

التمرين 1: بسّط (اختزل) الكسور الآتية.

$$10 \quad \frac{9}{18} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$7 \quad \frac{12}{16} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$4 \quad \frac{14}{63} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$1 \quad \frac{28}{63} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$8 \quad \frac{80}{90} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$5 \quad \frac{14}{18} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$2 \quad \frac{14}{35} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$9 \quad \frac{7}{21} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$6 \quad \frac{4}{16} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$3 \quad \frac{60}{70} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

التمرين 2: أتمم المساويات الآتية.

$$9 \quad \frac{4}{9} = \frac{\quad}{\quad} = \frac{\quad}{63}$$

$$6 \quad 1 = \frac{\quad}{\quad} = \frac{4}{\quad}$$

$$3 \quad 1 = \frac{\quad}{\quad} = \frac{\quad}{7}$$

$$1 \quad \frac{1}{10} = \frac{\quad}{\quad} = \frac{\quad}{110}$$

$$10 \quad \frac{3}{5} = \frac{\quad}{\quad} = \frac{27}{\quad}$$

$$7 \quad \frac{3}{8} = \frac{\quad}{\quad} = \frac{\quad}{32}$$

$$4 \quad \frac{1}{6} = \frac{\quad}{\quad} = \frac{11}{\quad}$$

$$2 \quad \frac{1}{8} = \frac{\quad}{\quad} = \frac{6}{\quad}$$

$$8 \quad \frac{5}{8} = \frac{\quad}{\quad} = \frac{35}{\quad}$$

$$5 \quad \frac{3}{7} = \frac{\quad}{\quad} = \frac{\quad}{28}$$

$$2 \quad \frac{1}{8} = \frac{\quad}{\quad} = \frac{6}{\quad}$$

التمرين 3: قارن الكسور الآتية.

$$22 \quad \frac{4}{9} \dots \frac{45}{99}$$

$$15 \quad \frac{8}{49} \dots \frac{1}{7}$$

$$8 \quad \frac{2}{5} \dots \frac{17}{50}$$

$$1 \quad \frac{7}{8} \dots \frac{73}{80}$$

$$23 \quad \frac{18}{27} \dots \frac{7}{9}$$

$$16 \quad \frac{1}{10} \dots \frac{5}{90}$$

$$9 \quad \frac{5}{9} \dots \frac{28}{54}$$

$$2 \quad \frac{15}{32} \dots \frac{3}{8}$$

$$24 \quad \frac{48}{70} \dots \frac{7}{10}$$

$$17 \quad \frac{3}{5} \dots \frac{8}{20}$$

$$10 \quad \frac{3}{10} \dots \frac{7}{20}$$

$$3 \quad \frac{11}{16} \dots \frac{3}{4}$$

$$25 \quad \frac{3}{7} \dots \frac{37}{77}$$

$$18 \quad \frac{9}{10} \dots \frac{38}{40}$$

$$11 \quad \frac{14}{30} \dots \frac{1}{3}$$

$$4 \quad \frac{5}{8} \dots \frac{13}{24}$$

$$26 \quad \frac{26}{49} \dots \frac{4}{7}$$

$$19 \quad \frac{5}{12} \dots \frac{1}{4}$$

$$12 \quad \frac{1}{2} \dots \frac{8}{18}$$

$$5 \quad \frac{4}{5} \dots \frac{41}{55}$$

$$20 \quad \frac{16}{18} \dots \frac{2}{3}$$

$$13 \quad \frac{38}{49} \dots \frac{6}{7}$$

$$6 \quad \frac{8}{56} \dots \frac{1}{8}$$

$$21 \quad \frac{5}{6} \dots \frac{47}{54}$$

$$14 \quad \frac{2}{9} \dots \frac{14}{72}$$

$$7 \quad \frac{11}{72} \dots \frac{1}{9}$$

التمرين 4: رتب تصاعديا الكسور الآتية.

