N4115 – an alternative encoding for geometric shapes

L2/12-058

This document proposes alternative encodings for some of the geometric shapes in ISO/IEC JTC1/SC2/WG2 N 4115, Proposal to add Wingdings and Webdings Symbols.

Only graduated sizes of regular convex shapes are considered, and then only where of interest regarding the importation of Wingdings. Enclosed shapes, non-convex shapes and differences in weight are ignored.

This document uses the simplified classification outlined in

"slightly small" a redundant measure

and "size 9, centered" a misnamed measure

and so the names of the sizes often differ from those in N4115.

The name of each character is shown as it appears in N4115, but edited, in some cases, by ~~striking~~ ~~through~~ words which are misleading or superfluous, and/or by inserting additional *underlined* words.

Where the name in N4115 conflicts with that in TUS 6.0, the TUS name is shown above, and the name from N4115 shown below, [bracketed].

The simplified classification means a lot of w-xxxx numbers are unified with different U+xxxx codepoints, but the net effect is not great:

— the additional tiny shapes seem a bit pointless;

— the additional bullets might be useful for people preparing presentations;

— 4 explicitly medium-sized triangles remove ambiguity from the existing standard, forcing 8 characters to default to "regular" size;

— 2 additional "medium small" shapes – black diamond and black lozenge – remove ambiguity from the existing standard, forcing U+2b25 and U+2b27 to default to "medium" size.

The codepoints 1f7d7, 2bb0, 2bb1 and 1f786, defined in N4115, are not needed after simplification, because their associated shapes do not differ significantly from characters already encoded.

Finally, two charts — the first showing how Table 2.5 might look, after version 6.1, and another showing the same table using Wingdings glyphs only. It is hoped that this shows how well the two sets of shapes can fit together.

w-xxxx	Wingding codepoint		side length	size	name	N4115 codepoint	alt. coding
3131	f083	◀	1282	M	black medium left-pointing triangle ~~centered~~ [1]	2bb7	
3132	f084	▶		M	black medium right-pointing triangle ~~centered~~ [1]	2bb8	
3129	f081	▲		M	black medium up-pointing triangle ~~centered~~ [2]	2bb5	
3130	f082	▼		M	black medium down-pointing triangle ~~centered~~ [3]	2bb6	
3116	f074	◀	1709	Reg	black left-pointing triangle	25c0	
3118	f076	◁		Reg	white left-pointing triangle	25c1	
3117	f075	▶		Reg	black right-pointing triangle	25b6	
3119	f077	▷		Reg	white right-pointing triangle	25b7	
3112	f070	▲		Reg	black up-pointing triangle	25b2	
3114	f072	△		Reg	white up-pointing triangle	25b3	
3113	f071	▼		Reg	black down-pointing triangle	25bc	
3115	f073	▽		Reg	white down-pointing triangle	25bd	
2159	f09f	·	198	tiny	black tiny square	1f795	
1160	f0a0	▪	296	VS	black very small square	2b1d	
2160	f0a0	▪	394	S	black ~~slightly~~ small square [4]	1f797	25aa
1167	f0a7	■	592	MS	black *medium* small square	25aa	25fe

2161	f0a1	■	790	M	black medium ~~small~~ square	25fe	25fc
2190	f0be	■	1046	Reg	black square ~~centered~~ [1]	2bb0	25a0
1110	f06e	■	1184	Reg	black ~~medium~~ square	25fc	
2162	f0a2	■	1480	L	black *large* square	25a0	2b1b
2163	f0a3	□	1480	L	white *large* square	25a1	2b1c
0103	f067	■	2048	XL	black *extra* large square [5]	2b1b	?
0099	f063	□	2048	XL	white *extra* large square [5]	2b1c	?
2171	f0ab	⬝	197	t	black tiny diamond	1f7a6	
2172	f0ac	⬩	296	VS	black very small diamond	1f7a7	
2173	f0ad	⬩	395	S	black small diamond	2b29	
1119	f077	◆	593	MS	black *medium small* diamond [black diamond 4]	1f7a9	
2174	f0ae	◆	789	M	black medium diamond	2b25	
2191	f0bf	◆	1046	Reg	black diamond ~~centered~~ [1]	2bb1	25c6
1117	f075	◆	1184	Reg	black diamond	25c6	
2175	f0af	◇	1184	Reg	white diamond	25c7	
2180	f0b4	⬝	172	t	black tiny lozenge	1f7b0	
2181	f0b5	⬩	256	VS	black very small lozenge	1f7b1	
2182	f0b6	⬩	342	S	black small lozenge	2b2a	

