

The Complete Lurah and Gabbai Guide

Nathan Kasimer

April 10, 2024

Contents

| | | |
|----------|---|-----------|
| I | Perpetual Luach | 4 |
| 1 | Computing Moladot and Determining Kevi'ot | 5 |
| 2 | Kevi'ot for Specific Years | 6 |
| 3 | Moladot for Specific Months | 8 |
| 4 | Selected Holiday's Gregorian Dates | 14 |
| 5 | Luachs for Each Year | 15 |
| 5.1 | 203 Monday-Short-Tuesday (non-leap) | 15 |
| 5.2 | 225 Monday-Long-Thursday (non-leap) | 17 |
| 5.3 | 315 Tuesday-Regular-Thursday (non-leap) | 19 |
| 5.4 | 517 Thursday-Regular-Shabbat (non-leap) | 21 |
| 5.5 | 521 Thursday-Long-Sunday (non-leap) | 23 |
| 5.6 | 701 Shabbat-Short-Sunday (non-leap) | 25 |
| 5.7 | 723 Shabbat-Regular-Tuesday (non-leap) | 32 |
| 5.8 | 205 Tuesday-Short-Thursday (leap) | 36 |
| 5.9 | 227 Tuesday-Long-Shabbat (leap) | 38 |
| 5.10 | 317 Tuesday-Regular-Shabbat | 40 |
| 5.11 | 501 Thursday-Short-Sunday | 42 |
| 5.12 | 523 Thursday-Long-Tuesday | 44 |
| 5.13 | 703 Shabbat-Short-Tuesday (leap) | 46 |
| 5.14 | 725 Shabbat-Long-Thursday (leap) | 54 |
| 6 | Zmanim | 59 |
| 6.1 | Zmanim for Chicago | 60 |
| 7 | Calculation of Zmanim | 62 |
| 7.1 | Mathematical Background | 62 |
| 7.2 | Instructions | 63 |
| 7.3 | Observations | 64 |
| 7.4 | Equation of Time and Declination Table | 65 |
| 7.5 | 0° Offset & Mins per ° Table | 67 |
| 7.6 | Depression Angles & Adjustments | 71 |
| 7.7 | Multiplication Table | 73 |
| 7.8 | Minute Correction Table | 74 |
| 7.9 | Time Zone Table | 75 |
| 7.10 | Sample Calculations | 76 |
| 7.10.1 | Example 1 | 76 |
| 7.10.2 | Example 2 | 76 |
| 7.10.3 | Example 3 | 76 |

| | | |
|--------|---------------------|----|
| 7.10.4 | Example 4 | 77 |
| 7.10.5 | Example 5 | 77 |

II Selected Halakhot for Gabbaim 78

8 Liturgical Halakhot 79

| | | |
|-------|---|----|
| 8.1 | Introduction | 79 |
| 8.2 | Situations where Prayer is Forbidden | 79 |
| 8.3 | A Diminished Minyan | 79 |
| 8.4 | Interruptions in Liturgy | 80 |
| 8.4.1 | During Pesukei DeZimra | 80 |
| 8.4.2 | During the Shema and its Blessings | 80 |
| 8.4.3 | During the Amidah | 80 |
| 8.5 | Time-Related Errors in Liturgy | 81 |
| 8.5.1 | Requests for Rain | 81 |
| 8.5.2 | Shabbat and Festival Liturgical Texts | 81 |
| 8.5.3 | Holiday Liturgical Additions | 82 |
| 8.5.4 | Cases of Doubt | 82 |
| 8.6 | Birkat Hamazon | 82 |
| 8.6.1 | When to Recite Birkat Hamazon | 82 |
| 8.6.2 | Errors in Additions to Birkat Hamazon | 82 |
| 8.7 | Priority List for Aliyot | 83 |

9 Problems in Sifrei Torah 84

| | | |
|-----|---|----|
| 9.1 | When an Invalidation is Found | 84 |
|-----|---|----|

Part I

Perpetual Luach

Chapter 1

Computing Moladot and Determining Kevi'ot

Chapter 2

Kevi'ot for Specific Years

The following is a list of kevi'ot for years until 6000. Years in **bold** are shemitta years. Years in *italics* are leap years. The number code works as follows:

- The first digit is the day of the week of Rosh Hashana (1=Sunday, 7=Shabbat, etc)
- The second digit is the number of days. 0 for a short year with either 353 or 383 days, 1 for a regular year with 354 or 384 days, and 2 for a long year of 355 or 385 days.
- The third digit is the day of the week of Pesah (1=Sunday, 7=Shabbat, etc)

Each year has its own luaḥ in subsequent chapters.

| Decade | ...0 | ...1 | ...2 | ...3 | ...4 | ...5 | ...6 | ...7 | ...8 | ...9 |
|--------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 5780 | 225 | 701 | 317 | 225 | 703 | 521 | 315 | 725 | 723 | 506 |
| 5790 | 115 | 723 | 517 | 205 | 723 | 523 | 506 | 113 | 523 | 517 |
| 5800 | 225 | 703 | 517 | 227 | 203 | 521 | 317 | 225 | 701 | 317 |
| 5810 | 225 | 723 | 501 | 315 | 725 | 723 | 506 | 115 | 723 | 517 |
| 5820 | 205 | 723 | 523 | 517 | 203 | 523 | 517 | 225 | 703 | 517 |
| 5830 | 225 | 703 | 521 | 317 | 225 | 701 | 317 | 225 | 723 | 501 |
| 5840 | 315 | 725 | 723 | 517 | 205 | 723 | 517 | 205 | 723 | 517 |
| 5850 | 227 | 203 | 523 | 517 | 225 | 703 | 517 | 225 | 725 | 701 |
| 5860 | 317 | 225 | 723 | 501 | 315 | 723 | 523 | 506 | 113 | 523 |
| 5870 | 517 | 205 | 723 | 517 | 216 | 113 | 517 | 227 | 225 | 703 |
| 5880 | 517 | 225 | 703 | 521 | 315 | 725 | 723 | 506 | 115 | 723 |
| 5890 | 501 | 315 | 723 | 523 | 506 | 113 | 523 | 517 | 205 | 723 |
| 5900 | 517 | 227 | 203 | 521 | 317 | 225 | 701 | 317 | 225 | 703 |
| 5910 | 521 | 315 | 725 | 723 | 517 | 205 | 723 | 501 | 315 | 723 |
| 5920 | 523 | 517 | 203 | 523 | 517 | 225 | 703 | 517 | 227 | 203 |
| 5930 | 521 | 317 | 225 | 701 | 317 | 225 | 725 | 701 | 315 | 725 |
| 5940 | 723 | 517 | 205 | 723 | 517 | 216 | 113 | 523 | 517 | 225 |
| 5950 | 703 | 517 | 225 | 703 | 517 | 227 | 225 | 701 | 317 | 225 |
| 5960 | 723 | 501 | 315 | 723 | 523 | 506 | 115 | 723 | 517 | 205 |
| 5970 | 723 | 517 | 227 | 203 | 523 | 517 | 225 | 703 | 517 | 225 |
| 5980 | 703 | 521 | 315 | 725 | 701 | 317 | 225 | 723 | 501 | 315 |
| 5990 | 723 | 523 | 517 | 205 | 723 | 517 | 205 | 723 | 517 | 227 |

Chapter 3

Moladot for Specific Months

Below is a table of the molad for every month until 5900. To save space, months are “stacked” on each other. Nisan, Iyyar, etc are below Tishrei, Marḥeshvan, etc. The three numbers are the days, hours, and ḥalakim of the molad. In this reckoning days start at 6pm the previous night, as in the normal Jewish way of reckoning dates. Often this is expressed using the am/pm system. To convert from these numbers to a time:

1. If the hour number (second number) is less than 6, subtract 1 from the day
2. If the hour is less than 6, add 6 to the hours. The time is pm.
3. If the hour is between 6 and 18, subtract 6 from the hours. The time is am.
4. If the hour is above 18, subtract 18 from the hours. The time is pm.
5. Divide the ḥalakim by 18 and round down. This is the number of minutes
6. The remainder of ḥalakim divided by 18 is the number of ḥalakim

For example, 2 - 5 - 204 works out to Sunday (since 5 is less than 6, so it’s Sunday evening) 11pm, 11 minutes, and 6 ḥalakim. Or more concisely, Sunday, 11:11pm and 6 ḥalakim. For simplicity and to match the molad as given in traditional Jewish texts, and to avoid the impression that the molad for any given month on the standard clock time has any astronomical meaning, it may be desirable to use days - hours - ḥalakim as in the table.

| | Tishrei Nisan | Marḥeshvan Iyyar | Kislev Sivan | Tevet Tammuz | Shevat Av | Adar Elul | Adar II |
|------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| 5784 | 6 - 11 - 882 3 - 4 - 1033 | 1 - 0 - 595 4 - 17 - 746 | 2 - 13 - 308 6 - 6 - 459 | 4 - 2 - 21 7 - 19 - 172 | 5 - 14 - 814 2 - 7 - 965 | 7 - 3 - 527 3 - 20 - 678 | 1 - 16 - 240 |
| 5785 | 5 - 9 - 391 7 - 13 - 829 | 6 - 22 - 104 2 - 2 - 542 | 1 - 10 - 897 3 - 15 - 255 | 2 - 23 - 610 5 - 3 - 1048 | 4 - 12 - 323 6 - 16 - 761 | 6 - 1 - 36 1 - 5 - 474 | |
| 5786 | 2 - 18 - 187 4 - 22 - 625 | 4 - 6 - 980 6 - 11 - 338 | 5 - 19 - 693 1 - 0 - 51 | 7 - 8 - 406 2 - 12 - 844 | 1 - 21 - 119 4 - 1 - 557 | 3 - 9 - 912 5 - 14 - 270 | |
| 5787 | 7 - 2 - 1063 3 - 20 - 134 | 1 - 15 - 776 5 - 8 - 927 | 3 - 4 - 489 6 - 21 - 640 | 4 - 17 - 202 1 - 10 - 353 | 6 - 5 - 995 2 - 23 - 66 | 7 - 18 - 708 4 - 11 - 859 | 2 - 7 - 421 |
| 5788 | 6 - 0 - 572 1 - 4 - 1010 | 7 - 13 - 285 2 - 17 - 723 | 2 - 1 - 1078 4 - 6 - 436 | 3 - 14 - 791 5 - 19 - 149 | 5 - 3 - 504 7 - 7 - 942 | 6 - 16 - 217 1 - 20 - 655 | |
| 5789 | 3 - 9 - 368 5 - 13 - 806 | 4 - 22 - 81 7 - 2 - 519 | 6 - 10 - 874 1 - 15 - 232 | 7 - 23 - 587 3 - 3 - 1025 | 2 - 12 - 300 4 - 16 - 738 | 4 - 1 - 13 6 - 5 - 451 | |
| 5790 | 7 - 18 - 164 4 - 11 - 315 | 2 - 6 - 957 6 - 0 - 28 | 3 - 19 - 670 7 - 12 - 821 | 5 - 8 - 383 2 - 1 - 534 | 6 - 21 - 96 3 - 14 - 247 | 1 - 9 - 889 5 - 2 - 1040 | 2 - 22 - 602 |
| 5791 | 6 - 15 - 753 1 - 20 - 111 | 1 - 4 - 466 3 - 8 - 904 | 2 - 17 - 179 4 - 21 - 617 | 4 - 5 - 972 6 - 10 - 330 | 5 - 18 - 685 7 - 23 - 43 | 7 - 7 - 398 2 - 11 - 836 | |

| | Tishrei Nisan | Marḥeshvan Iyyar | Kislev Sivan | Tevet Tammuz | Shevat Av | Adar Elul | Adar II |
|------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|---------------|
| 5792 | 4 - 0 - 549 6 - 4 - 987 | 5 - 13 - 262 7 - 17 - 700 | 7 - 1 - 1055 2 - 6 - 413 | 1 - 14 - 768 3 - 19 - 126 | 3 - 3 - 481 5 - 7 - 919 | 4 - 16 - 194 6 - 20 - 632 | |
| 5793 | 1 - 9 - 345 5 - 2 - 496 | 2 - 22 - 58 6 - 15 - 209 | 4 - 10 - 851 1 - 3 - 1002 | 5 - 23 - 564 2 - 16 - 715 | 7 - 12 - 277 4 - 5 - 428 | 2 - 0 - 1070 5 - 18 - 141 | 3 - 13 - 783 |
| 5794 | 7 - 6 - 934 2 - 11 - 292 | 1 - 19 - 647 4 - 0 - 5 | 3 - 8 - 360 5 - 12 - 798 | 4 - 21 - 73 7 - 1 - 511 | 6 - 9 - 866 1 - 14 - 224 | 7 - 22 - 579 3 - 2 - 1017 | |
| 5795 | 4 - 15 - 730 1 - 8 - 881 | 6 - 4 - 443 2 - 21 - 594 | 7 - 17 - 156 4 - 10 - 307 | 2 - 5 - 949 5 - 23 - 20 | 3 - 18 - 662 7 - 11 - 813 | 5 - 7 - 375 2 - 0 - 526 | 6 - 20 - 88 |
| 5796 | 3 - 13 - 239 5 - 17 - 677 | 5 - 1 - 1032 7 - 6 - 390 | 6 - 14 - 745 1 - 19 - 103 | 1 - 3 - 458 3 - 7 - 896 | 2 - 16 - 171 4 - 20 - 609 | 4 - 4 - 964 6 - 9 - 322 | |
| 5797 | 7 - 22 - 35 3 - 2 - 473 | 2 - 10 - 828 4 - 15 - 186 | 3 - 23 - 541 6 - 3 - 979 | 5 - 12 - 254 7 - 16 - 692 | 7 - 0 - 1047 2 - 5 - 405 | 1 - 13 - 760 3 - 18 - 118 | |
| 5798 | 5 - 6 - 911 1 - 23 - 1062 | 6 - 19 - 624 3 - 12 - 775 | 1 - 8 - 337 5 - 1 - 488 | 2 - 21 - 50 6 - 14 - 201 | 4 - 9 - 843 1 - 2 - 994 | 5 - 22 - 556 2 - 15 - 707 | 7 - 11 - 269 |
| 5799 | 4 - 4 - 420 6 - 8 - 858 | 5 - 17 - 133 7 - 21 - 571 | 7 - 5 - 926 2 - 10 - 284 | 1 - 18 - 639 3 - 22 - 1077 | 3 - 7 - 352 5 - 11 - 790 | 4 - 20 - 65 7 - 0 - 503 | |
| 5800 | 1 - 13 - 216 3 - 17 - 654 | 3 - 1 - 1009 5 - 6 - 367 | 4 - 14 - 722 6 - 19 - 80 | 6 - 3 - 435 1 - 7 - 873 | 7 - 16 - 148 2 - 20 - 586 | 2 - 4 - 941 4 - 9 - 299 | |
| 5801 | 5 - 22 - 12 2 - 15 - 163 | 7 - 10 - 805 4 - 3 - 956 | 1 - 23 - 518 5 - 16 - 669 | 3 - 12 - 231 7 - 5 - 382 | 5 - 0 - 1024 1 - 18 - 95 | 6 - 13 - 737 3 - 6 - 888 | 1 - 2 - 450 |
| 5802 | 4 - 19 - 601 6 - 23 - 1039 | 6 - 8 - 314 1 - 12 - 752 | 7 - 21 - 27 3 - 1 - 465 | 2 - 9 - 820 4 - 14 - 178 | 3 - 22 - 533 6 - 2 - 971 | 5 - 11 - 246 7 - 15 - 684 | |
| 5803 | 2 - 4 - 397 5 - 21 - 548 | 3 - 17 - 110 7 - 10 - 261 | 5 - 5 - 903 1 - 22 - 1054 | 6 - 18 - 616 3 - 11 - 767 | 1 - 7 - 329 5 - 0 - 480 | 2 - 20 - 42 6 - 13 - 193 | 4 - 8 - 835 |
| 5804 | 1 - 1 - 986 3 - 6 - 344 | 2 - 14 - 699 4 - 19 - 57 | 4 - 3 - 412 6 - 7 - 850 | 5 - 16 - 125 7 - 20 - 563 | 7 - 4 - 918 2 - 9 - 276 | 1 - 17 - 631 3 - 21 - 1069 | |
| 5805 | 5 - 10 - 782 7 - 15 - 140 | 6 - 23 - 495 2 - 3 - 933 | 1 - 12 - 208 3 - 16 - 646 | 3 - 0 - 1001 5 - 5 - 359 | 4 - 13 - 714 6 - 18 - 72 | 6 - 2 - 427 1 - 6 - 865 | |
| 5806 | 2 - 19 - 578 6 - 12 - 729 | 4 - 8 - 291 1 - 1 - 442 | 5 - 21 - 4 2 - 14 - 155 | 7 - 9 - 797 4 - 2 - 948 | 1 - 22 - 510 5 - 15 - 661 | 3 - 11 - 223 7 - 4 - 374 | 4 - 23 - 1016 |
| 5807 | 1 - 17 - 87 3 - 21 - 525 | 3 - 5 - 880 5 - 10 - 238 | 4 - 18 - 593 6 - 22 - 1031 | 6 - 7 - 306 1 - 11 - 744 | 7 - 20 - 19 3 - 0 - 457 | 2 - 8 - 812 4 - 13 - 170 | |
| 5808 | 6 - 1 - 963 1 - 6 - 321 | 7 - 14 - 676 2 - 19 - 34 | 2 - 3 - 389 4 - 7 - 827 | 3 - 16 - 102 5 - 20 - 540 | 5 - 4 - 895 7 - 9 - 253 | 6 - 17 - 608 1 - 21 - 1046 | |
| 5809 | 3 - 10 - 759 7 - 3 - 910 | 4 - 23 - 472 1 - 16 - 623 | 6 - 12 - 185 3 - 5 - 336 | 1 - 0 - 978 4 - 18 - 49 | 2 - 13 - 691 6 - 6 - 842 | 4 - 2 - 404 7 - 19 - 555 | 5 - 15 - 117 |
| 5810 | 2 - 8 - 268 4 - 12 - 706 | 3 - 20 - 1061 6 - 1 - 419 | 5 - 9 - 774 7 - 14 - 132 | 6 - 22 - 487 2 - 2 - 925 | 1 - 11 - 200 3 - 15 - 638 | 2 - 23 - 993 5 - 4 - 351 | |
| 5811 | 6 - 17 - 64 1 - 21 - 502 | 1 - 5 - 857 3 - 10 - 215 | 2 - 18 - 570 4 - 22 - 1008 | 4 - 7 - 283 6 - 11 - 721 | 5 - 19 - 1076 1 - 0 - 434 | 7 - 8 - 789 2 - 13 - 147 | |
| 5812 | 4 - 1 - 940 7 - 19 - 11 | 5 - 14 - 653 2 - 7 - 804 | 7 - 3 - 366 3 - 20 - 517 | 1 - 16 - 79 5 - 9 - 230 | 3 - 4 - 872 6 - 21 - 1023 | 4 - 17 - 585 1 - 10 - 736 | 6 - 6 - 298 |
| 5813 | 2 - 23 - 449 5 - 3 - 887 | 4 - 12 - 162 6 - 16 - 600 | 6 - 0 - 955 1 - 5 - 313 | 7 - 13 - 668 2 - 18 - 26 | 2 - 2 - 381 4 - 6 - 819 | 3 - 15 - 94 5 - 19 - 532 | |
| 5814 | 7 - 8 - 245 4 - 1 - 396 | 1 - 20 - 1038 5 - 14 - 109 | 3 - 9 - 751 7 - 2 - 902 | 4 - 22 - 464 1 - 15 - 615 | 6 - 11 - 177 3 - 4 - 328 | 7 - 23 - 970 4 - 17 - 41 | 2 - 12 - 683 |
| 5815 | 6 - 5 - 834 1 - 10 - 192 | 7 - 18 - 547 2 - 22 - 985 | 2 - 7 - 260 4 - 11 - 698 | 3 - 19 - 1053 6 - 0 - 411 | 5 - 8 - 766 7 - 13 - 124 | 6 - 21 - 479 2 - 1 - 917 | |
| 5816 | 3 - 14 - 630 5 - 18 - 1068 | 5 - 3 - 343 7 - 7 - 781 | 6 - 16 - 56 1 - 20 - 494 | 1 - 4 - 849 3 - 9 - 207 | 2 - 17 - 562 4 - 21 - 1000 | 4 - 6 - 275 6 - 10 - 713 | |