$$2 : \frac{5}{8} : \frac{11}{16} : \frac{9}{2} : \frac{1}{8} \quad 13$$

$$\frac{9}{2} : 3 : \frac{10}{3} : \frac{10}{12} : \frac{3}{2} \quad 7$$

$$\frac{7}{2} : \frac{1}{18} : \frac{1}{3} : 2 : \frac{11}{9} \quad 1$$

$$3 : \frac{9}{2} : \frac{6}{8} : \frac{9}{4} : \frac{2}{16} \quad 14$$

$$\frac{7}{18} : 1 : \frac{3}{6} : \frac{5}{2} : \frac{7}{9} \quad 8$$

$$\frac{7}{2} : 3 : \frac{2}{12} : \frac{10}{4} : \frac{11}{6} \quad 2$$

$$\frac{1}{6} : 3 : \frac{11}{6} : \frac{9}{12} : \frac{5}{4} \quad 15$$

$$3 : \frac{10}{3} : \frac{2}{12} : \frac{7}{6} : \frac{4}{3} \quad 9$$

$$3 : \frac{6}{8} : \frac{1}{16} : \frac{3}{2} : \frac{7}{2} \quad 3$$

$$\frac{11}{2} : 3 : \frac{3}{18} : \frac{11}{3} : \frac{2}{9} \quad 16$$

$$\frac{9}{30} : 3 : \frac{5}{6} : \frac{7}{5} : \frac{10}{3} \quad 10$$

$$3 : \frac{1}{3} : \frac{3}{2} : \frac{10}{3} : \frac{8}{12} \quad 4$$

$$\frac{2}{4} : \frac{9}{2} : \frac{10}{12} : 1 : \frac{10}{3} \quad 17$$

$$\frac{11}{2} : 1 : \frac{6}{4} : \frac{3}{16} : \frac{7}{4} \quad 11$$

$$\frac{8}{5} : \frac{6}{30} : \frac{11}{5} : \frac{3}{2} : 2 \quad 5$$

$$\frac{2}{4} : \frac{8}{3} : \frac{3}{24} : \frac{5}{2} : 1 \quad 18$$

$$\frac{1}{4} : \frac{9}{8} : \frac{9}{2} : \frac{9}{24} : 2 \quad 12$$

$$\frac{13}{6} : 1 : \frac{10}{6} : \frac{2}{3} : \frac{5}{12} \quad 6$$

$$\frac{10}{24} : \frac{6}{4} : \frac{1}{8} : \frac{7}{3} : 2 \quad (25)$$

$$3 : \frac{7}{3} : \frac{6}{30} : \frac{4}{5} : \frac{2}{3} \quad (26)$$

$$\frac{2}{18} : 1 : \frac{10}{3} : \frac{11}{3} : \frac{4}{9} \quad (22)$$

$$\frac{1}{20} : \frac{2}{10} : \frac{6}{5} : \frac{5}{2} : 2 \quad (23)$$

$$\frac{1}{4} : \frac{9}{2} : \frac{10}{4} : 2 : \frac{9}{24} \quad (24)$$

$$\frac{11}{3} : \frac{3}{2} : \frac{11}{18} : 2 : \frac{5}{9} \quad (19)$$

$$\frac{10}{9} : \frac{8}{18} : \frac{10}{6} : \frac{5}{6} : 3 \quad (20)$$

$$\frac{7}{30} : 2 : \frac{10}{6} : \frac{11}{2} : \frac{2}{6} \quad (21)$$

التمرين 5: احسب ثم بسّط النتيجة إن أمكن.

$$\frac{15}{16} - \frac{1}{4} = \dots \quad (25)$$

$$\frac{14}{18} + \frac{4}{6} = \dots \quad (26)$$

$$\frac{53}{36} - \frac{7}{6} = \dots \quad (19)$$

$$\frac{11}{48} + \frac{9}{6} = \dots \quad (20)$$

$$\frac{18}{36} + \frac{3}{9} = \dots \quad (21)$$

$$\frac{9}{7} - \frac{43}{63} = \dots \quad (22)$$

$$\frac{9}{5} - \frac{24}{25} = \dots \quad (23)$$

$$\frac{6}{99} + \frac{8}{9} = \dots \quad (24)$$

$$\frac{9}{15} + \frac{7}{3} = \dots \quad (13)$$

$$\frac{8}{5} - \frac{21}{25} = \dots \quad (14)$$

$$\frac{7}{4} + \frac{17}{32} = \dots \quad (15)$$

$$\frac{56}{28} - \frac{8}{4} = \dots \quad (16)$$

$$\frac{9}{4} + \frac{13}{24} = \dots \quad (17)$$

$$\frac{7}{4} - \frac{49}{40} = \dots \quad (18)$$

$$\frac{7}{2} + \frac{13}{18} = \dots \quad (7)$$

$$\frac{36}{36} - \frac{5}{9} = \dots \quad (8)$$

$$\frac{89}{88} - \frac{7}{8} = \dots \quad (9)$$

$$\frac{7}{9} + \frac{3}{36} = \dots \quad (10)$$

$$\frac{4}{12} - \frac{1}{6} = \dots \quad (11)$$

$$\frac{3}{9} + \frac{5}{63} = \dots \quad (12)$$

$$\frac{81}{81} - \frac{5}{9} = \dots \quad (1)$$

$$\frac{8}{2} + \frac{7}{10} = \dots \quad (2)$$

$$\frac{1}{55} + \frac{9}{5} = \dots \quad (3)$$

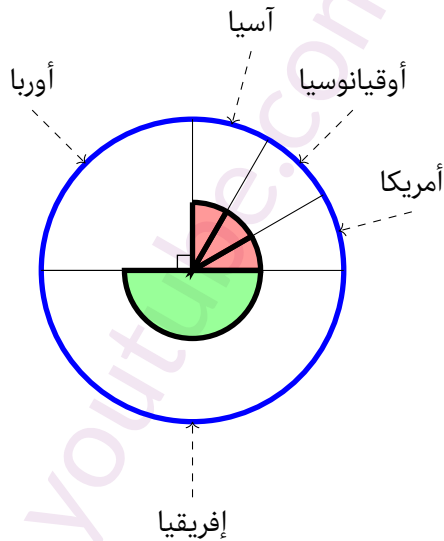
$$\frac{8}{7} - \frac{53}{49} = \dots \quad (4)$$

$$\frac{2}{9} + \frac{18}{45} = \dots \quad (5)$$

$$\frac{19}{42} - \frac{2}{6} = \dots \quad (6)$$

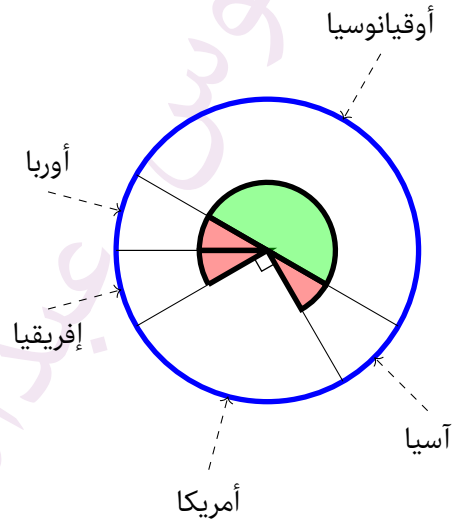
التمرين 6:

٢ المخطط الدائري الموالي يمثل توزيع رحلات إحدى الوكالات الجوية حسب الوجهة. الزوايا التي لها نفس اللون متقايسة. الزاوية الخضراء مستقيمة.



ا. عبر بكسر عن عدد الرحلات نحو إفريقيا.
ب. ما هو الكسر الذي يمثل عدد الرحلات نحو أمريكا ؟
ج. إذا علمت أن العدد الكلي للرحلات هو 252 رحلة فاحسب عدد الرحلات نحو أوقيانوسيا.

١ المخطط الدائري الموالي يمثل توزيع رحلات إحدى الوكالات الجوية حسب الوجهة. الزوايا التي لها نفس اللون متقايسة. الزاوية الخضراء مستقيمة.



ا. عبر بكسر عن عدد الرحلات نحو إفريقيا.
ب. ما هو الكسر الذي يمثل عدد الرحلات نحو أمريكا ؟
ج. إذا علمت أن العدد الكلي للرحلات هو 228 رحلة فاحسب عدد الرحلات نحو آسيا.