1115	f073	♦	513	MS	black medium small lozenge	1f7b3	
2183	f0b7	♦	684	M	black medium lozenge	2b27	
1116	f074	⧫	1025	Reg	black lozenge	29eb	
2184	f0b8	◊	1025	Reg	lozenge	25ca	
2192	f0c0	⬟		Reg	black pentagon	2b1f	
2193	f0c1	⬟		Reg	turned black pentagon	2bb2	
2194	f0c2	⬣		Reg	horizontal black hexagon	2b23	
2195	f0c3	⬢		Reg	black hexagon	2b22	
2196	f0c4	⯃		Reg	horizontal black octagon	2bb3	
2197	f0c5	⯃		Reg	black octagon	2bb4	
2149	f095	·	Ø 198	t	dot operator	22c5	
1158	f09e	•	296	VS	bullet operator	2219	
2150	f096	•	394	S	*bullet* ~~black slightly small circle~~ [4]	1f786	2022
1159	f09f	•	592	MS	*Z notation spot* [6] ~~bullet~~	2022	2981
2151	f097	●	789	M	*medium black circle* ~~Z notation spot~~	2981	26ab
1108	f06c	●	1185	Reg	*black circle* ~~medium black circle~~	26ab	25cf

2152	f098	●	1480	L	*black large circle* ~~black circle~~	25cf	2b24
2153	f099	○	1480	L	*large circle* ~~white circle~~	25cb	25ef
0110	f06e	⬤	2048	XL	black *extra* large circle [5]	2b24	?

Notes:

1. The word "centered" is superfluous. These geometric shapes are vertically centered by default.
2. The word "centered" is misleading. The glyph is drawn within a circumscribed circle which *is* centered; the Wingdings glyph itself is raised. The proposal here is that U+2BB5 should have ½ of its height above the math axis, rather than ⅔.
3. The word "centered" is misleading. The glyph is drawn within a circumscribed circle which *is* centered; the Wingdings glyph itself is lowered. The proposal here is that U+2BB6 should have ½ of its height above the math axis, rather than ⅓.
4. "Slightly small" is a redundant concept, which can be unified with UTR 25's classification of "small" .
5. U+2001 was hitherto a Unicode oddity, being the only character defined to fit an "em quad". N4115 introduces 3 more: a black square, a white square and a black circle. These em-quad shapes are not part of the graduated set of shapes, so that the "extra large" names suggested here might well be misleading. In addition to better names, these characters need to be allocated codepoints.
6. Forcing a particular size upon a character used in a formal notation is not something the UTC should be doing. U+2218, 2219 and 2981 all provide instances of this regrettable practice. If the UTC ever permits items of formal notation to be distinguished from abstract shapes the Windings ⇌ Unicode mapping will need to be updated.

graduated sizes of regular convex shapes

including possible additions for TUS 6.1

size	tiny	very small		small		medium small		medium (default1)		regular (default2)		large	
triangle left				25c2	25c3			2bb7		25c0	25c1		
triangle right				25b8 =2023	25b9			2bb8		25b6	25b7		
triangle up				25b4	25b5			2bb5		25b2	25b3		
triangle down				25be	25bf			2bb6		25bc	25bd		
square	1f795	2b1d	2b1e	25aa	25ab	25fe	25fd	25fc	25fb	25a0	25a1	2b1b	2b1c
diamond	1f7a6	1f7a7		2b29	22c4	1f7a9		2b25	2b26	25c6	25c7		
lozenge	1f7b0	1f7b1		2b2a	2b2b	1f7b3		2b27	2b28	29eb	25ca		
pentagon up										2b1f	2b20		
pentagon down										2bb2			
hexagon horizontal										2b23	2394		
hexagon vertical										2b22	2b21		
octagon horizontal										2bb3			
octagon vertical										2bb4			
circle	22c5	2219	2218	2022	25e6	2981	26ac	26ab	26aa	25cf	25cb	2b24	25ef
ellipse horizontal										2b2c	2b2d		
ellipse vertical										2b2e	2b2f		

graduated sizes of regular convex shapes

using only Wingdings glyphs

size	tiny	very small		small		medium small		medium (default1)		regular (default2)		large	
triangle left								3131		3116	3118		
triangle right								3132		3117	3119		
triangle up								3129		3112	3114		
triangle down								3130		3113	3115		
square	2159	1160		2160		1167		2161		1110 2190		2162	2163
diamond	2171	2172		2173		1119		2174		1117 2191	2175		
lozenge	2180	2181		2182		1115		2183		1116	2184		
pentagon up										2192			
pentagon down										2193			
hexagon horizontal										2194			
hexagon vertical										2195			
octagon horizontal										2196			
octagon vertical										2197			
circle	2149	1158		2150		1159		2151		1108		2152	2153
ellipse horizontal													
ellipse vertical													