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# **Generating mathematical symbols using Math AutoCorrect or Unicode**

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**Document reference: B013**

**Date: June 2017**

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# Generating mathematical symbols using Math AutoCorrect or Unicode

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## Introduction

There are more symbols used in mathematics than are shown on a standard keyboard. Whilst there are various ways to generate additional symbols this document has been written to help with two specific methods within Microsoft Word. Consideration has also been given to the result when these symbols are translated into Braille using the Duxbury Braille Translator software.

I am grateful to James Bowden for the guidance and support he has provided in the creation of this document.

David Spybey

March 2017

## Microsoft Word

Microsoft Word has many built in mathematical symbols that can be created using its Math AutoCorrect feature. It is a useful feature which can be used if you do not have mathematical typesetting software or if you are writing mathematics which does not contain complex notation. The tables below show a wide range of mathematical symbols that will translate correctly into UEB using the Duxbury Braille Translator (11.3 or 12.1). Other braille translation software may also translate these symbols correctly.

The entries in the "Print Outcome" column in all the tables are shown in the font Cambria Math. The "Normal" font used in a document may affect the style of the print outcome and more detail is provided in Appendix A. To find a full list of symbols that can be generated using Math AutoCorrect go to <https://support.office.com> and search for "math autocorrect".

## Setting up Math AutoCorrect in WORD

The explanation below is based on a Microsoft web page.

The reference to the font Cambria Math may be unnecessary but there are some symbols that are preferable in this font and more information about this is given in Appendix A.

Appendix B provides details of how to set up Math AutoCorrect for those who are not using a mouse or mouse pad.

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To insert a Math AutoCorrect symbol, type one of the codes given in the tables below followed by a delimiting term. For example, after you type a code, type a punctuation mark, or press SPACEBAR or ENTER. To ensure that the Math AutoCorrect symbols appear the same in your document as they do in the AutoCorrect dialog box, on the **Home** tab, in the **Font** group, select **Cambria Math**.

To insert a Math AutoCorrect symbol outside of an equation, you need to select the **Use Math AutoCorrect rules outside of math regions** check box in the **AutoCorrect** dialog box.

### **Use Math AutoCorrect rules outside of an equation**

Click the **Microsoft Office Button** , and then click **Word Options**.

Click **Proofing**, and then click **AutoCorrect Options**.

Click the **Math AutoCorrect** tab.

Select the **Use Math AutoCorrect rules outside of math regions** check box.

\*\*\*\*\*

## Using Unicode

Unicode is a computing industry standard for the encoding of text and symbols. Some Unicode values contain a letter and the standard way to display these codes uses capital letters but lower case letters work equally well. For example, 25A1 and 25a1 both lead to a hollow square. To use Unicode type the symbol's Unicode value and then Alt+X, i.e. after the Unicode value hold down the Alt key and tap the X key. You cannot have a number, or one of the letters a-f, before the Unicode value so it may be necessary to insert a space before the Unicode value and then delete it afterwards.

## Problems with entry method

There are potential issues with both Math AutoCorrect and Unicode. For example, to get  $4\sqrt{3}$  using Math AutoCorrect a space or punctuation is needed after the root sign and this needs to be deleted before typing the 3. To get  $4\sqrt{3}$  using Unicode there needs to be a space before typing the Unicode value 221A for the root sign and this space needs to be deleted at some stage.

It should also be noted that the font following the insertion of one of these symbols may result in a font change from the "Normal" document font and more detail of this is given in Appendix A.

## Grade 1 indicators and spacing

When material is written using an equation editor, such as MathType, the translation software will generally space the material following UEB guidance and it will use a mixture of grade 1 symbol/word/passage indicators.

When material is written using either Unicode or Math AutoCorrect the translation software is likely to follow the spacing of the print material and it will only make use of grade 1 symbol indicators.