الحلول

حل التمرين I:

$$10 \quad \frac{9}{18} = \frac{9 \div 9}{18 \div 9} = \frac{1}{2}$$

$$7 \quad \frac{12}{16} = \frac{12 \div 4}{16 \div 4} = \frac{3}{4}$$

$$4 \quad \frac{14}{63} = \frac{14 \div 7}{63 \div 7} = \frac{2}{9}$$

$$1 \quad \frac{28}{63} = \frac{28 \div 7}{63 \div 7} = \frac{4}{9}$$

$$8 \quad \frac{80}{90} = \frac{80 \div 10}{90 \div 10} = \frac{8}{9}$$

$$5 \quad \frac{14}{18} = \frac{14 \div 2}{18 \div 2} = \frac{7}{9}$$

$$2 \quad \frac{14}{35} = \frac{14 \div 7}{35 \div 7} = \frac{2}{5}$$

$$9 \quad \frac{7}{21} = \frac{7 \div 7}{21 \div 7} = \frac{1}{3}$$

$$6 \quad \frac{4}{16} = \frac{4 \div 4}{16 \div 4} = \frac{1}{4}$$

$$3 \quad \frac{60}{70} = \frac{60 \div 10}{70 \div 10} = \frac{6}{7}$$

حل التمرين 2:

$$10 \quad \frac{3}{5} = \frac{3 \times 9}{5 \times 9} = \frac{27}{45}$$

$$7 \quad \frac{3}{8} = \frac{3 \times 4}{8 \times 4} = \frac{12}{32}$$

$$4 \quad \frac{1}{6} = \frac{1 \times 11}{6 \times 11} = \frac{11}{66}$$

$$1 \quad \frac{1}{10} = \frac{1 \times 11}{10 \times 11} = \frac{11}{110}$$

$$8 \quad \frac{5}{8} = \frac{5 \times 7}{8 \times 7} = \frac{35}{56}$$

$$5 \quad \frac{3}{7} = \frac{3 \times 4}{7 \times 4} = \frac{12}{28}$$

$$2 \quad \frac{1}{8} = \frac{1 \times 6}{8 \times 6} = \frac{6}{48}$$

$$9 \quad \frac{4}{9} = \frac{4 \times 7}{9 \times 7} = \frac{28}{63}$$

$$6 \quad 1 = \frac{1}{1} = \frac{1 \times 4}{1 \times 4} = \frac{4}{4}$$

$$3 \quad 1 = \frac{1}{1} = \frac{1 \times 7}{1 \times 7} = \frac{7}{7}$$

حل التمرين 3:

$$\frac{38}{49} < \frac{6}{7} \quad \text{إذن} \quad \frac{38}{49} < \frac{42}{49} \quad \text{و} \quad \frac{6}{7} = \frac{6 \times 7}{7 \times 7} = \frac{42}{49} \quad 13$$

$$\frac{2}{9} > \frac{14}{72} \quad \text{إذن} \quad \frac{16}{72} > \frac{14}{72} \quad \text{و} \quad \frac{2}{9} = \frac{2 \times 8}{9 \times 8} = \frac{16}{72} \quad 14$$

$$\frac{8}{49} > \frac{1}{7} \quad \text{إذن} \quad \frac{8}{49} > \frac{7}{49} \quad \text{و} \quad \frac{1}{7} = \frac{1 \times 7}{7 \times 7} = \frac{7}{49} \quad 15$$

$$\frac{1}{10} > \frac{5}{90} \quad \text{إذن} \quad \frac{9}{90} > \frac{5}{90} \quad \text{و} \quad \frac{1}{10} = \frac{1 \times 9}{10 \times 9} = \frac{9}{90} \quad 16$$

$$\frac{3}{5} > \frac{8}{20} \quad \text{إذن} \quad \frac{12}{20} > \frac{8}{20} \quad \text{و} \quad \frac{3}{5} = \frac{3 \times 4}{5 \times 4} = \frac{12}{20} \quad 17$$

$$\frac{9}{10} < \frac{38}{40} \quad \text{إذن} \quad \frac{36}{40} < \frac{38}{40} \quad \text{و} \quad \frac{9}{10} = \frac{9 \times 4}{10 \times 4} = \frac{36}{40} \quad 18$$

$$\frac{5}{12} > \frac{1}{4} \quad \text{إذن} \quad \frac{5}{12} > \frac{3}{12} \quad \text{و} \quad \frac{1}{4} = \frac{1 \times 3}{4 \times 3} = \frac{3}{12} \quad 19$$

$$\frac{16}{18} > \frac{2}{3} \quad \text{إذن} \quad \frac{16}{18} > \frac{12}{18} \quad \text{و} \quad \frac{2}{3} = \frac{2 \times 6}{3 \times 6} = \frac{12}{18} \quad 20$$

$$\frac{5}{6} < \frac{47}{54} \quad \text{إذن} \quad \frac{45}{54} < \frac{47}{54} \quad \text{و} \quad \frac{5}{6} = \frac{5 \times 9}{6 \times 9} = \frac{45}{54} \quad 21$$

$$\frac{4}{9} < \frac{45}{99} \quad \text{إذن} \quad \frac{44}{99} < \frac{45}{99} \quad \text{و} \quad \frac{4}{9} = \frac{4 \times 11}{9 \times 11} = \frac{44}{99} \quad 22$$

$$\frac{18}{27} < \frac{7}{9} \quad \text{إذن} \quad \frac{18}{27} < \frac{21}{27} \quad \text{و} \quad \frac{7}{9} = \frac{7 \times 3}{9 \times 3} = \frac{21}{27} \quad 23$$

$$\frac{48}{70} < \frac{7}{10} \quad \text{إذن} \quad \frac{48}{70} < \frac{49}{70} \quad \text{و} \quad \frac{7}{10} = \frac{7 \times 7}{10 \times 7} = \frac{49}{70} \quad 24$$

$$\frac{7}{8} < \frac{73}{80} \quad \text{إذن} \quad \frac{70}{80} < \frac{73}{80} \quad \text{و} \quad \frac{7}{8} = \frac{7 \times 10}{8 \times 10} = \frac{70}{80} \quad 1$$

$$\frac{15}{32} > \frac{3}{8} \quad \text{إذن} \quad \frac{15}{32} > \frac{12}{32} \quad \text{و} \quad \frac{3}{8} = \frac{3 \times 4}{8 \times 4} = \frac{12}{32} \quad 2$$

$$\frac{11}{16} < \frac{3}{4} \quad \text{إذن} \quad \frac{11}{16} < \frac{12}{16} \quad \text{و} \quad \frac{3}{4} = \frac{3 \times 4}{4 \times 4} = \frac{12}{16} \quad 3$$