| | Tishrei Nisan | Marheshvan Iyyar | Kislev Sivan | Tevet Tammuz | Shevat Av | Adar Elul | Adar II |
|------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|---------------|
| 5817 | 7 - 23 - 426 4 - 16 - 577 | 2 - 12 - 139 6 - 5 - 290 | 4 - 0 - 932 7 - 18 - 3 | 5 - 13 - 645 2 - 6 - 796 | 7 - 2 - 358 3 - 19 - 509 | 1 - 15 - 71 5 - 8 - 222 | 3 - 3 - 864 |
| 5818 | 6 - 20 - 1015 2 - 1 - 373 | 1 - 9 - 728 3 - 14 - 86 | 2 - 22 - 441 5 - 2 - 879 | 4 - 11 - 154 6 - 15 - 592 | 5 - 23 - 947 1 - 4 - 305 | 7 - 12 - 660 2 - 17 - 18 | |
| 5819 | 4 - 5 - 811 6 - 10 - 169 | 5 - 18 - 524 7 - 22 - 962 | 7 - 7 - 237 2 - 11 - 675 | 1 - 19 - 1030 4 - 0 - 388 | 3 - 8 - 743 5 - 13 - 101 | 4 - 21 - 456 7 - 1 - 894 | |
| 5820 | 1 - 14 - 607 5 - 7 - 758 | 3 - 3 - 320 6 - 20 - 471 | 4 - 16 - 33 1 - 9 - 184 | 6 - 4 - 826 2 - 21 - 977 | 7 - 17 - 539 4 - 10 - 690 | 2 - 6 - 252 5 - 23 - 403 | 3 - 18 - 1045 |
| 5821 | 7 - 12 - 116 2 - 16 - 554 | 2 - 0 - 909 4 - 5 - 267 | 3 - 13 - 622 5 - 17 - 1060 | 5 - 2 - 335 7 - 6 - 773 | 6 - 15 - 48 1 - 19 - 486 | 1 - 3 - 841 3 - 8 - 199 | |
| 5822 | 4 - 20 - 992 1 - 14 - 63 | 6 - 9 - 705 3 - 2 - 856 | 7 - 22 - 418 4 - 15 - 569 | 2 - 11 - 131 6 - 4 - 282 | 3 - 23 - 924 7 - 16 - 1075 | 5 - 12 - 637 2 - 5 - 788 | 7 - 1 - 350 |
| 5823 | 3 - 18 - 501 5 - 22 - 939 | 5 - 7 - 214 7 - 11 - 652 | 6 - 19 - 1007 2 - 0 - 365 | 1 - 8 - 720 3 - 13 - 78 | 2 - 21 - 433 5 - 1 - 871 | 4 - 10 - 146 6 - 14 - 584 | |
| 5824 | 1 - 3 - 297 3 - 7 - 735 | 2 - 16 - 10 4 - 20 - 448 | 4 - 4 - 803 6 - 9 - 161 | 5 - 17 - 516 7 - 21 - 954 | 7 - 6 - 229 2 - 10 - 667 | 1 - 18 - 1022 3 - 23 - 380 | |
| 5825 | 5 - 12 - 93 2 - 5 - 244 | 7 - 0 - 886 3 - 17 - 1037 | 1 - 13 - 599 5 - 6 - 750 | 3 - 2 - 312 6 - 19 - 463 | 4 - 15 - 25 1 - 8 - 176 | 6 - 3 - 818 2 - 20 - 969 | 7 - 16 - 531 |
| 5826 | 4 - 9 - 682 6 - 14 - 40 | 5 - 22 - 395 1 - 2 - 833 | 7 - 11 - 108 2 - 15 - 546 | 1 - 23 - 901 4 - 4 - 259 | 3 - 12 - 614 5 - 16 - 1052 | 5 - 1 - 327 7 - 5 - 765 | |
| 5827 | 1 - 18 - 478 3 - 22 - 916 | 3 - 7 - 191 5 - 11 - 629 | 4 - 19 - 984 7 - 0 - 342 | 6 - 8 - 697 1 - 13 - 55 | 7 - 21 - 410 3 - 1 - 848 | 2 - 10 - 123 4 - 14 - 561 | |
| 5828 | 6 - 3 - 274 2 - 20 - 425 | 7 - 15 - 1067 4 - 9 - 138 | 2 - 4 - 780 5 - 21 - 931 | 3 - 17 - 493 7 - 10 - 644 | 5 - 6 - 206 1 - 23 - 357 | 6 - 18 - 999 3 - 12 - 70 | 1 - 7 - 712 |
| 5829 | 5 - 0 - 863 7 - 5 - 221 | 6 - 13 - 576 1 - 17 - 1014 | 1 - 2 - 289 3 - 6 - 727 | 2 - 15 - 2 4 - 19 - 440 | 4 - 3 - 795 6 - 8 - 153 | 5 - 16 - 508 7 - 20 - 946 | |
| 5830 | 2 - 9 - 659 4 - 14 - 17 | 3 - 22 - 372 6 - 2 - 810 | 5 - 11 - 85 7 - 15 - 523 | 6 - 23 - 878 2 - 4 - 236 | 1 - 12 - 591 3 - 16 - 1029 | 3 - 1 - 304 5 - 5 - 742 | |
| 5831 | 6 - 18 - 455 3 - 11 - 606 | 1 - 7 - 168 5 - 0 - 319 | 2 - 19 - 961 6 - 13 - 32 | 4 - 8 - 674 1 - 1 - 825 | 5 - 21 - 387 2 - 14 - 538 | 7 - 10 - 100 4 - 3 - 251 | 1 - 22 - 893 |
| 5832 | 5 - 15 - 1044 7 - 20 - 402 | 7 - 4 - 757 2 - 9 - 115 | 1 - 17 - 470 3 - 21 - 908 | 3 - 6 - 183 5 - 10 - 621 | 4 - 18 - 976 6 - 23 - 334 | 6 - 7 - 689 1 - 12 - 47 | |
| 5833 | 3 - 0 - 840 6 - 17 - 991 | 4 - 13 - 553 1 - 6 - 704 | 6 - 2 - 266 2 - 19 - 417 | 7 - 14 - 1059 4 - 8 - 130 | 2 - 3 - 772 5 - 20 - 923 | 3 - 16 - 485 7 - 9 - 636 | 5 - 5 - 198 |
| 5834 | 1 - 22 - 349 4 - 2 - 787 | 3 - 11 - 62 5 - 15 - 500 | 4 - 23 - 855 7 - 4 - 213 | 6 - 12 - 568 1 - 16 - 1006 | 1 - 1 - 281 3 - 5 - 719 | 2 - 13 - 1074 4 - 18 - 432 | |
| 5835 | 6 - 7 - 145 1 - 11 - 583 | 7 - 19 - 938 3 - 0 - 296 | 2 - 8 - 651 4 - 13 - 9 | 3 - 21 - 364 6 - 1 - 802 | 5 - 10 - 77 7 - 14 - 515 | 6 - 22 - 870 2 - 3 - 228 | |
| 5836 | 3 - 15 - 1021 7 - 9 - 92 | 5 - 4 - 734 1 - 21 - 885 | 6 - 17 - 447 3 - 10 - 598 | 1 - 6 - 160 4 - 23 - 311 | 2 - 18 - 953 6 - 12 - 24 | 4 - 7 - 666 1 - 0 - 817 | 5 - 20 - 379 |
| 5837 | 2 - 13 - 530 4 - 17 - 968 | 4 - 2 - 243 6 - 6 - 681 | 5 - 14 - 1036 7 - 19 - 394 | 7 - 3 - 749 2 - 8 - 107 | 1 - 16 - 462 3 - 20 - 900 | 3 - 5 - 175 5 - 9 - 613 | |
| 5838 | 6 - 22 - 326 2 - 2 - 764 | 1 - 11 - 39 3 - 15 - 477 | 2 - 23 - 832 5 - 4 - 190 | 4 - 12 - 545 6 - 16 - 983 | 6 - 1 - 258 1 - 5 - 696 | 7 - 13 - 1051 2 - 18 - 409 | |
| 5839 | 4 - 7 - 122 1 - 0 - 273 | 5 - 19 - 915 2 - 12 - 1066 | 7 - 8 - 628 4 - 1 - 779 | 1 - 21 - 341 5 - 14 - 492 | 3 - 10 - 54 7 - 3 - 205 | 4 - 22 - 847 1 - 15 - 998 | 6 - 11 - 560 |
| 5840 | 3 - 4 - 711 5 - 9 - 69 | 4 - 17 - 424 6 - 21 - 862 | 6 - 6 - 137 1 - 10 - 575 | 7 - 18 - 930 2 - 23 - 288 | 2 - 7 - 643 4 - 12 - 1 | 3 - 20 - 356 6 - 0 - 794 | |
| 5841 | 7 - 13 - 507 4 - 6 - 658 | 2 - 2 - 220 5 - 19 - 371 | 3 - 14 - 1013 7 - 8 - 84 | 5 - 3 - 726 1 - 20 - 877 | 6 - 16 - 439 3 - 9 - 590 | 1 - 5 - 152 4 - 22 - 303 | 2 - 17 - 945 |

| | Tishrei Nisan | Marḥeshvan Iyyar | Kislev Sivan | Tevet Tammuz | Shevat Av | Adar Elul | Adar II |
|------|-------------------------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|--------------|
| 5842 | 6 - II - 16 1 - 15 - 454 | 7 - 23 - 809 3 - 4 - 167 | 2 - 12 - 522 4 - 16 - 960 | 4 - I - 235 6 - 5 - 673 | 5 - 13 - 1028 7 - 18 - 386 | 7 - 2 - 741 2 - 7 - 99 | |
| 5843 | 3 - 19 - 892 6 - 0 - 250 | 5 - 8 - 605 7 - 12 - 1043 | 6 - 21 - 318 2 - I - 756 | 1 - 10 - 31 3 - 14 - 469 | 2 - 22 - 824 5 - 3 - 182 | 4 - II - 537 6 - 15 - 975 | |
| 5844 | 1 - 4 - 688 4 - 21 - 839 | 2 - 17 - 401 6 - 10 - 552 | 4 - 6 - 114 7 - 23 - 265 | 5 - 18 - 907 2 - II - 1058 | 7 - 7 - 620 4 - 0 - 771 | 1 - 20 - 333 5 - 13 - 484 | 3 - 9 - 46 |
| 5845 | 7 - 2 - 197 2 - 6 - 635 | 1 - 14 - 990 3 - 19 - 348 | 3 - 3 - 703 5 - 8 - 61 | 4 - 16 - 416 6 - 20 - 854 | 6 - 5 - 129 1 - 9 - 567 | 7 - 17 - 922 2 - 22 - 280 | |
| 5846 | 4 - 10 - 1073 6 - 15 - 431 | 5 - 23 - 786 1 - 4 - 144 | 7 - 12 - 499 2 - 16 - 937 | 2 - I - 212 4 - 5 - 650 | 3 - 13 - 1005 5 - 18 - 363 | 5 - 2 - 718 7 - 7 - 76 | |
| 5847 | 1 - 19 - 869 5 - 12 - 1020 | 3 - 8 - 582 7 - I - 733 | 4 - 21 - 295 1 - 14 - 446 | 6 - 10 - 8 3 - 3 - 159 | 7 - 22 - 801 4 - 15 - 952 | 2 - II - 514 6 - 4 - 665 | 4 - 0 - 227 |
| 5848 | 7 - 17 - 378 2 - 21 - 816 | 2 - 6 - 91 4 - 10 - 529 | 3 - 18 - 884 5 - 23 - 242 | 5 - 7 - 597 7 - II - 1035 | 6 - 20 - 310 2 - 0 - 748 | 1 - 9 - 23 3 - 13 - 461 | |
| 5849 | 5 - 2 - 174 7 - 6 - 612 | 6 - 14 - 967 1 - 19 - 325 | 1 - 3 - 680 3 - 8 - 38 | 2 - 16 - 393 4 - 20 - 831 | 4 - 5 - 106 6 - 9 - 544 | 5 - 17 - 899 7 - 22 - 257 | |
| 5850 | 2 - 10 - 1050 6 - 4 - 121 | 3 - 23 - 763 7 - 16 - 914 | 5 - 12 - 476 2 - 5 - 627 | 7 - I - 189 3 - 18 - 340 | 1 - 13 - 982 5 - 7 - 53 | 3 - 2 - 695 6 - 19 - 846 | 4 - 15 - 408 |
| 5851 | 1 - 8 - 559 3 - 12 - 997 | 2 - 21 - 272 5 - I - 710 | 4 - 9 - 1065 6 - 14 - 423 | 5 - 22 - 778 1 - 3 - 136 | 7 - II - 491 2 - 15 - 929 | 2 - 0 - 204 4 - 4 - 642 | |
| 5852 | 5 - 17 - 355 2 - 10 - 506 | 7 - 6 - 68 3 - 23 - 219 | 1 - 18 - 861 5 - II - 1012 | 3 - 7 - 574 7 - 0 - 725 | 4 - 20 - 287 1 - 13 - 438 | 6 - 9 - 0 3 - 2 - 151 | 7 - 21 - 793 |
| 5853 | 4 - 14 - 944 6 - 19 - 302 | 6 - 3 - 657 1 - 8 - 15 | 7 - 16 - 370 2 - 20 - 808 | 2 - 5 - 83 4 - 9 - 521 | 3 - 17 - 876 5 - 22 - 234 | 5 - 6 - 589 7 - 10 - 1027 | |
| 5854 | 1 - 23 - 740 4 - 4 - 98 | 3 - 12 - 453 5 - 16 - 891 | 5 - I - 166 7 - 5 - 604 | 6 - 13 - 959 1 - 18 - 317 | 1 - 2 - 672 3 - 7 - 30 | 2 - 15 - 385 4 - 19 - 823 | |
| 5855 | 6 - 8 - 536 3 - I - 687 | 7 - 21 - 249 4 - 14 - 400 | 2 - 9 - 1042 6 - 3 - 113 | 3 - 22 - 755 7 - 15 - 906 | 5 - II - 468 2 - 4 - 619 | 7 - 0 - 181 3 - 17 - 332 | 1 - 12 - 974 |
| 5856 | 5 - 6 - 45 7 - 10 - 483 | 6 - 18 - 838 1 - 23 - 196 | 1 - 7 - 551 3 - II - 989 | 2 - 20 - 264 5 - 0 - 702 | 4 - 8 - 1057 6 - 13 - 415 | 5 - 21 - 770 1 - 2 - 128 | |
| 5857 | 2 - 14 - 921 4 - 19 - 279 | 4 - 3 - 634 6 - 7 - 1072 | 5 - 16 - 347 7 - 20 - 785 | 7 - 5 - 60 2 - 9 - 498 | 1 - 17 - 853 3 - 22 - 211 | 3 - 6 - 566 5 - 10 - 1004 | |
| 5858 | 6 - 23 - 717 3 - 16 - 868 | 1 - 12 - 430 5 - 5 - 581 | 3 - I - 143 6 - 18 - 294 | 4 - 13 - 936 1 - 7 - 7 | 6 - 2 - 649 2 - 19 - 800 | 7 - 15 - 362 4 - 8 - 513 | 2 - 4 - 75 |
| 5859 | 5 - 21 - 226 1 - I - 664 | 7 - 9 - 1019 2 - 14 - 377 | 1 - 22 - 732 4 - 3 - 90 | 3 - II - 445 5 - 15 - 883 | 5 - 0 - 158 7 - 4 - 596 | 6 - 12 - 951 1 - 17 - 309 | |
| 5860 | 3 - 6 - 22 6 - 23 - 173 | 4 - 18 - 815 1 - II - 966 | 6 - 7 - 528 3 - 0 - 679 | 7 - 20 - 241 4 - 13 - 392 | 2 - 8 - 1034 6 - 2 - 105 | 3 - 21 - 747 7 - 14 - 898 | 5 - 10 - 460 |
| 5861 | 2 - 3 - 611 4 - 7 - 1049 | 3 - 16 - 324 5 - 20 - 762 | 5 - 5 - 37 7 - 9 - 475 | 6 - 17 - 830 1 - 22 - 188 | 1 - 6 - 543 3 - 10 - 981 | 2 - 19 - 256 4 - 23 - 694 | |
| 5862 | 6 - 12 - 407 1 - 16 - 845 | 1 - I - 120 3 - 5 - 558 | 2 - 13 - 913 4 - 18 - 271 | 4 - 2 - 626 6 - 6 - 1064 | 5 - 15 - 339 7 - 19 - 777 | 7 - 4 - 52 2 - 8 - 490 | |
| 5863 | 3 - 21 - 203 7 - 14 - 354 | 5 - 9 - 996 2 - 3 - 67 | 6 - 22 - 709 3 - 15 - 860 | 1 - II - 422 5 - 4 - 573 | 3 - 0 - 135 6 - 17 - 286 | 4 - 12 - 928 1 - 5 - 1079 | 6 - 1 - 641 |
| 5864 | 2 - 18 - 792 4 - 23 - 150 | 4 - 7 - 505 6 - II - 943 | 5 - 20 - 218 1 - 0 - 656 | 7 - 8 - 1011 2 - 13 - 369 | 1 - 21 - 724 4 - 2 - 82 | 3 - 10 - 437 5 - 14 - 875 | |
| 5865 | 7 - 3 - 588 2 - 7 - 1026 | 1 - 16 - 301 3 - 20 - 739 | 3 - 5 - 14 5 - 9 - 452 | 4 - 17 - 807 6 - 22 - 165 | 6 - 6 - 520 1 - 10 - 958 | 7 - 19 - 233 2 - 23 - 671 | |
| 5866 | 4 - 12 - 384 1 - 5 - 535 | 6 - 1 - 97 2 - 18 - 248 | 7 - 13 - 890 4 - 6 - 1041 | 2 - 2 - 603 5 - 19 - 754 | 3 - 15 - 316 7 - 8 - 467 | 5 - 4 - 29 1 - 21 - 180 | 6 - 16 - 822 |

| | Tishrei Nisan | Marheshvan Iyyar | Kislev Sivan | Tevet Tammuz | Shevat Av | Adar Elul | Adar II |
|------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------------|
| 5867 | 3 - 9 - 973 5 - 14 - 331 | 4 - 22 - 686 7 - 3 - 44 | 6 - 11 - 399 1 - 15 - 837 | 1 - 0 - 112 3 - 4 - 550 | 2 - 12 - 905 4 - 17 - 263 | 4 - 1 - 618 6 - 5 - 1056 | |
| 5868 | 7 - 18 - 769 2 - 23 - 127 | 2 - 7 - 482 4 - 11 - 920 | 3 - 20 - 195 6 - 0 - 633 | 5 - 8 - 988 7 - 13 - 346 | 6 - 21 - 701 2 - 2 - 59 | 1 - 10 - 414 3 - 14 - 852 | |
| 5869 | 5 - 3 - 565 1 - 20 - 716 | 6 - 16 - 278 3 - 9 - 429 | 1 - 4 - 1071 4 - 22 - 142 | 2 - 17 - 784 6 - 10 - 935 | 4 - 6 - 497 7 - 23 - 648 | 5 - 19 - 210 2 - 12 - 361 | 7 - 7 - 1003 |
| 5870 | 4 - 1 - 74 6 - 5 - 512 | 5 - 13 - 867 7 - 18 - 225 | 7 - 2 - 580 2 - 6 - 1018 | 1 - 15 - 293 3 - 19 - 731 | 3 - 4 - 6 5 - 8 - 444 | 4 - 16 - 799 6 - 21 - 157 | |
| 5871 | 1 - 9 - 950 5 - 3 - 21 | 2 - 22 - 663 6 - 15 - 814 | 4 - 11 - 376 1 - 4 - 527 | 6 - 0 - 89 2 - 17 - 240 | 7 - 12 - 882 4 - 5 - 1033 | 2 - 1 - 595 5 - 18 - 746 | 3 - 14 - 308 |
| 5872 | 7 - 7 - 459 2 - 11 - 897 | 1 - 20 - 172 4 - 0 - 610 | 3 - 8 - 965 5 - 13 - 323 | 4 - 21 - 678 7 - 2 - 36 | 6 - 10 - 391 1 - 14 - 829 | 7 - 23 - 104 3 - 3 - 542 | |
| 5873 | 4 - 16 - 255 6 - 20 - 693 | 6 - 4 - 1048 1 - 9 - 406 | 7 - 17 - 761 2 - 22 - 119 | 2 - 6 - 474 4 - 10 - 912 | 3 - 19 - 187 5 - 23 - 625 | 5 - 7 - 980 7 - 12 - 338 | |
| 5874 | 2 - 1 - 51 5 - 18 - 202 | 3 - 13 - 844 7 - 6 - 995 | 5 - 2 - 557 1 - 19 - 708 | 6 - 15 - 270 3 - 8 - 421 | 1 - 3 - 1063 4 - 21 - 134 | 2 - 16 - 776 6 - 9 - 927 | 4 - 5 - 489 |
| 5875 | 7 - 22 - 640 3 - 2 - 1078 | 2 - 11 - 353 4 - 15 - 791 | 4 - 0 - 66 6 - 4 - 504 | 5 - 12 - 859 7 - 17 - 217 | 7 - 1 - 572 2 - 5 - 1010 | 1 - 14 - 285 3 - 18 - 723 | |
| 5876 | 5 - 7 - 436 7 - 11 - 874 | 6 - 20 - 149 2 - 0 - 587 | 1 - 8 - 942 3 - 13 - 300 | 2 - 21 - 655 5 - 2 - 13 | 4 - 10 - 368 6 - 14 - 806 | 5 - 23 - 81 1 - 3 - 519 | |
| 5877 | 2 - 16 - 232 6 - 9 - 383 | 4 - 4 - 1025 7 - 22 - 96 | 5 - 17 - 738 2 - 10 - 889 | 7 - 6 - 451 3 - 23 - 602 | 1 - 19 - 164 5 - 12 - 315 | 3 - 7 - 957 7 - 1 - 28 | 4 - 20 - 670 |
| 5878 | 1 - 13 - 821 3 - 18 - 179 | 3 - 2 - 534 5 - 6 - 972 | 4 - 15 - 247 6 - 19 - 685 | 6 - 3 - 1040 1 - 8 - 398 | 7 - 16 - 753 2 - 21 - 111 | 2 - 5 - 466 4 - 9 - 904 | |
| 5879 | 5 - 22 - 617 2 - 15 - 768 | 7 - 11 - 330 4 - 4 - 481 | 2 - 0 - 43 5 - 17 - 194 | 3 - 12 - 836 7 - 5 - 987 | 5 - 1 - 549 1 - 18 - 700 | 6 - 14 - 262 3 - 7 - 413 | 1 - 2 - 1055 |
| 5880 | 4 - 20 - 126 7 - 0 - 564 | 6 - 8 - 919 1 - 13 - 277 | 7 - 21 - 632 3 - 1 - 1070 | 2 - 10 - 345 4 - 14 - 783 | 3 - 23 - 58 6 - 3 - 496 | 5 - 11 - 851 7 - 16 - 209 | |
| 5881 | 2 - 4 - 1002 4 - 9 - 360 | 3 - 17 - 715 5 - 22 - 73 | 5 - 6 - 428 7 - 10 - 866 | 6 - 19 - 141 1 - 23 - 579 | 1 - 7 - 934 3 - 12 - 292 | 2 - 20 - 647 5 - 1 - 5 | |
| 5882 | 6 - 13 - 798 3 - 6 - 949 | 1 - 2 - 511 4 - 19 - 662 | 2 - 15 - 224 6 - 8 - 375 | 4 - 3 - 1017 7 - 21 - 88 | 5 - 16 - 730 2 - 9 - 881 | 7 - 5 - 443 3 - 22 - 594 | 1 - 18 - 156 |
| 5883 | 5 - 11 - 307 7 - 15 - 745 | 7 - 0 - 20 2 - 4 - 458 | 1 - 12 - 813 3 - 17 - 171 | 3 - 1 - 526 5 - 5 - 964 | 4 - 14 - 239 6 - 18 - 677 | 6 - 2 - 1032 1 - 7 - 390 | |
| 5884 | 2 - 20 - 103 5 - 0 - 541 | 4 - 8 - 896 6 - 13 - 254 | 5 - 21 - 609 1 - 1 - 1047 | 7 - 10 - 322 2 - 14 - 760 | 1 - 23 - 35 4 - 3 - 473 | 3 - 11 - 828 5 - 16 - 186 | |
| 5885 | 7 - 4 - 979 3 - 22 - 50 | 1 - 17 - 692 5 - 10 - 843 | 3 - 6 - 405 6 - 23 - 556 | 4 - 19 - 118 1 - 12 - 269 | 6 - 7 - 911 3 - 0 - 1062 | 7 - 20 - 624 4 - 13 - 775 | 2 - 9 - 337 |
| 5886 | 6 - 2 - 488 1 - 6 - 926 | 7 - 15 - 201 2 - 19 - 639 | 2 - 3 - 994 4 - 8 - 352 | 3 - 16 - 707 5 - 21 - 65 | 5 - 5 - 420 7 - 9 - 858 | 6 - 18 - 133 1 - 22 - 571 | |
| 5887 | 3 - 11 - 284 5 - 15 - 722 | 4 - 23 - 1077 7 - 4 - 435 | 6 - 12 - 790 1 - 17 - 148 | 1 - 1 - 503 3 - 5 - 941 | 2 - 14 - 216 4 - 18 - 654 | 4 - 2 - 1009 6 - 7 - 367 | |
| 5888 | 7 - 20 - 80 4 - 13 - 231 | 2 - 8 - 873 6 - 1 - 1024 | 3 - 21 - 586 7 - 14 - 737 | 5 - 10 - 299 2 - 3 - 450 | 6 - 23 - 12 3 - 16 - 163 | 1 - 11 - 805 5 - 4 - 956 | 3 - 0 - 518 |
| 5889 | 6 - 17 - 669 1 - 22 - 27 | 1 - 6 - 382 3 - 10 - 820 | 2 - 19 - 95 4 - 23 - 533 | 4 - 7 - 888 6 - 12 - 246 | 5 - 20 - 601 1 - 0 - 1039 | 7 - 9 - 314 2 - 13 - 752 | |
| 5890 | 4 - 2 - 465 7 - 19 - 616 | 5 - 15 - 178 2 - 8 - 329 | 7 - 3 - 971 3 - 21 - 42 | 1 - 16 - 684 5 - 9 - 835 | 3 - 5 - 397 6 - 22 - 548 | 4 - 18 - 110 1 - 11 - 261 | 6 - 6 - 903 |
| 5891 | 2 - 23 - 1054 5 - 4 - 412 | 4 - 12 - 767 6 - 17 - 125 | 6 - 1 - 480 1 - 5 - 918 | 7 - 14 - 193 2 - 18 - 631 | 2 - 2 - 986 4 - 7 - 344 | 3 - 15 - 699 5 - 20 - 57 | |

