \frac{5}{9}$ (ii) $\frac{7}{8}, \frac{7}{25}, \frac{7}{11}, \frac{7}{18}, \frac{7}{10}$

(iii) $\frac{37}{47}, \frac{37}{50}, \frac{37}{100}, \frac{37}{1000}, \frac{37}{85}, \frac{37}{41}$ (iv) $\frac{3}{5}, \frac{1}{5}, \frac{4}{5}, \frac{2}{5}$

(v) $\frac{2}{5}, \frac{3}{4}, \frac{1}{2}, \frac{3}{5}$ (vi) $\frac{3}{8}, \frac{3}{12}, \frac{3}{6}, \frac{3}{4}$

(vii) $\frac{4}{6}, \frac{3}{8}, \frac{6}{12}, \frac{5}{16}$

Solution: (i) here, denominator of all fractions are same,

$\therefore 1 < 2 < 3 < 4 < 5 < 6 < 7$

so $\frac{1}{9} < \frac{2}{9} < \frac{3}{9} < \frac{4}{9} < \frac{5}{9} < \frac{6}{9} < \frac{7}{9}$

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(ii) $\frac{7}{8}, \frac{7}{25}, \frac{7}{11}, \frac{7}{18}, \frac{7}{10}$

here $25 > 18 > 11 > 10 > 8$

$\therefore$ Ascending order is $\frac{7}{25} < \frac{7}{18} < \frac{7}{11} < \frac{7}{10} < \frac{7}{8}$

(iii) $\frac{37}{47}, \frac{37}{50}, \frac{37}{100}, \frac{37}{1000}, \frac{37}{85}, \frac{37}{41}$

here $1000 > 100 > 85 > 50 > 47 > 41$

Therefore, descending order is as follows.

$$\frac{37}{1000} < \frac{37}{100} < \frac{37}{85} < \frac{37}{50} < \frac{37}{47} < \frac{37}{41}$$

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

here, $1 < 2 < 3 < 4$

$\therefore$ Ascending order is given as $\frac{1}{5} < \frac{2}{5} < \frac{3}{5} < \frac{4}{5}$

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

we convert each fraction as equivalent fraction of their denominator as LCM $(5,4,2,5) = 2 \times 2 \times 5 = 20$

2	5, 4, 2, 5
2	5, 2, 1, 5
5	5, 1, 1, 5
	1, 1, 1, 1

so $\frac{2}{5} \times \frac{4}{4} = \frac{8}{20}$; $\frac{3}{4} \times \frac{5}{5} = \frac{15}{20}$

$\frac{1}{2} \times \frac{10}{10} = \frac{10}{20}$; $\frac{3}{5} \times \frac{4}{4} = \frac{12}{20}$

Now, $\because 8 < 10 < 12 < 15$

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Therefore, Ascending order is as.

$$\frac{2}{5} < \frac{1}{2} < \frac{3}{5} < \frac{3}{4}$$

(vi) $\frac{3}{8}, \frac{3}{12}, \frac{3}{6}, \frac{3}{4}$

here $12 > 8 > 6 > 4$

Therefore ascending order is $\frac{3}{12} < \frac{3}{8} < \frac{3}{6} < \frac{3}{4}$

(vii) $\frac{4}{6}, \frac{3}{8}, \frac{6}{12}, \frac{5}{16}$

we convert each fraction in equivalent fraction of denominator = LCM (6, 8, 12, 16)

= 48

2	6, 8, 12, 16
2	3, 4, 6, 8
2	3, 2, 3, 4
2	3, 1, 3, 2
3	3, 1, 3, 1
	1, 1, 1, 1

hence $\frac{4}{6} \times \frac{8}{8} = \frac{32}{48}$; $\frac{3}{8} \times \frac{6}{6} = \frac{18}{48}$

$\frac{6}{12} \times \frac{4}{4} = \frac{24}{48}$; $\frac{5}{16} \times \frac{3}{3} = \frac{15}{48}$

$\therefore 15 < 18 < 24 < 32$

Therfore $\frac{5}{16} < \frac{3}{8} < \frac{6}{12} < \frac{4}{6}$

Q.8 Arrange in descending order in each of the following using the symbol >.

