

## حلول تمارين المراجعة العامة في الجبر

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جمع وطرح أعداد ناطقة:حل التمرين 1:

$-8+12=4$	$13-26=-13$	$-14-19=-33$	$32-47=-15$	$1,25-5,25=-4$
$-7,5-2,5=-10$	$-6,2+1,8=-4,4$	$6,5-13,9=-7,4$	$-(9+15)=-24$	$-(-24-32)=56$

حل التمرين 2:

$\frac{1}{4}-\frac{3}{4}=\frac{1-3}{4}=\frac{-2}{4}=-\frac{1}{2}$	$\frac{3}{2}-\frac{1}{4}=\frac{3\times 2}{2\times 2}-\frac{1}{4}=\frac{6-1}{4}=\frac{5}{4}$
$\frac{1}{2}+\frac{3}{4}=\frac{1\times 3}{2\times 3}+\frac{4\times 2}{3\times 2}=\frac{3+8}{6}=\frac{11}{6}$	$\frac{5}{-2}-\frac{3}{5}=\frac{5\times 5}{-2\times 5}-\frac{3\times 2}{5\times 2}=\frac{-25-6}{10}=-\frac{31}{10}$
$\frac{-5}{-3}+\frac{2}{-7}=\frac{5}{3}-\frac{2}{7}=\frac{5\times 7-2\times 3}{3\times 7}=\frac{35-6}{21}=\frac{29}{21}$	
$-\frac{1}{6}-\frac{5}{-4}=\frac{1}{6}+\frac{5}{4}=\frac{1\times 2}{6\times 2}+\frac{5\times 3}{4\times 3}=\frac{2+15}{12}=\frac{17}{12}$	

ضرب وقسمة أعداد ناطقة:حل التمرين 3:

$7\times(-3)=-21$	$-8\times 6=-48$	$-4\times(-3)=12$	$5\times(-7)=-35$	$-5\times(-9)=45$
$6\times(-9)=-54$	$-11\times 5=-55$	$-12\times 10=-120$	$-9\times 8=-72$	$-7\times(-8)=56$

حل التمرين 4:

$\frac{-2}{5}\times\frac{-3}{-7}=\frac{(-2)\times(-3)}{5\times(-7)}=\frac{6}{-35}=-\frac{6}{35}$	$\frac{7}{-6}\times\frac{3}{-4}=\frac{7\times 1}{(-2)\times(-4)}=\frac{7}{8}$
$\frac{-9}{2}\div\frac{3}{-5}=\frac{-9}{2}\times\frac{-5}{3}=\frac{3\times 5}{2}=\frac{15}{2}$	$\frac{1}{-8}\div\frac{-7}{-21}=\frac{-1}{8}\times\frac{21}{7}=-\frac{1}{8}\times 3=-\frac{3}{8}$
$\frac{-4}{-5}\div\frac{7}{-13}=\frac{4}{5}\times\frac{-13}{7}=-\frac{4\times 13}{5\times 7}=-\frac{52}{35}$	$\frac{15}{-7}\times\frac{-14}{-3}=-\frac{15\times 14}{7\times 3}=-\frac{5\times 2}{1\times 1}=-10$

القوى:

حل التمرين 5:

$\left(\frac{3}{2}\right)^2 = \frac{3^2}{2^2} = \frac{9}{4}$	$\left(\frac{4}{5}\right)^2 = \frac{4^2}{5^2} = \frac{16}{25}$	$\left(\frac{-5}{6}\right)^2 = \frac{(-5)^2}{6^2} = \frac{25}{36}$
$\left(\frac{7}{-8}\right)^2 = \frac{7^2}{(-8)^2} = \frac{49}{64}$	$\left(\frac{-4}{-3}\right)^2 = \frac{(-4)^2}{(-3)^2} = \frac{16}{9}$	$\left(\frac{-9}{8}\right)^2 = \frac{(-9)^2}{8^2} = \frac{81}{64}$

حل التمرين 6:

$\frac{1}{4}\left(\frac{3}{2}\right)^2 = \frac{1}{4} \times \frac{3^2}{2^2} = \frac{1}{4} \times \frac{9}{4} = \frac{9}{16}$	$\frac{-7}{3}\left(\frac{-5}{4}\right)^2 = -\frac{7}{3} \times \frac{5^2}{4^2} = -\frac{7}{3} \times \frac{25}{16} = -\frac{175}{48}$
$\frac{2}{5}\left(\frac{-1}{3}\right)^2 = \frac{2}{5} \times \left(\frac{1}{3}\right)^2 = \frac{2}{5} \times \frac{1^2}{3^2} = \frac{2}{5 \times 9} = \frac{2}{45}$	$\frac{1}{-8}\left(\frac{-5}{-3}\right)^2 = -\frac{1}{8} \times \left(\frac{5}{3}\right)^2 = -\frac{1}{8} \times \frac{5^2}{3^2} = -\frac{25}{72}$
$-\frac{3}{4}\left(\frac{-4}{3}\right)^2 = -\frac{3}{4} \times \frac{4}{3} = -\frac{4}{3}$	$\frac{3}{4}\left(\frac{-4}{3}\right)^2 = \frac{3}{4} \times \frac{4}{3} = \frac{4}{3}$

حل التمرين 7:

$\frac{2}{5} \times \frac{3}{4} - \frac{6}{5} \times \frac{7}{4} = \frac{3-3 \times 7}{5 \times 2} = \frac{3-21}{10} = -\frac{18}{10} = -\frac{9}{5}$
$\left(\frac{3}{2}\right)^2 - \left(\frac{5}{4}\right)^2 = \frac{9}{4} - \frac{25}{16} = \frac{36-25}{16} = \frac{11}{16}$
$5\left(\frac{3}{2}\right)^2 - 3 \times \frac{5}{4} = \frac{5 \times 9}{4} - \frac{3 \times 5}{4} = \frac{45-15}{4} = \frac{30}{4} = \frac{15}{2}$
$\frac{1}{4} \times \left(\frac{3}{2}\right)^2 - \frac{6}{5} \times \left(\frac{5}{4}\right)^2 = \frac{1}{4} \times \frac{9}{4} - \frac{6 \times 5}{5 \times 4^2} = \frac{9-30}{16} = -\frac{21}{16}$

حل التمرين 8:

$10^4 \times 10^7 = 10^{4+7} = 10^{11}$	$\frac{10^4}{10^7} = 10^4 \times 10^{-7} = 10^{4-7} = 10^{-3}$
$(10^4)^7 = 10^{4 \times 7} = 10^{28}$	$10^{-4} \times 10^7 = 10^{-4+7} = 10^3$
$(10^{-4})^7 = 10^{-4 \times 7} = 10^{-28}$	$\frac{10^{-4}}{10^7} = 10^{-4} \times 10^{-7} = 10^{-4-7} = 10^{-11}$
$\frac{10^4}{10^{-7}} = 10^4 \times 10^7 = 10^{4+7} = 10^{11}$	$10^{-4} \times 10^{-7} = 10^{-4-7} = 10^{-11}$
$10^{-7} \times 10^4 = 10^{-7+4} = 10^{-3}$	$(10^{-7})^{-4} = 10^{(-7) \times (-4)} = 10^{28}$

حل التمرين 9:

$$10^4 \times 10^{-3} \times 10^5 \times 10^{-11} = 10^{4-3+5-11} = 10^{-5}$$

$$(10^{-3})^5 \times (10^{-4})^{-1} = 10^{-15} \times 10^4 = 10^{-15+4} = 10^{-11}$$

$$\frac{10^5}{10^6} \times \frac{10^{-7}}{10^2} \times \frac{10^{-9}}{10^{11}} = 10^{5-6} \times 10^{-7-2} \times 10^{-9-11} = 10^{-1} \times 10^{-9} \times 10^{-20} = 10^{-30}$$

$$\left(10^{-6} \times \frac{10^5}{10^{-2}}\right)^3 = (10^{-6})^3 \times \left(\frac{10^5}{10^{-2}}\right)^3 = 10^{-18} \times (10^5 \times 10^2)^3 = 10^{-18} \times (10^7)^3 = 10^{-18+21} = 10^3$$

$$\left(\left(\left(10^2\right)^{-3}\right)^{-5}\right)^{-2} = 10^{2 \times (-3) \times (-5) \times (-2)} = 10^{-60}$$

الكتابة العلمية:حل التمرين 10:

$$12\,300\,000\,000\,000 = 1,23 \times 10^{13}$$

$$0,000\,000\,000\,075 = 7,5 \times 10^{-11}$$

$$9\,700\,000\,000\,000\,000 = 9,7 \times 10^{15}$$

$$0,000\,000\,000\,000\,001\,75 = 1,75 \times 10^{-15}$$

$$971\,000\,000\,000 = 9,71 \times 10^{11}$$

$$0,000\,000\,000\,007\,001 = 7,001 \times 10^{-12}$$

$$75,09 = 7,509 \times 10^1$$

$$800\,000\,000\,000\,000\,000 = 8 \times 10^{17}$$

$$45\,200\,000\,000 = 4,52 \times 10^{10}$$

$$0,000\,000\,003 = 3 \times 10^{-9}$$

حل التمرين 11:

$$32,5 \times 10^7 = 3,25 \times 10^1 \times 10^7 = 3,25 \times 10^8$$

$$0,08 \times 10^5 = 8 \times 10^{-2} \times 10^5 = 8 \times 10^3$$

$$76,1 \times 10^{-9} = 7,61 \times 10^1 \times 10^{-9} = 7,61 \times 10^{-8}$$

$$0,0075 \times 10^{-5} = 7,5 \times 10^{-3} \times 10^{-5} = 7,5 \times 10^{-8}$$

$$850 \times 10^{12} = 8,5 \times 10^2 \times 10^{12} = 8,5 \times 10^{14}$$

$$750\,000 \times 10^9 = 7,5 \times 10^5 \times 10^9 = 7,5 \times 10^{14}$$

$$0,000\,042 \times 10^{15} = 4,2 \times 10^{-5} \times 10^{15} = 4,2 \times 10^{10}$$

$$0,4 \times 10^4 = 4 \times 10^{-1} \times 10^4 = 4 \times 10^3$$

$$0,100 \times 10^{-31} = 1 \times 10^{-1} \times 10^{-31} = 1 \times 10^{-32}$$

$$12\,000 \times 10^{-53} = 1,2 \times 10^4 \times 10^{-53} = 1,2 \times 10^{-49}$$

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