$$\frac{5}{8} > \frac{13}{24} \quad \text{إذن} \quad \frac{15}{24} > \frac{13}{24} \quad \text{و} \quad \frac{5}{8} = \frac{5 \times 3}{8 \times 3} = \frac{15}{24} \quad 4$$

$$\frac{4}{5} > \frac{41}{55} \quad \text{إذن} \quad \frac{44}{55} > \frac{41}{55} \quad \text{و} \quad \frac{4}{5} = \frac{4 \times 11}{5 \times 11} = \frac{44}{55} \quad 5$$

$$\frac{8}{56} > \frac{1}{8} \quad \text{إذن} \quad \frac{8}{56} > \frac{7}{56} \quad \text{و} \quad \frac{1}{8} = \frac{1 \times 7}{8 \times 7} = \frac{7}{56} \quad 6$$

$$\frac{11}{72} > \frac{1}{9} \quad \text{إذن} \quad \frac{11}{72} > \frac{8}{72} \quad \text{و} \quad \frac{1}{9} = \frac{1 \times 8}{9 \times 8} = \frac{8}{72} \quad 7$$

$$\frac{2}{5} > \frac{17}{50} \quad \text{إذن} \quad \frac{20}{50} > \frac{17}{50} \quad \text{و} \quad \frac{2}{5} = \frac{2 \times 10}{5 \times 10} = \frac{20}{50} \quad 8$$

$$\frac{5}{9} > \frac{28}{54} \quad \text{إذن} \quad \frac{30}{54} > \frac{28}{54} \quad \text{و} \quad \frac{5}{9} = \frac{5 \times 6}{9 \times 6} = \frac{30}{54} \quad 9$$

$$\frac{3}{10} < \frac{7}{20} \quad \text{إذن} \quad \frac{6}{20} < \frac{7}{20} \quad \text{و} \quad \frac{3}{10} = \frac{3 \times 2}{10 \times 2} = \frac{6}{20} \quad 10$$

$$\frac{14}{30} > \frac{1}{3} \quad \text{إذن} \quad \frac{14}{30} > \frac{10}{30} \quad \text{و} \quad \frac{1}{3} = \frac{1 \times 10}{3 \times 10} = \frac{10}{30} \quad 11$$

$$\frac{1}{2} > \frac{8}{18} \quad \text{إذن} \quad \frac{9}{18} > \frac{8}{18} \quad \text{و} \quad \frac{1}{2} = \frac{1 \times 9}{2 \times 9} = \frac{9}{18} \quad 12$$

$$\frac{26}{49} < \frac{4}{7} \quad \text{إذن} \quad \frac{26}{49} < \frac{28}{49} \quad \text{و} \quad \frac{4}{7} = \frac{4 \times 7}{7 \times 7} = \frac{28}{49} \quad (26)$$

$$\frac{3}{7} < \frac{37}{77} \quad \text{إذن} \quad \frac{33}{77} < \frac{37}{77} \quad \text{و} \quad \frac{3}{7} = \frac{3 \times 11}{7 \times 11} = \frac{33}{77} \quad (25)$$

حل التمرين 4:

$$1 \text{ لدينا : } \frac{7}{2} = \frac{7 \times 9}{2 \times 9} = \frac{63}{18} ; \frac{1}{18} ; \frac{1}{3} = \frac{1 \times 6}{3 \times 6} = \frac{6}{18} ; 2 = \frac{36}{18} ; \frac{11}{9} = \frac{11 \times 2}{9 \times 2} = \frac{22}{18}$$

$$\text{بما أن : } \frac{1}{18} < \frac{6}{18} < \frac{22}{18} < \frac{36}{18} < \frac{63}{18} \quad \text{فإن} \quad \frac{1}{18} < \frac{1}{3} < \frac{11}{9} < 2 < \frac{7}{2}$$

$$2 \text{ لدينا : } \frac{7}{2} = \frac{7 \times 6}{2 \times 6} = \frac{42}{12} ; 3 = \frac{36}{12} ; \frac{2}{12} ; \frac{10}{4} = \frac{10 \times 3}{4 \times 3} = \frac{30}{12} ; \frac{11}{6} = \frac{11 \times 2}{6 \times 2} = \frac{22}{12}$$

$$\text{بما أن : } \frac{2}{12} < \frac{22}{12} < \frac{30}{12} < \frac{36}{12} < \frac{42}{12} \quad \text{فإن} \quad \frac{2}{12} < \frac{11}{6} < \frac{10}{4} < 3 < \frac{7}{2}$$

$$3 \text{ لدينا : } 3 = \frac{48}{16} ; \frac{6}{8} = \frac{6 \times 2}{8 \times 2} = \frac{12}{16} ; \frac{1}{16} ; \frac{3}{2} = \frac{3 \times 8}{2 \times 8} = \frac{24}{16} ; \frac{7}{2} = \frac{7 \times 8}{2 \times 8} = \frac{56}{16}$$

$$\text{بما أن : } \frac{1}{16} < \frac{12}{16} < \frac{24}{16} < \frac{48}{16} < \frac{56}{16} \quad \text{فإن} \quad \frac{1}{16} < \frac{6}{8} < \frac{3}{2} < 3 < \frac{7}{2}$$

$$4 \text{ لدينا : } 3 = \frac{36}{12} ; \frac{1}{3} = \frac{1 \times 4}{3 \times 4} = \frac{4}{12} ; \frac{3}{2} = \frac{3 \times 6}{2 \times 6} = \frac{18}{12} ; \frac{10}{3} = \frac{10 \times 4}{3 \times 4} = \frac{40}{12} ; \frac{8}{12}$$

$$\text{بما أن : } \frac{4}{12} < \frac{8}{12} < \frac{18}{12} < \frac{36}{12} < \frac{40}{12} \quad \text{فإن} \quad \frac{1}{3} < \frac{8}{12} < \frac{3}{2} < 3 < \frac{10}{3}$$

$$5 \text{ لدينا : } \frac{8}{5} = \frac{8 \times 6}{5 \times 6} = \frac{48}{30} ; \frac{6}{30} ; \frac{11}{5} = \frac{11 \times 6}{5 \times 6} = \frac{66}{30} ; \frac{3}{2} = \frac{3 \times 15}{2 \times 15} = \frac{45}{30} ; 2 = \frac{60}{30}$$

