GeoGebra	Tutorial:	Directed	Numbers
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No.	Toolbar Icon	Command	Remarks
1.		MaxNum=15	
2.		<pre>list1=Sequence(If(i > 0, "\$+", "\$") + (Text(i)) + "\$", i, -MaxNum, MaxNum)</pre>	<pre>list1 = {"\$-15\$", "\$-14\$", "\$-13\$", "\$-12\$", "\$-11\$", "\$-10\$", "\$-9\$", "\$-8\$", "\$-7\$", "\$-6\$", "\$-5\$", "\$-4\$", "\$-3\$", "\$-2\$", "\$-1\$", "\$0\$", "\$+1\$", "\$+2\$", "\$+3\$", "\$+4\$", "\$+5\$", "\$+6\$", "\$+7\$", "\$+8\$", "\$+9\$", "\$+10\$", "\$+11\$", "\$+12\$", "\$+13\$", "\$+14\$", "\$+15\$"}</pre>
			Draw as drop-down list Caption: Choose : Show Label Serif font, Large size, Black
3.		a=SelectedIndex(list1) -	
4.		<pre>MaxNum - 1 list2=Sequence(If(i > 0, "\$+", "\$") + (Text(i)) + "\$", i, -MaxNum, MaxNum)</pre>	<pre>list2 = {"\$-15\$", "\$-14\$", "\$-13\$", "\$-12\$", "\$-11\$", "\$-10\$", "\$-9\$", "\$-8\$", "\$-7\$", "\$-6\$", "\$-5\$", "\$-4\$", "\$-3\$", "\$-2\$", "\$-1\$", "\$0\$", "\$+1\$", "\$+2\$", "\$+3\$", "\$+4\$", "\$+5\$", "\$+6\$", "\$+7\$", "\$+8\$", "\$+9\$", "\$+10\$", "\$+11\$", "\$+12\$", "\$+13\$", "\$+14\$", "\$+15\$"} Draw as drop-down list Caption: Choose: Show Label Serif font, Large size, Black</pre>
5.		b=SelectedIndex(list2) - MaxNum - 1	-
6.	ABC	a If $(b \ge 0, "+", "")$ b =?	See Figure 1. renamed as textQuestion LaTex formula, Large size Absolution Position On Screen

No.	Toolbar Icon	Command	Remarks	
7.	ABC	<pre>Start at 0. If(a>=0, "Move up for " + (Text(abs(a))), "Move down for "+(Text(abs(a)))) unit If(abs(a)>1, "s", "")].</pre>	renamed as textStep1 Absolution Position On Screen	
8.	ABC	Then If(b>=0, "move up for " + (Text(abs(b))), "move down for "+(Text(abs(b)))) unit If(abs(b)>1, "s", "").	renamed as textStep2 Absolution Position On Screen	
9.	ABC	The destination is $a+b$.	renamed as textStep3 Absolution Position On Screen	
10.	ABC	a If(b ≥ 0, "+", "") b = a+b	renamed as textAnswer LaTex formula, Large size Absolution Position On Screen	
11.	OK	<pre>Insert a button named button1 Caption: Random On Click Script (see Figure 2): SetValue(list1,RandomBetween(1,2*MaxNum+1)) SetValue(list2,RandomBetween(1,2*MaxNum+1))</pre>		
12.		u=Vector((0.5,0),(0.5,a))	Color: red, Line Thickness: 5	
13.		v=Vector((1,a),(1,a+b))	Color: red, Line Thickness: 5	
14.			Hide grid and xAxis. yAxis Distance: 1	
			Press Ctrl+Shift+D to toggle "Selection Allowed" for all objects. See Figure 3.	

A more sophisticated version of this applet is available on https://ggbm.at/TukBNuG2 .

Edit			
a $If[b \ge 0, "+", ""]$ b =?			
✓ LaTeX formula • Symbols • Objects •			
π			
Preview			
-12 + 5 = ?			
Help OK Cance	el		





Figure 2

directed new.ggb				
	▼ Graphics	X Algebra X		
12		– List		
Α	10	● list1 = {"\$-15\$", "\$-		
•		list2 = {"\$-15\$", "\$-		
	Choose: -12 Choose: $+5$	 Number 		
↓		O MaxNum = 15		
\	12	a = -12		
-	10	\mathbf{O} b = 5		
	$-12 \pm 5 - 7$ Pandom ⁸	- lext		
	-12+0-1	textAnswer = -12		
	4	textQuestion = -12		
\bigcirc	Start at 0. Move down for 12 units	textStep1 = "Start at		
		= textStep2 = Then in		
$\mathbf{\bullet}_{\mathbf{v}}$				
1	I nen move up for 5 units.			
~~•~		• $u = \begin{pmatrix} 0 \\ -12 \end{pmatrix}$		
	The destination is –7.			
• ~	-61	$\bullet \mathbf{v} = \begin{pmatrix} 0 \\ \mathbf{r} \end{pmatrix}$		
ABC		(5)		
	-12 + 3 = -7 -12			
OK	-14			
	-16			
	-18			
	-20 -			
?		-		
\$	Input:	÷ (