

الدرس الرابع

سلسلة تمارين رقم 2: الضرب في مجموعة الأعداد الكسرية النسبية

تمرين رقم 1:

أحسب الجذاءات التالية

(1)

$$A = \frac{4}{5} \times \frac{7}{8} \quad B =$$

$$\frac{18}{39} \times \frac{13}{9} \quad C = \frac{2}{3} + \frac{5}{12}$$

(2)

$A = \frac{3}{5} \times \frac{10}{6}$	$B = \frac{12}{7} \times \frac{14}{9}$	$C = \frac{9}{4} \times \frac{4}{9}$
$D = \frac{8}{3} \times \frac{102}{1050}$	$E = \frac{7}{9} \times \frac{27}{35} \times \frac{25}{6}$	$F = \frac{3}{4} \times \frac{88}{15} \times 5$

تمرين رقم 2:

غير النقاط بالأعداد الصحيحة النسبية

$$A = \frac{4}{17} \times \frac{\dots}{\dots} = \frac{4}{51} \quad B = \frac{2}{9} \times \frac{\dots}{\dots} = 0$$

$$C = \frac{3}{5} \times \frac{\dots}{\dots} = \frac{3}{5} \quad D = \frac{9}{7} \times \frac{\dots}{\dots} = 1$$

تمرين رقم 3:

أحسب الحالات التالية

$$A = \frac{-9}{7} \quad B = \frac{-9}{7} \quad C = \frac{-28}{-12} \times \frac{-12}{9}$$

$$D = \frac{1 + \frac{2}{3}}{1 - \frac{2}{3}} \quad E = \frac{5 - \frac{1}{2}}{5 + \frac{3}{4}} \quad F = \frac{\frac{1}{3} - \frac{1}{4}}{\frac{1}{4} - \frac{1}{3}}$$

تمرين رقم 4:

احسب

$\frac{-7+1}{4} \times \frac{-8}{4} \times \frac{-8}{3}$	$\frac{5}{14} + \frac{-2}{7} \times \frac{21}{20}$
$\left(\frac{-7+1}{4}\right) \times \frac{-8}{4} \times \frac{-8}{3}$	$\left(\frac{5}{14} + \frac{-2}{7}\right) \times \frac{21}{20}$
$\left(\frac{-7}{4} - \frac{1}{4}\right) \times \frac{-8}{4} \times \frac{-8}{3}$	$\left(\frac{5}{14} - \frac{-2}{7}\right) \times \frac{21}{20}$
$\frac{-7}{4} - \frac{1}{4} \times \frac{-8}{4} \times \frac{-8}{3}$	$\frac{5}{14} - \frac{-2}{7} \times \frac{21}{20}$

تمرين رقم 5

أجد x في كل الحالات التالية :

$$6x = 1$$

$$\frac{-7}{8}x = \frac{7}{24}$$

$$\frac{11}{3}x = 2$$

$$\frac{1}{7}x = -2$$

$$3x = \frac{3}{4}$$

$$\frac{3}{5}x = \frac{2}{7}$$

$$\frac{1}{5}x = -\frac{1}{4}$$

$$\frac{-3}{2}x = -\frac{2}{3}$$

تمرين رقم 6:

احسب الحالات التالية:

(1)

(أ)

$$\frac{6}{4+3} \times \frac{1}{8} + \frac{1}{7-1} \times \frac{3}{8+6}$$

(ب)

$$\frac{1}{2} \times \frac{5}{6} \times \frac{3}{4} - \frac{2}{3} \times \frac{1}{4} \times \frac{3}{4} - \frac{1}{16} \times \frac{5}{3}$$

(2)

(أ)

$$\left(1 - \frac{1}{3}\right) \times \left(1 - \frac{1}{6}\right) \times \left(1 - \frac{1}{12}\right)$$

(ب)

$$1 - \frac{1}{3} \times 1 - \frac{1}{6} \times 1 - \frac{1}{12}$$

تمرين رقم 7:

$$E = \left(\frac{3}{5}x + \frac{1}{15}\right) \times \frac{5}{3} - \frac{1}{9}$$

(1) أحسب E في كل من الحالات التالية:

$$x = \frac{1}{27} \quad x = \frac{1}{9} \quad x = \frac{1}{3}$$

(2) ماذا تلاحظ؟ وضع.

