# تمارين درس الكسور والعمليات عليها

# -الجزء السادس-

## 2) الكسور:

### 2.7. ضرب عدد في كسر:

**التمرين 1:**

أحسب ما يلي بأبسط طريقة ممكنة:

| | | | |
|---|---|---|---|
| $\frac{3}{7}\times 14$ | $\frac{45}{50}\times 5$ | $\frac{15}{8}\times 11$ | $\frac{12}{40}\times 7$ |
| $\frac{11}{9}\times 3$ | $\frac{12}{27}\times 9$ | $\frac{24}{21}\times 10$ | $\frac{44}{36}\times 6$ |

(الحل)

**التمرين 2:**

أحسب ما يلي بأبسط طريقة ممكنة:

| | | | |
|---|---|---|---|
| $12\times\frac{4}{3}$ | $255\times\frac{7}{51}$ | $60\times\frac{9}{8}$ | $32\times\frac{1}{4}$ |
| $63\times\frac{2}{7}$ | $55\times\frac{3}{8}$ | $14\times\frac{7}{2}$ | $45\times\frac{3}{5}$ |

(الحل)

### 2.8. العمليات على الكسور:

**التمرين 1:**

أحسب ما يلي، مع إعطاء النتيجة على شكل كسر مبسّط إلى أبعد حد ممكن:

| | | |
|---|---|---|
| $\frac{13}{2}-\frac{4}{2}\times\frac{7}{3}$ | $\frac{15}{3}+\frac{4}{3}\times\frac{7}{3}$ | $\frac{13}{4}\times\frac{7}{5}+\frac{4}{5}$ |
| $\frac{1}{2}\times\frac{3}{8}+\frac{7}{32}$ | $\frac{7}{16}+\frac{7}{2}\times\frac{3}{4}$ | |

(الحل)

## التمرين 2:

أحسب ما يلي، مع إعطاء النتيجة على شكل كسر مبسّط إلى أبعد حد ممكن:

| | | | |
|---|---|---|---|
| $\frac{11}{4}\times\frac{5}{9}-1$ | $\frac{15-2}{3\times7}\times\frac{15}{7}$ | $\left(\frac{8}{11}\times\frac{7}{4}+6\right)\frac{5}{8}$ | $\left(\frac{19}{3}-\frac{8}{9}\right)\frac{11}{6}$ |

(الحل)

## التمرين 3:

أحسب ما يلي، مع إعطاء النتيجة على شكل كسر مبسّط إلى أبعد حد ممكن:

| | | |
|---|---|---|
| $\left(\frac{5}{3}-\frac{1}{3}\right)\frac{2}{3}$ | $\left(\frac{8}{3}-1\right)\frac{2}{7}$ | $\frac{2}{7}\left(\frac{10}{3}-3\right)$ |
| $\left(\frac{4}{3}-1\right)\left(\frac{3}{8}+1\right)$ | $\left(\frac{10}{3}-1\right)\left(\frac{4}{3}-1\right)\left(\frac{3}{8}+1\right)$ | $\frac{2+3\times6}{9+3\times7}$ |

(الحل)

## التمرين 4:

أحسب ما يلي، مع إعطاء النتيجة على شكل كسر مبسّط إلى أبعد حد ممكن:

| | | |
|---|---|---|
| $\frac{100-5\times4}{50-3\times6}$ | $\frac{5(10-7)+1}{6(13-10)-2}$ | $\frac{2+8}{2+10}$ |
| $3\times\frac{7}{21}+\frac{5}{3}-\frac{2}{7}$ | $6\times\frac{2+7\times3}{20-4\times2}$ | $20\times\frac{4+8\times3}{10-3\times2}$ |

(الحل)