Some of the symbols in the following tables need to be in grade 1 and will require an indicator which sets up grade 1 before them. A full list of these symbols is given in Appendix C.

## Table of symbols and codes

Math AutoCorrect	Unicode	Print outcome	Braille translation	Description
<code>\angle</code>	2220	$\angle$	⠠⠠	angle sign
<code>\approx</code>	2248	$\approx$	⠠⠠⠠	approximately equal to
<code>\ast</code>	2217	$*$	⠠⠠	asterisk
<code>\because</code>	2235	$\because$	⠠⠠⠠	because, since
<code>\bot</code>	22A5	$\perp$	⠠⠠⠠	perpendicular to
<code>\box</code>	25A1	$\square$	⠠⠠⠠⠠	hollow square
<code>\cap</code>	2229	$\cap$	⠠⠠	intersection
<code>\cdot</code>	22C5	$\cdot$	⠠⠠	dot operator, multiplication dot
<code>\circ</code>	2218	$\circ$	⠠⠠	hollow dot
<code>\cong</code>	2245	$\cong$	⠠⠠⠠⠠	is congruent to
<code>\cup</code>	222A	$\cup$	⠠⠠⠠	union
<code>\dashv</code>	22A3	$\dashv$	⠠⠠⠠⠠	reverse assertion
<code>\degree</code>	00B0	$^\circ$	⠠⠠	degrees
<code>\div</code>	00F7	$\div$	⠠⠠	division sign
<code>\dots</code>	2026	$\dots$	⠠⠠⠠⠠	ellipsis
<code>\downarrow</code>	2193	$\downarrow$	⠠⠠	down arrow
<code>\Downarrow</code>	21D3	$\Downarrow$	⠠⠠⠠⠠	down double arrow
<code>\emptyset</code>	2205	$\emptyset$	⠠⠠	empty set
<code>\equiv</code>	2261	$\equiv$	⠠⠠⠠	equivalent
<code>\exists</code>	2203	$\exists$	⠠⠠	there exists
<code>\forall</code>	2200	$\forall$	⠠⠠	for all
<code>\ge</code>	2265	$\geq$	⠠⠠⠠⠠	greater than or equal to
<code>\geq</code>	2265	$\geq$	⠠⠠⠠⠠	greater than or equal to

<b>Math AutoCorrect</b>	<b>Unicode</b>	<b>Print outcome</b>	<b>Braille translation</b>	<b>Description</b>
<code>\gets</code>	2190	←	⠠⠠	left arrow
<code>\gg</code>	226B	≫	⠠⠠⠠⠠	much greater than
<code>\hbar</code>	210F	ℏ	⠠⠠⠠	Dirac constant, h-bar
<code>\hookleftarrow</code>	21A9	↵	⠠⠠⠠⠠⠠⠠	left arrow with hook
<code>\hookrightarrow</code>	21AA	↶	⠠⠠⠠⠠⠠⠠	right arrow with hook
<code>\in</code>	2208	∈	⠠⠠	is an element of
<code>\inc</code>	2206	Δ	⠠⠠⠠	increment, Laplace operator, same as capital delta
<code>\infty</code>	221E	∞	⠠⠠⠠	infinity
<code>\int</code>	222B	∫	⠠⠠	integral
<code>\langle</code>	2329	⟨	⠠⠠	left pointing angle bracket
<code>\lbrace</code>	007B	{	⠠⠠	left curly bracket
<code>\lbrack</code>	005B	[	⠠⠠	left square bracket
<code>\ldots</code>	2026	...	⠠⠠⠠	ellipsis
<code>\le</code>	2264	≤	⠠⠠⠠	less than or equal to
<code>\leftarrow</code>	2190	←	⠠⠠	left arrow
<code>\Leftarrow</code>	21D0	⇐	⠠⠠⠠	left double arrow
<code>\leftharpoondown</code>	21BD	↷	⠠⠠⠠⠠	left harpoon with barb downwards
<code>\leftharpoonup</code>	21BC	↶	⠠⠠⠠⠠	left harpoon with barb upwards
<code>\leftrightarrow</code>	2194	↔	⠠⠠⠠⠠	left right arrow
<code>\Leftrightarrow</code>	21D4	⇔	⠠⠠⠠⠠⠠	left right double arrow
<code>\leq</code>	2264	≤	⠠⠠⠠	less than or equal
<code>\ll</code>	226A	≪	⠠⠠⠠	much less than
<code>\mapsto</code>	21A6	↦	⠠⠠⠠⠠	right arrow from bar