| | Tishrei Nisan | Marḥeshvan Iyyar | Kislev Sivan | Tevet Tammuz | Shevat Av | Adar Elul | Adar II |
|------|------------------------------|------------------------------|------------------------------|-------------------------------|------------------------------|------------------------------|--------------|
| 5892 | 7 - 8 - 850 2 - 13 - 208 | 1 - 21 - 563 4 - 1 - 1001 | 3 - 10 - 276 5 - 14 - 714 | 4 - 22 - 1069 7 - 3 - 427 | 6 - 11 - 782 1 - 16 - 140 | 1 - 0 - 495 3 - 4 - 933 | |
| 5893 | 4 - 17 - 646 1 - 10 - 797 | 6 - 6 - 359 2 - 23 - 510 | 7 - 19 - 72 4 - 12 - 223 | 2 - 7 - 865 6 - 0 - 1016 | 3 - 20 - 578 7 - 13 - 729 | 5 - 9 - 291 2 - 2 - 442 | 6 - 22 - 4 |
| 5894 | 3 - 15 - 155 5 - 19 - 593 | 5 - 3 - 948 7 - 8 - 306 | 6 - 16 - 661 1 - 21 - 19 | 1 - 5 - 374 3 - 9 - 812 | 2 - 18 - 87 4 - 22 - 525 | 4 - 6 - 880 6 - 11 - 238 | |
| 5895 | 7 - 23 - 1031 3 - 4 - 389 | 2 - 12 - 744 4 - 17 - 102 | 4 - 1 - 457 6 - 5 - 895 | 5 - 14 - 170 7 - 18 - 608 | 7 - 2 - 963 2 - 7 - 321 | 1 - 15 - 676 3 - 20 - 34 | |
| 5896 | 5 - 8 - 827 2 - 1 - 978 | 6 - 21 - 540 3 - 14 - 691 | 1 - 10 - 253 5 - 3 - 404 | 2 - 22 - 1046 6 - 16 - 117 | 4 - 11 - 759 1 - 4 - 910 | 6 - 0 - 472 2 - 17 - 623 | 7 - 13 - 185 |
| 5897 | 4 - 6 - 336 6 - 10 - 774 | 5 - 19 - 49 7 - 23 - 487 | 7 - 7 - 842 2 - 12 - 200 | 1 - 20 - 555 4 - 0 - 993 | 3 - 9 - 268 5 - 13 - 706 | 4 - 21 - 1061 7 - 2 - 419 | |
| 5898 | 1 - 15 - 132 5 - 8 - 283 | 3 - 3 - 925 6 - 20 - 1076 | 4 - 16 - 638 1 - 9 - 789 | 6 - 5 - 351 2 - 22 - 502 | 7 - 18 - 64 4 - 11 - 215 | 2 - 6 - 857 5 - 23 - 1008 | 3 - 19 - 570 |
| 5899 | 7 - 12 - 721 2 - 17 - 79 | 2 - 1 - 434 4 - 5 - 872 | 3 - 14 - 147 5 - 18 - 585 | 5 - 2 - 940 7 - 7 - 298 | 6 - 15 - 653 1 - 20 - 11 | 1 - 4 - 366 3 - 8 - 804 | |

Chapter 4

Selected Holiday's Gregorian Dates

| | | | | | | | | | |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Year: | 5784 | 5785 | 5786 | 5787 | 5788 | 5789 | 5790 | 5791 | 5792 |
| Gregorian Years | 2023-2024 | 2024-2025 | 2025-2026 | 2026-2027 | 2027-2028 | 2028-2029 | 2029-2030 | 2030-2031 | 2031-2032 |
| Kevi'a | 703 | 521 | 315 | 725 | 723 | 506 | 115 | 723 | 517 |
| Rosh Hashana | Sat 09-16 | Thu 10-03 | Tue 09-23 | Sat 09-12 | Sat 10-02 | Thu 09-21 | Mon 09-10 | Sat 09-28 | Thu 09-18 |
| Yom Kippur | Mon 09-25 | Sat 10-12 | Thu 10-02 | Mon 09-21 | Mon 10-11 | Sat 09-30 | Wed 09-19 | Mon 10-07 | Sat 09-27 |
| Sukkot | Sat 09-30 | Thu 10-17 | Tue 10-07 | Sat 09-26 | Sat 10-16 | Thu 10-05 | Mon 09-24 | Sat 10-12 | Thu 10-02 |
| Chanukka | Fri 12-08 | Thu 12-26 | Mon 12-15 | Sat 12-05 | Sat 12-25 | Wed 12-13 | Sun 12-02 | Sat 12-21 | Wed 12-10 |
| 10 Tevet | Fri 12-22 | Fri 01-10 | Tue 12-30 | Sun 12-20 | Sun 01-09 | Thu 12-28 | Sun 12-16 | Sun 01-05 | Thu 12-25 |
| Purim | Sun 03-24 | Fri 03-14 | Tue 03-03 | Tue 03-23 | Sun 03-12 | Thu 03-01 | Tue 03-19 | Sun 03-09 | Thu 02-26 |
| Pesah | Tue 04-23 | Sun 04-13 | Thu 04-02 | Thu 04-22 | Tue 04-11 | Sat 03-31 | Thu 04-18 | Tue 04-08 | Sat 03-27 |
| Shavu'ot | Wed 06-12 | Mon 06-02 | Fri 05-22 | Fri 06-11 | Wed 05-31 | Sun 05-20 | Fri 06-07 | Wed 05-28 | Sun 05-16 |
| 17 Tammuz | Tue 07-23 | Sun 07-13 | Thu 07-02 | Thu 07-22 | Tue 07-11 | Sun 07-01 | Thu 07-18 | Tue 07-08 | Sun 06-27 |
| 9 Av | Tue 08-13 | Sun 08-03 | Thu 07-23 | Thu 08-12 | Tue 08-01 | Sun 07-22 | Thu 08-08 | Tue 07-29 | Sun 07-18 |

| | | | | | | | | | |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Year: | 5793 | 5794 | 5795 | 5796 | 5797 | 5798 | 5799 | 5800 | 5801 |
| Gregorian Years | 2032-2033 | 2033-2034 | 2034-2035 | 2035-2036 | 2036-2037 | 2037-2038 | 2038-2039 | 2039-2040 | 2040-2041 |
| Kevi'a | 205 | 723 | 523 | 506 | 113 | 523 | 517 | 225 | 703 |
| Rosh Hashana | Mon 09-06 | Sat 09-24 | Thu 09-14 | Thu 10-04 | Mon 09-22 | Thu 09-10 | Thu 09-30 | Mon 09-19 | Sat 09-08 |
| Yom Kippur | Wed 09-15 | Mon 10-03 | Sat 09-23 | Sat 10-13 | Wed 10-01 | Sat 09-19 | Sat 10-09 | Wed 09-28 | Mon 09-17 |
| Sukkot | Mon 09-20 | Sat 10-08 | Thu 09-28 | Thu 10-18 | Mon 10-06 | Thu 09-24 | Thu 10-14 | Mon 10-03 | Sat 09-22 |
| Chanukka | Sun 11-28 | Sat 12-17 | Thu 12-07 | Wed 12-26 | Sun 12-14 | Thu 12-03 | Wed 12-22 | Mon 12-12 | Fri 11-30 |
| 10 Tevet | Sun 12-12 | Sun 01-01 | Fri 12-22 | Thu 01-10 | Sun 12-28 | Fri 12-18 | Thu 01-06 | Tue 12-27 | Fri 12-14 |
| Purim | Tue 03-15 | Sun 03-05 | Sun 03-25 | Thu 03-13 | Sun 03-01 | Sun 03-21 | Thu 03-10 | Tue 02-28 | Sun 03-17 |
| Pesah | Thu 04-14 | Tue 04-04 | Tue 04-24 | Sat 04-12 | Tue 03-31 | Tue 04-20 | Sat 04-09 | Thu 03-29 | Tue 04-16 |
| Shavu'ot | Fri 06-03 | Wed 05-24 | Wed 06-13 | Sun 06-01 | Wed 05-20 | Wed 06-09 | Sun 05-29 | Fri 05-18 | Wed 06-05 |
| 17 Tammuz | Thu 07-14 | Tue 07-04 | Tue 07-24 | Sun 07-13 | Tue 06-30 | Tue 07-20 | Sun 07-10 | Thu 06-28 | Tue 07-16 |
| 9 Av | Thu 08-04 | Tue 07-25 | Tue 08-14 | Sun 08-03 | Tue 07-21 | Tue 08-10 | Sun 07-31 | Thu 07-19 | Tue 08-06 |

| | | | | | | | | | |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Year: | 5802 | 5803 | 5804 | 5805 | 5806 | 5807 | 5808 | 5809 | 5810 |
| Gregorian Years | 2041-2042 | 2042-2043 | 2043-2044 | 2044-2045 | 2045-2046 | 2046-2047 | 2047-2048 | 2048-2049 | 2049-2050 |
| Kevi'a | 517 | 227 | 203 | 521 | 317 | 225 | 701 | 317 | 225 |
| Rosh Hashana | Thu 09-26 | Mon 09-15 | Mon 10-05 | Thu 09-22 | Tue 09-12 | Mon 10-01 | Sat 09-21 | Tue 09-08 | Mon 09-27 |
| Yom Kippur | Sat 10-05 | Wed 09-24 | Wed 10-14 | Sat 10-01 | Thu 09-21 | Wed 10-10 | Mon 09-30 | Thu 09-17 | Wed 10-06 |
| Sukkot | Thu 10-10 | Mon 09-29 | Mon 10-19 | Thu 10-06 | Tue 09-26 | Mon 10-15 | Sat 10-05 | Tue 09-22 | Mon 10-11 |
| Chanukka | Wed 12-18 | Mon 12-08 | Sun 12-27 | Thu 12-15 | Mon 12-04 | Mon 12-24 | Fri 12-13 | Mon 11-30 | Mon 12-20 |
| 10 Tevet | Thu 01-02 | Tue 12-23 | Sun 01-10 | Fri 12-30 | Tue 12-19 | Tue 01-08 | Fri 12-27 | Tue 12-15 | Tue 01-04 |
| Purim | Thu 03-06 | Thu 03-26 | Sun 03-13 | Fri 03-03 | Thu 03-22 | Tue 03-12 | Fri 02-28 | Thu 03-18 | Tue 03-08 |
| Pesah | Sat 04-05 | Sat 04-25 | Tue 04-12 | Sun 04-02 | Sat 04-21 | Thu 04-11 | Sun 03-29 | Sat 04-17 | Thu 04-07 |
| Shavu'ot | Sun 05-25 | Sun 06-14 | Wed 06-01 | Mon 05-22 | Sun 06-10 | Fri 05-31 | Mon 05-18 | Sun 06-06 | Fri 05-27 |
| 17 Tammuz | Sun 07-06 | Sun 07-26 | Tue 07-12 | Sun 07-02 | Sun 07-22 | Thu 07-11 | Sun 06-28 | Sun 07-18 | Thu 07-07 |
| 9 Av | Sun 07-27 | Sun 08-16 | Tue 08-02 | Sun 07-23 | Sun 08-12 | Thu 08-01 | Sun 07-19 | Sun 08-08 | Thu 07-28 |

Chapter 5

Luachs for Each Year

5.1 203 Monday-Short-Tuesday (non-leap)

Rosh Hashana I – 1 Tishrei

Arvit is chanted in the appropriate tune for Rosh Hashana. *Le'eila le'eila* is included in Kaddish. *Tik'u bahodesh shofar* are recited before Hatzki Kaddish. The Amidah is recited with **המלך הקדוש** and **עושה השלום**. These are continued through Yom Kippur.

Kiddush is the text for Rosh Hashana, followed by **שהחיינו**. LeDavid is recited at the end of Arvit.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaharit. The Shir Shel Yom is for Monday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into five aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:12 | 8 pesukim |
| Shelishi | Genesis 21:13–21:21 | 9 pesukim |
| Revi'i | Genesis 21:22–21:27 | 6 pesukim |
| Ḥamishi | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Hatzki Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥianu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Hatzki Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. LeDavid is read after Aleinu. Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥianu in kiddush applies to it as well as the holiday.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is

recited in shaḥarit. The Shir Shel Yom is for Tuesday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *shebeḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before תתקבל in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

3 Tishrei The holiday is concluded with Arvit for weekdays. Vihi No'am is not recited. Havdala is on wine only, without introductory verses, flame or spices.

Tzom Gedalia – 3 Tishrei

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting.

Seliḥot are recited (before shaḥarit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are שוב מחרון אפך to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Wednesday and LeDavid.

Minḥa is said with the same Torah reading as shaḥarit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at מנן דוד. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

Shabbat Shuva Vayelech – 6 Tishrei

Kabbalat Shabbat and Arvit as usual, with the additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaḥarit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite שיר המעלות ממעמקים after *Yishtabeh*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Micah when Vayelech is read on Shabbat Shuva.

Shabbat Minhā begins as usual, reading from Haazinu. The Amida includes additions for the 10 Days of Repentance. **צדקתך** is said.

Arvit for the conclusion of Shabbat as usual. *Vibi no'am* is omitted.

5.2 225 Monday-Long-Thursday (non-leap)

Rosh Hashana I – 1 Tishrei

Arvit is chanted in the appropriate tune for Rosh Hashana. *Le'eila le'eila* is included in Kaddish. *Tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with **המלך הקדוש** and **עושה השלום**. These are continued through Yom Kippur.

Kiddush is the text for Rosh Hashana, followed by **שהחיינו**. LeDavid is recited at the end of Arvit.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaharit. The Shir Shel Yom is for Monday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into five aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:12 | 8 pesukim |
| Shelishi | Genesis 21:13–21:21 | 9 pesukim |
| Revi'i | Genesis 21:22–21:27 | 6 pesukim |
| Ḥamishi | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *shebeḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. LeDavid is read after Aleinu. Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of shehehiyanu in kiddush applies to it as well as the holiday.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaharit. The Shir Shel Yom is for Tuesday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *shehehiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

3 Tishrei The holiday is concluded with Arvit for weekdays. Vihi No'am is not recited. Havdala is on wine only, without introductory verses, flame or spices.

Tzom Gedalia – 3 Tishrei

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting.

Seliḥot are recited (before shaharit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are **שוב מחרון אפך** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Wednesday and Ledavid.

Minḥa is said with the same Torah reading as shaharit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מגן דוד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

Shabbat Shuva Vayelech – 6 Tishrei

Kabbalat Shabbat and Arvit as usual, with the additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaḥarit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שיר המעלות ממעמקים** after *Yishtabab*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Micah when Vayelech is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from Haazinu. The Amida includes additions for the 10 Days of Repentance. **צדקתך** is said.

Arvit for the conclusion of Shabbat as usual. *Vibi no'am* is omitted.

5.3 315 Tuesday-Regular-Thursday (non-leap)

Rosh Hashana I – 1 Tishrei

Arvit is chanted in the appropriate tune for Rosh Hashana. *Le'eila le'eila* is included in Kaddish. *Tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with **המלך הקדוש** and **עושה השלום**. These are continued through Yom Kippur.

Kiddush is the text for Rosh Hashana, followed by **שהחיינו**. LeDavid is recited at the end of Arvit.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaḥarit. The Shir Shel Yom is for Tuesday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into five aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:12 | 8 pesukim |
| Shelishi | Genesis 21:13–21:21 | 9 pesukim |
| Revi'i | Genesis 21:22–21:27 | 6 pesukim |
| Ḥamishi | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. LeDavid is read after Aleinu. Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥiyanu in kiddush applies to it as well as the holiday.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaharit. The Shir Shel Yom is for Wednesday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

3 Tishrei The holiday is concluded with Arvit for weekdays. Vihi No'am is not recited. Havdala is on wine only, without introductory verses, flame or spices. **Tzom Gedalia – 3 Tishrei**

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting.

Seliḥot are recited (before shaharit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are **שוב מחרון אפך** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Thursday and LeDavid.

Minḥa is said with the same Torah reading as shaharit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מגן דוד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

Shabbat Shuva Vayelech – 5 Tishrei

Kabbalat Shabbat and Arvit as usual, with the additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaḥarit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שיר המעלות ממעמקים** after *Yishtabab*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Micah when Vayelech is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from Haazinu. The Amida includes additions for the 10 Days of Repentance. **צדקתך** is said.

Arvit for the conclusion of Shabbat as usual. *Vibi no'am* is omitted.

5.4 517 Thursday-Regular-Shabbat (non-leap)

Rosh Hashana I – 1 Tishrei

Arvit is chanted in the appropriate tune for Rosh Hashana. *Le'eila le'eila* is included in Kaddish. *Tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with **המלך הקדוש** and **עושה השלום**. These are continued through Yom Kippur.

Kiddush is the text for Rosh Hashana, followed by **שהחיינו**. LeDavid is recited at the end of Arvit.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaḥarit. The Shir Shel Yom is for Thursday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into five aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:12 | 8 pesukim |
| Shelishi | Genesis 21:13–21:21 | 9 pesukim |
| Revi'i | Genesis 21:22–21:27 | 6 pesukim |
| Ḥamishi | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥyanu in kiddush applies to it as well as the holiday. LeDavid is recited after Aleinu.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaharit. The Shir Shel Yom is for Friday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana. Avinu Malkeinu is omitted, Kaddish Shalem, etc.

Kabbalat Shabbat is abbreviated, since there is a festival on Friday. Arvit has additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaharit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שיר המעלות ממעמקים** after *Yishtabeh*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Joel when Haazinu is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from VeZot HaBerakha. The Amida includes additions for the 10 Days of Repentance. **צדקתך** is said.

Arvit for the conclusion of Shabbat as usual. *Vibi no'am* is said.

Tzom Gedalia – 4 Tishrei

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting. Because the 3rd of Tishrei falls on Shabbat, the fast is pushed off to Sunday.

Seliḥot are recited (before shaḥarit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are **שׁוֹב מִחֶרֶן אֲפָךְ** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Sunday and LeDavid.

Minḥa is said with the same Torah reading as shaḥarit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מִגֵּן דָּוִד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

5.5 521 Thursday-Long-Sunday (non-leap)

Rosh Hashana I – 1 Tishrei

Arvit is chanted in the appropriate tune for Rosh Hashana. *Le'eila le'eila* is included in Kaddish. *Tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with **הַמֶּלֶךְ הַקָּדוֹשׁ** and **עוֹשֵׂה הַשְּׁלוֹם**. These are continued through Yom Kippur.

Kiddush is the text for Rosh Hashana, followed by **שְׁהֵיִינוּ**. LeDavid is recited at the end of Arvit.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **הַמַּאִיר** is recited in shaḥarit. The Shir Shel Yom is for Thursday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into five aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:12 | 8 pesukim |
| Shelishi | Genesis 21:13–21:21 | 9 pesukim |
| Revi'i | Genesis 21:22–21:27 | 6 pesukim |
| Ḥamishi | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *shebepiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תִּתְקַבֵּל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥiyanu in kiddush applies to it as well as the holiday. LeDavid is recited after Aleinu.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaharit. The Shir Shel Yom is for Friday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana. Avinu Malkeinu is omitted, Kaddish Shalem, etc.

Kabbalat Shabbat is abbreviated, since there is a festival on Friday. Arvit has additions to the Amidah for the 10 Days of Repentance, and *hamelekh hakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaharit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שיר המעלות ממעמקים** after *Yishtabeh*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Joel when Haazinu is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from VeZot HaBerakha. The Amida includes additions for the 10 Days of Repentance. **צדקתך** is said.

Arvit for the conclusion of Shabbat as usual. *Vibi no'am* is said.

Tzom Gedalia – 4 Tishrei

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the

First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting. Because the 3rd of Tishrei falls on Shabbat, the fast is pushed off to Sunday.

Selihot are recited (before shaharit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are **שוב מחרון אפך** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Sunday and Ledavid.

Minḥa is said with the same Torah reading as shaharit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מגן דוד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

5.6 701 Shabbat-Short-Sunday (non-leap)

Rosh Hashana I – 1 Tishrei

Kabbalat Shabbat is abbreviated, beginning with **מזמור שיר ליום השבת**. The chapter **במה מדליקין** is omitted. *Le'eila le'eila* is included in Kaddish beginning with the Kaddish following abbreviated Kabbalat Shabbat. Arvit is chanted in the appropriate tune for Rosh Hashana. Both *Veshameru* and *tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with **המלך הקדוש** and **עושה השלום**. These are continued through Yom Kippur. **ויכולו** and the Berakha Eḥad Me'ein Shalosh is chanted in the Shabbat tune, with **המלך הקדוש**.

Kiddush is the text for Rosh Hashana, with additions for Shabbat, followed by **שהחיינו**. LeDavid is recited at the end of Arvit.

Shaharit is recited according to the text in the mahzor, with piyyutim according to local communal custom. **אל אדון** is recited in shaharit. The Shir Shel Yom is for Shabbat, along with LeDavid. Many communities recite Anim Zemirot (either because it is Rosh Hashana or because it is Shabbat). Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into seven aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:8 | 4 pesukim |
| Shelishi | Genesis 21:9–21:12 | 4 pesukim |
| Revi'i | Genesis 21:13–21:17 | 5 pesukim |
| Ḥamishi | Genesis 21:18–21:21 | 4 pesukim |
| Shishi | Genesis 21:22–21:27 | 6 pesukim |
| Shevi'i | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana with additions for Shabbat.