(i) $\frac{8}{17}, \frac{8}{9}, \frac{8}{5}, \frac{8}{13}$ (ii) $\frac{5}{9}, \frac{3}{12}, \frac{1}{3}, \frac{4}{15}$ (iii) $\frac{2}{7}, \frac{11}{35}, \frac{9}{14}, \frac{13}{28}$

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Solution: (i) $\frac{8}{17}, \frac{8}{9}, \frac{8}{5}, \frac{8}{13}$

Here $5 < 9 < 13 < 17$

Therefore descending order is as.

$$\frac{8}{5} > \frac{8}{9} > \frac{8}{13} > \frac{8}{17}$$

(ii) $\frac{5}{9}, \frac{3}{12}, \frac{1}{3}, \frac{4}{15}$

3	9, 12, 3, 15
2	3, 4, 1, 5
	3, 2, 1, 5

Here LCM (9, 12, 3, 15)

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

$= 180$

So, By converting each fraction with denominator 180, we get

$\frac{5 \times 20}{9 \times 20} = \frac{100}{180}$; $\frac{3}{12} \times \frac{15}{15} = \frac{45}{180}$; $\frac{1}{3} \times \frac{60}{60} = \frac{60}{180}$

$\frac{4}{15} \times \frac{12}{12} = \frac{48}{180}$

$\therefore 100 < 60 < 48 < 45$

Therefore $\frac{5}{9} > \frac{1}{3} > \frac{4}{15} > \frac{3}{12}$

(iii) $\frac{2}{7}, \frac{11}{35}, \frac{9}{14}, \frac{13}{28}$

7	7, 35, 14, 28
2	1, 5, 2, 4
	1, 5, 1, 2

$\therefore$ LCM (7, 35, 14, 28) $= 7 \times 2 \times 5 \times 2$

$= 140$

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By converting each fraction with denominator 140, we get

$\frac{2}{7} \times \frac{20}{20} = \frac{40}{140}$; $\frac{11}{35} \times \frac{4}{4} = \frac{44}{140}$; $\frac{9}{14} \times \frac{10}{10} = \frac{90}{140}$.

$\frac{13}{28} \times \frac{5}{5} = \frac{65}{140}$ $\quad \therefore \; 90 < 65 < 44 < 40$

hence, $\frac{9}{14} > \frac{13}{28} > \frac{11}{35} > \frac{2}{7}$

Q.9 Find answers to the following, Write and indicate how you solved them.

(i) Is $\frac{5}{9}$ equal to $\frac{4}{5}$ (ii) Is $\frac{9}{16}$ equal to $\frac{5}{9}$

(iii) Is $\frac{4}{5}$ equal to $\frac{16}{20}$ (iv) is $\frac{1}{15}$ equal to $\frac{4}{30}$

Solution: (i) $\frac{5}{9} \not\times \frac{4}{5}$

(Doing Cross Multiplication)

$\Rightarrow 25 \neq 36$

$\therefore \frac{5}{9} \neq \frac{4}{5}$

(ii) $\frac{9}{16} \times \frac{5}{9}$

$\Rightarrow 81 \neq 80$ (Doing Cross Multiplication)

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

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(iii) $\frac{4}{5} \times \frac{16}{20}$

$\Rightarrow 80 = 80$ (By Cross Multiplication)

$\therefore \frac{4}{5} = \frac{16}{20}$

(iv) $\frac{1}{15} \times \frac{4}{30}$

$\Rightarrow 30 \neq 60$ (By Cross Multiplication)

$\therefore \frac{1}{15} \neq \frac{4}{30}$

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