$$\text{بما أن : } \frac{6}{30} < \frac{45}{30} < \frac{48}{30} < \frac{60}{30} < \frac{66}{30} \quad \text{فإن} \quad \frac{6}{30} < \frac{3}{2} < \frac{8}{5} < 2 < \frac{11}{5}$$

$$6 \text{ لدينا : } \frac{13}{6} = \frac{13 \times 2}{6 \times 2} = \frac{26}{12} ; 1 = \frac{12}{12} ; \frac{10}{6} = \frac{10 \times 2}{6 \times 2} = \frac{20}{12} ; \frac{2}{3} = \frac{2 \times 4}{3 \times 4} = \frac{8}{12} ; \frac{5}{12}$$

$$\text{بما أن : } \frac{5}{12} < \frac{8}{12} < \frac{12}{12} < \frac{20}{12} < \frac{26}{12} \quad \text{فإن} \quad \frac{5}{12} < \frac{2}{3} < 1 < \frac{10}{6} < \frac{13}{6}$$

$$7 \text{ لدينا : } \frac{9}{2} = \frac{9 \times 6}{2 \times 6} = \frac{54}{12} ; 3 = \frac{36}{12} ; \frac{10}{3} = \frac{10 \times 4}{3 \times 4} = \frac{40}{12} ; \frac{10}{12} ; \frac{3}{2} = \frac{3 \times 6}{2 \times 6} = \frac{18}{12}$$

$$\text{بما أن : } \frac{10}{12} < \frac{18}{12} < \frac{36}{12} < \frac{40}{12} < \frac{54}{12} \quad \text{فإن} \quad \frac{10}{12} < \frac{3}{2} < 3 < \frac{10}{3} < \frac{9}{2}$$

$$8 \text{ لدينا : } 1 = \frac{18}{18} ; \frac{3}{6} = \frac{3 \times 3}{6 \times 3} = \frac{9}{18} ; \frac{5}{2} = \frac{5 \times 9}{2 \times 9} = \frac{45}{18} ; \frac{7}{9} = \frac{7 \times 2}{9 \times 2} = \frac{14}{18}$$

$$\text{بما أن : } \frac{7}{18} < \frac{9}{18} < \frac{14}{18} < \frac{18}{18} < \frac{45}{18} \quad \text{فإن} \quad \frac{7}{18} < \frac{3}{6} < \frac{7}{9} < 1 < \frac{5}{2}$$

$$9 \text{ لدينا : } 3 = \frac{36}{12} ; \frac{10}{3} = \frac{10 \times 4}{3 \times 4} = \frac{40}{12} ; \frac{2}{12} ; \frac{7}{6} = \frac{7 \times 2}{6 \times 2} = \frac{14}{12} ; \frac{4}{3} = \frac{4 \times 4}{3 \times 4} = \frac{16}{12}$$

بما أن : $\frac{2}{12} < \frac{7}{12} < \frac{4}{3} < 3 < \frac{10}{3}$ فإن : $\frac{2}{12} < \frac{14}{12} < \frac{16}{12} < \frac{36}{12} < \frac{40}{12}$

10 لدينا : $\frac{9}{30} : 3 = \frac{90}{30} : \frac{5}{6} = \frac{5 \times 5}{6 \times 5} = \frac{25}{30} : \frac{7}{5} = \frac{7 \times 6}{5 \times 6} = \frac{42}{30} : \frac{10}{3} = \frac{10 \times 10}{3 \times 10} = \frac{100}{30}$

بما أن : $\frac{9}{30} < \frac{5}{6} < \frac{7}{5} < 3 < \frac{10}{3}$ فإن : $\frac{9}{30} < \frac{25}{30} < \frac{42}{30} < \frac{90}{30} < \frac{100}{30}$

11 لدينا : $\frac{11}{2} = \frac{11 \times 8}{2 \times 8} = \frac{88}{16} : 1 = \frac{16}{16} : \frac{6}{4} = \frac{6 \times 4}{4 \times 4} = \frac{24}{16} : \frac{3}{16} : \frac{7}{4} = \frac{7 \times 4}{4 \times 4} = \frac{28}{16}$

بما أن : $\frac{3}{16} < 1 < \frac{6}{4} < \frac{7}{4} < \frac{11}{2}$ فإن : $\frac{3}{16} < \frac{16}{16} < \frac{24}{16} < \frac{28}{16} < \frac{88}{16}$

12 لدينا : $\frac{1}{4} = \frac{1 \times 6}{4 \times 6} = \frac{6}{24} : \frac{9}{8} = \frac{9 \times 3}{8 \times 3} = \frac{27}{24} : \frac{9}{2} = \frac{9 \times 12}{2 \times 12} = \frac{108}{24} : \frac{9}{24} : 2 = \frac{48}{24}$

بما أن : $\frac{1}{4} < \frac{9}{24} < \frac{9}{8} < 2 < \frac{9}{2}$ فإن : $\frac{6}{24} < \frac{9}{24} < \frac{27}{24} < \frac{48}{24} < \frac{108}{24}$

13 لدينا : $2 = \frac{32}{16} : \frac{5}{8} = \frac{5 \times 2}{8 \times 2} = \frac{10}{16} : \frac{11}{16} : \frac{9}{2} = \frac{9 \times 8}{2 \times 8} = \frac{72}{16} : \frac{1}{8} = \frac{1 \times 2}{8 \times 2} = \frac{2}{16}$

بما أن : $\frac{1}{8} < \frac{5}{8} < \frac{11}{16} < 2 < \frac{9}{2}$ فإن : $\frac{2}{16} < \frac{10}{16} < \frac{11}{16} < \frac{32}{16} < \frac{72}{16}$

14 لدينا : $3 = \frac{48}{16} : \frac{9}{2} = \frac{9 \times 8}{2 \times 8} = \frac{72}{16} : \frac{6}{8} = \frac{6 \times 2}{8 \times 2} = \frac{12}{16} : \frac{9}{4} = \frac{9 \times 4}{4 \times 4} = \frac{36}{16} : \frac{2}{16}$