Shofar is not blown. Musaf includes the additions for Shabbat. **וביום השבת** and **ישמחו** should be chanted in the tune for Shabbat.

Afternoon kiddush includes the verses for both Shabbat and Rosh Hashana.

Minḥa begins with Ashrei, Uva Letzion, Ḥatzi Kaddish, and the Torah reading for Ha'azinu.

| | | |
|---------|------------------------|-----------|
| Kohen | Deuteronomy 32:1–32:3 | 3 pesukim |
| Levi | Deuteronomy 32:4–32:6 | 3 pesukim |
| Yisrael | Deuteronomy 32:7–32:12 | 6 pesukim |

After the Torah is returned, Ḥatzi Kaddish is said, and the Amida for Rosh Hashana is recited. צדקתך צדק is omitted.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. The havdala paragraph is inserted in the Amida. LeDavid is recited after Aleinu. Kiddush is YaKeNHaz—Yayin (hagafen), Kiddush (בורא מאורי (אשר בחר בנו וכו'), Ner (האש), Havdala (המבדיל בין קודש לקודש), Zeman (שהחיינו).. Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥyanu applies to it as well as the holiday.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. המאיר is recited in shaharit. The Shir Shel Yom is for Sunday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before *titkabal* in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

3 Tishrei

The holiday is concluded with Arvit for weekdays. Vihi No'am is not recited. Havdala is on wine only, without introductory verses, flame or spices.

Tzom Gedalia – 3 Tishrei

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting.

Seliḥot are recited (before shaharit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are שוב מחרון אפך to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Monday and LeDavid.

Minḥa is said with the same Torah reading as shaḥarit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מִגֵּן דָּוִד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

Following Tzom Gedalia, liturgical additions continue for the 10 Days of Repentance.

Shabbat Shuva Haazinu – 8 Tishrei

Kabbalat Shabbat and Arvit as usual, with the additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaḥarit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שִׁיר הַמַּעֲלוֹת מִמַּעַמְקִים** after *Yishtabeh*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Joel when Haazinu is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from VeZot HaBerakha.

The Amida includes additions for the 10 Days of Repentance. **צְדָקָתְךָ** is said.

Arvit for the conclusion of Shabbat as usual. *Vibi no'am* is said.

Shabbat Bereshit – 29 Tishrei

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|-------------------|------------|
| Kohen | Genesis 1:1–2:3 | 34 pesukim |
| Levi | Genesis 2:4–2:19 | 16 pesukim |
| Shelishi | Genesis 2:20–3:21 | 27 pesukim |
| Revi'i | Genesis 3:22–4:18 | 21 pesukim |
| Ḥamishi | Genesis 4:19–4:22 | 4 pesukim |
| Shishi | Genesis 4:23–5:24 | 28 pesukim |
| Shevi'i | Genesis 5:25–6:8 | 16 pesukim |
| Maftir | Genesis 6:5–6:8 | 4 pesukim |

Note that different ḥumashim have different aliya breakdowns for this parasha. Make sure to check with leiners that they learned the correct portion. The Haftara for Shabbat Maḥar Ḥodesh is I Samuel 20:18–20:42. Some read the Haftara for Bereishit even when it falls on Maḥar Ḥodesh (Isaiah 42:5–43:10)

The new month of Marḥeshvan (not “Cheshvan”) is blessed. See page 8 for the molad. Rosh Ḥodesh is Sunday and Monday.

רֵאשׁ חֹדֶשׁ מִרְחֶשֶׁבֶן יְהִיָּה בַיּוֹם רֵאשׁוֹן וּבַיּוֹם שֵׁנִי

Av HaRaḥamim is omitted. Shabbat Musaf as usual.

Minḥa for Shabbat. *Tzidkatekha* is omitted for Erev Rosh Ḥodesh.

Arvit for Motzaei Shabbat includes *ya'ale veyavo*.

Rosh Hodesh Marḥeshvan, First day (30 Tishrei)

Shaharit for Rosh Hodesh. *Ya'ale veyavo* in the shaharit Amidah, Hallel, Kaddish Shalem, no *El Erekh Apayim*.

| | | |
|----------|---------------------|-----------|
| Kohen | Numbers 28:1–28:3 | 3 pesukim |
| Levi | Numbers 28:3–28:5 | 3 pesukim |
| Shelishi | Numbers 28:6–28:10 | 5 pesukim |
| Revi'i | Numbers 28:11–28:15 | 5 pesukim |

Ḥatzi Kaddish, the Torah is returned as usual. No *Lamenatzeah*. Remove Tefillin before or after Ḥatzi Kaddish, according to community custom. Musaf for Rosh Hodesh, Shir shel Yom for Rosh Hodesh and Sunday.

Minḥa as usual for weekday, with the addition of *Ya'ale Veyavo* in the Amidah and the omission of *tahanun*.

Rosh Hodesh Marḥeshvan, Second Day (1 Marḥeshvan)

Davening on Rosh Hodesh is the same as the first day of Rosh Hodesh, except that the Psalm of the Day is for Rosh Hodesh and Monday.

Shabbat Noah – 6 Marḥeshvan

Kabbalat Shabbat and Arvit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 6:9–6:22 | 14 pesukim |
| Levi | Genesis 7:1–7:16 | 16 pesukim |
| Shelishi | Genesis 7:17–8:14 | 22 pesukim |
| Revi'i | Genesis 8:15–9:7 | 15 pesukim |
| Ḥamishi | Genesis 9:8–9:17 | 10 pesukim |
| Shishi | Genesis 9:18–10:32 | 44 pesukim |
| Shevi'i | Genesis 11:1–11:32 | 32 pesukim |
| Maftir | Genesis 11:29–11:32 | 4 pesukim |

The Haftara for Noah is Isaiah 54:1–55:5. Some congregations say a special misheberakh for those fasting BeHaB.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Lekh Lekha – 13 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaharit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 12:1–12:13 | 13 pesukim |
| Levi | Genesis 12:14–13:4 | 11 pesukim |
| Shelishi | Genesis 13:5–13:18 | 14 pesukim |
| Revi'i | Genesis 14:1–14:20 | 20 pesukim |
| Ḥamishi | Genesis 14:21–15:6 | 10 pesukim |
| Shishi | Genesis 15:7–17:6 | 37 pesukim |
| Shevi'i | Genesis 17:7–17:27 | 21 pesukim |
| Maftir | Genesis 17:24–17:27 | 4 pesukim |

The Haftara for Lech-Lecha is Isaiah 40:27–41:16.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Vayera — 20 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaharit as usual.

| | | |
|----------|---------------------|--|
| Kohen | Genesis 18:1–18:14 | 14 pesukim |
| Levi | Genesis 18:15–18:33 | 19 pesukim |
| Shelishi | Genesis 19:1–19:20 | 20 pesukim (this aliya has a shalsholet) |
| Revi'i | Genesis 19:21–21:4 | 40 pesukim |
| Ḥamishi | Genesis 21:5–21:21 | 17 pesukim |
| Shishi | Genesis 21:22–21:34 | 13 pesukim |
| Shevi'i | Genesis 22:1–22:24 | 24 pesukim |
| Maftir | Genesis 22:20–22:24 | 5 pesukim |

The Haftara for Vayera is II Kings 4:1–4:37.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Ḥayyei Sara — 27 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 23:1–23:16 | 16 pesukim |
| Levi | Genesis 23:17–24:9 | 13 pesukim |
| Shelishi | Genesis 24:10–24:26 | 17 pesukim |
| Revi'i | Genesis 24:27–24:52 | 26 pesukim |
| Ḥamishi | Genesis 24:53–24:67 | 15 pesukim |
| Shishi | Genesis 25:1–25:11 | 11 pesukim |
| Shevi'i | Genesis 25:12–25:18 | 7 pesukim |
| Maftir | Genesis 25:16–25:18 | 3 pesukim |

The Haftara for Chayei Sara is I Kings 1:1–1:31.

The new month of Kislev is blessed. See page 8 for the molad. Rosh Ḥodesh is Tuesday.

ראש חודש כסלו יהיה ביום שלישי

Av HaRaḥamim is omitted. Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Rosh Ḥodesh Kislev — 1 Kislev

Shaḥarit for Rosh Ḥodesh. *Ya'ale veyavo* in the shaḥarit Amidah, Hallel, Kaddish Shalem, no *El Erekh Apayim*.

| | | |
|----------|---------------------|-----------|
| Kohen | Numbers 28:1–28:3 | 3 pesukim |
| Levi | Numbers 28:3–28:5 | 3 pesukim |
| Shelishi | Numbers 28:6–28:10 | 5 pesukim |
| Revi'i | Numbers 28:11–28:15 | 5 pesukim |

Ḥatzi Kaddish, the Torah is returned as usual. No *Lamenatzeah*. Remove Tefillin before or after Ḥatzi Kaddish, according to community custom. Musaf for Rosh Ḥodesh, Shir shel Yom for Rosh Ḥodesh and Tuesday.

Minḥa as usual for weekday, with the addition of *Ya'ale Veyavo* in the Amidah and the omission of *tahannun*.

Shabbat Toledot — 5 Kislev

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 25:19–26:5 | 21 pesukim |
| Levi | Genesis 26:6–26:12 | 7 pesukim |
| Shelishi | Genesis 26:13–26:22 | 10 pesukim |
| Revi'i | Genesis 26:23–26:29 | 7 pesukim |
| Ḥamishi | Genesis 26:30–27:27 | 33 pesukim |
| Shishi | Genesis 27:28–28:4 | 23 pesukim |
| Shevi'i | Genesis 28:5–28:9 | 5 pesukim |
| Maftir | Genesis 28:7–28:9 | 3 pesukim |

The Haftara for Toldot is Malachi 1:1–2:7.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat VaYetztei — 12 Kislev

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 28:10–28:22 | 13 pesukim |
| Levi | Genesis 29:1–29:17 | 17 pesukim |
| Shelishi | Genesis 29:18–30:13 | 31 pesukim |
| Revi'i | Genesis 30:14–30:27 | 14 pesukim |
| Ḥamishi | Genesis 30:28–31:16 | 32 pesukim |
| Shishi | Genesis 31:17–31:42 | 26 pesukim |
| Shevi'i | Genesis 31:43–32:3 | 15 pesukim |
| Maftir | Genesis 32:1–32:3 | 3 pesukim |

The Haftara for Vayetztei is Hosea 12:13–14:10.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Vayishlah — 19 Kislev

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 32:4–32:13 | 10 pesukim |
| Levi | Genesis 32:14–32:30 | 17 pesukim |
| Shelishi | Genesis 32:31–33:5 | 8 pesukim |
| Revi'i | Genesis 33:6–33:20 | 15 pesukim |
| Ḥamishi | Genesis 34:1–35:11 | 42 pesukim |
| Shishi | Genesis 35:12–36:19 | 37 pesukim |
| Shevi'i | Genesis 36:20–36:43 | 24 pesukim |
| Maftir | Genesis 36:40–36:43 | 4 pesukim |

The Haftara for Vayishlach is Obadiah 1:1–1:21.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Erev Ḥanukka — Thursday 24 Kislev Taḥanun is omitted at Minḥa.

Ḥanukka — 24 Kislev (Friday night)

The Ḥanukka Menora is lit in the synagogue after sunset prior to 'arvit in the southern part of the synagogue, with all three of its blessings, beginning with the far right light. 'Arvit includes *'al hanisim*, which is included in every amida and in *birkat hamazon* throughout Ḥanukka (if forgotten, do not repeat the amida or bentshing, though it may be inserted in the paragraph *elohai netzor* in the amida or in the *haraḥaman* paragraphs of bentshing).

At home, the Hanukka Menora should be lit after sunset (some wait until dusk), beginning with the far right light, following the recitation of the three blessings on the Hanukka lighting. It may be lit throughout the night if members of the household are present to see the candles, though it is preferable to light earlier. Each night another flame is added to the left of the flames from the previous night, and the newest candle is lit first.

Hanukka candles are lit in shul, without a berachka (one candles). Shaḥarit Friday morning includes *‘al hanisim* in the Amidah. After the leader recites the communal amidah, full Hallel is recited (no taḥanun). Ḥatzi Kaddish is said, since there is no Musaf today. The Torah is taken out, without *‘el ‘erekh ‘apayim*. Three aliyot are read as follows:

| | | |
|----------|-------------------|------------|
| Kohen | Numbers 7:1–7:11 | 11 pesukim |
| Levi | Numbers 7:12–7:14 | 3 pesukim |
| Shelishi | Numbers 7:15–7:17 | 3 pesukim |

The *yehi ratzon* paragraphs are not recited. The Torah is returned as usual, Ḥatzi Kaddish, ashrei, no *lamenatzeah*. Psalm of the Day for Friday and most communities recite *mizmor shir hanukkat habayit*.

Minḥa includes *‘al hanisim* (no taḥanun). Hanukka candles (two candles) must be lit before Shabbat candles, and have sufficient fuel to burn until dusk.

Shabbat Hanukka Parshat Vayeshev — 26 Kislev

Kabbalat Shabbat and *‘arvit* as usual, with *‘al hanisim*.

Shabbat Shaḥarit with *‘al hanisim*. Full Hallel, Kaddish Shalem. Two Sifrei Torah are taken out of the ark, one for the parsha, one for Hanukka Maftir.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 37:1–37:11 | 11 pesukim |
| Levi | Genesis 37:12–37:22 | 11 pesukim |
| Shelishi | Genesis 37:23–37:36 | 14 pesukim |
| Revi'i | Genesis 38:1–38:30 | 30 pesukim |
| Ḥamishi | Genesis 39:1–39:6 | 6 pesukim |
| Shishi | Genesis 39:7–39:23 | 17 pesukim |
| Shevi'i | Genesis 40:1–40:23 | 23 pesukim |
| Maftir | Numbers 7:18–7:23 | 6 pesukim |

After the seven aliyot from the parsha are read, both Sifrei Torah are placed on the table and Ḥatzi Kaddish is recited. Maftir is read, followed by the Haftara. The Haftara for the first Shabbat of Hanukka is Zechariah 2:14–4:7. The new month of Tevet is blessed. See page 8 for the molad. Rosh Ḥodesh is Wednesday.

ראש חודש טבת יהיה ביום רביעי

Musaf as usual with *‘al hanisim*. Most recite Psalm 30 (*mizmor shir hanukkat habayit ledavid*) following the Psalm for Shabbat.

Minḥa as usual with *‘al hanisim*.

Third Day of Hanukka — 27 Kislev

‘Arvit for the conclusion of Shabbat. Havdala and *‘al hanisim* in the Amidah, Ḥatzi Kaddish, *vibi no'am*, etc. The Hanukka Menora is lit (three candles), then aleinu and havdala. At home, havdala is recited before the Hanukka candles are lit (three candles), which should be done as soon as practicable.

Hanukka candles are lit in shul, without a berachka (three candles). Shaḥarit Sunday morning includes *‘al hanisim* in the Amidah. After the leader recites the communal amidah, full Hallel is recited (no taḥanun). Ḥatzi Kaddish is said, since there is no Musaf today. The Torah is taken out, without *‘el ‘erekh ‘apayim*. Three aliyot are read as follows:

| | | |
|----------|-------------------|-----------|
| Kohen | Numbers 7:24–7:26 | 3 pesukim |
| Levi | Numbers 7:27–7:29 | 3 pesukim |
| Shelishi | Numbers 7:30–7:35 | 6 pesukim |

The *yehi ratzon* paragraphs are not recited. The Torah is returned as usual, Ḥatzi Kaddish, ashrei, no *lamenatzeah*. Psalm of the Day for Sunday and most communities recite *mizmor shir hanukkat habayit*.

Fourth Day of Ḥanukka— 28 Kislev

The Ḥanukka Menora is lit before 'arvit with berakhot (four candles), as in previous days. 'Arvit includes 'al *hanisim*. The Ḥanukka Menora is lit at home (four candles).

Ḥanukka candles are lit in shul, without a berakha (four candles). Shaḥarit Monday morning includes 'al *hanisim* in the Amidah. After the leader recites the communal amidah, full Hallel is recited (no taḥanun). Ḥatzi Kaddish is said, since there is no Musaf today. The Torah is taken out, without 'el 'erekh 'apayim. Three aliyot are read as follows:

| | | |
|----------|-------------------|-----------|
| Kohen | Numbers 7:30–7:32 | 3 pesukim |
| Levi | Numbers 7:33–7:35 | 3 pesukim |
| Shelishi | Numbers 7:36–7:41 | 6 pesukim |

The *yehi ratzon* paragraphs are not recited. The Torah is returned as usual, Ḥatzi Kaddish, ashrei, no *lamenatzeah*. Psalm of the Day for Monday and most communities recite *mizmor shir hanukkat habayit*.

Fifth Day of Ḥanukka— 29 Kislev

The Ḥanukka Menora is lit before 'arvit with berakhot (fifth candles), as in previous days. 'Arvit includes 'al *hanisim*. The Ḥanukka Menora is lit at home (fifth candles).

Ḥanukka candles are lit in shul, without a berakha (five candles). Shaḥarit Tuesday morning includes 'al *hanisim* in the Amidah. After the leader recites the communal amidah, full Hallel is recited (no taḥanun). Ḥatzi Kaddish is said, since there is no Musaf today. The Torah is taken out, without 'el 'erekh 'apayim. Three aliyot are read as follows:

| | | |
|----------|-------------------|-----------|
| Kohen | Numbers 7:36–7:38 | 3 pesukim |
| Levi | Numbers 7:39–7:41 | 3 pesukim |
| Shelishi | Numbers 7:42–7:47 | 6 pesukim |

The *yehi ratzon* paragraphs are not recited. The Torah is returned as usual, Ḥatzi Kaddish, ashrei, no *lamenatzeah*. Psalm of the Day for Tuesday and most communities recite *mizmor shir hanukkat habayit*.

5.7 723 Shabbat-Regular-Tuesday (non-leap)

Rosh Hashana I – 1 Tishrei

Kabbalat Shabbat is abbreviated, beginning with מזמור שיר ליום השבת. The chapter במה מדליקין is omitted. *Le'eila le'eila* is included in Kaddish beginning with the Kaddish following abbreviated Kabbalat Shabbat. Arvit is chanted in the appropriate tune for Rosh Hashana. Both *Veshameru* and *tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with המלך הקדוש and עושה השלום. These are continued through Yom Kippur. ויכולו and the Berakha Eḥad Me'ein Shalosh is chanted in the Shabbat tune, with המלך הקדוש.

Kiddush is the text for Rosh Hashana, with additions for Shabbat, followed by שהחיינו. LeDavid is recited at the end of Arvit.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. אל אדון is recited in shaḥarit. The Shir Shel Yom is for Shabbat, along with LeDavid. Many communities recite Anim Zemirot (either because it is Rosh Hashana or because it is Shabbat). Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into seven aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:8 | 4 pesukim |
| Shelishi | Genesis 21:9–21:12 | 4 pesukim |
| Revi'i | Genesis 21:13–21:17 | 5 pesukim |
| Ḥamishi | Genesis 21:18–21:21 | 4 pesukim |
| Shishi | Genesis 21:22–21:27 | 6 pesukim |
| Shevi'i | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana with additions for Shabbat.

Shofar is not blown. Musaf includes the additions for Shabbat. **ויביום השבת** and **ישמחו** should be chanted in the tune for Shabbat.

Afternoon kiddush includes the verses for both Shabbat and Rosh Hashana.

Minḥa begins with Ashrei, Uva Letzion, Ḥatzi Kaddish, and the Torah reading for Ha'azinu.

| | | |
|---------|------------------------|-----------|
| Kohen | Deuteronomy 32:1–32:3 | 3 pesukim |
| Levi | Deuteronomy 32:4–32:6 | 3 pesukim |
| Yisrael | Deuteronomy 32:7–32:12 | 6 pesukim |

After the Torah is returned, Ḥatzi Kaddish is said, and the Amida for Rosh Hashana is recited. **צדקתך צדק** is omitted.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. The havdala paragraph is inserted in the Amida. LeDavid is recited after Aleinu. Kiddush is YaKeNHaz—Yayin (hagafen), Kiddush (**אשר בחר בנו וכו'**), Ner (**בורא מאורי**), (**האש**), Havdala (**המבדיל בין קודש לקודש**), Zeman (**שהחיינו**). Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥyanu applies to it as well as the holiday.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaharit. The Shir Shel Yom is for Sunday, along with LeDavid. Some communities recite Anim Zemiroth. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before *titkabal* in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

3 Tishrei

The holiday is concluded with Arvit for weekdays. Vihi No'am is not recited. Havdala is on wine only, without introductory verses, flame or spices.

Tzom Gedalia – 3 Tishrei

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting.

Selihot are recited (before shaharit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are **שוב מחרון אפך** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Monday and Ledavid.

Minḥa is said with the same Torah reading as shaharit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מגן דוד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

Following Tzom Gedalia, liturgical additions continue for the 10 Days of Repentance.

Shabbat Shuva Haazinu – 8 Tishrei

Kabbalat Shabbat and Arvit as usual, with the additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaharit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שיר המעלות ממעמקים** after *Yishtabeh*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Joel when Haazinu is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from VeZot HaBerakha.

The Amida includes additions for the 10 Days of Repentance. **צדקתך** is said.

Arvit for the conclusion of Shabbat as usual. *Vihi no'am* is said.

Shabbat Bereshit – 29 Tishrei

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaharit as usual.

| | | |
|----------|-------------------|------------|
| Kohen | Genesis 1:1–2:3 | 34 pesukim |
| Levi | Genesis 2:4–2:19 | 16 pesukim |
| Shelishi | Genesis 2:20–3:21 | 27 pesukim |
| Revi'i | Genesis 3:22–4:18 | 21 pesukim |
| Ḥamishi | Genesis 4:19–4:22 | 4 pesukim |
| Shishi | Genesis 4:23–5:24 | 28 pesukim |
| Shevi'i | Genesis 5:25–6:8 | 16 pesukim |
| Maftir | Genesis 6:5–6:8 | 4 pesukim |

Note that different ḥumashim have different aliya breakdowns for this parasha. Make sure to check with leiners that they learned the correct portion. The Haftara for Shabbat Maḥar Ḥodesh is I Samuel 20:18–20:42. Some read the Haftara for Bereishit even when it falls on Maḥar Ḥodesh (Isaiah 42:5–43:10)

The new month of Marḥeshvan (not “Cheshvan”) is blessed. See page 8 for the molad. Rosh Ḥodesh is Sunday and Monday.

ראש חודש מרחשון יהיה ביום ראשון וביום שני

Av HaRaḥamim is omitted. Shabbat Musaf as usual.

Minḥa for Shabbat. *Tzidkatekha* is omitted for Erev Rosh Ḥodesh.

Arvit for Motzaei Shabbat includes *ya'ale veyavo*.