## التمرين 5:

أحسب ما يلي، مع إعطاء النتيجة على شكل كسر مبسط إلى أبعد حد ممكن:

| | | |
|---|---|---|
| $\frac{2}{3}\left(\frac{8}{3}-1\right)$ | $\frac{5}{9}\left(\frac{3}{5}+\frac{2}{15}\right)$ | $\frac{2}{5}+\frac{3}{5}\times\frac{15}{9}$ |
| $\frac{3}{7}\times\frac{14}{9}+1$ | $\left(\frac{8}{5}+\frac{9}{10}\right)\left(\frac{3}{4}-\frac{7}{20}\right)$ | |

(الحل)

# حلول تمارين درس الكسور والعمليات عليها
# -الجزء السادس-

## 2) الكسور:

### 2.7. ضرب عدد في كسر:

**حل التمرين 1:**

| | |
|---|---|
| $\frac{3}{7}\times 14 = 3\times\frac{14}{7} = 3\times 2 = 6$ | $\frac{45}{50}\times 5 = \frac{9\times\cancel{5}}{10\times\cancel{5}}\times 5 = \frac{9\times 5}{10} = \frac{9\times\cancel{5}}{2\times\cancel{5}} = \frac{9}{2}$ |
| $\frac{15}{8}\times 11 = \frac{15\times 11}{8} = \frac{165}{8}$ | $\frac{12}{40}\times 7 = \frac{3\times\cancel{4}}{10\times\cancel{4}}\times 7 = \frac{3\times 7}{10} = \frac{21}{10}$ |
| $\frac{11}{9}\times 3 = \frac{11\times 3}{9} = \frac{11\times\cancel{3}}{3\times\cancel{3}} = \frac{11}{3}$ | $\frac{12}{27}\times 9 = \frac{4\times\cancel{3}}{9\times\cancel{3}}\times 9 = \frac{4\times\cancel{9}}{\cancel{9}} = 4$ |
| $\frac{24}{21}\times 10 = \frac{8\times\cancel{3}}{7\times\cancel{3}}\times 10 = \frac{8\times 10}{7} = \frac{80}{7}$ | |
| $\frac{44}{36}\times 6 = \frac{11\times\cancel{4}}{9\times\cancel{4}}\times 6 = \frac{11\times 6}{9} = \frac{11\times 2\times\cancel{3}}{3\times\cancel{3}} = \frac{22}{3}$ | |

(التمرين)

**حل التمرين 2:**

| | |
|---|---|
| $12\times\frac{4}{3} = \frac{12}{3}\times 4 = 4\times 4 = 16$ | $255\times\frac{7}{51} = \frac{255}{51}\times 7 = 5\times 7 = 35$ |
| $60\times\frac{9}{8} = \frac{60}{8}\times 9 = \frac{15\times\cancel{4}}{2\times\cancel{4}}\times 9 = \frac{15\times 9}{2} = \frac{135}{2}$ | $32\times\frac{1}{4} = \frac{32}{4}\times 1 = 8\times 1 = 8$ |
| $63\times\frac{2}{7} = \frac{63}{7}\times 2 = 9\times 2 = 18$ | $55\times\frac{3}{8} = \frac{55\times 3}{8} = \frac{165}{8}$ |
| $14\times\frac{7}{2} = \frac{14}{2}\times 2 = 7\times 7 = 49$ | $45\times\frac{3}{5} = \frac{45}{5}\times 3 = 9\times 3 = 27$ |

(التمرين)