بما أن : $\frac{2}{16} < \frac{6}{8} < \frac{9}{4} < 3 < \frac{9}{2}$ فإن : $\frac{2}{16} < \frac{12}{16} < \frac{36}{16} < \frac{48}{16} < \frac{72}{16}$

15 لدينا : $\frac{1}{6} = \frac{1 \times 2}{6 \times 2} = \frac{2}{12} : 3 = \frac{36}{12} : \frac{11}{6} = \frac{11 \times 2}{6 \times 2} = \frac{22}{12} : \frac{9}{12} : \frac{5}{4} = \frac{5 \times 3}{4 \times 3} = \frac{15}{12}$

بما أن : $\frac{1}{6} < \frac{9}{12} < \frac{5}{4} < \frac{11}{6} < 3$ فإن : $\frac{2}{12} < \frac{9}{12} < \frac{15}{12} < \frac{22}{12} < \frac{36}{12}$

16 لدينا : $\frac{11}{2} = \frac{11 \times 9}{2 \times 9} = \frac{99}{18} : 3 = \frac{54}{18} : \frac{3}{18} : \frac{11}{3} = \frac{11 \times 6}{3 \times 6} = \frac{66}{18} : \frac{2}{9} = \frac{2 \times 2}{9 \times 2} = \frac{4}{18}$

بما أن : $\frac{3}{18} < \frac{2}{9} < 3 < \frac{11}{3} < \frac{11}{2}$ فإن : $\frac{3}{18} < \frac{4}{18} < \frac{54}{18} < \frac{66}{18} < \frac{99}{18}$

17 لدينا : $\frac{2}{4} = \frac{2 \times 3}{4 \times 3} = \frac{6}{12} : \frac{9}{2} = \frac{9 \times 6}{2 \times 6} = \frac{54}{12} : \frac{10}{12} : 1 = \frac{12}{12} : \frac{10}{3} = \frac{10 \times 4}{3 \times 4} = \frac{40}{12}$

بما أن : $\frac{2}{4} < \frac{10}{12} < 1 < \frac{10}{3} < \frac{9}{2}$ فإن : $\frac{6}{12} < \frac{10}{12} < \frac{12}{12} < \frac{40}{12} < \frac{54}{12}$

18 لدينا : $\frac{2}{4} = \frac{2 \times 6}{4 \times 6} = \frac{12}{24} : \frac{8}{3} = \frac{8 \times 8}{3 \times 8} = \frac{64}{24} : \frac{3}{24} : \frac{5}{2} = \frac{5 \times 12}{2 \times 12} = \frac{60}{24} : 1 = \frac{24}{24}$

بما أن : $\frac{3}{24} < \frac{2}{4} < 1 < \frac{5}{2} < \frac{8}{3}$ فإن : $\frac{3}{24} < \frac{12}{24} < \frac{24}{24} < \frac{60}{24} < \frac{64}{24}$

$$\textcircled{19} \text{ لدينا : } \frac{11}{3} = \frac{11 \times 6}{3 \times 6} = \frac{66}{18} \quad ; \quad \frac{3}{2} = \frac{3 \times 9}{2 \times 9} = \frac{27}{18} \quad ; \quad \frac{11}{18} \quad ; \quad 2 = \frac{36}{18} \quad ; \quad \frac{5}{9} = \frac{5 \times 2}{9 \times 2} = \frac{10}{18}$$

$$\text{بما أن : } \frac{5}{9} < \frac{11}{18} < \frac{3}{2} < 2 < \frac{11}{3} \quad ; \quad \text{فإن} \quad \frac{10}{18} < \frac{11}{18} < \frac{27}{18} < \frac{36}{18} < \frac{66}{18}$$

$$\textcircled{20} \text{ لدينا : } \frac{10}{9} = \frac{10 \times 2}{9 \times 2} = \frac{20}{18} \quad ; \quad \frac{8}{18} \quad ; \quad \frac{10}{6} = \frac{10 \times 3}{6 \times 3} = \frac{30}{18} \quad ; \quad \frac{5}{6} = \frac{5 \times 3}{6 \times 3} = \frac{15}{18} \quad ; \quad 3 = \frac{54}{18}$$

$$\text{بما أن : } \frac{8}{18} < \frac{5}{6} < \frac{10}{9} < \frac{10}{6} < 3 \quad ; \quad \text{فإن} \quad \frac{8}{18} < \frac{15}{18} < \frac{20}{18} < \frac{30}{18} < \frac{54}{18}$$

$$\textcircled{21} \text{ لدينا : } \frac{7}{30} \quad ; \quad 2 = \frac{60}{30} \quad ; \quad \frac{10}{6} = \frac{10 \times 5}{6 \times 5} = \frac{50}{30} \quad ; \quad \frac{11}{2} = \frac{11 \times 15}{2 \times 15} = \frac{165}{30} \quad ; \quad \frac{2}{6} = \frac{2 \times 5}{6 \times 5} = \frac{10}{30}$$

$$\text{بما أن : } \frac{7}{30} < \frac{2}{6} < \frac{10}{6} < 2 < \frac{11}{2} \quad ; \quad \text{فإن} \quad \frac{7}{30} < \frac{10}{30} < \frac{50}{30} < \frac{60}{30} < \frac{165}{30}$$

$$\textcircled{22} \text{ لدينا : } \frac{2}{18} \quad ; \quad 1 = \frac{18}{18} \quad ; \quad \frac{10}{3} = \frac{10 \times 6}{3 \times 6} = \frac{60}{18} \quad ; \quad \frac{11}{3} = \frac{11 \times 6}{3 \times 6} = \frac{66}{18} \quad ; \quad \frac{4}{9} = \frac{4 \times 2}{9 \times 2} = \frac{8}{18}$$

$$\text{بما أن : } \frac{2}{18} < \frac{4}{9} < 1 < \frac{10}{3} < \frac{11}{3} \quad ; \quad \text{فإن} \quad \frac{2}{18} < \frac{8}{18} < \frac{18}{18} < \frac{60}{18} < \frac{66}{18}$$

$$\textcircled{23} \text{ لدينا : } \frac{1}{20} \quad ; \quad \frac{2}{10} = \frac{2 \times 2}{10 \times 2} = \frac{4}{20} \quad ; \quad \frac{6}{5} = \frac{6 \times 4}{5 \times 4} = \frac{24}{20} \quad ; \quad \frac{5}{2} = \frac{5 \times 10}{2 \times 10} = \frac{50}{20} \quad ; \quad 2 = \frac{40}{20}$$