Rosh Ḥodesh Marḥeshvan, First day (30 Tishrei)

Shaḥarit for Rosh Ḥodesh. *Ya'ale veyavo* in the shaḥarit Amidah, Hallel, Kaddish Shalem, no *El Erekh Apayim*.

| | | |
|----------|---------------------|-----------|
| Kohen | Numbers 28:1–28:3 | 3 pesukim |
| Levi | Numbers 28:3–28:5 | 3 pesukim |
| Shelishi | Numbers 28:6–28:10 | 5 pesukim |
| Revi'i | Numbers 28:11–28:15 | 5 pesukim |

Ḥatzi Kaddish, the Torah is returned as usual. No *Lamenatzeah*. Remove Tefillin before or after Ḥatzi Kaddish, according to community custom. Musaf for Rosh Ḥodesh, Shir shel Yom for Rosh Ḥodesh and Sunday.

Minḥa as usual for weekday, with the addition of *Ya'ale Veyavo* in the Amidah and the omission of *taḥanun*.

Rosh Ḥodesh Marḥeshvan, Second Day (1 Marḥeshvan)

Davening on Rosh Ḥodesh is the same as the first day of Rosh Ḥodesh, except that the Psalm of the Day is for Rosh Ḥodesh and Monday.

Shabbat Noah – 6 Marḥeshvan

Kabbalat Shabbat and Arvit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 6:9–6:22 | 14 pesukim |
| Levi | Genesis 7:1–7:16 | 16 pesukim |
| Shelishi | Genesis 7:17–8:14 | 22 pesukim |
| Revi'i | Genesis 8:15–9:7 | 15 pesukim |
| Ḥamishi | Genesis 9:8–9:17 | 10 pesukim |
| Shishi | Genesis 9:18–10:32 | 44 pesukim |
| Shevi'i | Genesis 11:1–11:32 | 32 pesukim |
| Maftir | Genesis 11:29–11:32 | 4 pesukim |

The Haftara for Noah is Isaiah 54:1–55:5. Some congregations say a special misheberakh for those fasting BeHaB.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Lekh Lekha – 13 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 12:1–12:13 | 13 pesukim |
| Levi | Genesis 12:14–13:4 | 11 pesukim |
| Shelishi | Genesis 13:5–13:18 | 14 pesukim |
| Revi'i | Genesis 14:1–14:20 | 20 pesukim |
| Ḥamishi | Genesis 14:21–15:6 | 10 pesukim |
| Shishi | Genesis 15:7–17:6 | 37 pesukim |
| Shevi'i | Genesis 17:7–17:27 | 21 pesukim |
| Maftir | Genesis 17:24–17:27 | 4 pesukim |

The Haftara for Lech-Lecha is Isaiah 40:27–41:16.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Vayera — 20 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|--|
| Kohen | Genesis 18:1–18:14 | 14 pesukim |
| Levi | Genesis 18:15–18:33 | 19 pesukim |
| Shelishi | Genesis 19:1–19:20 | 20 pesukim (this aliya has a shalsholet) |
| Revi'i | Genesis 19:21–21:4 | 40 pesukim |
| Ḥamishi | Genesis 21:5–21:21 | 17 pesukim |
| Shishi | Genesis 21:22–21:34 | 13 pesukim |
| Shevi'i | Genesis 22:1–22:24 | 24 pesukim |
| Maftir | Genesis 22:20–22:24 | 5 pesukim |

The Haftara for Vayera is II Kings 4:1–4:37.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Ḥayyei Sara — 27 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 23:1–23:16 | 16 pesukim |
| Levi | Genesis 23:17–24:9 | 13 pesukim |
| Shelishi | Genesis 24:10–24:26 | 17 pesukim |
| Revi'i | Genesis 24:27–24:52 | 26 pesukim |
| Ḥamishi | Genesis 24:53–24:67 | 15 pesukim |
| Shishi | Genesis 25:1–25:11 | 11 pesukim |
| Shevi'i | Genesis 25:12–25:18 | 7 pesukim |
| Maftir | Genesis 25:16–25:18 | 3 pesukim |

The Haftara for Chayei Sara is I Kings 1:1–1:31.

The new month of Kislev is blessed. See page 8 for the molad. Rosh Ḥodesh is Tuesday and Wednesday.

ראש חודש כסלו יהיה ביום שלישי וביום רביעי

Av HaRaḥamim is omitted. Shabbat Musaf as usual.

Shabbat Minḥa as usual.

5.8 205 Tuesday-Short-Thursday (leap)

Rosh Hashana I – 1 Tishrei

Arvit is chanted in the appropriate tune for Rosh Hashana. *Le'eila le'eila* is included in Kaddish. *Tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with **המלך הקדוש** and **עושה השלום**. These are continued through Yom Kippur.

Kiddush is the text for Rosh Hashana, followed by **שהחיינו**. LeDavid is recited at the end of Arvit.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaḥarit. The Shir Shel Yom is for Tuesday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into five aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:12 | 8 pesukim |
| Shelishi | Genesis 21:13–21:21 | 9 pesukim |
| Revi'i | Genesis 21:22–21:27 | 6 pesukim |
| Ḥamishi | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. LeDavid is read after Aleinu. Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥyanu in kiddush applies to it as well as the holiday.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaḥarit. The Shir Shel Yom is for Wednesday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

3 Tishrei The holiday is concluded with Arvit for weekdays. Vihi No'am is not recited. Havdala is on wine only, without introductory verses, flame or spices. **Tzom Gedalia – 3 Tishrei**

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting.

Seliḥot are recited (before shaḥarit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are **שוב מחרון אפך** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Thursday and LeDavid.

Minḥa is said with the same Torah reading as shaḥarit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מגן דוד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

Shabbat Shuva Vayelech – 5 Tishrei

Kabbalat Shabbat and Arvit as usual, with the additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaḥarit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שיר המעלות ממעמקים** after *Yishtabach*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Micah when Vayelech is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from Haazinu. The Amida includes additions for the 10 Days of Repentance. **צדקתך** is said.

Arvit for the conclusion of Shabbat as usual. *Vihi no'am* is omitted.

5.9 227 Tuesday-Long-Shabbat (leap)

Rosh Hashana I – 1 Tishrei

Arvit is chanted in the appropriate tune for Rosh Hashana. *Le'eila le'eila* is included in Kaddish. *Tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with **המלך הקדוש** and **עושה השלום**. These are continued through Yom Kippur.

Kiddush is the text for Rosh Hashana, followed by **שהחיינו**. LeDavid is recited at the end of Arvit.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaḥarit. The Shir Shel Yom is for Tuesday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into five aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:12 | 8 pesukim |
| Shelishi | Genesis 21:13–21:21 | 9 pesukim |
| Revi'i | Genesis 21:22–21:27 | 6 pesukim |
| Ḥamishi | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. LeDavid is read after Aleinu. Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of *sheheḥiyanu* in kiddush applies to it as well as the holiday.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaḥarit. The Shir Shel Yom is for Wednesday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

3 Tishrei The holiday is concluded with Arvit for weekdays. Vihi No'am is not recited. Havdala is on wine only, without introductory verses, flame or spices. **Tzom Gedalia – 3 Tishrei**

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting.

Seliḥot are recited (before shaḥarit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are **שוב מחרון אפך** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Thursday and LeDavid.

Minḥa is said with the same Torah reading as shaḥarit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מגן דוד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

Shabbat Shuva Vayelech – 5 Tishrei

Kabbalat Shabbat and Arvit as usual, with the additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaḥarit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שיר המעלות ממעמקים** after *Yishtabach*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Micah when Vayelech is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from Haazinu. The Amida includes additions for the 10 Days of Repentance. **צדקתך** is said.

Arvit for the conclusion of Shabbat as usual. *Vihi no'am* is omitted.

5.10 317 Tuesday-Regular-Shabbat

Rosh Hashana I – 1 Tishrei

Arvit is chanted in the appropriate tune for Rosh Hashana. *Le'eila le'eila* is included in Kaddish. *Tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with **המלך הקדוש** and **עושה השלום**. These are continued through Yom Kippur.

Kiddush is the text for Rosh Hashana, followed by **שהחיינו**. LeDavid is recited at the end of Arvit.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaḥarit. The Shir Shel Yom is for Tuesday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into five aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:12 | 8 pesukim |
| Shelishi | Genesis 21:13–21:21 | 9 pesukim |
| Revi'i | Genesis 21:22–21:27 | 6 pesukim |
| Ḥamishi | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. LeDavid is read after Aleinu. Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥyanu in kiddush applies to it as well as the holiday.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaḥarit. The Shir Shel Yom is for Wednesday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תתקבל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

3 Tishrei The holiday is concluded with Arvit for weekdays. Vihi No'am is not recited. Havdala is on wine only, without introductory verses, flame or spices. **Tzom Gedalia – 3 Tishrei**

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting.

Seliḥot are recited (before shaḥarit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are **שוב מחרון אפך** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Thursday and LeDavid.

Minḥa is said with the same Torah reading as shaḥarit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מגן דוד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

Shabbat Shuva Vayelech – 5 Tishrei

Kabbalat Shabbat and Arvit as usual, with the additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaḥarit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שיר המעלות ממעמקים** after *Yishtabach*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Micah when Vayelech is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from Haazinu. The Amida includes additions for the 10 Days of Repentance. **צדקתך** is said.

Arvit for the conclusion of Shabbat as usual. *Vihi no'am* is omitted.

5.11 501 Thursday-Short-Sunday

Rosh Hashana I – 1 Tishrei

Arvit is chanted in the appropriate tune for Rosh Hashana. *Le'eila le'eila* is included in Kaddish. *Tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with **הַמֶּלֶךְ הַקָּדוֹשׁ** and **עוֹשֵׂה הַשְּׁלוֹם**. These are continued through Yom Kippur.

Kiddush is the text for Rosh Hashana, followed by **שְׁהֵיִינוּ**. LeDavid is recited at the end of Arvit.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **הַמַּאֲוֵר** is recited in shaḥarit. The Shir Shel Yom is for Thursday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into five aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:12 | 8 pesukim |
| Shelishi | Genesis 21:13–21:21 | 9 pesukim |
| Revi'i | Genesis 21:22–21:27 | 6 pesukim |
| Ḥamishi | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תְּתַקְבֵּל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥiyanu in kiddush applies to it as well as the holiday. LeDavid is recited after Aleinu.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **הַמַּאֲוֵר** is recited in shaḥarit. The Shir Shel Yom is for Friday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תְּתַקְבֵּל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana. Avinu Malkeinu is omitted, Kaddish Shalem, etc.

Kabbalat Shabbat is abbreviated, since there is a festival on Friday. Arvit has additions to the Amidah for the 10 Days of Repentance, and *hamelekh hakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaḥarit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שיר המעלות ממעמקים** after *Yishtabah*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Joel when Haazinu is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from VeZot HaBerakha. The Amida includes additions for the 10 Days of Repentance. **צדקתך** is said.

Arvit for the conclusion of Shabbat as usual. *Vibi no'am* is said.

Tzom Gedalia – 4 Tishrei

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting. Because the 3rd of Tishrei falls on Shabbat, the fast is pushed off to Sunday.

Seliḥot are recited (before shaḥarit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are **שוב מחרון אפך** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Sunday and Ledavid.

Minḥa is said with the same Torah reading as shaḥarit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מגן דוד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

5.12 523 Thursday-Long-Tuesday

Rosh Hashana I – 1 Tishrei

Arvit is chanted in the appropriate tune for Rosh Hashana. *Le'eila le'eila* is included in Kaddish. *Tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with **המלך הקדוש** and **עושה השלום**. These are continued through Yom Kippur.

Kiddush is the text for Rosh Hashana, followed by **שְׁהֵחֵיָנוּ**. LeDavid is recited at the end of Arvit.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **הַמְאִיר** is recited in shaharit. The Shir Shel Yom is for Thursday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into five aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:12 | 8 pesukim |
| Shelishi | Genesis 21:13–21:21 | 9 pesukim |
| Revi'i | Genesis 21:22–21:27 | 6 pesukim |
| Ḥamishi | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תְּתַקַּבֵּל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥiyanu in kiddush applies to it as well as the holiday. LeDavid is recited after Aleinu.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **הַמְאִיר** is recited in shaharit. The Shir Shel Yom is for Friday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *sheheḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before **תְּתַקַּבֵּל** in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana. Avinu Malkeinu is omitted, Kaddish Shalem, etc.

Kabbalat Shabbat is abbreviated, since there is a festival on Friday. Arvit has additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaḥarit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שיר המעלות ממעמקים** after *Yishtabeh*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Joel when Haazinu is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from VeZot HaBerakha. The Amida includes additions for the 10 Days of Repentance. **צדקתך** is said.

Arvit for the conclusion of Shabbat as usual. *Vibi no'am* is said.

Tzom Gedalia – 4 Tishrei

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting. Because the 3rd of Tishrei falls on Shabbat, the fast is pushed off to Sunday.

Seliḥot are recited (before shaḥarit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are **שוב מחרון אפך** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Sunday and Ledavid.

Minḥa is said with the same Torah reading as shaḥarit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מגן דוד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

5.13 703 Shabbat-Short-Tuesday (leap)

Rosh Hashana I – 1 Tishrei

Kabbalat Shabbat is abbreviated, beginning with **מזמור שיר ליום השבת**. The chapter **במה מדליקין** is omitted. *Le'eila le'eila* is included in Kaddish beginning with the Kaddish following abbreviated Kabbalat Shabbat. Arvit is chanted in the appropriate tune for Rosh Hashana. Both *Veshameru* and *tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with **המלך הקדוש** and **עושה השלום**. These are continued through Yom Kippur. **ויכולו** and the Berakha Eḥad Me'ein Shalosh is chanted in the Shabbat tune, with **המלך הקדוש**.

Kiddush is the text for Rosh Hashana, with additions for Shabbat, followed by **שהחיינו**. LeDavid is recited at the end of Arvit.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **אל אדון** is recited in shaḥarit. The Shir Shel Yom is for Shabbat, along with LeDavid. Many communities recite Anim Zemirot (either because it is Rosh Hashana or because it is Shabbat). Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into seven aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:8 | 4 pesukim |
| Shelishi | Genesis 21:9–21:12 | 4 pesukim |
| Revi'i | Genesis 21:13–21:17 | 5 pesukim |
| Ḥamishi | Genesis 21:18–21:21 | 4 pesukim |
| Shishi | Genesis 21:22–21:27 | 6 pesukim |
| Shevi'i | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana with additions for Shabbat.

Shofar is not blown. Musaf includes the additions for Shabbat. **וביום השבת** and **ישמחו** should be chanted in the tune for Shabbat.

Afternoon kiddush includes the verses for both Shabbat and Rosh Hashana.

Minḥa begins with Ashrei, Uva Letzion, Ḥatzi Kaddish, and the Torah reading for Ha'azinu.

| | | |
|---------|------------------------|-----------|
| Kohen | Deuteronomy 32:1–32:3 | 3 pesukim |
| Levi | Deuteronomy 32:4–32:6 | 3 pesukim |
| Yisrael | Deuteronomy 32:7–32:12 | 6 pesukim |

After the Torah is returned, Ḥatzi Kaddish is said, and the Amida for Rosh Hashana is recited. **צדקתך צדק** is omitted.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. The havdala paragraph is inserted in the Amida. LeDavid is recited after Aleinu. Kiddush is YaKeNHaz—Yayin (hagafen), Kiddush (**אשר בחר בנו וכו'**), Ner (**בורא מאורי**), Havdala (**האש**), Havdala (**המבדיל בין קודש לקודש**), Zeman (**שהחיינו**). Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥyanu applies to it as well as the holiday.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **המאיר** is recited in shaḥarit. The Shir Shel Yom is for Sunday, along with LeDavid. Some communities recite Anim Zemirot. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *shebeḥiyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before *titkabal* in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

3 Tishrei

The holiday is concluded with Arvit for weekdays. Vihi No'am is not recited. Havdala is on wine only, without introductory verses, flame or spices.

Tzom Gedalia – 3 Tishrei

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Nora'im season, which formerly included days of fasting.

Seliḥot are recited (before shaḥarit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Nora'im trope. Those phrases are **שׁוּב מִחֲרוֹן אַפֶּךָ** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Monday and LeDavid.

Minḥa is said with the same Torah reading as shaḥarit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מִגֵּן דָּוִד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

Following Tzom Gedalia, liturgical additions continue for the 10 Days of Repentance.

Shabbat Shuva Haazinu – 8 Tishrei

Kabbalat Shabbat and Arvit as usual, with the additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaḥarit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite **שִׁיר הַמַּעֲלֹת מִמַּעַמְקִים** after *Yishtabeh*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Joel when Haazinu is read on Shabbat Shuva.

Shabbat Minhā begins as usual, reading from VeZot HaBerakha.

The Amida includes additions for the 10 Days of Repentance. צדקתך is said.

Arvit for the conclusion of Shabbat as usual. *Vibi no'am* is said.

Shabbat Bereshit – 29 Tishrei

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|-------------------|------------|
| Kohen | Genesis 1:1–2:3 | 34 pesukim |
| Levi | Genesis 2:4–2:19 | 16 pesukim |
| Shelishi | Genesis 2:20–3:21 | 27 pesukim |
| Revi'i | Genesis 3:22–4:18 | 21 pesukim |
| Ḥamishi | Genesis 4:19–4:22 | 4 pesukim |
| Shishi | Genesis 4:23–5:24 | 28 pesukim |
| Shevi'i | Genesis 5:25–6:8 | 16 pesukim |
| Maftir | Genesis 6:5–6:8 | 4 pesukim |

Note that different ḥumashim have different aliya breakdowns for this parasha. Make sure to check with leiners that they learned the correct portion. The Haftara for Shabbat Maḥar Ḥodesh is I Samuel 20:18–20:42. Some read the Haftara for Bereishit even when it falls on Maḥar Ḥodesh (Isaiah 42:5–43:10)

The new month of Marḥeshvan (not “Cheshvan”) is blessed. See page 8 for the molad. Rosh Ḥodesh is Sunday and Monday.

ראש חודש מרחשון יהיה ביום ראשון וביום שני

Av HaRaḥamim is omitted. Shabbat Musaf as usual.

Minḥa for Shabbat. *Tzidkatekha* is omitted for Erev Rosh Ḥodesh.

Arvit for Motzaei Shabbat includes *ya'ale veyavo*.

Rosh Ḥodesh Marḥeshvan, First day (30 Tishrei)

Shaḥarit for Rosh Ḥodesh. *Ya'ale veyavo* in the shaḥarit Amidah, Hallel, Kaddish Shalem, no *El Erekh Apayim*.

| | | |
|----------|---------------------|-----------|
| Kohen | Numbers 28:1–28:3 | 3 pesukim |
| Levi | Numbers 28:3–28:5 | 3 pesukim |
| Shelishi | Numbers 28:6–28:10 | 5 pesukim |
| Revi'i | Numbers 28:11–28:15 | 5 pesukim |

Ḥatzi Kaddish, the Torah is returned as usual. No *Lamenatzeah*. Remove Tefillin before or after Ḥatzi Kaddish, according to community custom. Musaf for Rosh Ḥodesh (including ולכפרת פשע), Shir shel Yom for Rosh Ḥodesh and Sunday.

Minḥa as usual for weekday, with the addition of *Ya'ale Veyavo* in the Amidah and the omission of *taḥanun*.

Rosh Ḥodesh Marḥeshvan, Second Day (1 Marḥeshvan)

Davening on Rosh Ḥodesh is the same as the first day of Rosh Ḥodesh, except that the Psalm of the Day is for Rosh Ḥodesh and Monday.

Shabbat Noah – 6 Marḥeshvan

Kabbalat Shabbat and Arvit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 6:9–6:22 | 14 pesukim |
| Levi | Genesis 7:1–7:16 | 16 pesukim |
| Shelishi | Genesis 7:17–8:14 | 22 pesukim |
| Revi'i | Genesis 8:15–9:7 | 15 pesukim |
| Ḥamishi | Genesis 9:8–9:17 | 10 pesukim |
| Shishi | Genesis 9:18–10:32 | 44 pesukim |
| Shevi'i | Genesis 11:1–11:32 | 32 pesukim |
| Maftir | Genesis 11:29–11:32 | 4 pesukim |

The Haftara for Noach is Isaiah 54:1–55:5. Some congregations say a special misheberakh for those fasting BeHaB.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Lekh Lekha – 13 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 12:1–12:13 | 13 pesukim |
| Levi | Genesis 12:14–13:4 | 11 pesukim |
| Shelishi | Genesis 13:5–13:18 | 14 pesukim |
| Revi'i | Genesis 14:1–14:20 | 20 pesukim |
| Ḥamishi | Genesis 14:21–15:6 | 10 pesukim |
| Shishi | Genesis 15:7–17:6 | 37 pesukim |
| Shevi'i | Genesis 17:7–17:27 | 21 pesukim |
| Maftir | Genesis 17:24–17:27 | 4 pesukim |

The Haftara for Lech-Lecha is Isaiah 40:27–41:16.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Vayera — 20 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|--|
| Kohen | Genesis 18:1–18:14 | 14 pesukim |
| Levi | Genesis 18:15–18:33 | 19 pesukim |
| Shelishi | Genesis 19:1–19:20 | 20 pesukim (this aliya has a shalsholet) |
| Revi'i | Genesis 19:21–21:4 | 40 pesukim |
| Ḥamishi | Genesis 21:5–21:21 | 17 pesukim |
| Shishi | Genesis 21:22–21:34 | 13 pesukim |
| Shevi'i | Genesis 22:1–22:24 | 24 pesukim |
| Maftir | Genesis 22:20–22:24 | 5 pesukim |

The Haftara for Vayera is II Kings 4:1–4:37.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Ḥayyei Sara — 27 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 23:1–23:16 | 16 pesukim |
| Levi | Genesis 23:17–24:9 | 13 pesukim |
| Shelishi | Genesis 24:10–24:26 | 17 pesukim |
| Revi'i | Genesis 24:27–24:52 | 26 pesukim |
| Ḥamishi | Genesis 24:53–24:67 | 15 pesukim |
| Shishi | Genesis 25:1–25:11 | 11 pesukim |
| Shevi'i | Genesis 25:12–25:18 | 7 pesukim |
| Maftir | Genesis 25:16–25:18 | 3 pesukim |

The Haftara for Chayei Sara is I Kings 1:1–1:31.

The new month of Kislev is blessed. See page 8 for the molad. Rosh Ḥodesh is Tuesday.

ראש חודש כסלו יהיה ביום שלישי

Av HaRaḥamim is omitted. Shabbat Musaf as usual.

Shabbat Minhā as usual.