<b>Math AutoCorrect</b>	<b>Unicode</b>	<b>Print outcome</b>	<b>Braille translation</b>	<b>Description</b>
<code>\matrix</code>	25A0	■	⠠⠨⠠	solid square
<code>\minus</code>	2212	−	⠤	minus sign
<code>\models</code>	22A8	⊨	⠠⠨⠠⠨⠠	is valid
<code>\mp</code>	2213	∓	⠤⠨	minus or plus
<code>\nabla</code>	2207	∇	⠠⠨⠠	nabla
<code>\ne</code>	2260	≠	⠠⠨⠠⠨⠠	not equal to
<code>\nearrow</code>	2197	↗	⠠⠨⠠	northeast arrow
<code>\neq</code>	2260	≠	⠠⠨⠠⠨⠠	not equal to
<code>\ni</code>	220B	∋	⠠⠨⠠⠨⠠	contains as an element
<code>\nwarrow</code>	2196	↖	⠠⠨⠠	northwest arrow
<code>\oint</code>	222E	∮	⠠⠨⠠	closed line integral
<code>\ominus</code>	2296	⊖	⠠⠨⠠⠨⠠⠨⠠	minus sign in a circle
<code>\oplus</code>	2295	⊕	⠠⠨⠠⠨⠠⠨⠠	plus sign in a circle
<code>\over</code>	002F	/	⠠⠨⠠	forward slash
<code>\parallel</code>	2225	∥	⠠⠨⠠	is parallel to
<code>\partial</code>	2202	∂	⠠⠨⠠	curly d
<code>\pm</code>	00B1	±	⠠⠨⠠	plus or minus
<code>\pprime</code>	2033	″	⠠⠨⠠	double prime
<code>\prime</code>	2032	′	⠠⠨⠠	prime
<code>\prod</code>	220F	∏	⠠⠨⠠	product operator, capital Greek pi
<code>\propto</code>	221D	∝	⠠⠨⠠	proportional to
<code>\rangle</code>	232A	⟩	⠠⠨⠠	right angle bracket
<code>\ratio</code>	2236	:	⠠⠨⠠	ratio, colon
<code>\rbrace</code>	007D	}	⠠⠨⠠	right curly bracket
<code>\rbrack</code>	005D	]	⠠⠨⠠	right square bracket
<code>\rightarrow</code>	2192	→	⠠⠨⠠	right arrow

