**A novel surveying technique to demonstrate terrain features compared with geophysical findings using a Roman villa site as an example**

*G R Pearson, C Short and V Russett*

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# SHORTER PAPERS

## A NOVEL SURVEYING TECHNIQUE, TO DEMONSTRATE TERRAIN FEATURES COMPARED WITH GEOPHYSICAL FINDINGS, USING A ROMAN VILLA SITE AS AN EXAMPLE

G. R. PEARSON, C. SHORT AND V. RUSSETT

SUMMARY

*An electronic, hydrostatic level, combined with computer mapping software, was used to model surface features, as an example of the technique, at Wemberham Roman villa, excavated previously in the 19th century. The terrain modelling was compared with a resistivity survey on the villa site. Using these combined techniques, it was shown that irregular undulations on the ground could be correlated with surviving villa walls.*

INTRODUCTION

A hydrostatic level measures heights above or below a set point, and has been used, previously, for determining levels at archaeological excavations (K. Dark, pers. comm.). The Yatton, Congresbury, Claverham and Cleeve Archaeology Research Team (YCCCART), a community archaeology group in North Somerset, acquired an electronic, hydrostatic level to assist with traditional, manual surveying of surface features. Furthermore, it was recognised that when combined with mapping computer software, three-dimensional images of surface terrain features could be produced.

The purpose of this paper is to report preliminary observations on the use of an electronic, hydrostatic level, combined with a computer software programme, as an example of this technique, to demonstrate features of the terrain in three dimensions, related to an earlier excavation (Reade 1885) and a geophysical survey at the Wemberham Roman villa site (YCCCART Report 2013).

SITE AND METHODS

**Site**

The Roman villa at Wemberham was discovered in March 1884, excavated and covered over (Reade 1885). It is situated in a large field, approximately two miles from the centre of Yatton, close beside the Congresbury Yeo river. Since the excavation, the ground over the villa appears to have sunk, relative to the surrounding field level, leaving irregular undulations (Fig. 1) and occasional, exposed stones, on the site of the original excavation.

**Geophysical survey**

A geophysical survey of the of the villa site and surrounding field, covering an area of approximately 180 x 120m, was undertaken during the period July to November 2013 (YCCCART Report 2013), using a Geoscan RM-15 resistivity meter. The completed survey was downloaded to the TerraSurveyor programme (DW Publishing) and the resultant composite adjusted using the following filters: Band weight equaliser, Grad shade; Despiked, Clip SD2; High Pass filter.

**Electronic, hydrostatic level survey**

An electronic, hydrostatic level (NIVCOMP, Zwichau, Germany) was used, which gives a digital display of the height, at points, above or below a zero reference point.

The survey was undertaken during the period July to October 2013, using four separate 20 x 20m grids. For each individual grid, tapes were laid out using the RM-15 survey baseline and heights were measured (Fig. 2) at 1m intervals southerly along the x-axis (21 columns), and easterly along the y-axis (21 columns). The zero reference point for Grids 1 and 2 was 10m along the eastern edge of Grid 1; for Grids 3 and 4 it was 10m along the eastern edge of Grid 4. The reading was zero for both points. The z-axis for all grids was the height at points measured above (+), or below (-), the zero point in mm. Individual readings were recorded on paper. The results for each grid were then combined, making the final area 40 x 40m (Fig. 3). The data were entered into Excel (Microsoft; this data table available as an online appendix at https://sanhs.org/proceedings-volume-163-2019), and used in the Surfer 10 programme, to produce three-dimensional images, including contours.

*Fig. 1 The villa site looking west; raised, riverbank (arrow)*

*Fig. 2 Taking measurements with the hydrostatic level (arrow) along tapes. Looking south-west*

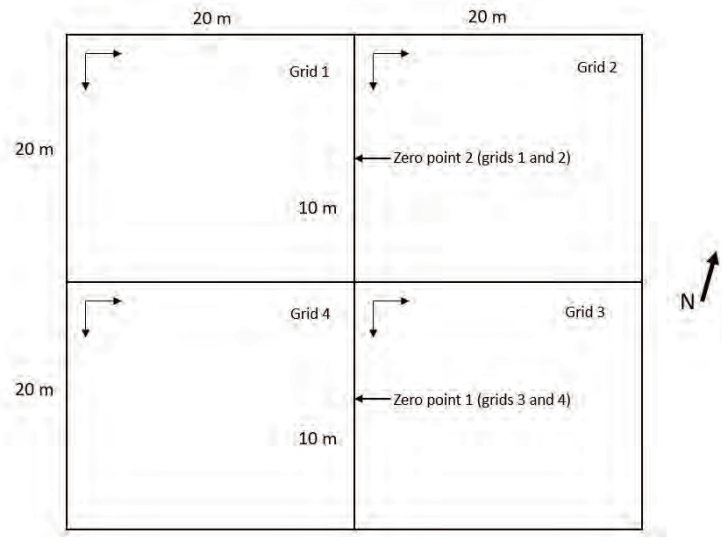


*Fig. 3 Grid plan over the villa. Arrows indicate the starting point and direction of measurement recording for each grid. N, direction of North. GPS readings, Grid 1, NW corner: NGR ST 40496 65247*

RESULTS

**Geophysical survey**

The survey of the area around the villa (YCCCART Report 2013) indicated its outline (Fig 4), which corresponded to the plan in the original excavation.

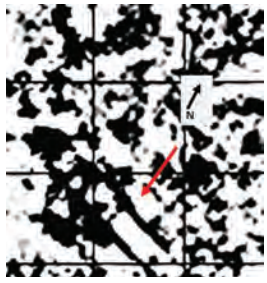

*Fig. 4 RM 15 survey showing the four grids over the villa (red arrow). N, north*

**Electronic, hydrostatic level survey**

Whilst it was not possible to relate, directly, the undulating ground to the underlying villa structure, it was considered that the stones represented parts of the exposed walls. However, it was not possible to correlate the findings with a particular part of the villa. A total of 1,681 readings were recorded over the four grids. The survey revealed maximum readings above or below the zero points to be 507 to -395 mm (Grid 1), 984 to -218 mm (Grid 2), 925 to -168 mm (Grid 3), and 710 to -216 mm (Grid 4).

Following the survey, three-dimensional images (Figs 5 and 6), with and without contours, were produced using the Surfer 10 programme. It could be seen that the raised areas in the south-east and south-west quadrants of the surveyed area closely resembled the earlier excavation and current geophysical findings.

DISCUSSION

Surface undulations over the site of a known Roman villa were surveyed using a hydrostatic, electronic level and computer mapping software. The three-dimensional images, including contours, produced using this technique, were compared with excavation findings (Reade 1885), and geophysical findings YCCCART Report (2013). The terrain modelling demonstrated that some of the undulating features on the ground appeared to correspond to raised, wall remnants of the villa. To our knowledge, this is the first report, using this technique, to correlate excavation and geophysical findings with surface features at an archaeological site. This example indicates its potential use in other archaeological situations, and needs to be confirmed by other users. It represents a potentially useful adjunct to non-invasive archaeological surveys.

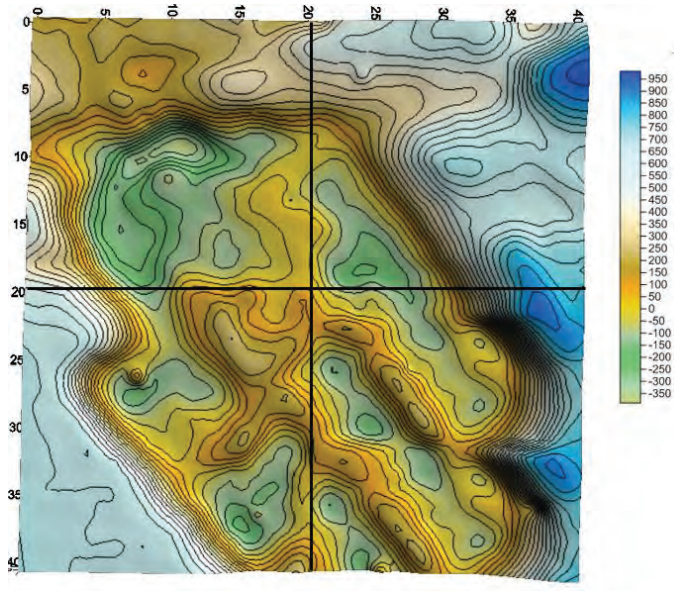


*Fig. 5 Terrain model, with contours, illustrating parts of villa walls visible. N, north. The lines represent the four grids*