$$\text{بما أن : } \frac{1}{20} < \frac{2}{10} < \frac{6}{5} < 2 < \frac{5}{2} \quad ; \quad \text{فإن} \quad \frac{1}{20} < \frac{4}{20} < \frac{24}{20} < \frac{40}{20} < \frac{50}{20}$$

$$\textcircled{24} \text{ لدينا : } \frac{1}{4} = \frac{1 \times 6}{4 \times 6} = \frac{6}{24} \quad ; \quad \frac{9}{2} = \frac{9 \times 12}{2 \times 12} = \frac{108}{24} \quad ; \quad \frac{10}{4} = \frac{10 \times 6}{4 \times 6} = \frac{60}{24} \quad ; \quad 2 = \frac{48}{24} \quad ; \quad \frac{9}{24}$$

$$\text{بما أن : } \frac{1}{4} < \frac{9}{24} < 2 < \frac{10}{4} < \frac{9}{2} \quad ; \quad \text{فإن} \quad \frac{6}{24} < \frac{9}{24} < \frac{48}{24} < \frac{60}{24} < \frac{108}{24}$$

$$\textcircled{25} \text{ لدينا : } \frac{10}{24} \quad ; \quad \frac{6}{4} = \frac{6 \times 6}{4 \times 6} = \frac{36}{24} \quad ; \quad \frac{1}{8} = \frac{1 \times 3}{8 \times 3} = \frac{3}{24} \quad ; \quad \frac{7}{3} = \frac{7 \times 8}{3 \times 8} = \frac{56}{24} \quad ; \quad 2 = \frac{48}{24}$$

$$\text{بما أن : } \frac{1}{8} < \frac{10}{24} < \frac{6}{4} < 2 < \frac{7}{3} \quad ; \quad \text{فإن} \quad \frac{3}{24} < \frac{10}{24} < \frac{36}{24} < \frac{48}{24} < \frac{56}{24}$$

$$\textcircled{26} \text{ لدينا : } 3 = \frac{90}{30} \quad ; \quad \frac{7}{3} = \frac{7 \times 10}{3 \times 10} = \frac{70}{30} \quad ; \quad \frac{6}{30} \quad ; \quad \frac{4}{5} = \frac{4 \times 6}{5 \times 6} = \frac{24}{30} \quad ; \quad \frac{2}{3} = \frac{2 \times 10}{3 \times 10} = \frac{20}{30}$$

$$\text{بما أن : } \frac{6}{30} < \frac{2}{3} < \frac{4}{5} < \frac{7}{3} < 3 \quad ; \quad \text{فإن} \quad \frac{6}{30} < \frac{20}{30} < \frac{24}{30} < \frac{70}{30} < \frac{90}{30}$$

حل التمرين 5:

$$\textcircled{1} \quad \frac{81}{81} - \frac{5}{9} = \frac{81}{81} - \frac{5 \times 9}{9 \times 9} = \frac{81}{81} - \frac{45}{81} = \frac{81 - 45}{81} = \frac{36}{81} = \frac{36 \div 9}{81 \div 9} = \frac{4}{9}$$

$$2 \quad \frac{8}{2} + \frac{7}{10} = \frac{8 \times 5}{2 \times 5} + \frac{7}{10} = \frac{40}{10} + \frac{7}{10} = \frac{40+7}{10} = \frac{47}{10}$$

$$3 \quad \frac{1}{55} + \frac{9}{5} = \frac{1}{55} + \frac{9 \times 11}{5 \times 11} = \frac{1}{55} + \frac{99}{55} = \frac{1+99}{55} = \frac{100}{55} = \frac{100 \div 5}{55 \div 5} = \frac{20}{11}$$

$$4 \quad \frac{8}{7} - \frac{53}{49} = \frac{8 \times 7}{7 \times 7} - \frac{53}{49} = \frac{56}{49} - \frac{53}{49} = \frac{56-53}{49} = \frac{3}{49}$$

$$5 \quad \frac{2}{9} + \frac{18}{45} = \frac{2 \times 5}{9 \times 5} + \frac{18}{45} = \frac{10}{45} + \frac{18}{45} = \frac{10+18}{45} = \frac{28}{45}$$

$$6 \quad \frac{19}{42} - \frac{2}{6} = \frac{19}{42} - \frac{2 \times 7}{6 \times 7} = \frac{19}{42} - \frac{14}{42} = \frac{19-14}{42} = \frac{5}{42}$$

$$7 \quad \frac{7}{2} + \frac{13}{18} = \frac{7 \times 9}{2 \times 9} + \frac{13}{18} = \frac{63}{18} + \frac{13}{18} = \frac{63+13}{18} = \frac{76}{18} = \frac{76 \div 2}{18 \div 2} = \frac{38}{9}$$

$$8 \quad \frac{36}{36} - \frac{5}{9} = \frac{36}{36} - \frac{5 \times 4}{9 \times 4} = \frac{36}{36} - \frac{20}{36} = \frac{36-20}{36} = \frac{16}{36} = \frac{16 \div 4}{36 \div 4} = \frac{4}{9}$$

$$9 \quad \frac{89}{88} - \frac{7}{8} = \frac{89}{88} - \frac{7 \times 11}{8 \times 11} = \frac{89}{88} - \frac{77}{88} = \frac{89-77}{88} = \frac{12}{88} = \frac{12 \div 4}{88 \div 4} = \frac{3}{22}$$

$$10 \quad \frac{7}{9} + \frac{3}{36} = \frac{7 \times 4}{9 \times 4} + \frac{3}{36} = \frac{28}{36} + \frac{3}{36} = \frac{28+3}{36} = \frac{31}{36}$$

$$11 \quad \frac{4}{12} - \frac{1}{6} = \frac{4}{12} - \frac{1 \times 2}{6 \times 2} = \frac{4}{12} - \frac{2}{12} = \frac{4-2}{12} = \frac{2}{12} = \frac{2 \div 2}{12 \div 2} = \frac{1}{6}$$

$$12 \quad \frac{3}{9} + \frac{5}{63} = \frac{3 \times 7}{9 \times 7} + \frac{5}{63} = \frac{21}{63} + \frac{5}{63} = \frac{21+5}{63} = \frac{26}{63}$$