Rosh Ḥodesh Kislev — 1 Kislev

Shaḥarit for Rosh Ḥodesh. *Ya'ale veyavo* in the shaḥarit Amidah, Hallel, Kaddish Shalem, no *El Erekh Apayim*.

| | | |
|----------|---------------------|-----------|
| Kohen | Numbers 28:1–28:3 | 3 pesukim |
| Levi | Numbers 28:3–28:5 | 3 pesukim |
| Shelishi | Numbers 28:6–28:10 | 5 pesukim |
| Revi'i | Numbers 28:11–28:15 | 5 pesukim |

Ḥatzi Kaddish, the Torah is returned as usual. No *Lamenatzeah*. Remove Tefillin before or after Ḥatzi Kaddish, according to community custom. Musaf for Rosh Ḥodesh (including ולכפרת פשע), Shir shel Yom for Rosh Ḥodesh and Tuesday.

Minhā as usual for weekday, with the addition of *Ya'ale Veyavo* in the Amidah and the omission of *taḥanun*.

Shabbat Toledot — 5 Kislev

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 25:19–26:5 | 21 pesukim |
| Levi | Genesis 26:6–26:12 | 7 pesukim |
| Shelishi | Genesis 26:13–26:22 | 10 pesukim |
| Revi'i | Genesis 26:23–26:29 | 7 pesukim |
| Ḥamishi | Genesis 26:30–27:27 | 33 pesukim |
| Shishi | Genesis 27:28–28:4 | 23 pesukim |
| Shevi'i | Genesis 28:5–28:9 | 5 pesukim |
| Maftir | Genesis 28:7–28:9 | 3 pesukim |

The Haftara for Toldot is Malachi 1:1–2:7.

Shabbat Musaf as usual.

Shabbat Minhā as usual.

Shabbat VaYeiitzei — 12 Kislev

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 28:10–28:22 | 13 pesukim |
| Levi | Genesis 29:1–29:17 | 17 pesukim |
| Shelishi | Genesis 29:18–30:13 | 31 pesukim |
| Revi'i | Genesis 30:14–30:27 | 14 pesukim |
| Ḥamishi | Genesis 30:28–31:16 | 32 pesukim |
| Shishi | Genesis 31:17–31:42 | 26 pesukim |
| Shevi'i | Genesis 31:43–32:3 | 15 pesukim |
| Maftir | Genesis 32:1–32:3 | 3 pesukim |

The Haftara for Vayetzei is Hosea 12:13–14:10.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Vayishlah — 19 Kislev

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 32:4–32:13 | 10 pesukim |
| Levi | Genesis 32:14–32:30 | 17 pesukim |
| Shelishi | Genesis 32:31–33:5 | 8 pesukim |
| Revi'i | Genesis 33:6–33:20 | 15 pesukim |
| Ḥamishi | Genesis 34:1–35:11 | 42 pesukim |
| Shishi | Genesis 35:12–36:19 | 37 pesukim |
| Shevi'i | Genesis 36:20–36:43 | 24 pesukim |
| Maftir | Genesis 36:40–36:43 | 4 pesukim |

The Haftara for Vayishlach is Obadiah 1:1–1:21.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Erev Ḥanukka — Thursday 24 Kislev Taḥanun is omitted at Minḥa.

Ḥanukka — 24 Kislev (Friday night)

The Ḥanukka Menora is lit in the synagogue after sunset prior to 'arvit in the southern part of the synagogue, with all three of its blessings, beginning with the far right light. 'Arvit includes *'al hanisim*, which is included in every amida and in *birkat hamazon* throughout Ḥanukka (if forgotten, do not repeat the amida or bentshing, though it may be inserted in the paragraph *elohai netzor* in the amida or in the *haraḥaman* paragraphs of bentshing).

At home, the Ḥanukka Menora should be lit after sunset (some wait until dusk), beginning with the far right light, following the recitation of the three blessings on the Ḥanukka lighting. It may be lit throughout the night if members of the household are present to see the candles, though it is preferable to light earlier. Each night another flame is added to the left of the flames from the previous night, and the newest candle is lit first.

Ḥanukka candles are lit in shul, without a beracha (one candles). Shaḥarit Friday morning includes *'al hanisim* in the Amidah. After the leader recites the communal amidah, full Hallel is recited (no taḥanun). Ḥatzi Kaddish is said, since there is no Musaf today. The Torah is taken out, without *el erekh 'apayim*. Three aliyot are read as follows:

| | | |
|----------|-------------------|------------|
| Kohen | Numbers 7:1–7:11 | 11 pesukim |
| Levi | Numbers 7:12–7:14 | 3 pesukim |
| Shelishi | Numbers 7:15–7:17 | 3 pesukim |

The *yehi ratzon* paragraphs are not recited. The Torah is returned as usual, Ḥatzi Kaddish, ashrei, no *lamenatzeah*. Psalm of the Day for Friday and most communities recite *mizmor shir ḥanukkat habayit*.

Minḥa includes *'al hanisim* (no taḥanun). Ḥanukka candles (two candles) must be lit before Shabbat candles, and have sufficient fuel to burn until dusk.

Shabbat Hanukka Parshat Vayeshev — 26 Kislev

Kabbalat Shabbat and 'arvit as usual, with *'al hanisim*.

Shabbat Shaḥarit with *'al hanisim*. Full Hallel, Kaddish Shalem. Two Sifrei Torah are taken out of the ark, one for the parsha, one for Hanukka Maftir.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 37:1–37:11 | 11 pesukim |
| Levi | Genesis 37:12–37:22 | 11 pesukim |
| Shelishi | Genesis 37:23–37:36 | 14 pesukim |
| Revi'i | Genesis 38:1–38:30 | 30 pesukim |
| Ḥamishi | Genesis 39:1–39:6 | 6 pesukim |
| Shishi | Genesis 39:7–39:23 | 17 pesukim |
| Shevi'i | Genesis 40:1–40:23 | 23 pesukim |
| Maftir | Numbers 7:18–7:23 | 6 pesukim |

After the seven aliyot from the parsha are read, both Sifrei Torah are placed on the table and Ḥatzi Kaddish is recited. Maftir is read, followed by the Haftara. The Haftara for the first Shabbat of Hanukka is Zechariah 2:14–4:7. The new month of Tevet is blessed. See page 8 for the molad. Rosh Ḥodesh is Wednesday.

ראש חודש טבת יהיה ביום רביעי

Musaf as usual with *'al hanisim*. Most recite Psalm 30 (*mizmor shir hanukkat habayit ledavid*) following the Psalm for Shabbat.

Minḥa as usual with *'al hanisim*.

Third Day of Hanukka — 27 Kislev

'Arvit for the conclusion of Shabbat. Havdala and *'al hanisim* in the Amidah, Ḥatzi Kaddish, *vibi no'am*, etc. The Hanukka Menora is lit (three candles), then aleinu and havdala. At home, havdala is recited before the Hanukka candles are lit (three candles), which should be done as soon as practicable.

Hanukka candles are lit in shul, without a berakha (three candles). Shaḥarit Sunday morning includes *'al hanisim* in the Amidah. After the leader recites the communal amidah, full Hallel is recited (no taḥanun). Ḥatzi Kaddish is said, since there is no Musaf today. The Torah is taken out, without *el 'erekh 'apayim*. Three aliyot are read as follows:

| | | |
|----------|-------------------|-----------|
| Kohen | Numbers 7:24–7:26 | 3 pesukim |
| Levi | Numbers 7:27–7:29 | 3 pesukim |
| Shelishi | Numbers 7:30–7:35 | 6 pesukim |

The *yebi ratzon* paragraphs are not recited. The Torah is returned as usual, Ḥatzi Kaddish, ashrei, no *lamenatzeah*. Psalm of the Day for Sunday and most communities recite *mizmor shir hanukkat habayit*.

Fourth Day of Hanukka— 28 Kislev

The Hanukka Menora is lit before 'arvit with berakhot (four candles), as in previous days. 'Arvit includes *'al hanisim*. The Hanukka Menora is lit at home (four candles).

Hanukka candles are lit in shul, without a berakha (four candles). Shaḥarit Monday morning includes *'al hanisim* in the Amidah. After the leader recites the communal amidah, full Hallel is recited (no taḥanun). Ḥatzi Kaddish is said, since there is no Musaf today. The Torah is taken out, without *el 'erekh 'apayim*. Three aliyot are read as follows:

| | | |
|----------|-------------------|-----------|
| Kohen | Numbers 7:30–7:32 | 3 pesukim |
| Levi | Numbers 7:33–7:35 | 3 pesukim |
| Shelishi | Numbers 7:36–7:41 | 6 pesukim |

The *yebi ratzon* paragraphs are not recited. The Torah is returned as usual, Ḥatzi Kaddish, ashrei, no *lamenatzeah*. Psalm of the Day for Monday and most communities recite *mizmor shir hanukkat habayit*.

Fifth Day of Hanukka— 29 Kislev

The Hanukka Menora is lit before 'arvit with berakhot (fifth candles), as in previous days. 'Arvit includes 'al hanisim. The Hanukka Menora is lit at home (fifth candles).

Hanukka candles are lit in shul, without a berakha (five candles). Shaḥarit Tuesday morning includes 'al hanisim in the Amidah. After the leader recites the communal amidah, full Hallel is recited (no taḥanun). Ḥatzi Kaddish is said, since there is no Musaf today. The Torah is taken out, without 'el 'erekb 'apayim. Three aliyot are read as follows:

| | | |
|----------|-------------------|-----------|
| Kohen | Numbers 7:36–7:38 | 3 pesukim |
| Levi | Numbers 7:39–7:41 | 3 pesukim |
| Shelishi | Numbers 7:42–7:47 | 6 pesukim |

The *yehi ratzon* paragraphs are not recited. The Torah is returned as usual, Ḥatzi Kaddish, ashrei, no *lamenatzeah*. Psalm of the Day for Tuesday and most communities recite *mizmor shir hanukkat habayit*.

5.14 725 Shabbat-Long-Thursday (leap)

Rosh Hashana I – 1 Tishrei

Kabbalat Shabbat is abbreviated, beginning with מזמור שיר ליום השבת. The chapter במה מדליקין is omitted. *Le'eila le'eila* is included in Kaddish beginning with the Kaddish following abbreviated Kabbalat Shabbat. Arvit is chanted in the appropriate tune for Rosh Hashana. Both *Veshameru* and *tik'u bahodesh shofar* are recited before Ḥatzi Kaddish. The Amidah is recited with המלך הקדוש and עושה השלום. These are continued through Yom Kippur. ויכולו and the Berakha Eḥad Me'ein Shalosh is chanted in the Shabbat tune, with המלך הקדוש.

Kiddush is the text for Rosh Hashana, with additions for Shabbat, followed by שהחיינו. LeDavid is recited at the end of Arvit.

Shaḥarit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. אל אדון is recited in shaḥarit. The Shir Shel Yom is for Shabbat, along with LeDavid. Many communities recite Anim Zemirot (either because it is Rosh Hashana or because it is Shabbat). Two Sifrei Torah are taken from the Ark. The Torah reading is the story of Isaac's birth and Ishma'el being expelled from Abraham's household, divided into seven aliyot, from the first Sefer Torah, and the Maftir is from the holiday listing in Pinḥas.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 21:1–21:4 | 4 pesukim |
| Levi | Genesis 21:5–21:8 | 4 pesukim |
| Shelishi | Genesis 21:9–21:12 | 4 pesukim |
| Revi'i | Genesis 21:13–21:17 | 5 pesukim |
| Ḥamishi | Genesis 21:18–21:21 | 4 pesukim |
| Shishi | Genesis 21:22–21:27 | 6 pesukim |
| Shevi'i | Genesis 21:28–21:34 | 7 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana I is I Samuel 1:1–2:10. The berakha after the haftara uses the text for Rosh Hashana with additions for Shabbat.

Shofar is not blown. Musaf includes the additions for Shabbat. ויביום השבת and ישמחו should be chanted in the tune for Shabbat.

Afternoon kiddush includes the verses for both Shabbat and Rosh Hashana.

Minḥa begins with Ashrei, Uva Letzion, Ḥatzi Kaddish, and the Torah reading for Ha'azinu.

| | | |
|---------|------------------------|-----------|
| Kohen | Deuteronomy 32:1–32:3 | 3 pesukim |
| Levi | Deuteronomy 32:4–32:6 | 3 pesukim |
| Yisrael | Deuteronomy 32:7–32:12 | 6 pesukim |

After the Torah is returned, Ḥatzi Kaddish is said, and the Amida for Rosh Hashana is recited. צדקתך צדק is omitted.

Rosh Hashana II – 2 Tishrei

Arvit for Rosh Hashana is recited, beginning with Berekhu. The havdala paragraph is inserted in the Amida. LeDavid is recited after Aleinu. Kiddush is YaKeNHaz—Yayin (hagafen), Kiddush (**אֲשֶׁר בָּחַר בָּנוּ וְכָרָא**), Ner (**בּוֹרֵא מְאֹרֵי**), Havdala (**הַמְבְדִּיל בֵּין קוֹדֶשׁ לְקוֹדֶשׁ**), Zeman (**שְׁהַחֲיֵינוּ**). Since the two days of Rosh Hashana are considered single “long day”, the custom is that a new fruit is eaten or a new garment is worn so that the berakha of sheheḥyanu applies to it as well as the holiday.

Shaharit is recited according to the text in the maḥzor, with piyyutim according to local communal custom. **הַמְאִיר** is recited in shaharit. The Shir Shel Yom is for Sunday, along with LeDavid. Some communities recite Anim Zemiroṭ. Two Sifrei Torah are taken from the Ark. The Torah reading is the story of the binding of Isaac, which immediately follows the reading from the first day.

| | | |
|----------|---------------------|-----------|
| Kohen | Genesis 22:1–22:3 | 3 pesukim |
| Levi | Genesis 22:4–22:8 | 5 pesukim |
| Shelishi | Genesis 22:9–22:14 | 6 pesukim |
| Revi'i | Genesis 22:15–22:19 | 5 pesukim |
| Ḥamishi | Genesis 22:20–22:24 | 5 pesukim |
| Maftir | Numbers 29:1–29:6 | 6 pesukim |

Ḥatzi Kaddish is recited, and the first Sefer Torah is lifted and wrapped. Maftir is read from the second Sefer Torah. The Haftara for Rosh Hashana II is Jeremiah 31:1–31:19. The berakha after the haftara uses the text for Rosh Hashana.

Shofar is blown, with *shebeḥyanu*. Three sets each of each sequence of blasts are blown. Musaf is recited according to the text in the maḥzor with piyyutim according to local custom. Some communities blow the shofar during the silent Amidah. The shofar is blown during the repetition. Most communities blow a total of 100 blasts of the shofar, which requires additional blasts after the amida. Most do this before *titkabal* in the Kaddish Shalem following the Amida.

Afternoon kiddush for Rosh Hashana.

Minḥa begins with Ashrei and Uva Letzion. Ḥatzi Kaddish and the Amida for Rosh Hashana, Avinu Malkeinu, Kaddish Shalem, etc.

3 Tishrei

The holiday is concluded with Arvit for weekdays. Vihi No'am is not recited. Havdala is on wine only, without introductory verses, flame or spices.

Tzom Gedalia – 3 Tishrei

The Third of Tishrei is a minor fast, commemorating the assassination of Gedalia, the governor of the Babylonian province of Judea. His assassination ended the last Jewish governance that had remained after the destruction of the First Temple. It also is part of the fasting of the Yamim Noraim season, which formerly included days of fasting.

Seliḥot are recited (before shaharit, as during the 10 Days of Repentance). Additions to the Amidah for both minor fasts and the 10 Days of Repentance are included. Avinu Malkeinu is read, using the text for the 10 Days of Repentance.

| | | |
|---------|--------------------|-----------|
| Kohen | Exodus 32:11–32:14 | 4 pesukim |
| Levi | Exodus 34:1–34:3 | 3 pesukim |
| Yisrael | Exodus 34:4–34:10 | 7 pesukim |

Note the break between first and second aliyot. The first and third aliyot have phrases where the reader pauses and allows the congregation to finish the phrase, then the reader repeats the phrase using Yamim Noraim trope. Those phrases are **שׁוֹב מִחֶרֶן אֲפָךְ** to the end of the verse, and the 13 Attributes of Mercy in the third aliya.

Psalm of the day for Monday and Ledavid.

Minḥa is said with the same Torah reading as shaharit, except that the third aliya is called as Maftir. The Haftara is Isaiah 55:6–56:8. The concluding berakha ends at **מִגֵּן דָּוִד**. The Amidah is recited, with additions for the Ten Days of Repentance and minor fasts. Avinu Malkeinu is recited, with the text for the 10 Days of Repentance.

Following Tzom Gedalia, liturgical additions continue for the 10 Days of Repentance.

Shabbat Shuva Haazinu – 8 Tishrei

Kabbalat Shabbat and Arvit as usual, with the additions to the Amidah for the 10 Days of Repentance, and *hamelekh bakadosh* in the Berakha Achat Me'ein Sheva, concluding with LeDavid.

Shabbat Shaḥarit, with additions for the 10 Days of Repentance in the Amidah. Most communities open the ark and recite שיר המעלות ממעמקים after *Yishtabeh*. LeDavid is recited.

| | | |
|----------|-------------------------|------------|
| Kohen | Deuteronomy 32:1–32:6 | 6 pesukim |
| Levi | Deuteronomy 32:7–32:12 | 6 pesukim |
| Shelishi | Deuteronomy 32:13–32:18 | 6 pesukim |
| Revi'i | Deuteronomy 32:19–32:28 | 10 pesukim |
| Ḥamishi | Deuteronomy 32:29–32:39 | 11 pesukim |
| Shishi | Deuteronomy 32:40–32:43 | 4 pesukim |
| Shevi'i | Deuteronomy 32:44–32:52 | 9 pesukim |
| Maftir | Deuteronomy 32:48–32:52 | 5 pesukim |

Note: the aliya breaks in the song of Ha'azinu are mentioned in the Talmud and must be adhered to.

Customs vary for the Haftara. All communities begin with Hosea 14:2–10. Some add both Joel 2:11–27 and Micah 7:18–20 (note that Joel should be before Micah to avoid going backwards within the 12 Prophets), some add either Joel or Micah but not both, others add only the verses from Joel when Haazinu is read on Shabbat Shuva.

Shabbat Minḥa begins as usual, reading from VeZot HaBerakha.

The Amida includes additions for the 10 Days of Repentance. צדקתך is said.

Arvit for the conclusion of Shabbat as usual. *Vibi no'am* is said.

Shabbat Bereshit – 29 Tishrei

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|-------------------|------------|
| Kohen | Genesis 1:1–2:3 | 34 pesukim |
| Levi | Genesis 2:4–2:19 | 16 pesukim |
| Shelishi | Genesis 2:20–3:21 | 27 pesukim |
| Revi'i | Genesis 3:22–4:18 | 21 pesukim |
| Ḥamishi | Genesis 4:19–4:22 | 4 pesukim |
| Shishi | Genesis 4:23–5:24 | 28 pesukim |
| Shevi'i | Genesis 5:25–6:8 | 16 pesukim |
| Maftir | Genesis 6:5–6:8 | 4 pesukim |

Note that different ḥumashim have different aliya breakdowns for this parasha. Make sure to check with leiners that they learned the correct portion. The Haftara for Shabbat Maḥar Ḥodesh is I Samuel 20:18–20:42. Some read the Haftara for Bereishit even when it falls on Maḥar Ḥodesh (Isaiah 42:5–43:10)

The new month of Marḥeshvan (not “Cheshvan”) is blessed. See page 8 for the molad. Rosh Ḥodesh is Sunday and Monday.

ראש חודש מרחשון יהיה ביום ראשון וביום שני

Av HaRaḥamim is omitted. Shabbat Musaf as usual.

Minḥa for Shabbat. *Tzidkatekha* is omitted for Erev Rosh Ḥodesh.

Arvit for Motzaei Shabbat includes *ya'ale veyavo*.

Rosh Ḥodesh Marḥeshvan, First day (30 Tishrei)

Shaḥarit for Rosh Ḥodesh. *Ya'ale veyavo* in the shaḥarit Amidah, Hallel, Kaddish Shalem, no *El Erekh Apayim*.

| | | |
|----------|---------------------|-----------|
| Kohen | Numbers 28:1–28:3 | 3 pesukim |
| Levi | Numbers 28:3–28:5 | 3 pesukim |
| Shelishi | Numbers 28:6–28:10 | 5 pesukim |
| Revi'i | Numbers 28:11–28:15 | 5 pesukim |

Ḥatzi Kaddish, the Torah is returned as usual. No *Lamenatzeah*. Remove Tefillin before or after Ḥatzi Kaddish, according to community custom. Musaf for Rosh Ḥodesh (including ולכפרת פשע), Shir shel Yom for Rosh Ḥodesh and Sunday.

Minḥa as usual for weekday, with the addition of *Ya'ale Veyavo* in the Amidah and the omission of *taḥanun*.

Rosh Ḥodesh Marḥeshvan, Second Day (1 Marḥeshvan)

Davening on Rosh Ḥodesh is the same as the first day of Rosh Ḥodesh, except that the Psalm of the Day is for Rosh Ḥodesh and Monday.

Shabbat Noah – 6 Marḥeshvan

Kabbalat Shabbat and Arvit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 6:9–6:22 | 14 pesukim |
| Levi | Genesis 7:1–7:16 | 16 pesukim |
| Shelishi | Genesis 7:17–8:14 | 22 pesukim |
| Revi'i | Genesis 8:15–9:7 | 15 pesukim |
| Ḥamishi | Genesis 9:8–9:17 | 10 pesukim |
| Shishi | Genesis 9:18–10:32 | 44 pesukim |
| Shevi'i | Genesis 11:1–11:32 | 32 pesukim |
| Maftir | Genesis 11:29–11:32 | 4 pesukim |

The Haftara for Noah is Isaiah 54:1–55:5. Some congregations say a special misheberakh for those fasting BeHaB.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Lekh Lekha – 13 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 12:1–12:13 | 13 pesukim |
| Levi | Genesis 12:14–13:4 | 11 pesukim |
| Shelishi | Genesis 13:5–13:18 | 14 pesukim |
| Revi'i | Genesis 14:1–14:20 | 20 pesukim |
| Ḥamishi | Genesis 14:21–15:6 | 10 pesukim |
| Shishi | Genesis 15:7–17:6 | 37 pesukim |
| Shevi'i | Genesis 17:7–17:27 | 21 pesukim |
| Maftir | Genesis 17:24–17:27 | 4 pesukim |

The Haftara for Lech-Lecha is Isaiah 40:27–41:16.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Vayera — 20 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|--|
| Kohen | Genesis 18:1–18:14 | 14 pesukim |
| Levi | Genesis 18:15–18:33 | 19 pesukim |
| Shelishi | Genesis 19:1–19:20 | 20 pesukim (this aliya has a shalsholet) |
| Revi'i | Genesis 19:21–21:4 | 40 pesukim |
| Ḥamishi | Genesis 21:5–21:21 | 17 pesukim |
| Shishi | Genesis 21:22–21:34 | 13 pesukim |
| Shevi'i | Genesis 22:1–22:24 | 24 pesukim |
| Maftir | Genesis 22:20–22:24 | 5 pesukim |

The Haftara for Vayera is II Kings 4:1–4:37.

Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Shabbat Ḥayyei Sara — 27 Marḥeshvan

Kabbalat Shabbat and Arvit as usual. Pesukei DeZimra and Shaḥarit as usual.

| | | |
|----------|---------------------|------------|
| Kohen | Genesis 23:1–23:16 | 16 pesukim |
| Levi | Genesis 23:17–24:9 | 13 pesukim |
| Shelishi | Genesis 24:10–24:26 | 17 pesukim |
| Revi'i | Genesis 24:27–24:52 | 26 pesukim |
| Ḥamishi | Genesis 24:53–24:67 | 15 pesukim |
| Shishi | Genesis 25:1–25:11 | 11 pesukim |
| Shevi'i | Genesis 25:12–25:18 | 7 pesukim |
| Maftir | Genesis 25:16–25:18 | 3 pesukim |

The Haftara for Chayei Sara is I Kings 1:1–1:31.

The new month of Kislev is blessed. See page 8 for the molad. Rosh Ḥodesh is Tuesday and Wednesday.

ראש חודש כסלו יהיה ביום שלישי וביום רביעי

Av HaRaḥamim is omitted. Shabbat Musaf as usual.

Shabbat Minḥa as usual.

Chapter 6

Zmanim

Below is a table of zmanim for the entire year. Dawn is the very beginning of the day. Nighttime obligations, such as the shema, must be performed before this time. Misheyakir is the earliest time to wear Tallit and Tefillin. Sunrise is the beginning of the preferred timeframe for reciting shaharit, and the earliest time to perform daytime halakhic obligations. Morning shema should be recited before the time labelled "shema", and shaharit before the time designated shaharit.

If shaharit was not recited at the proper time, it may be recited until noon. Noon is also listed because it is 12 hours before halakhic midnight, the time before which nighttime obligations should be performed (but if one failed to, generally they may do so until dawn). Minḥa Gedola is one-half proportional hour after noon, the earliest time for minḥa. MK is Minḥa Ketana, which is the preferred earliest time to recite minḥa. Plag is Pelag haMinḥa, the earliest time to begin Shabbat. It is also the time at which some communities end reciting minḥa and begin reciting arvit. Most communities, however, recite minḥa before sunset, and arvit after it. Sunset is also the latest time to perform daytime halakhic obligations.

Dusk is an earlier zman for nighttime, when it begins to get dark. Opinions vary, but the time below is a good benchmark for the earliest time to recite evening shema, earliest ideal time for arvit, and earliest time for nighttime halakhic obligations. Nightfall is when the sky is dark, which is when havdala may be recited.

For dates between those listed, estimate given the adjacent dates. Do not rely on these times to the exact minute, since there is slight variation in zmanim from year to year, and rounding combined with estimating between dates can cause slight inaccuracies.

Prop Hr is the number of minutes in $1/12$ of the daylight. This is useful to compute other times not listed here, such as the latest time to eat ḥametz on Erev Pesah (2 hours before noon), or earliest Minḥa (half a proportional hour after noon, as noted above).

Note that the table does not account for Daylight Saving Time, and is in the standard time of the location.

For ease of navigation, sunrise, noon, and sunset times are bolded.

6.1 Zmanim for Chicago

| Date | Dawn | Misheyakir | Sunrise | Shema | Shaharit | Noon | MK | Plag | Sunset | Dusk | Nightfall | Prop Hr |
|-------|-------|------------|--------------|-------|----------|--------------|-------|-------|--------------|-------|-----------|---------|
| 01-01 | 05:48 | 06:17 | 07:18 | 09:36 | 10:22 | 11:54 | 14:35 | 15:32 | 16:29 | 17:04 | 17:16 | 46 |
| 01-04 | 05:48 | 06:17 | 07:18 | 09:37 | 10:23 | 11:55 | 14:37 | 15:34 | 16:32 | 17:06 | 17:18 | 46 |
| 01-07 | 05:49 | 06:17 | 07:18 | 09:37 | 10:24 | 11:56 | 14:39 | 15:37 | 16:35 | 17:09 | 17:21 | 46 |
| 01-10 | 05:48 | 06:17 | 07:17 | 09:37 | 10:24 | 11:58 | 14:41 | 15:40 | 16:38 | 17:12 | 17:24 | 47 |
| 01-13 | 05:48 | 06:17 | 07:16 | 09:38 | 10:25 | 11:59 | 14:44 | 15:43 | 16:41 | 17:15 | 17:27 | 47 |
| 01-16 | 05:47 | 06:16 | 07:15 | 09:38 | 10:25 | 12:00 | 14:46 | 15:46 | 16:45 | 17:18 | 17:30 | 47 |
| 01-19 | 05:46 | 06:14 | 07:13 | 09:37 | 10:25 | 12:01 | 14:49 | 15:49 | 16:49 | 17:22 | 17:33 | 48 |
| 01-22 | 05:44 | 06:13 | 07:11 | 09:37 | 10:25 | 12:02 | 14:51 | 15:52 | 16:52 | 17:25 | 17:37 | 48 |
| 01-25 | 05:43 | 06:11 | 07:09 | 09:36 | 10:25 | 12:03 | 14:54 | 15:55 | 16:56 | 17:29 | 17:40 | 49 |
| 01-28 | 05:41 | 06:09 | 07:07 | 09:35 | 10:24 | 12:03 | 14:56 | 15:58 | 17:00 | 17:32 | 17:44 | 49 |
| 01-31 | 05:38 | 06:06 | 07:04 | 09:34 | 10:24 | 12:04 | 14:59 | 16:01 | 17:04 | 17:36 | 17:47 | 50 |
| 02-03 | 05:36 | 06:04 | 07:01 | 09:32 | 10:23 | 12:04 | 15:01 | 16:04 | 17:07 | 17:39 | 17:51 | 51 |
| 02-06 | 05:33 | 06:01 | 06:57 | 09:31 | 10:22 | 12:04 | 15:03 | 16:07 | 17:11 | 17:43 | 17:54 | 51 |
| 02-09 | 05:30 | 05:57 | 06:54 | 09:29 | 10:21 | 12:05 | 15:06 | 16:11 | 17:15 | 17:47 | 17:58 | 52 |
| 02-12 | 05:26 | 05:54 | 06:50 | 09:27 | 10:20 | 12:05 | 15:08 | 16:14 | 17:19 | 17:50 | 18:02 | 52 |
| 02-15 | 05:23 | 05:50 | 06:46 | 09:25 | 10:18 | 12:04 | 15:10 | 16:17 | 17:23 | 17:54 | 18:05 | 53 |
| 02-18 | 05:19 | 05:46 | 06:42 | 09:23 | 10:17 | 12:04 | 15:12 | 16:19 | 17:27 | 17:58 | 18:09 | 54 |
| 02-21 | 05:15 | 05:42 | 06:38 | 09:21 | 10:15 | 12:04 | 15:14 | 16:22 | 17:30 | 18:01 | 18:12 | 54 |
| 02-24 | 05:11 | 05:38 | 06:33 | 09:18 | 10:13 | 12:04 | 15:16 | 16:25 | 17:34 | 18:05 | 18:16 | 55 |
| 02-27 | 05:06 | 05:34 | 06:28 | 09:16 | 10:12 | 12:03 | 15:18 | 16:28 | 17:38 | 18:08 | 18:19 | 56 |
| 03-02 | 05:01 | 05:29 | 06:24 | 09:13 | 10:10 | 12:03 | 15:20 | 16:31 | 17:41 | 18:12 | 18:23 | 56 |
| 03-05 | 04:57 | 05:24 | 06:19 | 09:10 | 10:08 | 12:02 | 15:22 | 16:33 | 17:45 | 18:15 | 18:26 | 57 |
| 03-08 | 04:52 | 05:19 | 06:14 | 09:08 | 10:05 | 12:01 | 15:24 | 16:36 | 17:48 | 18:19 | 18:30 | 58 |
| 03-11 | 04:47 | 05:14 | 06:09 | 09:05 | 10:03 | 12:00 | 15:25 | 16:39 | 17:52 | 18:22 | 18:33 | 59 |
| 03-14 | 04:41 | 05:09 | 06:04 | 09:02 | 10:01 | 12:00 | 15:27 | 16:41 | 17:55 | 18:26 | 18:37 | 59 |
| 03-17 | 04:36 | 05:04 | 05:59 | 08:59 | 09:59 | 11:59 | 15:29 | 16:44 | 17:59 | 18:29 | 18:40 | 60 |
| 03-20 | 04:31 | 04:59 | 05:54 | 08:56 | 09:56 | 11:58 | 15:30 | 16:46 | 18:02 | 18:32 | 18:43 | 61 |
| 03-23 | 04:25 | 04:53 | 05:49 | 08:53 | 09:54 | 11:57 | 15:32 | 16:49 | 18:05 | 18:36 | 18:47 | 61 |
| 03-26 | 04:20 | 04:48 | 05:43 | 08:50 | 09:52 | 11:56 | 15:34 | 16:51 | 18:09 | 18:39 | 18:50 | 62 |
| 03-29 | 04:14 | 04:43 | 05:38 | 08:47 | 09:50 | 11:55 | 15:35 | 16:54 | 18:12 | 18:43 | 18:54 | 63 |
| 04-01 | 04:08 | 04:37 | 05:33 | 08:44 | 09:47 | 11:54 | 15:37 | 16:56 | 18:15 | 18:46 | 18:57 | 64 |
| 04-04 | 04:03 | 04:32 | 05:28 | 08:41 | 09:45 | 11:53 | 15:38 | 16:59 | 18:19 | 18:50 | 19:01 | 64 |
| 04-07 | 03:57 | 04:26 | 05:23 | 08:38 | 09:43 | 11:53 | 15:40 | 17:01 | 18:22 | 18:53 | 19:05 | 65 |
| 04-10 | 03:51 | 04:21 | 05:18 | 08:35 | 09:41 | 11:52 | 15:41 | 17:03 | 18:25 | 18:57 | 19:08 | 66 |
| 04-13 | 03:45 | 04:16 | 05:13 | 08:32 | 09:38 | 11:51 | 15:43 | 17:06 | 18:29 | 19:00 | 19:12 | 66 |
| 04-16 | 03:40 | 04:10 | 05:08 | 08:29 | 09:36 | 11:50 | 15:45 | 17:08 | 18:32 | 19:04 | 19:16 | 67 |
| 04-19 | 03:34 | 04:05 | 05:04 | 08:27 | 09:34 | 11:50 | 15:46 | 17:11 | 18:35 | 19:07 | 19:19 | 68 |
| 04-22 | 03:28 | 04:00 | 04:59 | 08:24 | 09:32 | 11:49 | 15:48 | 17:13 | 18:39 | 19:11 | 19:23 | 68 |
| 04-25 | 03:23 | 03:55 | 04:55 | 08:22 | 09:31 | 11:48 | 15:50 | 17:16 | 18:42 | 19:15 | 19:27 | 69 |
| 04-28 | 03:17 | 03:50 | 04:51 | 08:19 | 09:29 | 11:48 | 15:51 | 17:18 | 18:45 | 19:18 | 19:31 | 70 |
| 05-01 | 03:12 | 03:45 | 04:46 | 08:17 | 09:27 | 11:48 | 15:53 | 17:21 | 18:49 | 19:22 | 19:34 | 70 |
| 05-04 | 03:06 | 03:41 | 04:43 | 08:15 | 09:26 | 11:47 | 15:55 | 17:23 | 18:52 | 19:25 | 19:38 | 71 |
| 05-07 | 03:01 | 03:36 | 04:39 | 08:13 | 09:24 | 11:47 | 15:57 | 17:26 | 18:55 | 19:29 | 19:42 | 71 |
| 05-10 | 02:56 | 03:32 | 04:35 | 08:11 | 09:23 | 11:47 | 15:59 | 17:28 | 18:58 | 19:33 | 19:46 | 72 |
| 05-13 | 02:52 | 03:28 | 04:32 | 08:09 | 09:22 | 11:47 | 16:00 | 17:31 | 19:01 | 19:36 | 19:49 | 72 |
| 05-16 | 02:47 | 03:24 | 04:29 | 08:08 | 09:21 | 11:47 | 16:02 | 17:33 | 19:05 | 19:40 | 19:53 | 73 |
| 05-19 | 02:43 | 03:20 | 04:26 | 08:07 | 09:20 | 11:47 | 16:04 | 17:36 | 19:08 | 19:43 | 19:56 | 73 |
| 05-22 | 02:39 | 03:17 | 04:24 | 08:05 | 09:19 | 11:47 | 16:06 | 17:38 | 19:10 | 19:46 | 20:00 | 74 |
| 05-25 | 02:35 | 03:14 | 04:21 | 08:04 | 09:19 | 11:47 | 16:07 | 17:40 | 19:13 | 19:49 | 20:03 | 74 |
| 05-28 | 02:32 | 03:12 | 04:19 | 08:04 | 09:18 | 11:48 | 16:09 | 17:42 | 19:16 | 19:52 | 20:06 | 75 |
| 05-31 | 02:29 | 03:09 | 04:18 | 08:03 | 09:18 | 11:48 | 16:11 | 17:44 | 19:18 | 19:55 | 20:09 | 75 |
| 06-03 | 02:26 | 03:07 | 04:16 | 08:02 | 09:18 | 11:48 | 16:12 | 17:46 | 19:20 | 19:57 | 20:12 | 75 |
| 06-06 | 02:24 | 03:06 | 04:15 | 08:02 | 09:18 | 11:49 | 16:13 | 17:48 | 19:22 | 20:00 | 20:14 | 76 |
| 06-09 | 02:22 | 03:05 | 04:15 | 08:02 | 09:18 | 11:49 | 16:15 | 17:50 | 19:24 | 20:02 | 20:16 | 76 |
| 06-12 | 02:21 | 03:04 | 04:14 | 08:02 | 09:18 | 11:50 | 16:16 | 17:51 | 19:26 | 20:03 | 20:18 | 76 |
| 06-15 | 02:21 | 03:03 | 04:14 | 08:02 | 09:18 | 11:51 | 16:17 | 17:52 | 19:27 | 20:05 | 20:19 | 76 |
| 06-18 | 02:20 | 03:03 | 04:14 | 08:03 | 09:19 | 11:51 | 16:18 | 17:53 | 19:28 | 20:06 | 20:20 | 76 |
| 06-21 | 02:21 | 03:04 | 04:15 | 08:03 | 09:20 | 11:52 | 16:19 | 17:54 | 19:29 | 20:07 | 20:21 | 76 |
| 06-24 | 02:22 | 03:05 | 04:16 | 08:04 | 09:20 | 11:53 | 16:19 | 17:54 | 19:29 | 20:07 | 20:22 | 76 |
| 06-27 | 02:23 | 03:06 | 04:17 | 08:05 | 09:21 | 11:53 | 16:19 | 17:54 | 19:30 | 20:07 | 20:22 | 76 |

| Date | Dawn | Misheyakir | Sunrise | Shema | Shaharit | Noon | MK | Plag | Sunset | Dusk | Nightfall | Prop Hr |
|-------|-------|------------|--------------|-------|----------|--------------|-------|-------|--------------|-------|-----------|---------|
| 06-30 | 02:25 | 03:07 | 04:18 | 08:06 | 09:22 | 11:54 | 16:20 | 17:54 | 19:29 | 20:07 | 20:21 | 76 |
| 07-03 | 02:27 | 03:09 | 04:19 | 08:07 | 09:23 | 11:54 | 16:19 | 17:54 | 19:29 | 20:06 | 20:21 | 76 |
| 07-06 | 02:30 | 03:11 | 04:21 | 08:08 | 09:24 | 11:55 | 16:19 | 17:54 | 19:28 | 20:05 | 20:19 | 76 |
| 07-09 | 02:33 | 03:14 | 04:23 | 08:09 | 09:25 | 11:55 | 16:19 | 17:53 | 19:27 | 20:04 | 20:18 | 75 |
| 07-12 | 02:36 | 03:17 | 04:25 | 08:11 | 09:26 | 11:56 | 16:18 | 17:52 | 19:26 | 20:02 | 20:16 | 75 |
| 07-15 | 02:40 | 03:20 | 04:28 | 08:12 | 09:27 | 11:56 | 16:17 | 17:51 | 19:24 | 20:00 | 20:14 | 75 |
| 07-18 | 02:44 | 03:23 | 04:30 | 08:13 | 09:28 | 11:56 | 16:16 | 17:49 | 19:22 | 19:58 | 20:12 | 74 |
| 07-21 | 02:48 | 03:26 | 04:33 | 08:15 | 09:29 | 11:56 | 16:15 | 17:47 | 19:20 | 19:55 | 20:09 | 74 |
| 07-24 | 02:52 | 03:30 | 04:36 | 08:16 | 09:29 | 11:56 | 16:13 | 17:45 | 19:17 | 19:52 | 20:06 | 73 |
| 07-27 | 02:56 | 03:33 | 04:39 | 08:17 | 09:30 | 11:56 | 16:12 | 17:43 | 19:14 | 19:49 | 20:02 | 73 |
| 07-30 | 03:01 | 03:37 | 04:42 | 08:19 | 09:31 | 11:56 | 16:10 | 17:40 | 19:11 | 19:45 | 19:59 | 72 |
| 08-02 | 03:05 | 03:41 | 04:45 | 08:20 | 09:32 | 11:56 | 16:08 | 17:38 | 19:08 | 19:42 | 19:55 | 72 |
| 08-05 | 03:10 | 03:45 | 04:48 | 08:22 | 09:33 | 11:56 | 16:06 | 17:35 | 19:04 | 19:38 | 19:51 | 71 |
| 08-08 | 03:14 | 03:48 | 04:51 | 08:23 | 09:34 | 11:55 | 16:03 | 17:32 | 19:00 | 19:34 | 19:46 | 71 |
| 08-11 | 03:19 | 03:52 | 04:54 | 08:24 | 09:35 | 11:55 | 16:01 | 17:28 | 18:56 | 19:29 | 19:42 | 70 |
| 08-14 | 03:23 | 03:56 | 04:57 | 08:26 | 09:35 | 11:54 | 15:58 | 17:25 | 18:52 | 19:25 | 19:37 | 70 |
| 08-17 | 03:27 | 04:00 | 05:00 | 08:27 | 09:36 | 11:54 | 15:55 | 17:21 | 18:48 | 19:20 | 19:32 | 69 |
| 08-20 | 03:32 | 04:04 | 05:03 | 08:28 | 09:36 | 11:53 | 15:52 | 17:18 | 18:43 | 19:15 | 19:27 | 68 |
| 08-23 | 03:36 | 04:07 | 05:06 | 08:29 | 09:37 | 11:52 | 15:49 | 17:14 | 18:38 | 19:10 | 19:22 | 68 |
| 08-26 | 03:40 | 04:11 | 05:09 | 08:30 | 09:37 | 11:52 | 15:46 | 17:10 | 18:34 | 19:05 | 19:17 | 67 |
| 08-29 | 03:44 | 04:15 | 05:12 | 08:32 | 09:38 | 11:51 | 15:43 | 17:06 | 18:29 | 19:00 | 19:12 | 66 |
| 09-01 | 03:48 | 04:18 | 05:16 | 08:33 | 09:38 | 11:50 | 15:40 | 17:02 | 18:24 | 18:55 | 19:07 | 66 |
| 09-04 | 03:52 | 04:22 | 05:19 | 08:34 | 09:39 | 11:49 | 15:36 | 16:58 | 18:19 | 18:50 | 19:01 | 65 |
| 09-07 | 03:56 | 04:25 | 05:22 | 08:35 | 09:39 | 11:48 | 15:33 | 16:53 | 18:14 | 18:45 | 18:56 | 64 |
| 09-10 | 04:00 | 04:29 | 05:25 | 08:36 | 09:39 | 11:47 | 15:29 | 16:49 | 18:09 | 18:39 | 18:51 | 64 |
| 09-13 | 04:03 | 04:32 | 05:28 | 08:37 | 09:40 | 11:46 | 15:26 | 16:45 | 18:03 | 18:34 | 18:45 | 63 |
| 09-16 | 04:07 | 04:36 | 05:31 | 08:38 | 09:40 | 11:45 | 15:22 | 16:40 | 17:58 | 18:29 | 18:40 | 62 |
| 09-19 | 04:11 | 04:39 | 05:34 | 08:39 | 09:40 | 11:44 | 15:19 | 16:36 | 17:53 | 18:23 | 18:34 | 62 |
| 09-22 | 04:14 | 04:42 | 05:37 | 08:40 | 09:41 | 11:42 | 15:15 | 16:32 | 17:48 | 18:18 | 18:29 | 61 |
| 09-25 | 04:18 | 04:46 | 05:40 | 08:41 | 09:41 | 11:41 | 15:12 | 16:27 | 17:42 | 18:13 | 18:24 | 60 |
| 09-28 | 04:21 | 04:49 | 05:44 | 08:42 | 09:41 | 11:40 | 15:09 | 16:23 | 17:37 | 18:07 | 18:18 | 59 |
| 10-01 | 04:24 | 04:52 | 05:47 | 08:43 | 09:42 | 11:39 | 15:05 | 16:19 | 17:32 | 18:02 | 18:13 | 59 |
| 10-04 | 04:28 | 04:55 | 05:50 | 08:44 | 09:42 | 11:38 | 15:02 | 16:14 | 17:27 | 17:57 | 18:08 | 58 |
| 10-07 | 04:31 | 04:59 | 05:53 | 08:45 | 09:43 | 11:38 | 14:58 | 16:10 | 17:22 | 17:52 | 18:03 | 57 |
| 10-10 | 04:34 | 05:02 | 05:57 | 08:47 | 09:43 | 11:37 | 14:55 | 16:06 | 17:17 | 17:47 | 17:58 | 57 |
| 10-13 | 04:38 | 05:05 | 06:00 | 08:48 | 09:44 | 11:36 | 14:52 | 16:02 | 17:12 | 17:42 | 17:53 | 56 |
| 10-16 | 04:41 | 05:08 | 06:03 | 08:49 | 09:45 | 11:35 | 14:49 | 15:58 | 17:07 | 17:38 | 17:49 | 55 |
| 10-19 | 04:44 | 05:12 | 06:07 | 08:51 | 09:45 | 11:35 | 14:46 | 15:54 | 17:03 | 17:33 | 17:44 | 55 |
| 10-22 | 04:47 | 05:15 | 06:10 | 08:52 | 09:46 | 11:34 | 14:43 | 15:51 | 16:58 | 17:29 | 17:40 | 54 |
| 10-25 | 04:51 | 05:18 | 06:14 | 08:54 | 09:47 | 11:34 | 14:40 | 15:47 | 16:54 | 17:25 | 17:36 | 53 |
| 10-28 | 04:54 | 05:21 | 06:18 | 08:56 | 09:48 | 11:34 | 14:38 | 15:44 | 16:50 | 17:21 | 17:32 | 53 |
| 10-31 | 04:57 | 05:25 | 06:21 | 08:57 | 09:49 | 11:33 | 14:35 | 15:41 | 16:46 | 17:17 | 17:28 | 52 |
| 11-03 | 05:00 | 05:28 | 06:25 | 08:59 | 09:50 | 11:33 | 14:33 | 15:38 | 16:42 | 17:13 | 17:25 | 51 |
| 11-06 | 05:04 | 05:31 | 06:29 | 09:01 | 09:52 | 11:33 | 14:31 | 15:35 | 16:38 | 17:10 | 17:22 | 51 |
| 11-09 | 05:07 | 05:35 | 06:32 | 09:03 | 09:53 | 11:34 | 14:29 | 15:32 | 16:35 | 17:07 | 17:19 | 50 |
| 11-12 | 05:10 | 05:38 | 06:36 | 09:05 | 09:55 | 11:34 | 14:28 | 15:30 | 16:32 | 17:04 | 17:16 | 50 |
| 11-15 | 05:13 | 05:41 | 06:40 | 09:07 | 09:56 | 11:34 | 14:26 | 15:28 | 16:29 | 17:02 | 17:13 | 49 |
| 11-18 | 05:16 | 05:45 | 06:43 | 09:09 | 09:58 | 11:35 | 14:25 | 15:26 | 16:27 | 17:00 | 17:11 | 49 |
| 11-21 | 05:20 | 05:48 | 06:47 | 09:11 | 09:59 | 11:36 | 14:24 | 15:24 | 16:25 | 16:58 | 17:09 | 48 |
| 11-24 | 05:23 | 05:51 | 06:50 | 09:13 | 10:01 | 11:37 | 14:24 | 15:23 | 16:23 | 16:56 | 17:08 | 48 |
| 11-27 | 05:26 | 05:54 | 06:54 | 09:16 | 10:03 | 11:38 | 14:23 | 15:22 | 16:21 | 16:55 | 17:07 | 47 |
| 11-30 | 05:28 | 05:57 | 06:57 | 09:18 | 10:05 | 11:39 | 14:23 | 15:21 | 16:20 | 16:54 | 17:06 | 47 |
| 12-03 | 05:31 | 06:00 | 07:00 | 09:20 | 10:07 | 11:40 | 14:23 | 15:21 | 16:19 | 16:53 | 17:05 | 47 |
| 12-06 | 05:34 | 06:03 | 07:03 | 09:22 | 10:08 | 11:41 | 14:23 | 15:21 | 16:19 | 16:53 | 17:05 | 46 |
| 12-09 | 05:36 | 06:05 | 07:06 | 09:24 | 10:10 | 11:42 | 14:24 | 15:21 | 16:19 | 16:53 | 17:05 | 46 |
| 12-12 | 05:39 | 06:08 | 07:08 | 09:26 | 10:12 | 11:44 | 14:24 | 15:22 | 16:19 | 16:53 | 17:05 | 46 |
| 12-15 | 05:41 | 06:10 | 07:11 | 09:28 | 10:14 | 11:45 | 14:25 | 15:22 | 16:20 | 16:54 | 17:06 | 46 |
| 12-18 | 05:43 | 06:12 | 07:13 | 09:30 | 10:15 | 11:47 | 14:26 | 15:23 | 16:21 | 16:55 | 17:07 | 46 |
| 12-21 | 05:44 | 06:13 | 07:14 | 09:31 | 10:17 | 11:48 | 14:28 | 15:25 | 16:22 | 16:56 | 17:08 | 46 |
| 12-24 | 05:46 | 06:15 | 07:16 | 09:33 | 10:18 | 11:50 | 14:29 | 15:26 | 16:23 | 16:58 | 17:10 | 46 |
| 12-27 | 05:47 | 06:16 | 07:17 | 09:34 | 10:20 | 11:51 | 14:31 | 15:28 | 16:25 | 17:00 | 17:12 | 46 |
| 12-30 | 05:48 | 06:17 | 07:18 | 09:35 | 10:21 | 11:53 | 14:33 | 15:30 | 16:28 | 17:02 | 17:14 | 46 |