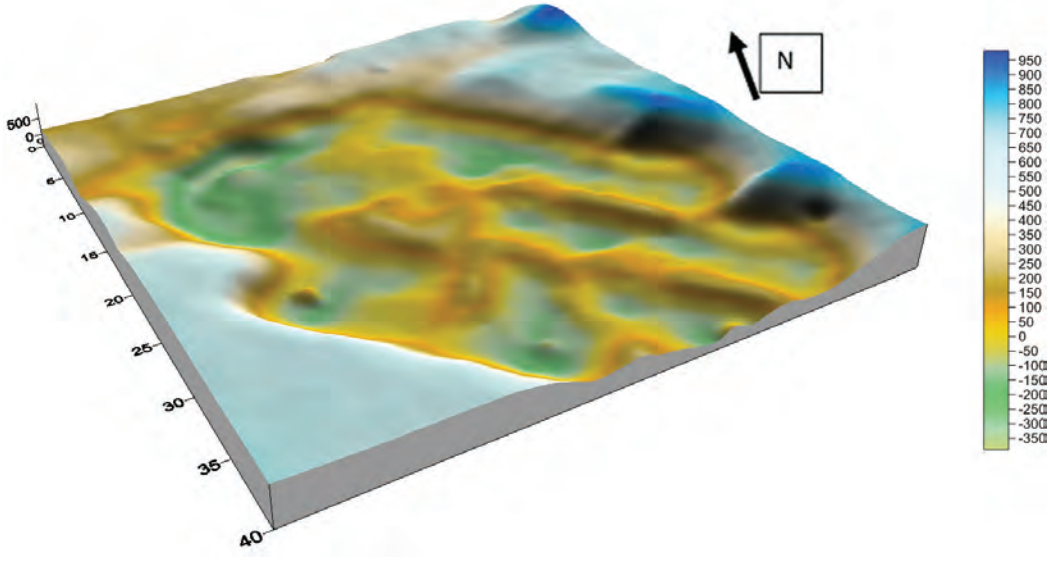


*Fig. 6 Terrain model, without contours, illustrating parts of villa walls. N, north*

ACKNOWLEDGEMENTS

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Special thanks to Golden Software, California, USA, for supplying Surfer 10; Ian Morton for recognising the potential use for the hydrostatic level in manual surveying and Unsal Hassan for help with analysing original electronic data; B. Wills, A. Dimmock and members of YCCCART who helped with the surveys; C. Campbell and P. English for helpful suggestions with the manuscript, and J. Wilcox for figure 2.

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# SIXTH-CENTURY CONNECTIONS: ANGLO-SAXON BROOCHES FROM SOMERSET

JAMES GERRARD

The 5th and 6th centuries AD remain one of the most fascinating, but poorly understood, periods in our county's history. Sandwiched between the collapse of the Roman Empire and the region's incorporation into the Kingdom of Wessex, these two centuries mark a period of post-Roman independence for what had been a prosperous part of the Late Roman Empire.

In Somerset these centuries are defined archaeologically by inhumation cemeteries (for instance Rahtz *et al*. 2000) and high-status sites, such as Cadbury Castle (Alcock 1995) and Cadbury Congresbury (Rahtz *et al*. 1993), the identification of which depends entirely on radiocarbon dating, or the presence of pottery with Mediterranean origins. These ceramics have traditionally been interpreted as indicators of connections between the south-west of Britain and the Eastern Roman Empire, although recent research has demonstrated that the connections were probably with Bordeaux/Aquitaine and Vigo/the Iberian Peninsula (Duggan 2018). Rather less attention has been focussed on objects that provide links eastwards, towards the so-called Anglo-Saxon regions of lowland Britain (Costen 2011, 144-5). This note, which reviews six early Anglo-Saxon brooches from Somerset, will try to address this issue and shed a little light on how the region was connected with other regions of Britain during the 6th century.

Three of the brooches are so-called 'button brooches' (nos 1-3), which are small (c. 20mm in diameter), saucer-shaped disc brooches typically with a helmeted and moustachioed human mask on the front. Normally they are made from copper alloy and the front is often gilded. They were usually secured with an iron pin on the reverse. They are predominantly distributed in East Kent, Coastal Sussex, the Isle of Wight, Hampshire and the Upper Thames Valley, with some outliers in northern France (Suzuki 2008, 336). The form was first formally classified by Avent and Evison (1982), who divided them into Classes A-L. More recently Suzuki (2008) has reassessed a much larger corpus of 209 button brooches and produced a substantially revised understanding of the type while still utilising Avent and Evison's (1982) broad framework. Since Suzuki's work the Portable Antiquities Scheme has added another 167 brooches to the total number known. The small number from Somerset emphasises their rarity in a region that was, for whatever reason, beyond the writ of 'Germanic' influence for most of the 6th century.

In chronological terms Suzuki (2008, 245) presents compelling arguments that the earliest button brooches developed from face mask roundels on Scandinavian relief brooches probably contemporaneously with the emergence of Salin's Style I c. AD 480. The earliest button brooches seem to have been manufactured in Kent and the Isle of Wight, but the type was then 'assimilated' into the existing tradition of wearing saucer brooches in the Upper Thames Valley. The form was probably falling out of use by the mid to late 6th century. Thus button brooches are a glimpse into a period of only four or five generations from c. AD 480-550.

## Brooch 1: Cadbury Castle

The excavations by Alcock at Cadbury Castle in the late 1960s produced a single button brooch of Class Bi (Alcock 1995, 70 and Illus. 5.3, Br 2) (not illustrated here). This is probably 6th century and the type is a reasonably uncommon one. Its distribution is focussed in Hampshire, Wiltshire and the Isle of Wight (Fig 1).

## Brooch 2: Ham Hill

Excavations by Wessex Archaeology at Ham Hill recovered a single button brooch with a profile portrait (Class L) from

Supporting data in respect of the paper

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TABLE. HEIGHTS IN MM ABOVE OR BELOW A FIXED BASE, RECORDED AT 1M INTERVALS IN FOUR, 20 X 20M GRIDS AND COMBINED TO GIVE A TOTAL AREA OF 40X 40M.