$$13 \quad \frac{9}{15} + \frac{7}{3} = \frac{9}{15} + \frac{7 \times 5}{3 \times 5} = \frac{9}{15} + \frac{35}{15} = \frac{9+35}{15} = \frac{44}{15}$$

$$14 \quad \frac{8}{5} - \frac{21}{25} = \frac{8 \times 5}{5 \times 5} - \frac{21}{25} = \frac{40}{25} - \frac{21}{25} = \frac{40-21}{25} = \frac{19}{25}$$

$$15 \quad \frac{7}{4} + \frac{17}{32} = \frac{7 \times 8}{4 \times 8} + \frac{17}{32} = \frac{56}{32} + \frac{17}{32} = \frac{56+17}{32} = \frac{73}{32}$$

$$16 \quad \frac{56}{28} - \frac{8}{4} = \frac{56}{28} - \frac{8 \times 7}{4 \times 7} = \frac{56}{28} - \frac{56}{28} = \frac{56-56}{28} = \frac{0}{28} = 0$$

$$17 \quad \frac{9}{4} + \frac{13}{24} = \frac{9 \times 6}{4 \times 6} + \frac{13}{24} = \frac{54}{24} + \frac{13}{24} = \frac{54+13}{24} = \frac{67}{24}$$

$$18 \quad \frac{7}{4} - \frac{49}{40} = \frac{7 \times 10}{4 \times 10} - \frac{49}{40} = \frac{70}{40} - \frac{49}{40} = \frac{70-49}{40} = \frac{21}{40}$$

$$19 \quad \frac{53}{36} - \frac{7}{6} = \frac{53}{36} - \frac{7 \times 6}{6 \times 6} = \frac{53}{36} - \frac{42}{36} = \frac{53-42}{36} = \frac{11}{36}$$

$$20 \quad \frac{11}{48} + \frac{9}{6} = \frac{11}{48} + \frac{9 \times 8}{6 \times 8} = \frac{11}{48} + \frac{72}{48} = \frac{11+72}{48} = \frac{83}{48}$$

$$21 \quad \frac{18}{36} + \frac{3}{9} = \frac{18}{36} + \frac{3 \times 4}{9 \times 4} = \frac{18}{36} + \frac{12}{36} = \frac{18+12}{36} = \frac{30}{36} = \frac{30 \div 6}{36 \div 6} = \frac{5}{6}$$

$$22 \quad \frac{9}{7} - \frac{43}{63} = \frac{9 \times 9}{7 \times 9} - \frac{43}{63} = \frac{81}{63} - \frac{43}{63} = \frac{81-43}{63} = \frac{38}{63}$$

$$23 \quad \frac{9}{5} - \frac{24}{25} = \frac{9 \times 5}{5 \times 5} - \frac{24}{25} = \frac{45}{25} - \frac{24}{25} = \frac{45 - 24}{25} = \frac{21}{25}$$

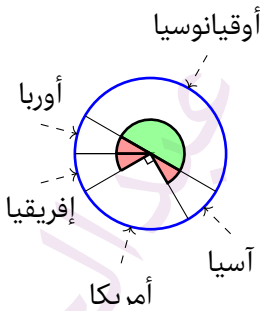
$$24 \quad \frac{6}{99} + \frac{8}{9} = \frac{6}{99} + \frac{8 \times 11}{9 \times 11} = \frac{6}{99} + \frac{88}{99} = \frac{6 + 88}{99} = \frac{94}{99}$$

$$25 \quad \frac{15}{16} - \frac{1}{4} = \frac{15}{16} - \frac{1 \times 4}{4 \times 4} = \frac{15}{16} - \frac{4}{16} = \frac{15 - 4}{16} = \frac{11}{16}$$

$$26 \quad \frac{14}{18} + \frac{4}{6} = \frac{14}{18} + \frac{4 \times 3}{6 \times 3} = \frac{14}{18} + \frac{12}{18} = \frac{14 + 12}{18} = \frac{26}{18} = \frac{26 \div 2}{18 \div 2} = \frac{13}{9}$$

حل التمرين 6:

1. قياس الزاوية الحمراء هو $(360 - 180 - 90) \div 3 = 30^\circ$.



$$\frac{30}{360} = \frac{30 \div 30}{360 \div 30} = \frac{1}{12}$$

$$\frac{90}{360} = \frac{90 \div 90}{360 \div 90} = \frac{1}{4}$$

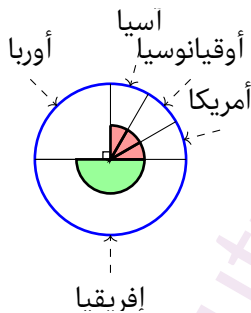
إذن الكسر الذي يمثل عدد الرحلات نحو إفريقيا هو $\frac{1}{12}$.

ب. الزاوية البيضاء قائمة إذن الكسر الذي يمثل عدد الرحلات نحو أمريكا هو $\frac{1}{4}$.

ج. الكسر الذي يمثل عدد الرحلات نحو آسيا هو $\frac{1}{12}$ (نفس الكسر مع إفريقيا) و بالتالي عدد الرحلات نحو آسيا هو 19 رحلة.

$$\frac{1}{12} \times 228 = \frac{1 \times 228}{12} = \frac{228}{12} = 19$$

2. قياس الزاوية الخضراء هو 180° .



$$\frac{180}{360} = \frac{180 \div 180}{360 \div 180} = \frac{1}{2}$$

$$\frac{30}{360} = \frac{30 \div 30}{360 \div 30} = \frac{1}{12}$$

إذن الكسر الذي يمثل عدد الرحلات نحو إفريقيا هو $\frac{1}{2}$.

ب. قياس الزاوية الحمراء هو $(360 - 180 - 90) \div 3 = 30^\circ$.

إذن الكسر الذي يمثل عدد الرحلات نحو أمريكا هو $\frac{1}{12}$.

ج. الكسر الذي يمثل عدد الرحلات نحو أوقيانوسيا هو $\frac{1}{12}$ (نفس الكسر مع أمريكا) و بالتالي عدد الرحلات نحو آسيا هو 21 رحلة.

$$\frac{1}{12} \times 252 = \frac{1 \times 252}{12} = \frac{252}{12} = 21$$