<b>Math AutoCorrect</b>	<b>Unicode</b>	<b>Print outcome</b>	<b>Braille translation</b>	<b>Description</b>
<code>\Rightarrow</code>	21D2	$\Rightarrow$	⠠⠠⠠⠠⠠⠠	right double arrow
<code>\rightharpoondown</code>	21C1	$\rightarrow$	⠠⠠⠠⠠⠠⠠	right harpoon with barb downwards
<code>\rightharpoonup</code>	21C0	$\rightarrow$	⠠⠠⠠⠠⠠⠠	right harpoon with barb upwards
<code>\searrow</code>	2198	$\searrow$	⠠⠠⠠	southeast arrow
<code>\sim</code>	223C	$\sim$	⠠⠠⠠	tilde
<code>\simeq</code>	2243	$\approx$	⠠⠠⠠	approximately equal to
<code>\sqrt</code>	221A	$\sqrt$	⠠⠠⠠	square root
<code>\subset</code>	2282	$\subset$	⠠⠠⠠	subset of
<code>\subseteq</code>	2286	$\subseteq$	⠠⠠⠠⠠	subset of or equal to
<code>\sum</code>	2211	$\Sigma$	⠠⠠⠠⠠	summation sign, capital Greek sigma
<code>\superset</code>	2283	$\supset$	⠠⠠⠠	superset of
<code>\supseteq</code>	2287	$\supseteq$	⠠⠠⠠⠠	superset of or equal to
<code>\swarrow</code>	2199	$\swarrow$	⠠⠠⠠	southwest arrow
<code>\times</code>	00D7	$\times$	⠠⠠⠠	multiplication sign
<code>\therefore</code>	2234	$\therefore$	⠠⠠⠠⠠	therefore
<code>\updownarrow</code>	2195	$\updownarrow$	⠠⠠⠠⠠⠠	up down arrow
<code>\Updownarrow</code>	21D5	$\Updownarrow$	⠠⠠⠠⠠⠠⠠	up down double arrow
<code>\vdash</code>	22A2	$\vdash$	⠠⠠⠠	assertion
<code>\vee</code>	2228	$\vee$	⠠⠠⠠	logical or
<code>\vert</code>	007C	$ $	⠠⠠⠠	vertical bar
<code>\wedge</code>	2227	$\wedge$	⠠⠠⠠	logical and



## Greek letters

Notes:

`\epsilon` (Unicode 03F5) gives the symbol  $\epsilon$  which is a "lunate epsilon" and this currently translates as  $\epsilon$  which is not correct.

`\varsigma` (Unicode 03C2) gives the symbol  $\varsigma$  but this symbol is not recognised in UEB and the current translation  $\varsigma$  is not correct UEB code.

Math AutoCorrect	Unicode	Print outcome	Braille translation	Description
<code>\alpha</code>	03B1	$\alpha$	$\alpha$	alpha
<code>\Alpha</code>	0391	A	$A$	capital alpha
<code>\beta</code>	03B2	$\beta$	$\beta$	beta
<code>\Beta</code>	0392	B	$B$	capital beta
<code>\gamma</code>	03B3	$\gamma$	$\gamma$	gamma
<code>\Gamma</code>	0393	$\Gamma$	$\Gamma$	capital gamma
<code>\delta</code>	03B4	$\delta$	$\delta$	delta
<code>\Delta</code>	0394	$\Delta$	$\Delta$	capital delta
<code>\varepsilon</code>	03B5	$\epsilon$	$\epsilon$	epsilon
<code>\Epsilon</code>	0395	E	$E$	capital epsilon
<code>\zeta</code>	03B6	$\zeta$	$\zeta$	zeta
<code>\Zeta</code>	0396	Z	$Z$	capital zeta
<code>\eta</code>	03B7	$\eta$	$\eta$	eta
<code>\Eta</code>	0397	H	$H$	capital eta
<code>\theta</code>	03B8	$\theta$	$\theta$	theta
<code>\Theta</code>	0398	$\Theta$	$\Theta$	capital theta
<code>\iota</code>	03B9	$\iota$	$\iota$	iota
<code>\Iota</code>	0399	I	$I$	capital iota
<code>\kappa</code>	03BA	$\kappa$	$\kappa$	kappa
<code>\Kappa</code>	039A	K	$K$	capital kappa
<code>\lambda</code>	03BB	$\lambda$	$\lambda$	lambda