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 153 | 1 | 0 | 211 | 2 | 0 | 240 |
| 0 | 1 | 145 | 1 | 1 | 191 | 2 | 1 | 229 |
| 0 | 2 | 148 | 1 | 2 | 212 | 2 | 2 | 219 |
| 0 | 3 | 138 | 1 | 3 | 188 | 2 | 3 | 193 |
| 0 | 4 | 122 | 1 | 4 | 197 | 2 | 4 | 182 |
| 0 | 5 | 201 | 1 | 5 | 227 | 2 | 5 | 220 |
| 0 | 6 | 195 | 1 | 6 | 211 | 2 | 6 | 209 |
| 0 | 7 | 194 | 1 | 7 | 201 | 2 | 7 | 182 |
| 0 | 8 | 200 | 1 | 8 | 210 | 2 | 8 | 188 |
| 0 | 9 | 202 | 1 | 9 | 228 | 2 | 9 | 195 |
| 0 | 10 | 199 | 1 | 10 | 213 | 2 | 10 | 193 |
| 0 | 11 | 221 | 1 | 11 | 241 | 2 | 11 | 209 |
| 0 | 12 | 248 | 1 | 12 | 220 | 2 | 12 | 213 |
| 0 | 13 | 259 | 1 | 13 | 233 | 2 | 13 | 221 |
| 0 | 14 | 286 | 1 | 14 | 235 | 2 | 14 | 230 |
| 0 | 15 | 330 | 1 | 15 | 245 | 2 | 15 | 254 |
| 0 | 16 | 255 | 1 | 16 | 266 | 2 | 16 | 284 |
| 0 | 17 | 203 | 1 | 17 | 241 | 2 | 17 | 304 |
| 0 | 18 | 208 | 1 | 18 | 284 | 2 | 18 | 352 |
| 0 | 19 | 214 | 1 | 19 | 357 | 2 | 19 | 414 |
| 0 | 20 | 248 | 1 | 20 | 410 | 2 | 20 | 465 |
| 0 | 21 | 239 | 1 | 21 | 433 | 2 | 21 | 480 |
| 0 | 22 | 426 | 1 | 22 | 483 | 2 | 22 | 492 |
| 0 | 23 | 467 | 1 | 23 | 497 | 2 | 23 | 505 |
| 0 | 24 | 466 | 1 | 24 | 497 | 2 | 24 | 514 |
| 0 | 25 | 462 | 1 | 25 | 513 | 2 | 25 | 515 |
| 0 | 26 | 496 | 1 | 26 | 537 | 2 | 26 | 533 |
| 0 | 27 | 517 | 1 | 27 | 544 | 2 | 27 | 532 |
| 0 | 28 | 558 | 1 | 28 | 562 | 2 | 28 | 545 |
| 0 | 29 | 596 | 1 | 29 | 608 | 2 | 29 | 562 |
| 0 | 30 | 600 | 1 | 30 | 612 | 2 | 30 | 549 |
| 0 | 31 | 609 | 1 | 31 | 616 | 2 | 31 | 537 |
| 0 | 32 | 613 | 1 | 32 | 633 | 2 | 32 | 580 |
| 0 | 33 | 606 | 1 | 33 | 622 | 2 | 33 | 574 |
| 0 | 34 | 558 | 1 | 34 | 570 | 2 | 34 | 506 |
| 0 | 35 | 468 | 1 | 35 | 468 | 2 | 35 | 486 |
| 0 | 36 | 371 | 1 | 36 | 436 | 2 | 36 | 539 |
| 0 | 37 | 394 | 1 | 37 | 467 | 2 | 37 | 624 |
| 0 | 38 | 496 | 1 | 38 | 539 | 2 | 38 | 749 |
| 0 | 39 | 599 | 1 | 39 | 664 | 2 | 39 | 843 |
| 0 | 40 | 622 | 1 | 40 | 763 | 2 | 40 | 910 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 3 | 0 | 264 | 4 | 0 | 299 | 5 | 0 | 344 |
| 3 | 1 | 233 | 4 | 1 | 266 | 5 | 1 | 295 |
| 3 | 2 | 229 | 4 | 2 | 240 | 5 | 2 | 246 |
| 3 | 3 | 214 | 4 | 3 | 231 | 5 | 3 | 225 |
| 3 | 4 | 178 | 4 | 4 | 186 | 5 | 4 | 174 |
| 3 | 5 | 207 | 4 | 5 | 195 | 5 | 5 | 181 |
| 3 | 6 | 184 | 4 | 6 | 169 | 5 | 6 | 195 |
| 3 | 7 | 144 | 4 | 7 | 129 | 5 | 7 | 157 |
| 3 | 8 | 133 | 4 | 8 | 86 | 5 | 8 | 158 |
| 3 | 9 | 121 | 4 | 9 | 113 | 5 | 9 | 138 |
| 3 | 10 | 134 | 4 | 10 | 149 | 5 | 10 | 168 |
| 3 | 11 | 153 | 4 | 11 | 199 | 5 | 11 | 190 |
| 3 | 12 | 193 | 4 | 12 | 235 | 5 | 12 | 217 |
| 3 | 13 | 217 | 4 | 13 | 288 | 5 | 13 | 296 |
| 3 | 14 | 245 | 4 | 14 | 344 | 5 | 14 | 356 |
| 3 | 15 | 280 | 4 | 15 | 363 | 5 | 15 | 378 |
| 3 | 16 | 298 | 4 | 16 | 372 | 5 | 16 | 371 |
| 3 | 17 | 318 | 4 | 17 | 359 | 5 | 17 | 328 |
| 3 | 18 | 335 | 4 | 18 | 318 | 5 | 18 | 306 |
| 3 | 19 | 370 | 4 | 19 | 328 | 5 | 19 | 298 |
| 3 | 20 | 434 | 4 | 20 | 372 | 5 | 20 | 300 |
| 3 | 21 | 445 | 4 | 21 | 375 | 5 | 21 | 317 |
| 3 | 22 | 460 | 4 | 22 | 386 | 5 | 22 | 332 |
| 3 | 23 | 449 | 4 | 23 | 389 | 5 | 23 | 353 |
| 3 | 24 | 467 | 4 | 24 | 486 | 5 | 24 | 339 |
| 3 | 25 | 459 | 4 | 25 | 394 | 5 | 25 | 329 |
| 3 | 26 | 467 | 4 | 26 | 387 | 5 | 26 | 338 |
| 3 | 27 | 463 | 4 | 27 | 386 | 5 | 27 | 324 |
| 3 | 28 | 475 | 4 | 28 | 396 | 5 | 28 | 336 |
| 3 | 29 | 474 | 4 | 29 | 418 | 5 | 29 | 385 |
| 3 | 30 | 465 | 4 | 30 | 429 | 5 | 30 | 396 |
| 3 | 31 | 488 | 4 | 31 | 435 | 5 | 31 | 393 |
| 3 | 32 | 497 | 4 | 32 | 418 | 5 | 32 | 393 |
| 3 | 33 | 486 | 4 | 33 | 447 | 5 | 33 | 417 |
| 3 | 34 | 480 | 4 | 34 | 467 | 5 | 34 | 439 |
| 3 | 35 | 541 | 4 | 35 | 551 | 5 | 35 | 575 |
| 3 | 36 | 721 | 4 | 36 | 744 | 5 | 36 | 737 |
| 3 | 37 | 835 | 4 | 37 | 874 | 5 | 37 | 879 |
| 3 | 38 | 896 | 4 | 38 | 937 | 5 | 38 | 905 |
| 3 | 39 | 945 | 4 | 39 | 967 | 5 | 39 | 922 |
| 3 | 40 | 953 | 4 | 40 | 984 | 5 | 40 | 932 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 6 | 0 | 355 | 7 | 0 | 302 | 8 | 0 | 202 |
| 6 | 1 | 292 | 7 | 1 | 238 | 8 | 1 | 170 |
| 6 | 2 | 261 | 7 | 2 | 210 | 8 | 2 | 117 |
| 6 | 3 | 241 | 7 | 3 | 193 | 8 | 3 | 84 |
| 6 | 4 | 170 | 7 | 4 | 126 | 8 | 4 | 45 |
| 6 | 5 | 166 | 7 | 5 | 100 | 8 | 5 | 14 |
| 6 | 6 | 216 | 7 | 6 | 131 | 8 | 6 | 35 |
| 6 | 7 | 223 | 7 | 7 | 169 | 8 | 7 | 49 |
| 6 | 8 | 184 | 7 | 8 | 84 | 8 | 8 | -3 |
| 6 | 9 | 163 | 7 | 9 | 88 | 8 | 9 | -150 |
| 6 | 10 | 136 | 7 | 10 | -42 | 8 | 10 | -270 |
| 6 | 11 | 156 | 7 | 11 | -27 | 8 | 11 | -297 |
| 6 | 12 | 178 | 7 | 12 | 50 | 8 | 12 | -235 |
| 6 | 13 | 225 | 7 | 13 | 95 | 8 | 13 | -90 |
| 6 | 14 | 280 | 7 | 14 | 108 | 8 | 14 | -51 |
| 6 | 15 | 283 | 7 | 15 | 90 | 8 | 15 | -52 |
| 6 | 16 | 287 | 7 | 16 | 56 | 8 | 16 | -104 |
| 6 | 17 | 255 | 7 | 17 | 78 | 8 | 17 | -99 |
| 6 | 18 | 252 | 7 | 18 | 130 | 8 | 18 | -64 |
| 6 | 19 | 236 | 7 | 19 | 128 | 8 | 19 | -24 |
| 6 | 20 | 249 | 7 | 20 | 113 | 8 | 20 | -10 |
| 6 | 21 | 228 | 7 | 21 | 92 | 8 | 21 | 1 |
| 6 | 22 | 250 | 7 | 22 | 121 | 8 | 22 | 47 |
| 6 | 23 | 261 | 7 | 23 | 176 | 8 | 23 | 110 |
| 6 | 24 | 277 | 7 | 24 | 198 | 8 | 24 | 154 |
| 6 | 25 | 282 | 7 | 25 | 229 | 8 | 25 | 230 |
| 6 | 26 | 305 | 7 | 26 | 272 | 8 | 26 | 293 |
| 6 | 27 | 316 | 7 | 27 | 325 | 8 | 27 | 383 |
| 6 | 28 | 325 | 7 | 28 | 365 | 8 | 28 | 472 |
| 6 | 29 | 376 | 7 | 29 | 423 | 8 | 29 | 504 |
| 6 | 30 | 394 | 7 | 30 | 444 | 8 | 30 | 534 |
| 6 | 31 | 398 | 7 | 31 | 493 | 8 | 31 | 570 |
| 6 | 32 | 416 | 7 | 32 | 491 | 8 | 32 | 566 |
| 6 | 33 | 433 | 7 | 33 | 519 | 8 | 33 | 602 |
| 6 | 34 | 482 | 7 | 34 | 556 | 8 | 34 | 614 |
| 6 | 35 | 562 | 7 | 35 | 588 | 8 | 35 | 626 |
| 6 | 36 | 674 | 7 | 36 | 627 | 8 | 36 | 625 |
| 6 | 37 | 771 | 7 | 37 | 677 | 8 | 37 | 652 |
| 6 | 38 | 845 | 7 | 38 | 755 | 8 | 38 | 657 |
| 6 | 39 | 880 | 7 | 39 | 785 | 8 | 39 | 689 |
| 6 | 40 | 881 | 7 | 40 | 794 | 8 | 40 | 689 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 9 | 0 | 135 | 10 | 0 | 114 | 11 | 0 | 207 |
| 9 | 1 | 101 | 10 | 1 | 82 | 11 | 1 | 182 |
| 9 | 2 | 42 | 10 | 2 | 58 | 11 | 2 | 139 |
| 9 | 3 | 4 | 10 | 3 | 9 | 11 | 3 | 41 |
| 9 | 4 | -22 | 10 | 4 | -62 | 11 | 4 | -32 |