إصلاح سلسلة تمارين رقم 2:

إصلاح تمرين رقم 1:

(1)

$$A = \frac{4 \times 7}{5 \times 2 \times 4}$$

$$B = \frac{2 \times 9 \times 13}{3 \times 13 \times 9}$$

$$C = \frac{2 \times 4}{3 \times 4} + \frac{5}{12}$$

$$A = \frac{7}{5 \times 2}$$

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

$$C = \frac{8}{12} + \frac{5}{12}$$

$$A = \frac{7}{10}$$

$$C = \frac{13}{12}$$

(2)

$$A = \frac{3 \times 2 \times 5}{5 \times 2 \times 3}$$

$$A = 1$$

$$B = \frac{4 \times 3 \times 2 \times 7}{7 \times 3 \times 3}$$

$$B = \frac{8}{3}$$

$$C = \frac{9 \times 4}{4 \times 9}$$

$$C = 1$$

$$D = \frac{8 \times 2 \times 3 \times 17}{3 \times 2 \times 25 \times 7 \times 3}$$

$$D = \frac{136}{525}$$

$$E = \frac{7 \times 9 \times 3 \times 5 \times 5}{9 \times 7 \times 5 \times 2 \times 3}$$

$$E = \frac{5}{2}$$

$$F = \frac{3 \times 4 \times 2 \times 11 \times 5}{4 \times 3 \times 5}$$

$$F = 22$$

إصلاح تمرين رقم 2:

$$A = \frac{4}{17} \times \frac{1}{3} = \frac{4}{51}$$

$$B = \frac{2}{9} \times \frac{0}{5} = 0$$

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

$$D = \frac{9}{7} \times \frac{7}{9} = 1$$

ملاحظة: بالنسبة للعدد الكسرى B توجد له العديد من الإجابات

إصلاح تفرين رقم 3:

$$A = -\frac{9}{7} \times \frac{1}{3}$$

$$B = -9 \times \frac{3}{7}$$

$$C = \frac{28}{27} \times \frac{9}{12}$$

$$A = -\frac{3 \times 3}{7 \times 3}$$

$$B = -\frac{3 \times 9}{7}$$

$$C = \frac{7 \times 4 \times 9}{9 \times 3 \times 4 \times 3}$$

$$A = -\frac{3}{7}$$

$$B = -\frac{27}{7}$$

$$C = \frac{7}{9}$$

$$D = \frac{\frac{3}{3} + \frac{2}{3}}{\frac{3}{3} - \frac{2}{3}}$$

$$E = \frac{\frac{5 \times 2}{1 \times 2} - \frac{1}{2}}{\frac{5 \times 4}{1 \times 4} + \frac{3}{4}}$$

$$F = \frac{\frac{1 \times 4}{3 \times 4} - \frac{1 \times 3}{4 \times 3}}{\frac{1 \times 3}{4 \times 3} - \frac{1 \times 4}{3 \times 4}}$$

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

$$= \frac{\frac{10}{20} - \frac{1}{2}}{\frac{2}{4} + \frac{3}{4}}$$

$$= \frac{\frac{4}{12} - \frac{3}{12}}{\frac{12}{12} - \frac{4}{12}}$$

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

$$= \frac{9}{23}$$

$$= \frac{1}{12}$$

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

$$= \frac{9}{2} \times \frac{4}{23}$$

$$= -\frac{1}{12} \times \frac{12}{1}$$

إصلاح تفرين رقم 4:

A = -29/12	E = 2/35
B = 4	F = 3/40
C = 16/3	G = 27/40
D = -13/12	H = 23/35

إصلاح تمرين رقم 5 :

$$x = \frac{1}{6}$$

$$x = \frac{7}{24} * \frac{-8}{7} = \frac{-1}{3}$$

$$x = 2 * \frac{3}{11} = \frac{6}{11}$$

$$x = -2 * \frac{7}{1} = -14$$

$$x = \frac{1}{3}$$

$$x = \frac{2}{7} * \frac{5}{3} = \frac{10}{21}$$

$$x = -\frac{1}{4} * \frac{5}{1} = \frac{-5}{4}$$

$$x = -\frac{2}{3} * \frac{-2}{3} = 1$$

إصلاح تمرين رقم 6 :

(1)

أ

$$\frac{\frac{6}{4+3} \times \frac{1}{8} + \frac{1}{7-1} \times \frac{3}{8+6}}{\frac{3}{3} + \frac{1}{28}} = \frac{\frac{6}{7} \times \frac{1}{8} + \frac{1}{6} \times \frac{3}{14}}{\frac{4 \times 1}{4 \times 7}} = \frac{\frac{6 \times 1}{7 \times 8} + \frac{1 \times 3}{6 \times 14}}{\frac{4}{28}} = \frac{\frac{2 \times 3}{7 \times 2 \times 4} + \frac{1 \times 3}{2 \times 3 \times 14}}{\frac{3}{7 \times 4} + \frac{1}{2 \times 14}} = \frac{\frac{3}{7 \times 4} + \frac{1}{2 \times 14}}{\frac{3}{28} + \frac{1}{28}} = \frac{\frac{3}{28} + \frac{1}{28}}{\frac{4 \times 1}{4 \times 7}} = \frac{1}{7}$$