<b>Math AutoCorrect</b>	<b>Unicode</b>	<b>Print outcome</b>	<b>Braille translation</b>	<b>Description</b>
<code>\Lambda</code>	039B	Λ	⠠⠠⠠⠠	capital lambda
<code>\mu</code>	03BC	μ	⠠⠠⠠	mu
<code>\Mu</code>	039C	Μ	⠠⠠⠠⠠	capital mu
<code>\nu</code>	03BD	ν	⠠⠠⠠	nu
<code>\Nu</code>	039D	Ν	⠠⠠⠠⠠	capital nu
<code>\xi</code>	03BE	ξ	⠠⠠⠠	xi
<code>\Xi</code>	039E	Ξ	⠠⠠⠠⠠	capital xi
<code>\o</code>	03BF	ο	⠠⠠⠠	omicron
<code>\O</code>	039F	Ο	⠠⠠⠠⠠	capital omicron
<code>\pi</code>	03C0	π	⠠⠠⠠	pi
<code>\Pi</code>	03A0	Π	⠠⠠⠠⠠	capital pi
<code>\rho</code>	03C1	ρ	⠠⠠⠠	rho
<code>\Rho</code>	03A1	Ρ	⠠⠠⠠⠠	capital rho
<code>\sigma</code>	03C3	σ	⠠⠠⠠	sigma
<code>\Sigma</code>	03A3	Σ	⠠⠠⠠⠠	capital sigma
<code>\tau</code>	03C4	τ	⠠⠠⠠	tau
<code>\Tau</code>	03A4	Τ	⠠⠠⠠⠠	capital tau
<code>\upsilon</code>	03C5	υ	⠠⠠⠠	upsilon
<code>\Upsilon</code>	03A5	Υ	⠠⠠⠠⠠	capital upsilon
<code>\phi</code>	03D5	φ	⠠⠠⠠	open or loopy phi
<code>\varphi</code>	03C6	φ	⠠⠠⠠	phi
<code>\Phi</code>	03A6	Φ	⠠⠠⠠⠠	capital phi
<code>\chi</code>	03C7	χ	⠠⠠⠠	chi
<code>\Chi</code>	03A7	Χ	⠠⠠⠠⠠	capital chi
<code>\psi</code>	03C8	ψ	⠠⠠⠠	psi
<code>\Psi</code>	03A8	Ψ	⠠⠠⠠⠠	capital psi
<code>\omega</code>	03C9	ω	⠠⠠⠠	omega
<code>\Omega</code>	03A9	Ω	⠠⠠⠠⠠	capital omega



## Adding more!

It is possible to add to the Math AutoCorrect options but these will not necessarily translate correctly.

Example:

You may choose to set your copy of Word so that it changes  $1/4$  to  $\frac{1}{4}$  automatically.

One way to do this is to go to Insert→Symbol→More Symbols and find the symbol  $\frac{1}{4}$ . With this symbol highlighted go to the AutoCorrect button and type  $1/4$  (you could choose  $\backslash 1/4$  if you wished) in the Replace box. The Duxbury Braille Translator translates  $\frac{1}{4}$  correctly but if you try a symbol such as the tick symbol  $\checkmark$  then, as there is currently no UEB coding for this symbol, it is not surprising if this symbol is simply missed out.

## Appendix A

### Fonts

The material from the Microsoft web page mentioned "on the **Home** tab, in the **Font** group, select **Cambria Math**". This seems to be unnecessary for most symbols.

When using the Math AutoCorrect in any font the resulting print symbol seems to be automatically changed into Cambria Math if the current font does not have the print symbol in it.

So `\subset` written in most fonts results in  $\subset$  in Cambria Math.

In the same way using Unicode 2282 results in  $\subset$  in Cambria Math.

This may seem to be helpful but there is a potential drawback when using Unicode. If the symbols are being entered as they occur in the text the change of font can affect the font of the following text.

For example

The text below starts in Arial. In (1) the symbol was obtained using Math AutoCorrect and in (2) Unicode was used.

1. Here is a subset  $\subset$ , it is used to indicate
2. Here is a subset  $\subset$ , it is used to indicate

The  $\subset$  symbol has automatically been written in Cambria Math.

Using Math AutoCorrect inserts a space after the symbol, this has been deleted in the above text, but retains the Arial font for the subsequent text.