| 9 | 5 | -77 | 10 | 5 | -122 | 11 | 5 | -116 |
| 9 | 6 | -100 | 10 | 6 | -188 | 11 | 6 | -241 |
| 9 | 7 | -126 | 10 | 7 | -335 | 11 | 7 | -336 |
| 9 | 8 | -232 | 10 | 8 | -367 | 11 | 8 | -299 |
| 9 | 9 | -346 | 10 | 9 | -351 | 11 | 9 | -152 |
| 9 | 10 | -378 | 10 | 10 | -274 | 11 | 10 | -95 |
| 9 | 11 | -395 | 10 | 11 | -312 | 11 | 11 | -142 |
| 9 | 12 | -359 | 10 | 12 | -316 | 11 | 12 | -209 |
| 9 | 13 | -257 | 10 | 13 | -272 | 11 | 13 | -172 |
| 9 | 14 | -170 | 10 | 14 | -233 | 11 | 14 | -141 |
| 9 | 15 | -130 | 10 | 15 | -168 | 11 | 15 | -132 |
| 9 | 16 | -140 | 10 | 16 | -140 | 11 | 16 | -111 |
| 9 | 17 | -125 | 10 | 17 | -83 | 11 | 17 | -34 |
| 9 | 18 | -96 | 10 | 18 | -47 | 11 | 18 | -1 |
| 9 | 19 | -77 | 10 | 19 | -15 | 11 | 19 | -19 |
| 9 | 20 | -13 | 10 | 20 | -3 | 11 | 20 | -44 |
| 9 | 21 | 8 | 10 | 21 | -29 | 11 | 21 | -78 |
| 9 | 22 | 16 | 10 | 22 | -67 | 11 | 22 | -94 |
| 9 | 23 | 31 | 10 | 23 | -47 | 11 | 23 | -66 |
| 9 | 24 | 130 | 10 | 24 | 58 | 11 | 24 | -27 |
| 9 | 25 | 223 | 10 | 25 | 195 | 11 | 25 | 107 |
| 9 | 26 | 317 | 10 | 26 | 312 | 11 | 26 | 233 |
| 9 | 27 | 427 | 10 | 27 | 433 | 11 | 27 | 363 |
| 9 | 28 | 518 | 10 | 28 | 542 | 11 | 28 | 476 |
| 9 | 29 | 598 | 10 | 29 | 658 | 11 | 29 | 576 |
| 9 | 30 | 626 | 10 | 30 | 702 | 11 | 30 | 693 |
| 9 | 31 | 654 | 10 | 31 | 705 | 11 | 31 | 704 |
| 9 | 32 | 649 | 10 | 32 | 702 | 11 | 32 | 715 |
| 9 | 33 | 647 | 10 | 33 | 694 | 11 | 33 | 682 |
| 9 | 34 | 674 | 10 | 34 | 679 | 11 | 34 | 645 |
| 9 | 35 | 658 | 10 | 35 | 657 | 11 | 35 | 644 |
| 9 | 36 | 663 | 10 | 36 | 653 | 11 | 36 | 621 |
| 9 | 37 | 642 | 10 | 37 | 662 | 11 | 37 | 634 |
| 9 | 38 | 672 | 10 | 38 | 667 | 11 | 38 | 664 |
| 9 | 39 | 661 | 10 | 39 | 637 | 11 | 39 | 673 |
| 9 | 40 | 643 | 10 | 40 | 621 | 11 | 40 | 639 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 12 | 0 | 324 | 13 | 0 | 435 | 14 | 0 | 497 |
| 12 | 1 | 302 | 13 | 1 | 382 | 14 | 1 | 416 |
| 12 | 2 | 206 | 13 | 2 | 247 | 14 | 2 | 268 |
| 12 | 3 | 116 | 13 | 3 | 111 | 14 | 3 | 60 |
| 12 | 4 | -7 | 13 | 4 | -77 | 14 | 4 | -114 |
| 12 | 5 | -171 | 13 | 5 | -208 | 14 | 5 | -208 |
| 12 | 6 | -312 | 13 | 6 | -298 | 14 | 6 | -291 |
| 12 | 7 | -267 | 13 | 7 | -209 | 14 | 7 | -266 |
| 12 | 8 | -210 | 13 | 8 | -202 | 14 | 8 | -211 |
| 12 | 9 | -136 | 13 | 9 | -170 | 14 | 9 | -218 |
| 12 | 10 | -102 | 13 | 10 | -144 | 14 | 10 | -180 |
| 12 | 11 | -123 | 13 | 11 | -137 | 14 | 11 | -153 |
| 12 | 12 | -151 | 13 | 12 | -151 | 14 | 12 | -135 |
| 12 | 13 | -108 | 13 | 13 | -122 | 14 | 13 | -136 |
| 12 | 14 | -93 | 13 | 14 | -79 | 14 | 14 | -102 |
| 12 | 15 | -49 | 13 | 15 | -51 | 14 | 15 | -51 |
| 12 | 16 | -20 | 13 | 16 | 0 | 14 | 16 | -6 |
| 12 | 17 | 20 | 13 | 17 | 25 | 14 | 17 | 3 |
| 12 | 18 | 28 | 13 | 18 | 31 | 14 | 18 | 22 |
| 12 | 19 | -2 | 13 | 19 | -60 | 14 | 19 | 40 |
| 12 | 20 | -74 | 13 | 20 | -32 | 14 | 20 | 28 |
| 12 | 21 | -107 | 13 | 21 | -97 | 14 | 21 | -29 |
| 12 | 22 | -109 | 13 | 22 | -127 | 14 | 22 | -91 |
| 12 | 23 | -85 | 13 | 23 | -95 | 14 | 23 | -115 |
| 12 | 24 | -45 | 13 | 24 | -83 | 14 | 24 | -124 |
| 12 | 25 | 18 | 13 | 25 | -38 | 14 | 25 | -84 |
| 12 | 26 | 162 | 13 | 26 | 30 | 14 | 26 | -24 |
| 12 | 27 | 275 | 13 | 27 | 175 | 14 | 27 | 44 |
| 12 | 28 | 394 | 13 | 28 | 309 | 14 | 28 | 189 |
| 12 | 29 | 497 | 13 | 29 | 384 | 14 | 29 | 325 |
| 12 | 30 | 587 | 13 | 30 | 485 | 14 | 30 | 418 |
| 12 | 31 | 632 | 13 | 31 | 568 | 14 | 31 | 519 |
| 12 | 32 | 638 | 13 | 32 | 580 | 14 | 32 | 551 |
| 12 | 33 | 613 | 13 | 33 | 591 | 14 | 33 | 583 |
| 12 | 34 | 601 | 13 | 34 | 593 | 14 | 34 | 583 |
| 12 | 35 | 604 | 13 | 35 | 566 | 14 | 35 | 583 |
| 12 | 36 | 583 | 13 | 36 | 565 | 14 | 36 | 579 |
| 12 | 37 | 573 | 13 | 37 | 569 | 14 | 37 | 578 |
| 12 | 38 | 616 | 13 | 38 | 560 | 14 | 38 | 589 |
| 12 | 39 | 649 | 13 | 39 | 609 | 14 | 39 | 587 |
| 12 | 40 | 655 | 13 | 40 | 638 | 14 | 40 | 625 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 15 | 0 | 507 | 16 | 0 | 501 | 17 | 0 | 445 |
| 15 | 1 | 451 | 16 | 1 | 449 | 17 | 1 | 391 |
| 15 | 2 | 297 | 16 | 2 | 350 | 17 | 2 | 328 |
| 15 | 3 | 79 | 16 | 3 | 199 | 17 | 3 | 239 |
| 15 | 4 | -120 | 16 | 4 | -45 | 17 | 4 | 72 |
| 15 | 5 | -244 | 16 | 5 | -230 | 17 | 5 | -142 |
| 15 | 6 | -297 | 16 | 6 | -283 | 17 | 6 | -242 |
| 15 | 7 | -295 | 16 | 7 | -298 | 17 | 7 | -293 |
| 15 | 8 | -257 | 16 | 8 | -280 | 17 | 8 | -273 |
| 15 | 9 | -242 | 16 | 9 | -265 | 17 | 9 | -226 |
| 15 | 10 | -196 | 16 | 10 | -179 | 17 | 10 | -157 |
| 15 | 11 | -144 | 16 | 11 | -148 | 17 | 11 | -138 |
| 15 | 12 | -127 | 16 | 12 | -108 | 17 | 12 | -112 |
| 15 | 13 | -84 | 16 | 13 | -92 | 17 | 13 | -86 |
| 15 | 14 | -98 | 16 | 14 | -113 | 17 | 14 | -110 |
| 15 | 15 | -97 | 16 | 15 | -91 | 17 | 15 | -117 |
| 15 | 16 | -67 | 16 | 16 | -88 | 17 | 16 | -70 |
| 15 | 17 | -34 | 16 | 17 | -45 | 17 | 17 | -56 |
| 15 | 18 | -4 | 16 | 18 | -24 | 17 | 18 | -42 |
| 15 | 19 | 8 | 16 | 19 | 14 | 17 | 19 | 1 |
| 15 | 20 | 29 | 16 | 20 | 25 | 17 | 20 | 39 |
| 15 | 21 | 37 | 16 | 21 | -9 | 17 | 21 | -52 |
| 15 | 22 | -46 | 16 | 22 | -79 | 17 | 22 | -116 |
| 15 | 23 | -117 | 16 | 23 | -114 | 17 | 23 | -117 |
| 15 | 24 | -149 | 16 | 24 | -151 | 17 | 24 | -186 |
| 15 | 25 | -137 | 16 | 25 | -172 | 17 | 25 | -168 |
| 15 | 26 | -91 | 16 | 26 | -148 | 17 | 26 | -182 |
| 15 | 27 | -30 | 16 | 27 | -73 | 17 | 27 | -121 |
| 15 | 28 | 79 | 16 | 28 | -7 | 17 | 28 | -57 |
| 15 | 29 | 254 | 16 | 29 | 120 | 17 | 29 | 45 |
| 15 | 30 | 369 | 16 | 30 | 294 | 17 | 30 | 206 |
| 15 | 31 | 476 | 16 | 31 | 412 | 17 | 31 | 368 |
| 15 | 32 | 557 | 16 | 32 | 530 | 17 | 32 | 492 |
| 15 | 33 | 595 | 16 | 33 | 643 | 17 | 33 | 637 |
| 15 | 34 | 620 | 16 | 34 | 718 | 17 | 34 | 754 |
| 15 | 35 | 656 | 16 | 35 | 782 | 17 | 35 | 836 |
| 15 | 36 | 644 | 16 | 36 | 744 | 17 | 36 | 815 |
| 15 | 37 | 612 | 16 | 37 | 689 | 17 | 37 | 767 |
| 15 | 38 | 650 | 16 | 38 | 716 | 17 | 38 | 746 |
| 15 | 39 | 651 | 16 | 39 | 719 | 17 | 39 | 744 |
| 15 | 40 | 663 | 16 | 40 | 721 | 17 | 40 | 756 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 18 | 0 | 380 | 19 | 0 | 450 | 20 | 0 | 521 |
| 18 | 1 | 315 | 19 | 1 | 429 | 20 | 1 | 516 |