ب

$$\frac{1 \times 5 \times 3}{2 \times 6 \times 4} - \frac{2 \times 1 \times 3}{3 \times 4 \times 4} - \frac{1 \times 5}{16 \times 3} = \frac{15}{48} - \frac{6}{48} - \frac{5}{48} = \frac{4}{48} = \frac{4 \times 1}{4 \times 12} = \frac{1}{12}$$

(2)

أ

$$\left(\frac{3}{3} - \frac{1}{3}\right) \times \left(\frac{6}{6} - \frac{1}{6}\right) \times \left(\frac{12}{12} - \frac{1}{12}\right) = \frac{2}{3} \times \frac{5}{6} \times \frac{11}{12} = \frac{2 \times 5 \times 11}{3 \times 6 \times 12} = \frac{2 \times 5 \times 11}{3 \times 2 \times 3 \times 12} = \frac{5 \times 11}{3 \times 3 \times 12} = \frac{55}{108}$$

ب

$$1 - \frac{1}{3} - \frac{1}{6} - \frac{1}{12} = \frac{12}{12} - \frac{1 \times 4}{3 \times 4} - \frac{1 \times 2}{6 \times 2} - \frac{1}{12} = \frac{12}{12} - \frac{4}{12} - \frac{2}{12} - \frac{1}{12} = \frac{5}{12}$$

إصلاح تمرين رقم 7:

(1) إذا $x = \frac{1}{3}$ فإن

$$E = \left(\frac{3}{5} \times \frac{1}{3} + \frac{1}{15} \right) \times \frac{5}{3} - \frac{1}{9}$$

$$E = \left(\frac{3 \times 1}{5 \times 3} + \frac{1}{15} \right) \times \frac{5}{3} - \frac{1}{9}$$

$$E = \left(\frac{3}{15} + \frac{1}{15} \right) \times \frac{5}{3} - \frac{1}{9}$$

$$E = \frac{4}{15} \times \frac{5}{3} - \frac{1}{9}$$

$$E = \frac{4 \times 5}{15 \times 3} - \frac{1}{9}$$

$$E = \frac{4 \times 5}{3 \times 5 \times 3} - \frac{1}{9}$$

$$E = \frac{4}{9} - \frac{1}{9}$$

$$E = \frac{3}{9}$$

$$E = \frac{3 \times 1}{3 \times 3}$$

$$E = \frac{1}{3}$$

إذا $x = \frac{1}{9}$ فإن

$$E = \left(\frac{3}{5} \times \frac{1}{9} + \frac{1}{15} \right) \times \frac{5}{3} - \frac{1}{9}$$

$$E = \left(\frac{3 \times 1}{5 \times 9} + \frac{1 \times 3}{15 \times 3} \right) \times \frac{5}{3} - \frac{1}{9}$$

$$E = \left(\frac{3}{45} + \frac{3}{45} \right) \times \frac{5}{3} - \frac{1}{9}$$

$$E = \frac{6}{45} \times \frac{5}{3} - \frac{1}{9}$$

$$E = \frac{6 \times 5}{2 \times 3 \times 5} - \frac{1}{9}$$

$$E = \frac{9 \times 5 \times 3}{2 \times 5} - \frac{1 \times 5}{9 \times 5}$$

$$E = \frac{10}{45} - \frac{5}{45}$$

$$E = \frac{5}{45}$$

$$E = \frac{1}{9}$$

إذا $x = \frac{1}{27}$ فإن

$$E = \left(\frac{3}{5} \times \frac{1}{27} + \frac{1}{15} \right) \times \frac{5}{3} - \frac{1}{9}$$

$$E = \left(\frac{3 \times 1}{5 \times 9 \times 3} + \frac{1}{15} \right) \times \frac{5}{3} - \frac{1}{9}$$

$$E = \left(\frac{1}{45} + \frac{3}{45} \right) \times \frac{5}{3} - \frac{1}{9}$$

$$E = \frac{4}{45} \times \frac{5}{3} - \frac{1}{9}$$

$$E = \frac{4 \times 5}{5 \times 9 \times 3} - \frac{1 \times 3}{9 \times 3}$$

$$E = \frac{4}{27} - \frac{3}{27}$$

$$E = \frac{1}{27}$$

(2) نلاحظ في الحالات الثلاث أن $E = x$ و نبين ذلك بالحساب :

$$E = \left(\frac{3}{5}x + \frac{1}{15} \right) \times \frac{5}{3} - \frac{1}{9}$$

$$\frac{3}{5}x \times \frac{5}{3} + \frac{1}{15} \times \frac{5}{3} - \frac{1}{9} = \frac{3 \times 5}{5 \times 3}x + \frac{1 \times 5}{15 \times 3} - \frac{1}{9} = x + \frac{1}{9} - \frac{1}{9} = x$$