

تمارين أنظمة الأعداد

1. أنجز التحويلات الآتية :

العدد	النتيجة	الطريقة																																								
$(10110)_2$	$(22)_{10}$	$(1*2^4) + (0*2^3) + (1*2^2) + (1*2^1) + (0*2^0)$ $16 + 0 + 4 + 2 + 0 = 22$																																								
$(38,75)_{10}$	$(100110,11)_2$	<table style="display: inline-table; vertical-align: top;"> <tr><td>$38/2=19$</td><td>0</td></tr> <tr><td>$19/2=9$</td><td>1</td></tr> <tr><td>$9/2=4$</td><td>1</td></tr> <tr><td>$4/2=2$</td><td>0</td></tr> <tr><td>$2/2=1$</td><td>0</td></tr> <tr><td>$1/2=0$</td><td>1</td></tr> </table> <div style="display: inline-block; vertical-align: top; margin-left: 20px;"> <table style="border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding-right: 5px;">0</td><td style="padding-right: 5px;">.</td><td style="padding-right: 5px;">75</td><td style="padding-left: 5px;">x</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;"></td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">2</td><td style="padding-left: 5px;">x</td></tr> <tr><td colspan="4" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">1</td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">50</td><td style="padding-left: 5px;">x</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;"></td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">2</td><td style="padding-left: 5px;">x</td></tr> <tr><td colspan="4" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">1</td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">00</td><td style="padding-left: 5px;"></td></tr> </table> <p>$(0.75)_{10} = (0.11)_2$</p> </div>	$38/2=19$	0	$19/2=9$	1	$9/2=4$	1	$4/2=2$	0	$2/2=1$	0	$1/2=0$	1	0	.	75	x			2	x					1		50	x			2	x					1		00	
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$(100101)_2$	$(37)_{10}$	$(1*2^5) + (0*2^4) + (0*2^3) + (1*2^2) + (0*2^1) + (1*2^0)$ $= 32 + 0 + 0 + 4 + 0 + 1 = 37$																																						
$(27,25)_{10}$	$(11011.01)_2$	<table style="display: inline-table; vertical-align: top;"> <tr><td>$27/2=13$</td><td>1</td></tr> <tr><td>$13/2=6$</td><td>1</td></tr> <tr><td>$6/2=3$</td><td>0</td></tr> <tr><td>$3/2=1$</td><td>1</td></tr> <tr><td>$1/2=0$</td><td>1</td></tr> </table> <div style="display: inline-block; vertical-align: top; margin-left: 20px;"> <table style="border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding-right: 5px;">0</td><td style="padding-right: 5px;">.</td><td style="padding-right: 5px;">25</td><td style="padding-left: 5px;">*</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;"></td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">2</td><td style="padding-left: 5px;">*</td></tr> <tr><td colspan="4" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">0</td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">50</td><td style="padding-left: 5px;">*</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;"></td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">2</td><td style="padding-left: 5px;">*</td></tr> <tr><td colspan="4" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">1</td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">00</td><td style="padding-left: 5px;"></td></tr> </table> </div>	$27/2=13$	1	$13/2=6$	1	$6/2=3$	0	$3/2=1$	1	$1/2=0$	1	0	.	25	*			2	*					0		50	*			2	*					1		00	
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$(100010.101)_2$	$(34.625)_{10}$	$(1*2^5) + (0*2^4) + (0*2^3) + (0*2^2) + (1*2^1) + (0*2^0) + (1*2^{-1}) + (0*2^{-2}) + (1*2^{-3})$ $= 32 + 0 + 0 + 0 + 2 + 0 + 1/2 + 0 + 1/8 = 34.625$																																																												
$(43,625)_{10}$	$(101011.101)_2$	<table style="display: inline-table; vertical-align: top;"> <tr><td>$43/2=21$</td><td>1</td></tr> <tr><td>$21/2=10$</td><td>1</td></tr> <tr><td>$10/2=5$</td><td>0</td></tr> <tr><td>$5/2=2$</td><td>1</td></tr> <tr><td>$2/2=1$</td><td>0</td></tr> <tr><td>$1/2=0$</td><td>1</td></tr> </table> <div style="display: inline-block; vertical-align: top; margin-left: 20px;"> <table style="border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding-right: 5px;">0</td><td style="padding-right: 5px;">.</td><td style="padding-right: 5px;">625</td><td style="padding-left: 5px;"></td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;"></td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">2</td><td style="padding-left: 5px;">x</td></tr> <tr><td colspan="4" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">1</td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">250</td><td style="padding-left: 5px;"></td></tr> <tr><td colspan="4" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;"></td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">2</td><td style="padding-left: 5px;">x</td></tr> <tr><td colspan="4" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">0</td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">500</td><td style="padding-left: 5px;"></td></tr> <tr><td colspan="4" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;"></td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">2</td><td style="padding-left: 5px;">x</td></tr> <tr><td colspan="4" style="border-top: 1px solid black;"></td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">1</td><td style="padding-right: 5px;"></td><td style="padding-right: 5px;">000</td><td style="padding-left: 5px;"></td></tr> </table> </div>	$43/2=21$	1	$21/2=10$	1	$10/2=5$	0	$5/2=2$	1	$2/2=1$	0	$1/2=0$	1	0	.	625				2	x					1		250								2	x					0		500								2	x					1		000	
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2. أوجد ناتج العمليات التالية :

$\begin{array}{r} 101011 \\ + \quad 1111 \\ \hline 111010 \end{array}$	$\begin{array}{r} 111100 \\ - \quad 1110 \\ \hline 101110 \end{array}$	$\begin{array}{r} 1001 \\ + \quad 111 \\ \hline 10000 \end{array}$	$\begin{array}{r} 10101 \\ - \quad 1010 \\ \hline 1011 \end{array}$
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3.

$\begin{array}{r} 11010 \\ - \quad 101 \\ \hline 10101 \end{array}$	$\begin{array}{r} 101010 \\ - \quad 1110 \\ \hline 11100 \end{array}$	$\begin{array}{r} 10101 \\ + \quad 1011 \\ \hline 100000 \end{array}$
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