| 18 | 2 | 283 | 19 | 2 | 399 | 20 | 2 | 499 |
| 18 | 3 | 225 | 19 | 3 | 362 | 20 | 3 | 483 |
| 18 | 4 | 127 | 19 | 4 | 266 | 20 | 4 | 387 |
| 18 | 5 | -77 | 19 | 5 | 123 | 20 | 5 | 261 |
| 18 | 6 | -205 | 19 | 6 | -84 | 20 | 6 | 99 |
| 18 | 7 | -236 | 19 | 7 | -178 | 20 | 7 | -62 |
| 18 | 8 | -256 | 19 | 8 | -238 | 20 | 8 | -148 |
| 18 | 9 | -209 | 19 | 9 | -209 | 20 | 9 | -135 |
| 18 | 10 | -134 | 19 | 10 | -137 | 20 | 10 | -92 |
| 18 | 11 | -83 | 19 | 11 | -23 | 20 | 11 | 32 |
| 18 | 12 | -77 | 19 | 12 | 8 | 20 | 12 | 110 |
| 18 | 13 | -89 | 19 | 13 | -4 | 20 | 13 | 130 |
| 18 | 14 | -104 | 19 | 14 | -29 | 20 | 14 | 109 |
| 18 | 15 | -95 | 19 | 15 | -20 | 20 | 15 | 96 |
| 18 | 16 | -44 | 19 | 16 | 12 | 20 | 16 | 171 |
| 18 | 17 | -54 | 19 | 17 | 15 | 20 | 17 | 79 |
| 18 | 18 | -43 | 19 | 18 | 6 | 20 | 18 | 23 |
| 18 | 19 | -12 | 19 | 19 | 22 | 20 | 19 | 40 |
| 18 | 20 | 21 | 19 | 20 | 24 | 20 | 20 | 113 |
| 18 | 21 | -29 | 19 | 21 | 5 | 20 | 21 | 34 |
| 18 | 22 | -145 | 19 | 22 | -109 | 20 | 22 | -18 |
| 18 | 23 | -185 | 19 | 23 | -180 | 20 | 23 | -38 |
| 18 | 24 | -207 | 19 | 24 | -176 | 20 | 24 | -62 |
| 18 | 25 | -218 | 19 | 25 | -128 | 20 | 25 | -38 |
| 18 | 26 | -184 | 19 | 26 | -167 | 20 | 26 | -76 |
| 18 | 27 | -166 | 19 | 27 | -184 | 20 | 27 | -119 |
| 18 | 28 | -124 | 19 | 28 | -136 | 20 | 28 | -162 |
| 18 | 29 | -68 | 19 | 29 | -70 | 20 | 29 | -110 |
| 18 | 30 | 60 | 19 | 30 | -8 | 20 | 30 | -32 |
| 18 | 31 | 225 | 19 | 31 | 133 | 20 | 31 | 63 |
| 18 | 32 | 410 | 19 | 32 | 322 | 20 | 32 | 193 |
| 18 | 33 | 583 | 19 | 33 | 491 | 20 | 33 | 358 |
| 18 | 34 | 718 | 19 | 34 | 662 | 20 | 34 | 582 |
| 18 | 35 | 837 | 19 | 35 | 785 | 20 | 35 | 792 |
| 18 | 36 | 876 | 19 | 36 | 886 | 20 | 36 | 890 |
| 18 | 37 | 822 | 19 | 37 | 869 | 20 | 37 | 947 |
| 18 | 38 | 768 | 19 | 38 | 806 | 20 | 38 | 866 |
| 18 | 39 | 765 | 19 | 39 | 778 | 20 | 39 | 798 |
| 18 | 40 | 744 | 19 | 40 | 809 | 20 | 40 | 815 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 21 | 0 | 561 | 22 | 0 | 606 | 23 | 0 | 630 |
| 21 | 1 | 547 | 22 | 1 | 592 | 23 | 1 | 622 |
| 21 | 2 | 558 | 22 | 2 | 594 | 23 | 2 | 608 |
| 21 | 3 | 535 | 22 | 3 | 583 | 23 | 3 | 613 |
| 21 | 4 | 488 | 22 | 4 | 541 | 23 | 4 | 597 |
| 21 | 5 | 395 | 22 | 5 | 487 | 23 | 5 | 534 |
| 21 | 6 | 277 | 22 | 6 | 385 | 23 | 6 | 408 |
| 21 | 7 | 122 | 22 | 7 | 212 | 23 | 7 | 261 |
| 21 | 8 | -31 | 22 | 8 | 40 | 23 | 8 | 97 |
| 21 | 9 | -107 | 22 | 9 | -56 | 23 | 9 | -26 |
| 21 | 10 | -78 | 22 | 10 | -88 | 23 | 10 | -80 |
| 21 | 11 | 12 | 22 | 11 | -18 | 23 | 11 | -45 |
| 21 | 12 | 111 | 22 | 12 | 91 | 23 | 12 | 58 |
| 21 | 13 | 128 | 22 | 13 | 149 | 23 | 13 | 142 |
| 21 | 14 | 206 | 22 | 14 | 235 | 23 | 14 | 194 |
| 21 | 15 | 178 | 22 | 15 | 199 | 23 | 15 | 255 |
| 21 | 16 | 99 | 22 | 16 | 104 | 23 | 16 | 165 |
| 21 | 17 | 49 | 22 | 17 | 84 | 23 | 17 | 142 |
| 21 | 18 | 15 | 22 | 18 | 50 | 23 | 18 | 126 |
| 21 | 19 | 66 | 22 | 19 | 63 | 23 | 19 | 166 |
| 21 | 20 | 104 | 22 | 20 | 108 | 23 | 20 | 131 |
| 21 | 21 | 78 | 22 | 21 | 94 | 23 | 21 | 46 |
| 21 | 22 | 7 | 22 | 22 | 131 | 23 | 22 | 24 |
| 21 | 23 | 8 | 22 | 23 | 173 | 23 | 23 | 63 |
| 21 | 24 | -59 | 22 | 24 | 144 | 23 | 24 | 124 |
| 21 | 25 | -42 | 22 | 25 | 76 | 23 | 25 | 111 |
| 21 | 26 | -50 | 22 | 26 | 45 | 23 | 26 | 48 |
| 21 | 27 | -101 | 22 | 27 | -58 | 23 | 27 | -42 |
| 21 | 28 | -136 | 22 | 28 | -97 | 23 | 28 | -97 |
| 21 | 29 | -83 | 22 | 29 | -132 | 23 | 29 | -133 |
| 21 | 30 | -10 | 22 | 30 | -77 | 23 | 30 | -136 |
| 21 | 31 | 54 | 22 | 31 | 26 | 23 | 31 | -51 |
| 21 | 32 | 175 | 22 | 32 | 21 | 23 | 32 | -16 |
| 21 | 33 | 316 | 22 | 33 | 14 | 23 | 33 | -74 |
| 21 | 34 | 539 | 22 | 34 | 203 | 23 | 34 | 1 |
| 21 | 35 | 776 | 22 | 35 | 460 | 23 | 35 | 201 |
| 21 | 36 | 902 | 22 | 36 | 714 | 23 | 36 | 473 |
| 21 | 37 | 925 | 22 | 37 | 851 | 23 | 37 | 742 |
| 21 | 38 | 904 | 22 | 38 | 904 | 23 | 38 | 848 |
| 21 | 39 | 837 | 22 | 39 | 886 | 23 | 39 | 892 |
| 21 | 40 | 827 | 22 | 40 | 855 | 23 | 40 | 841 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 24 | 0 | 657 | 25 | 0 | 659 | 26 | 0 | 663 |
| 24 | 1 | 639 | 25 | 1 | 654 | 26 | 1 | 655 |
| 24 | 2 | 626 | 25 | 2 | 621 | 26 | 2 | 627 |
| 24 | 3 | 629 | 25 | 3 | 593 | 26 | 3 | 546 |
| 24 | 4 | 592 | 25 | 4 | 485 | 26 | 4 | 332 |
| 24 | 5 | 488 | 25 | 5 | 232 | 26 | 5 | 112 |
| 24 | 6 | 357 | 25 | 6 | 114 | 26 | 6 | -37 |
| 24 | 7 | 164 | 25 | 7 | -36 | 26 | 7 | -114 |
| 24 | 8 | 29 | 25 | 8 | -50 | 26 | 8 | 133 |
| 24 | 9 | -6 | 25 | 9 | -52 | 26 | 9 | -148 |
| 24 | 10 | -62 | 25 | 10 | -102 | 26 | 10 | -138 |
| 24 | 11 | -70 | 25 | 11 | -118 | 26 | 11 | -122 |
| 24 | 12 | -10 | 25 | 12 | -85 | 26 | 12 | -102 |
| 24 | 13 | 86 | 25 | 13 | -18 | 26 | 13 | -86 |
| 24 | 14 | 162 | 25 | 14 | 65 | 26 | 14 | -46 |
| 24 | 15 | 229 | 25 | 15 | 182 | 26 | 15 | 75 |
| 24 | 16 | 208 | 25 | 16 | 240 | 26 | 16 | 177 |
| 24 | 17 | 198 | 25 | 17 | 232 | 26 | 17 | 174 |
| 24 | 18 | 202 | 25 | 18 | 197 | 26 | 18 | 144 |
| 24 | 19 | 189 | 25 | 19 | 111 | 26 | 19 | 62 |
| 24 | 20 | 94 | 25 | 20 | -1 | 26 | 20 | 1 |
| 24 | 21 | 0 | 25 | 21 | -71 | 26 | 21 | -18 |
| 24 | 22 | -73 | 25 | 22 | -152 | 26 | 22 | -128 |
| 24 | 23 | -45 | 25 | 23 | -133 | 26 | 23 | -142 |
| 24 | 24 | -35 | 25 | 24 | -61 | 26 | 24 | -68 |
| 24 | 25 | 92 | 25 | 25 | 109 | 26 | 25 | 3 |
| 24 | 26 | 87 | 25 | 26 | 163 | 26 | 26 | 170 |
| 24 | 27 | 15 | 25 | 27 | 156 | 26 | 27 | 213 |
| 24 | 28 | -30 | 25 | 28 | -59 | 26 | 28 | 130 |
| 24 | 29 | -60 | 25 | 29 | -23 | 26 | 29 | 20 |
| 24 | 30 | -84 | 25 | 30 | -65 | 26 | 30 | -69 |
| 24 | 31 | -70 | 25 | 31 | -97 | 26 | 31 | -65 |
| 24 | 32 | -16 | 25 | 32 | -40 | 26 | 32 | -79 |
| 24 | 33 | -11 | 25 | 33 | 26 | 26 | 33 | -55 |
| 24 | 34 | -33 | 25 | 34 | 37 | 26 | 34 | -8 |
| 24 | 35 | 45 | 25 | 35 | 43 | 26 | 35 | 44 |
| 24 | 36 | 303 | 25 | 36 | 164 | 26 | 36 | 164 |
| 24 | 37 | 560 | 25 | 37 | 357 | 26 | 37 | 317 |
| 24 | 38 | 757 | 25 | 38 | 599 | 26 | 38 | 535 |
| 24 | 39 | 809 | 25 | 39 | 727 | 26 | 39 | 719 |
| 24 | 40 | 801 | 25 | 40 | 765 | 26 | 40 | 751 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 27 | 0 | 687 | 28 | 0 | 671 | 29 | 0 | 673 |