Using Unicode there is no space after the symbol but the change in font to Cambria Math is continued in the following text.

The following shows an example which again uses the Arial font, (1) used Math AutoCorrect and (2) used Unicode. It all stays in Arial as the symbols are available in the Arial font. The font Cambria Math is not present in any of the resulting text.

1. The summation sign  $\sum$ , is the same as a capital sigma  $\Sigma$  but it is clearly larger in the print.
2. The summation sign  $\sum$ , is the same as a capital sigma  $\Sigma$  but it is clearly larger in the print.

Whilst Arial, or some other font, may be fine for most symbols the table below show some symbols where the Cambria Math font may be preferred.

<b>Math AutoCorrect</b>	<b>Unicode</b>	<b>Arial</b>	<b>Cambria Math</b>	<b>Description</b>
<code>\infty</code>	221E	$\infty$	$\infty$	infinity
<code>\matrix</code>	25A0	■	■	solid square
<code>\sqrt</code>	221A	$\sqrt$	$\sqrt$	square root
<code>\sum</code>	2211	$\Sigma$	$\Sigma$	summation sign
<code>\times</code>	00D7	$\times$	$\times$	multiplication sign
<code>\gamma</code>	03B3	$\gamma$	$\gamma$	gamma
<code>\Gamma</code>	0393	$\Gamma$	$\Gamma$	capital gamma
<code>\delta</code>	03B4	$\delta$	$\delta$	delta
<code>\kappa</code>	03BA	$\kappa$	$\kappa$	kappa
<code>\lambda</code>	03BB	$\lambda$	$\lambda$	lambda
<code>\Lambda</code>	039B	$\Lambda$	$\Lambda$	capital lambda
<code>\nu</code>	03BD	$\nu$	$\nu$	nu
<code>\pi</code>	03C0	$\pi$	$\pi$	pi
<code>\tau</code>	03C4	$\tau$	$\tau$	tau
<code>\upsilon</code>	03C5	$\upsilon$	$\upsilon$	upsilon
<code>\chi</code>	03C7	$\chi$	$\chi$	chi

When preparing documents changing between the Normal font and Cambria Math can be a nuisance and it may well be helpful to set up a "Style" in Word to help.

If you create a new style called "Maths" create it as a "Character style" and make the font "Cambria Math". The size of the font may be left blank so that the Maths style will pick up the size of the Normal font used in the document. Setting up a shortcut key for the style at this stage will make it easier to use.

Ctrl+spacebar is a shortcut for returning to the Normal style.

If the shortcut chosen for the "Maths" style is Ctrl+Alt+# then the following key entry can be used.

To obtain:

The value of  $\pi$  is 3.142 to three decimal places.

Using Math AutoCorrect

Type: The value of [space]

Press: Ctrl+Alt+#

Type : \pi

Press: Ctrl+spacebar

Type: [space] is 3.142 to three decimal places.

Using Unicode

Type: The value of [space]

Press: Ctrl+Alt+#

Type : 03C0

Press: Alt+X

Press: Ctrl+spacebar

Type: [space] is 3.142 to three decimal places.

## Appendix B

### Setting up Math AutoCorrect in WORD without using a mouse

Math AutoCorrect only needs to be set up once.

The following provides the key strokes to use and describes the effect of the key strokes.

Alt+F this opens the Microsoft Office Button

Alt+I this opens "Word Options"

Ctrl+Tab to find "Proofing"

Once "Proofing" has been found then tab, once, to the "AutoCorrectOptions" and press Enter

At this point there are five tabs

- AutoCorrect

- Math AutoCorrect

- AutoFormat As You Type

- AutoFormat

- Smart Tags

Ctrl+Tab until "Math AutoCorrect" is found.

In this dialog there are two check boxes to tick.

"Use Math AutoCorrect rules outside of math regions"

and

"Replace text as you type"

Tab to each check box and if needed press Space to check the box.