## 2.8. العمليات على الكسور:

### حل التمرين 1:

| |
|---|
| $\frac{13}{2}-\frac{4}{2}\times\frac{7}{3}=\frac{13}{2}-\frac{28}{6}=\frac{13\times3}{2\times3}-\frac{28}{6}=\frac{39-28}{6}=\frac{11}{6}$ |
| $\frac{15}{3}+\frac{4}{3}\times\frac{7}{3}=\frac{15}{3}+\frac{4\times7}{3\times3}=\frac{15}{3}+\frac{21}{9}=\frac{15\times3}{3\times3}+\frac{21}{9}=\frac{45+21}{9}=\frac{73}{9}$ |
| $\frac{13}{4}\times\frac{7}{5}+\frac{4}{5}=\frac{13\times7}{4\times5}+\frac{4}{5}=\frac{91}{20}+\frac{4}{5}=\frac{91}{20}+\frac{4\times4}{5\times4}=\frac{91+16}{20}=\frac{107}{20}$ |
| $\frac{1}{2}\times\frac{3}{8}+\frac{7}{32}=\frac{1\times3}{2\times8}+\frac{7}{32}=\frac{3}{16}+\frac{7}{32}=\frac{3\times2}{16\times2}+\frac{7}{32}=\frac{6+7}{32}=\frac{13}{32}$ |
| $\frac{7}{16}+\frac{7}{2}\times\frac{3}{4}=\frac{7}{16}+\frac{7\times3}{2\times4}=\frac{7}{16}+\frac{21}{8}=\frac{7}{16}+\frac{21\times2}{8\times2}=\frac{7+42}{16}=\frac{49}{16}$ |

(التمرين)

### حل التمرين 2:

| |
|---|
| $\frac{11}{4}\times\frac{5}{9}-1=\frac{11\times5}{4\times9}-1=\frac{55}{36}-1=\frac{55}{36}-\frac{36}{36}=\frac{19}{36}$ |
| $\frac{15-2}{3\times7}\times\frac{15}{7}=\frac{13}{3\times7}\times\frac{15}{7}=\frac{13\times\cancel{3}\times5}{\cancel{3}\times7\times7}=\frac{65}{49}$ |
| $\left(\frac{8}{11}\times\frac{7}{\cancel{4}}+6\right)\frac{5}{8}=\left(\frac{2\times\cancel{4}\times7}{11\times\cancel{4}}+6\right)\frac{5}{8}=\left(\frac{14}{11}+\frac{66}{11}\right)\frac{5}{8}=\frac{80}{11}\times\frac{5}{8}=\frac{10\times\cancel{8}\times5}{11\times\cancel{8}}=\frac{50}{11}$ |
| $\left(\frac{19}{3}-\frac{8}{9}\right)\frac{11}{6}=\left(\frac{19\times3}{3\times3}-\frac{8}{9}\right)\frac{11}{6}=\left(\frac{57}{9}-\frac{8}{9}\right)\frac{11}{6}=\frac{49}{9}\times\frac{11}{6}=\frac{539}{54}$ |

(التمرين)

## حل التمرين 3:

| |
|---|
| $\left(\frac{5}{3}-\frac{1}{3}\right)\frac{2}{3}=\frac{4}{3}\times\frac{2}{3}=\frac{4\times2}{3\times3}=\frac{8}{9}$ |
| $\left(\frac{8}{3}-1\right)\frac{2}{7}=\left(\frac{8}{3}-\frac{3}{3}\right)\frac{2}{7}=\frac{5}{3}\times\frac{2}{7}=\frac{5\times2}{3\times7}=\frac{10}{21}$ |
| $\frac{2}{7}\left(\frac{10}{3}-3\right)=\frac{2}{7}\left(\frac{10}{3}-\frac{9}{3}\right)=\frac{2}{7}\times\frac{1}{3}=\frac{2\times1}{7\times3}=\frac{2}{21}$ |
| $\left(\frac{4}{3}-1\right)\left(\frac{3}{8}+1\right)=\left(\frac{4}{3}-\frac{3}{3}\right)\left(\frac{3}{8}+\frac{8}{8}\right)=\frac{1}{3}\times\frac{11}{8}=\frac{1\times11}{3\times8}=\frac{11}{24}$ |
| $\left(\frac{10}{3}-1\right)\left(\frac{4}{3}-1\right)\left(\frac{3}{8}+1\right)=\left(\frac{10}{3}-\frac{3}{3}\right)\left(\frac{4}{3}-\frac{3}{3}\right)\left(\frac{3}{8}+\frac{8}{8}\right)=\frac{7}{3}\times\frac{1}{3}\times\frac{11}{8}=\frac{77}{72}$ |
| $\frac{2+3\times6}{9+3\times7}=\frac{2+18}{9+21}=\frac{20}{30}=\frac{2\times\cancel{10}}{3\times\cancel{10}}=\frac{2}{3}$ |