| 27 | 1 | 656 | 28 | 1 | 644 | 29 | 1 | 650 |
| 27 | 2 | 639 | 28 | 2 | 616 | 29 | 2 | 639 |
| 27 | 3 | 565 | 28 | 3 | 599 | 29 | 3 | 632 |
| 27 | 4 | 376 | 28 | 4 | 516 | 29 | 4 | 606 |
| 27 | 5 | 78 | 28 | 5 | 223 | 29 | 5 | 473 |
| 27 | 6 | -72 | 28 | 6 | -9 | 29 | 6 | 181 |
| 27 | 7 | -142 | 28 | 7 | -150 | 29 | 7 | -27 |
| 27 | 8 | -190 | 28 | 8 | -162 | 29 | 8 | -76 |
| 27 | 9 | -163 | 28 | 9 | -116 | 29 | 9 | -74 |
| 27 | 10 | -126 | 28 | 10 | -71 | 29 | 10 | -58 |
| 27 | 11 | -104 | 28 | 11 | -55 | 29 | 11 | -38 |
| 27 | 12 | -134 | 28 | 12 | -86 | 29 | 12 | 6 |
| 27 | 13 | -111 | 28 | 13 | -75 | 29 | 13 | 4 |
| 27 | 14 | -93 | 28 | 14 | -58 | 29 | 14 | -8 |
| 27 | 15 | 3 | 28 | 15 | -10 | 29 | 15 | 76 |
| 27 | 16 | 111 | 28 | 16 | 92 | 29 | 16 | 118 |
| 27 | 17 | 125 | 28 | 17 | 151 | 29 | 17 | 177 |
| 27 | 18 | 169 | 28 | 18 | 188 | 29 | 18 | 97 |
| 27 | 19 | 205 | 28 | 19 | 192 | 29 | 19 | 76 |
| 27 | 20 | 78 | 28 | 20 | 179 | 29 | 20 | 134 |
| 27 | 21 | 32 | 28 | 21 | 56 | 29 | 21 | 127 |
| 27 | 22 | -38 | 28 | 22 | -26 | 29 | 22 | 30 |
| 27 | 23 | -99 | 28 | 23 | -68 | 29 | 23 | -63 |
| 27 | 24 | -105 | 28 | 24 | -122 | 29 | 24 | -149 |
| 27 | 25 | -89 | 28 | 25 | -130 | 29 | 25 | -167 |
| 27 | 26 | 42 | 28 | 26 | -75 | 29 | 26 | -136 |
| 27 | 27 | 191 | 28 | 27 | 63 | 29 | 27 | -45 |
| 27 | 28 | 189 | 28 | 28 | 227 | 29 | 28 | 156 |
| 27 | 29 | 67 | 28 | 29 | 177 | 29 | 29 | 235 |
| 27 | 30 | -20 | 28 | 30 | 43 | 29 | 30 | 120 |
| 27 | 31 | -44 | 28 | 31 | -41 | 29 | 31 | -11 |
| 27 | 32 | -58 | 28 | 32 | -77 | 29 | 32 | -67 |
| 27 | 33 | -97 | 28 | 33 | -110 | 29 | 33 | -52 |
| 27 | 34 | -68 | 28 | 34 | -79 | 29 | 34 | 34 |
| 27 | 35 | -1 | 28 | 35 | 42 | 29 | 35 | 134 |
| 27 | 36 | 171 | 28 | 36 | 196 | 29 | 36 | 270 |
| 27 | 37 | 334 | 28 | 37 | 353 | 29 | 37 | 429 |
| 27 | 38 | 529 | 28 | 38 | 517 | 29 | 38 | 604 |
| 27 | 39 | 677 | 28 | 39 | 684 | 29 | 39 | 752 |
| 27 | 40 | 730 | 28 | 40 | 758 | 29 | 40 | 786 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 30 | 0 | 673 | 31 | 0 | 655 | 32 | 0 | 672 |
| 30 | 1 | 653 | 31 | 1 | 661 | 32 | 1 | 667 |
| 30 | 2 | 645 | 31 | 2 | 651 | 32 | 2 | 652 |
| 30 | 3 | 627 | 31 | 3 | 633 | 32 | 3 | 646 |
| 30 | 4 | 629 | 31 | 4 | 640 | 32 | 4 | 644 |
| 30 | 5 | 582 | 31 | 5 | 647 | 32 | 5 | 647 |
| 30 | 6 | 417 | 31 | 6 | 565 | 32 | 6 | 629 |
| 30 | 7 | 149 | 31 | 7 | 402 | 32 | 7 | 608 |
| 30 | 8 | 6 | 31 | 8 | 181 | 32 | 8 | 400 |
| 30 | 9 | -28 | 31 | 9 | 8 | 32 | 9 | 175 |
| 30 | 10 | -53 | 31 | 10 | -16 | 32 | 10 | 58 |
| 30 | 11 | -28 | 31 | 11 | -46 | 32 | 11 | -18 |
| 30 | 12 | -12 | 31 | 12 | -3 | 32 | 12 | 34 |
| 30 | 13 | 36 | 31 | 13 | 66 | 32 | 13 | 75 |
| 30 | 14 | 56 | 31 | 14 | 113 | 32 | 14 | 107 |
| 30 | 15 | 119 | 31 | 15 | 185 | 32 | 15 | 81 |
| 30 | 16 | 224 | 31 | 16 | 205 | 32 | 16 | 43 |
| 30 | 17 | 149 | 31 | 17 | 20 | 32 | 17 | -83 |
| 30 | 18 | 3 | 31 | 18 | -83 | 32 | 18 | -96 |
| 30 | 19 | -43 | 31 | 19 | -108 | 32 | 19 | -106 |
| 30 | 20 | 0 | 31 | 20 | -69 | 32 | 20 | -70 |
| 30 | 21 | 125 | 31 | 21 | 122 | 32 | 21 | 95 |
| 30 | 22 | 42 | 31 | 22 | 130 | 32 | 22 | 118 |
| 30 | 23 | -41 | 31 | 23 | 107 | 32 | 23 | 159 |
| 30 | 24 | -123 | 31 | 24 | 85 | 32 | 24 | 140 |
| 30 | 25 | -165 | 31 | 25 | 37 | 32 | 25 | 76 |
| 30 | 26 | -153 | 31 | 26 | 3 | 32 | 26 | 48 |
| 30 | 27 | -93 | 31 | 27 | -48 | 32 | 27 | -58 |
| 30 | 28 | 4 | 31 | 28 | -125 | 32 | 28 | -90 |
| 30 | 29 | 128 | 31 | 29 | -126 | 32 | 29 | -140 |
| 30 | 30 | 160 | 31 | 30 | -33 | 32 | 30 | -110 |
| 30 | 31 | 55 | 31 | 31 | 44 | 32 | 31 | 10 |
| 30 | 32 | 15 | 31 | 32 | 108 | 32 | 32 | 11 |
| 30 | 33 | 34 | 31 | 33 | 192 | 32 | 33 | 7 |
| 30 | 34 | 110 | 31 | 34 | 377 | 32 | 34 | 188 |
| 30 | 35 | 224 | 31 | 35 | 622 | 32 | 35 | 446 |
| 30 | 36 | 419 | 31 | 36 | 800 | 32 | 36 | 711 |
| 30 | 37 | 524 | 31 | 37 | 870 | 32 | 37 | 855 |
| 30 | 38 | 720 | 31 | 38 | 896 | 32 | 38 | 906 |
| 30 | 39 | 795 | 31 | 39 | 844 | 32 | 39 | 891 |
| 30 | 40 | 804 | 31 | 40 | 824 | 32 | 40 | 846 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 33 | 0 | 658 | 34 | 0 | 680 | 35 | 0 | 675 |
| 33 | 1 | 660 | 34 | 1 | 665 | 35 | 1 | 669 |
| 33 | 2 | 655 | 34 | 2 | 647 | 35 | 2 | 666 |
| 33 | 3 | 647 | 34 | 3 | 648 | 35 | 3 | 661 |
| 33 | 4 | 642 | 34 | 4 | 646 | 35 | 4 | 674 |
| 33 | 5 | 646 | 34 | 5 | 651 | 35 | 5 | 652 |
| 33 | 6 | 634 | 34 | 6 | 652 | 35 | 6 | 648 |
| 33 | 7 | 629 | 34 | 7 | 647 | 35 | 7 | 648 |
| 33 | 8 | 572 | 34 | 8 | 607 | 35 | 8 | 623 |
| 33 | 9 | 400 | 34 | 9 | 528 | 35 | 9 | 587 |
| 33 | 10 | 180 | 34 | 10 | 307 | 35 | 10 | 478 |
| 33 | 11 | 86 | 34 | 11 | 142 | 35 | 11 | 268 |
| 33 | 12 | 22 | 34 | 12 | 20 | 35 | 12 | 84 |
| 33 | 13 | -7 | 34 | 13 | -50 | 35 | 13 | -42 |
| 33 | 14 | -41 | 34 | 14 | -93 | 35 | 14 | -104 |
| 33 | 15 | -97 | 34 | 15 | -101 | 35 | 15 | -142 |
| 33 | 16 | -80 | 34 | 16 | -84 | 35 | 16 | -123 |
| 33 | 17 | -93 | 34 | 17 | -140 | 35 | 17 | -184 |
| 33 | 18 | -124 | 34 | 18 | -165 | 35 | 18 | -129 |
| 33 | 19 | -122 | 34 | 19 | -136 | 35 | 19 | -90 |
| 33 | 20 | 9 | 34 | 20 | 20 | 35 | 20 | 12 |
| 33 | 21 | 43 | 34 | 21 | 1 | 35 | 21 | -63 |
| 33 | 22 | 23 | 34 | 22 | -78 | 35 | 22 | -153 |
| 33 | 23 | 66 | 34 | 23 | -46 | 35 | 23 | -120 |
| 33 | 24 | 136 | 34 | 24 | -8 | 35 | 24 | -35 |
| 33 | 25 | 100 | 34 | 25 | 92 | 35 | 25 | 104 |
| 33 | 26 | 55 | 34 | 26 | 80 | 35 | 26 | 163 |
| 33 | 27 | 48 | 34 | 27 | 3 | 35 | 27 | 142 |
| 33 | 28 | -95 | 34 | 28 | -16 | 35 | 28 | 50 |
| 33 | 29 | -149 | 34 | 29 | -65 | 35 | 29 | -22 |
| 33 | 30 | -128 | 34 | 30 | -102 | 35 | 30 | -47 |
| 33 | 31 | -49 | 34 | 31 | -74 | 35 | 31 | -86 |
| 33 | 32 | -19 | 34 | 32 | -5 | 35 | 32 | -38 |
| 33 | 33 | -78 | 34 | 33 | -13 | 35 | 33 | 32 |
| 33 | 34 | -29 | 34 | 34 | -23 | 35 | 34 | 52 |
| 33 | 35 | 211 | 34 | 35 | 59 | 35 | 35 | 47 |
| 33 | 36 | 496 | 34 | 36 | 310 | 35 | 36 | 173 |
| 33 | 37 | 747 | 34 | 37 | 581 | 35 | 37 | 168 |
| 33 | 38 | 852 | 34 | 38 | 757 | 35 | 38 | 617 |
| 33 | 39 | 899 | 34 | 39 | 812 | 35 | 39 | 739 |
| 33 | 40 | 846 | 34 | 40 | 793 | 35 | 40 | 774 |