Finally, Tab to the OK button to close the changes. Then exit the main Word Options dialog similarly.

## Appendix C

### Symbols which must be in grade 1

All the symbols in the following table need to be in grade 1 as they have an alternative grade 2 meaning. Grade 1 may be set up by a grade 1 symbol/word/passage indicator or by a numeric indicator.

Math AutoCorrect	Unicode	Print outcome	Braille translation	Description
<code>\box</code>	25A1	□	⠠⠨⠠	hollow square
<code>\downarrow</code>	2193	↓	⠠⠫	down arrow
<code>\Downarrow</code>	21D3	⇓	⠠⠫⠠⠫	down double arrow
<code>\gets</code>	2190	←	⠠⠠	left arrow
<code>\hookleftarrow</code>	21A9	↵	⠠⠠⠠⠠⠠⠠	left arrow with hook
<code>\hookrightarrow</code>	21AA	↷	⠠⠠⠠⠠⠠⠠	right arrow with hook
<code>\int</code>	222B	∫	⠠	integral
<code>\leftarrow</code>	2190	←	⠠⠠	left arrow
<code>\Leftarrow</code>	21D0	⇐	⠠⠠⠠	left double arrow
<code>\leftharpoondown</code>	21BD	↵	⠠⠠⠠⠠	left harpoon with barb downwards
<code>\leftharpoonup</code>	21BC	↶	⠠⠠⠠⠠	left harpoon with barb upwards
<code>\leftrightarrow</code>	2194	↔	⠠⠠⠠⠠	left right arrow
<code>\Leftrightarrow</code>	21D4	⇔	⠠⠠⠠⠠⠠	left right double arrow
<code>\mapsto</code>	21A6	↦	⠠⠠⠠⠠	right arrow from bar
<code>\nearrow</code>	2197	↗	⠠⠠	northeast arrow
<code>\nwarrow</code>	2196	↖	⠠⠠	northwest arrow
<code>\ominus</code>	2296	⊖	⠠⠠⠠⠠⠠	minus sign in a circle
<code>\oplus</code>	2295	⊕	⠠⠠⠠⠠⠠	plus sign in a circle
<code>\rightarrow</code>	2192	→	⠠⠠	right arrow

<b>Math AutoCorrect</b>	<b>Unicode</b>	<b>Print outcome</b>	<b>Braille translation</b>	<b>Description</b>
<code>\Rrightarrow</code>	21D2	$\Rightarrow$	⠠⠠⠠⠠	right double arrow
<code>\rightharpoondown</code>	21C1	$\rightarrow$	⠠⠠⠠⠠⠠	right harpoon with barb downwards
<code>\rightharpoonup</code>	21C0	$\rightarrow$	⠠⠠⠠⠠⠠	right harpoon with barb upwards
<code>\searrow</code>	2198	$\searrow$	⠠⠠⠠	southeast arrow
<code>\swarrow</code>	2199	$\swarrow$	⠠⠠⠠	southwest arrow
<code>\therefore</code>	2234	$\therefore$	⠠⠠⠠	therefore
<code>\updownarrow</code>	2195	$\updownarrow$	⠠⠠⠠⠠⠠	up down arrow
<code>\Updownarrow</code>	21D5	$\Updownarrow$	⠠⠠⠠⠠⠠⠠	up down double arrow

Note:

<b>Math AutoCorrect</b>	<b>Unicode</b>	<b>Print outcome</b>	<b>Braille translation</b>	<b>Description</b>
<code>\pprime</code>	2033	$''$	⠠⠠⠠	double prime
<code>\prime</code>	2032	$'$	⠠⠠	prime

Prime and double prime are unusual symbols as they may or may not need to be in grade 1.

If they are immediately preceded and followed by a letter then they need to be in grade 1 as they would represent "gg". Otherwise their meaning is not ambiguous and they do not need to be in grade 1. .

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