(التمرين)

## حل التمرين 4:

| |
|---|
| $\frac{100-5\times4}{50-3\times6}=\frac{100-20}{50-18}=\frac{80}{32}=\frac{5\times\cancel{16}}{2\times\cancel{16}}=\frac{5}{2}$ |
| $\frac{5(10-7)+1}{6(13-10)-2}=\frac{5\times3+1}{6\times3-2}=\frac{15+1}{18-2}=\frac{16}{16}=1$ |
| $\frac{2+8}{2+10}=\frac{10}{12}=\frac{5\times\cancel{2}}{6\times\cancel{2}}=\frac{5}{6}$ |
| $3\times\frac{7}{21}+\frac{5}{3}-\frac{2}{7}=\frac{3\times7}{21}+\frac{5\times7}{3\times7}-\frac{2\times3}{7\times3}=\frac{21+35-6}{21}=\frac{50}{21}$ |
| $6\times\frac{2+7\times3}{20-4\times2}=6\times\frac{2+21}{20-8}=6\times\frac{23}{12}=\frac{6}{12}\times23=\frac{1\times\cancel{6}}{2\times\cancel{6}}\times23=\frac{23}{2}$ |
| $20\times\frac{4+8\times3}{10-3\times2}=20\times\frac{4+24}{10-6}=20\times\frac{28}{4}=\frac{20}{4}\times28=5\times28=140$ |

(التمرين)

## حل التمرين 5:

$$\frac{2}{3}\left(\frac{8}{3}-1\right)=\frac{2}{3}\left(\frac{8}{3}-\frac{3}{3}\right)=\frac{2}{3}\left(\frac{8-3}{3}\right)=\frac{2}{3}\times\frac{5}{3}=\frac{10}{9}$$

$$\frac{5}{9}\left(\frac{3}{5}+\frac{2}{15}\right)=\frac{5}{9}\left(\frac{3\times3}{5\times3}+\frac{2}{15}\right)=\frac{5}{9}\left(\frac{9+2}{15}\right)=\frac{5}{9}\times\frac{11}{15}=\frac{\cancel{5}\times11}{9\times3\times\cancel{5}}=\frac{11}{27}$$

$$\frac{2}{5}+\frac{3}{5}\times\frac{15}{9}=\frac{2}{5}+\frac{3\times15}{5\times9}=\frac{2}{5}+\frac{3\times\cancel{3}\times\cancel{5}}{\cancel{5}\times3\times\cancel{3}}=\frac{2}{5}+\frac{3}{3}=\frac{2}{5}+1=\frac{2}{5}+\frac{5}{5}=\frac{2+5}{5}=\frac{7}{5}$$

$$\frac{3}{7}\times\frac{14}{9}+1=\frac{3\times14}{7\times9}+1=\frac{\cancel{3}\times2\times\cancel{7}}{\cancel{7}\times3\times\cancel{3}}+1=\frac{2}{3}+1=\frac{2}{3}+\frac{3}{3}=\frac{2+3}{3}=\frac{5}{3}$$

$$\left(\frac{8}{5}+\frac{9}{10}\right)\left(\frac{3}{4}-\frac{7}{20}\right)=\left(\frac{8\times2}{5\times2}+\frac{9}{10}\right)\left(\frac{3\times5}{4\times5}-\frac{7}{20}\right)=\left(\frac{16+9}{10}\right)\left(\frac{15-7}{20}\right)$$

$$=\frac{25}{10}\times\frac{8}{20}=\frac{25\times8}{10\times20}=\frac{\cancel{5}\times\cancel{5}\times2\times\cancel{4}}{\cancel{2}\times\cancel{5}\times\cancel{4}\times\cancel{5}}=1$$

(التمرين)