| Xm | Ym | Zmm | Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|---|---|---|
| 36 | 0 | 694 | 37 | 0 | 702 | 38 | 0 | 704 |
| 36 | 1 | 665 | 37 | 1 | 675 | 38 | 1 | 686 |
| 36 | 2 | 661 | 37 | 2 | 668 | 38 | 2 | 678 |
| 36 | 3 | 660 | 37 | 3 | 660 | 38 | 3 | 669 |
| 36 | 4 | 656 | 37 | 4 | 661 | 38 | 4 | 659 |
| 36 | 5 | 656 | 37 | 5 | 646 | 38 | 5 | 650 |
| 36 | 6 | 640 | 37 | 6 | 632 | 38 | 6 | 655 |
| 36 | 7 | 646 | 37 | 7 | 640 | 38 | 7 | 659 |
| 36 | 8 | 646 | 37 | 8 | 635 | 38 | 8 | 647 |
| 36 | 9 | 614 | 37 | 9 | 628 | 38 | 9 | 652 |
| 36 | 10 | 572 | 37 | 10 | 617 | 38 | 10 | 629 |
| 36 | 11 | 487 | 37 | 11 | 590 | 38 | 11 | 615 |
| 36 | 12 | 315 | 37 | 12 | 480 | 38 | 12 | 542 |
| 36 | 13 | 92 | 37 | 13 | 212 | 38 | 13 | 428 |
| 36 | 14 | -97 | 37 | 14 | 24 | 38 | 14 | 166 |
| 36 | 15 | -176 | 37 | 15 | -196 | 38 | 15 | 0 |
| 36 | 16 | -194 | 37 | 16 | -216 | 38 | 16 | -159 |
| 36 | 17 | -64 | 37 | 17 | -178 | 38 | 17 | -155 |
| 36 | 18 | -140 | 37 | 18 | -122 | 38 | 18 | -76 |
| 36 | 19 | -107 | 37 | 19 | -91 | 38 | 19 | 11 |
| 36 | 20 | -28 | 37 | 20 | -12 | 38 | 20 | 86 |
| 36 | 21 | -11 | 37 | 21 | 22 | 38 | 21 | 63 |
| 36 | 22 | -132 | 37 | 22 | -26 | 38 | 22 | -10 |
| 36 | 23 | -132 | 37 | 23 | -74 | 38 | 23 | -62 |
| 36 | 24 | -59 | 37 | 24 | -112 | 38 | 24 | -116 |
| 36 | 25 | 8 | 37 | 25 | -76 | 38 | 25 | -119 |
| 36 | 26 | 179 | 37 | 26 | 39 | 38 | 26 | -68 |
| 36 | 27 | 197 | 37 | 27 | 204 | 38 | 27 | 50 |
| 36 | 28 | 124 | 37 | 28 | 189 | 38 | 28 | 220 |
| 36 | 29 | -3 | 37 | 29 | 86 | 38 | 29 | 195 |
| 36 | 30 | -71 | 37 | 30 | -18 | 38 | 30 | 40 |
| 36 | 31 | -68 | 37 | 31 | -39 | 38 | 31 | -36 |
| 36 | 32 | -82 | 37 | 32 | -58 | 38 | 32 | -76 |
| 36 | 33 | -56 | 37 | 33 | -97 | 38 | 33 | -111 |
| 36 | 34 | -3 | 37 | 34 | -72 | 38 | 34 | -85 |
| 36 | 35 | 50 | 37 | 35 | -1 | 38 | 35 | 66 |
| 36 | 36 | 147 | 37 | 36 | 184 | 38 | 36 | 217 |
| 36 | 37 | 321 | 37 | 37 | 337 | 38 | 37 | 365 |
| 36 | 38 | 552 | 37 | 38 | 529 | 38 | 38 | 536 |
| 36 | 39 | 734 | 37 | 39 | 680 | 38 | 39 | 713 |
| 36 | 40 | 757 | 37 | 40 | 740 | 38 | 40 | 758 |

| Xm | Ym | Zmm | Xm | Ym | Zmm |
|---|---|---|---|---|---|
| 39 | 0 | 708 | 40 | 0 | 710 |
| 39 | 1 | 682 | 40 | 1 | 690 |
| 39 | 2 | 665 | 40 | 2 | 672 |
| 39 | 3 | 660 | 40 | 3 | 659 |
| 39 | 4 | 648 | 40 | 4 | 645 |
| 39 | 5 | 652 | 40 | 5 | 629 |
| 39 | 6 | 648 | 40 | 6 | 621 |
| 39 | 7 | 648 | 40 | 7 | 630 |
| 39 | 8 | 633 | 40 | 8 | 619 |
| 39 | 9 | 642 | 40 | 9 | 625 |
| 39 | 10 | 640 | 40 | 10 | 626 |
| 39 | 11 | 638 | 40 | 11 | 617 |
| 39 | 12 | 582 | 40 | 12 | 620 |
| 39 | 13 | 497 | 40 | 13 | 581 |
| 39 | 14 | 383 | 40 | 14 | 517 |
| 39 | 15 | 179 | 40 | 15 | 412 |
| 39 | 16 | -33 | 40 | 16 | 262 |
| 39 | 17 | -41 | 40 | 17 | 104 |
| 39 | 18 | 15 | 40 | 18 | 143 |
| 39 | 19 | 121 | 40 | 19 | 205 |
| 39 | 20 | 200 | 40 | 20 | 278 |
| 39 | 21 | 141 | 40 | 21 | 108 |
| 39 | 22 | 33 | 40 | 22 | 54 |
| 39 | 23 | -65 | 40 | 23 | -32 |
| 39 | 24 | -162 | 40 | 24 | -149 |
| 39 | 25 | -168 | 40 | 25 | -168 |
| 39 | 26 | -105 | 40 | 26 | 130 |
| 39 | 27 | -51 | 40 | 27 | -104 |
| 39 | 28 | 111 | 40 | 28 | -15 |
| 39 | 29 | 232 | 40 | 29 | 116 |
| 39 | 30 | 119 | 40 | 30 | 139 |
| 39 | 31 | -7 | 40 | 31 | 56 |
| 39 | 32 | -56 | 40 | 32 | 25 |
| 39 | 33 | -24 | 40 | 33 | 56 |
| 39 | 34 | 66 | 40 | 34 | 171 |
| 39 | 35 | 160 | 40 | 35 | 287 |
| 39 | 36 | 303 | 40 | 36 | 427 |
| 39 | 37 | 447 | 40 | 37 | 566 |
| 39 | 38 | 621 | 40 | 38 | 726 |
| 39 | 39 | 716 | 40 | 39 | 810 |
| 39 | 40 | 785 | 40 | 40 | 803 |