Chapter 7

Calculation of Zmanim

7.1 Mathematical Background

Calculating zmanim is primarily an exercise in trigonometry. Given the rotation of the earth, one needs to know at what time the sun will be a certain number of degrees below the horizon. The equation is as follows (Levi, *Halachic Times*):

$$z = \arcsin \left(\tan D \tan L + \frac{\sin A}{\cos D \cos L} \right)$$

Where z is the time before or after sunrise or sunset, D is the sun's declination¹, L is the latitude, and A is the depression angle of the sun, i.e. the angle of the sun below the horizon (a positive number here is for angle below the horizon). This angle must be converted to number of minutes (by multiplying by 4) and either added to or subtracted from 6pm for evening zmanim or 6am for morning zmanim (negative z is a morning zman after 6am or an evening zman before 6pm). This time is then converted from "sundial time" (solar time)² by adding or subtracting minutes to account for the equation of time for the given date. This is the zman expressed in local time, where 12:00 noon is the average solar noon. This can then be converted to standard time by adding or subtracting time to account for the standard time zone in use.

This process is quite tedious to do manually, which is why people usually use tables or computer programs. Computer programs rely on access to a computer, and many of them rely on internet access, and unless preparations are made, cannot show zmanim on Shabbos. Most tables list the zmanim for a particular location for a full year. This makes the zmanim tables either very lengthy, cover a limited number of locations, or both. These tables take a different approach, with tables for useful depression angles, each showing the number of minutes to add/subtract from 6am/pm for a range of latitudes and solar declinations.

The theory behind these tables is that for small angles, $\sin x \approx x$ (and by definition $\arcsin x \approx x$, when x is expressed in radians). Since most depression angles widely used are fairly small, and most hour-angles for zmanim are small until you get close to the poles, the minutes from sunrise/sunset for a given depression angle can be approximated as a linear function $y = mx + b$, where b is the hour-angle when the sun is at 0° relative to the horizon³ equal to $\tan D \tan L$ converted into minutes (this figure could be negative if the latitude and declination are in opposite hemispheres), and m is equal to $\frac{1}{\cos D \cos L}$, multiplied by a conversion factor to convert the units to degrees per minute. For larger depression angles, or larger values of $mx + b$, a conversion factor can be applied to the depression angle or overall minute number, respectively, to retain the basic process of using a linear approximation of minutes offset from 0° .

¹This is how many degrees north or south of the equator would see the sun directly overhead at solar noon

²Sundials are unable to measure times after sunset or before sunrise, but the time system here is the same as that measured by a sundial, where 6am is when the sun is due east, noon when it is due north or south and at its highest point in the sky, and 6pm when it is due west. This also explains how an angle can be converted to a number of minutes. From the perspective of an observer on earth, the sun does a 360° circle clockwise in the northern hemisphere and counterclockwise in the southern hemisphere (that's where the term "clockwise" comes from), which works out to moving 15° per hour. This rotation is what a sundial measures.

³Which, as will be explained in the list of depression angles, is close but not exactly the same time as sunrise or sunset

7.2 Instructions

Instructions for use of the zman calculation tables are as follows:

1. Look up the desired date in the date table and note the minutes figure for the equation of time and the solar declination. These can be also be more accurately determined from an almanac (note that the sign of the equation of time is arbitrary and it may be negative when this chart has positive, or the reverse. An almanac's value will be more accurate, but care must be taken to use the correct sign for the equation of time)
2. Determine the latitude of the location for which zmanim are being calculated
3. Look up the 0° offset and minutes-per-degree figure for the given declination and latitude. For increased precision, interpolate both values for latitude, and declination if using a value from an almanac.
4. Determine the sign of the 0° offset. For zmanim in summer (equinox to equinox), the sign is positive. In the winter it is negative.
5. Determine the number of degrees to use for the desired zman. Explanations of the various times, and angle adjustments for more accurate calculations for large depression angles, are in a table below. If using the multiplication table, the angle adjustment is already factored in.
6. Multiply the number of degrees (from the adjustment table if desired) by the minutes-per-degree value. This number of minutes is always positive. This task can be simplified for depression angles listed by using the multiplication table, which incorporates the depression angle adjustments. Add this value to the 0° offset (using a negative 0° offset in winter, as noted above)
7. Use the minute correction table to adjust the result. As shown on the table, no adjustment is needed for results of 53 minutes or less, and only above 90 minutes is the adjustment more than 2 minutes. Note that the sign of the minutes to add should match the input, so a negative number of minutes would become a slightly larger number of negative minutes after adjustment.
8. For zmanim in the morning (dawn, misheyakir) the minutes is a time earlier than 6am (or later, if negative). For zmanim in the evening, the minutes is number of minutes before 6pm (or before, if negative). This is the time of the zman in solar time
9. If you are calculating a zman that is not directly based on a depression angle (such as 20 minutes before sunset for candle lighting, or 7 minutes after $7^\circ 5'$ for havdala, or 3 proportional hours after a particular dawn zman for latest morning shema according to the Magen Avraham), calculate it now. For zmanim dependent on proportional hours, use the fact that chatzos is 12 noon in solar time⁴
10. Add or subtract the number of minutes from the equation of time table for the given date
11. Add or subtract time to account for standard time (including daylight saving time). This is a constant number of minutes for a given location (though you may need to add an hour for DST). This can be calculated with the formula $mins = 4 * ((UTCoffset * 15) - Latitude)$. For convenience, a table of timezones is below.

I suggest highlighting the line(s) for latitudes you often calculate zmanim for. The arithmetic of multiplying degrees times degrees per minute can be made much simpler by using the fact that a second is $\frac{1}{60}$ of a minute, and an arcminute is $\frac{1}{60}$ of a degree.

The zmanim calculated here do not have the precision of a computer program. Declination values vary from year to year, as does the equation of time (which is why both figures are rounded in the tables here). The 0° offset figures and equation of time are only given to the minute. If these numbers are obtained from an almanac more precisely, the result will in turn be more precise. The precision of the overall zman, though, will be limited to whatever input (latitude, longitude, declination, equation of time) is least precise.

⁴At least, in mainstream opinions. There are opinions that believe proportional hours are indexed to dawn and sunset, or dawn and dusk (using a definition that isn't "symmetric" with dawn), in which case chatzos is not solar noon. These definitions are difficult to square with the definition of chatzos assumed in halakhic texts.

7.3 Observations

When looking at the table, it should be noted that the o° offsets vary throughout the year much more than the minutes-per-degree number does. This is why approximating a zman with a fixed number of minutes before sunrise or after sunset works reasonably well. To calculate that number of minutes, subtract the depression angle for sunrise or sunset ($50'$) from the desired depression angle, and multiply the result by either the largest or smallest minutes-per-degree figure (generally, whichever results in the most stringency).

The same process can also be used to calculate minutes from sunrise or sunset for a specific date, using published sunrise or sunset times from a newspaper. While this requires manually multiplying the degrees times the minutes-per-degree instead of using the multiplication table, it skips the step of determining the o° offset, using the equation of time, or correcting for time zone.

7.4 Equation of Time and Declination Table

These are the value of the equation of time and solar declination for dates throughout the year. These values vary from year to year according to the gregorian leap year cycle (and declination can change noticeably from morning to night around the equinoxes, or from one time zone to another, if they are distant). If to-the-minute accuracy is desired, these values can be determined from an almanac.

| Date | Eqn of Time | Declination | Date | Eqn of Time | Declination | Date | Eqn of Time | Declination |
|--------|-------------|-------------|--------|-------------|-------------|--------|-------------|-------------|
| Jan-01 | 2.9 | -23.0° | Apr-29 | -2.7 | 14.2° | Sep-01 | 0.4 | 7.8° |
| Jan-02 | 3.4 | -22.9° | Apr-30 | -2.9 | 14.5° | Sep-02 | 0.0 | 7.4° |
| Jan-03 | 3.8 | -22.9° | May-01 | -3.0 | 14.8° | Sep-03 | -0.3 | 7.1° |
| Jan-04 | 4.2 | -22.8° | May-02 | -3.1 | 15.1° | Sep-04 | -0.6 | 6.7° |
| Jan-05 | 4.7 | -22.7° | May-03 | -3.3 | 15.4° | Sep-05 | -1.0 | 6.3° |
| Jan-06 | 5.1 | -22.6° | May-04 | -3.4 | 15.7° | Sep-06 | -1.3 | 5.9° |
| Jan-07 | 5.5 | -22.4° | May-05 | -3.5 | 16.0° | Sep-07 | -1.7 | 5.5° |
| Jan-08 | 5.9 | -22.3° | May-06 | -3.6 | 16.3° | Sep-08 | -2.0 | 5.1° |
| Jan-09 | 6.3 | -22.2° | May-07 | -3.6 | 16.6° | Sep-09 | -2.4 | 4.7° |
| Jan-10 | 6.7 | -22.1° | May-08 | -3.7 | 16.9° | Sep-10 | -2.8 | 4.3° |
| Jan-11 | 7.1 | -21.9° | May-09 | -3.8 | 17.2° | Sep-11 | -3.1 | 3.9° |
| Jan-12 | 7.5 | -21.8° | May-10 | -3.8 | 17.4° | Sep-12 | -3.5 | 3.5° |
| Jan-13 | 7.9 | -21.6° | May-11 | -3.9 | 17.7° | Sep-13 | -3.9 | 3.1° |
| Jan-14 | 8.3 | -21.5° | May-12 | -3.9 | 18.0° | Sep-14 | -4.3 | 2.7° |
| Jan-15 | 8.6 | -21.3° | May-13 | -3.9 | 18.2° | Sep-15 | -4.6 | 2.3° |
| Jan-16 | 9.0 | -21.1° | May-14 | -3.9 | 18.5° | Sep-16 | -5.0 | 1.9° |
| Jan-17 | 9.3 | -21.0° | May-15 | -3.9 | 18.7° | Sep-17 | -5.4 | 1.5° |
| Jan-18 | 9.7 | -20.8° | May-16 | -3.9 | 19.0° | Sep-18 | -5.8 | 1.1° |
| Jan-19 | 10.0 | -20.6° | May-17 | -3.9 | 19.2° | Sep-19 | -6.1 | 0.7° |
| Jan-20 | 10.3 | -20.4° | May-18 | -3.9 | 19.4° | Sep-20 | -6.5 | 0.3° |
| Jan-21 | 10.6 | -20.2° | May-19 | -3.8 | 19.6° | Sep-21 | -6.9 | -0.1° |
| Jan-22 | 10.9 | -20.0° | May-20 | -3.8 | 19.9° | Sep-22 | -7.3 | -0.5° |
| Jan-23 | 11.2 | -19.8° | May-21 | -3.7 | 20.1° | Sep-23 | -7.6 | -0.9° |
| Jan-24 | 11.4 | -19.5° | May-22 | -3.7 | 20.3° | Sep-24 | -8.0 | -1.3° |
| Jan-25 | 11.7 | -19.3° | May-23 | -3.6 | 20.5° | Sep-25 | -8.4 | -1.7° |
| Jan-26 | 12.0 | -19.1° | May-24 | -3.5 | 20.7° | Sep-26 | -8.7 | -2.1° |
| Jan-27 | 12.2 | -18.8° | May-25 | -3.4 | 20.9° | Sep-27 | -9.1 | -2.5° |
| Jan-28 | 12.4 | -18.6° | May-26 | -3.3 | 21.0° | Sep-28 | -9.4 | -2.9° |
| Jan-29 | 12.6 | -18.4° | May-27 | -3.2 | 21.2° | Sep-29 | -9.8 | -3.3° |
| Jan-30 | 12.8 | -18.1° | May-28 | -3.1 | 21.4° | Sep-30 | -10.1 | -3.7° |
| Jan-31 | 13.0 | -17.8° | May-29 | -3.0 | 21.5° | Oct-01 | -10.5 | -4.1° |
| Feb-01 | 13.2 | -17.6° | May-30 | -2.9 | 21.7° | Oct-02 | -10.8 | -4.5° |
| Feb-02 | 13.3 | -17.3° | May-31 | -2.7 | 21.9° | Oct-03 | -11.1 | -4.9° |
| Feb-03 | 13.5 | -17.0° | Jun-01 | -2.6 | 22.0° | Oct-04 | -11.4 | -5.3° |
| Feb-04 | 13.6 | -16.8° | Jun-02 | -2.4 | 22.1° | Oct-05 | -11.8 | -5.7° |
| Feb-05 | 13.7 | -16.5° | Jun-03 | -2.3 | 22.3° | Oct-06 | -12.1 | -6.1° |
| Feb-06 | 13.9 | -16.2° | Jun-04 | -2.1 | 22.4° | Oct-07 | -12.4 | -6.5° |
| Feb-07 | 14.0 | -15.9° | Jun-05 | -1.9 | 22.5° | Oct-08 | -12.6 | -6.9° |
| Feb-08 | 14.0 | -15.6° | Jun-06 | -1.8 | 22.6° | Oct-09 | -12.9 | -7.2° |
| Feb-09 | 14.1 | -15.3° | Jun-07 | -1.6 | 22.7° | Oct-10 | -13.2 | -7.6° |
| Feb-10 | 14.2 | -15.0° | Jun-08 | -1.4 | 22.8° | Oct-11 | -13.5 | -8.0° |
| Feb-11 | 14.2 | -14.7° | Jun-09 | -1.2 | 22.9° | Oct-12 | -13.7 | -8.4° |
| Feb-12 | 14.2 | -14.3° | Jun-10 | -1.0 | 23.0° | Oct-13 | -14.0 | -8.8° |
| Feb-13 | 14.3 | -14.0° | Jun-11 | -0.8 | 23.1° | Oct-14 | -14.2 | -9.1° |
| Feb-14 | 14.3 | -13.7° | Jun-12 | -0.6 | 23.1° | Oct-15 | -14.4 | -9.5° |
| Feb-15 | 14.3 | -13.4° | Jun-13 | -0.4 | 23.2° | Oct-16 | -14.6 | -9.9° |
| Feb-16 | 14.2 | -13.0° | Jun-14 | -0.2 | 23.2° | Oct-17 | -14.8 | -10.2° |
| Feb-17 | 14.2 | -12.7° | Jun-15 | 0.0 | 23.3° | Oct-18 | -15.0 | -10.6° |
| Feb-18 | 14.2 | -12.4° | Jun-16 | 0.2 | 23.3° | Oct-19 | -15.2 | -11.0° |
| Feb-19 | 14.1 | -12.0° | Jun-17 | 0.5 | 23.4° | Oct-20 | -15.4 | -11.3° |
| Feb-20 | 14.0 | -11.7° | Jun-18 | 0.7 | 23.4° | Oct-21 | -15.5 | -11.7° |
| Feb-21 | 14.0 | -11.3° | Jun-19 | 0.9 | 23.4° | Oct-22 | -15.7 | -12.0° |
| Feb-22 | 13.9 | -11.0° | Jun-20 | 1.1 | 23.4° | Oct-23 | -15.8 | -12.4° |
| Feb-23 | 13.8 | -10.6° | Jun-21 | 1.3 | 23.4° | Oct-24 | -15.9 | -12.7° |
| Feb-24 | 13.7 | -10.2° | Jun-22 | 1.5 | 23.4° | Oct-25 | -16.0 | -13.0° |
| Feb-25 | 13.5 | -9.9° | Jun-23 | 1.8 | 23.4° | Oct-26 | -16.1 | -13.4° |
| Feb-26 | 13.4 | -9.5° | Jun-24 | 2.0 | 23.4° | Oct-27 | -16.2 | -13.7° |
| Feb-27 | 13.2 | -9.1° | Jun-25 | 2.2 | 23.4° | Oct-28 | -16.3 | -14.0° |
| Feb-28 | 13.1 | -8.8° | Jun-26 | 2.4 | 23.4° | Oct-29 | -16.3 | -14.3° |
| Mar-01 | 12.9 | -8.4° | Jun-27 | 2.6 | 23.3° | Oct-30 | -16.3 | -14.7° |
| Mar-02 | 12.7 | -8.0° | Jun-28 | 2.8 | 23.3° | Oct-31 | -16.4 | -15.0° |
| Mar-03 | 12.5 | -7.6° | Jun-29 | 3.1 | 23.2° | Nov-01 | -16.4 | -15.3° |
| | | | Jun-30 | 3.3 | 23.2° | Nov-02 | -16.4 | -15.6° |
| | | | Jul-01 | 3.5 | 23.1° | Nov-03 | -16.4 | -15.9° |
| | | | Jul-02 | 3.7 | 23.1° | | | |
| | | | Jul-03 | 3.9 | 23.0° | | | |

7.5 0° Offset & Mins per $^\circ$ Table

| | 0° | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° | 14° | 15° | |
|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| 0° | 0.0 4.0 | 0.0 4.0 | 0.0 4.0 | 0.0 4.0 | 0.0 4.0 | 0.0 4.0 | 0.0 4.0 | 0.0 4.0 | 0.0 4.0 | 0.0 4.0 | 0.0 4.1 | 0.0 4.1 | 0.0 4.1 | 0.0 4.1 | 0.0 4.1 | 0.0 4.1 | 0° |
| 1° | 0.0 4.0 | 0.1 4.0 | 0.1 4.0 | 0.2 4.0 | 0.3 4.0 | 0.3 4.0 | 0.4 4.0 | 0.5 4.0 | 0.6 4.0 | 0.6 4.1 | 0.7 4.1 | 0.8 4.1 | 0.9 4.1 | 0.9 4.1 | 1.0 4.1 | 1.1 4.1 | 1° |
| 2° | 0.0 4.0 | 0.1 4.0 | 0.3 4.0 | 0.4 4.0 | 0.6 4.0 | 0.7 4.0 | 0.8 4.0 | 1.0 4.0 | 1.1 4.0 | 1.3 4.1 | 1.4 4.1 | 1.6 4.1 | 1.7 4.1 | 1.8 4.1 | 2.0 4.1 | 2.1 4.1 | 2° |
| 3° | 0.0 4.0 | 0.2 4.0 | 0.4 4.0 | 0.6 4.0 | 0.8 4.0 | 1.1 4.0 | 1.3 4.0 | 1.5 4.0 | 1.7 4.0 | 1.9 4.1 | 2.1 4.1 | 2.3 4.1 | 2.6 4.1 | 2.8 4.1 | 3.0 4.1 | 3.2 4.1 | 3° |
| 4° | 0.0 4.0 | 0.3 4.0 | 0.6 4.0 | 0.8 4.0 | 1.1 4.0 | 1.4 4.0 | 1.7 4.0 | 2.0 4.0 | 2.3 4.0 | 2.5 4.1 | 2.8 4.1 | 3.1 4.1 | 3.4 4.1 | 3.7 4.1 | 4.0 4.1 | 4.3 4.2 | 4° |
| 5° | 0.0 4.0 | 0.3 4.0 | 0.7 4.0 | 1.1 4.0 | 1.4 4.0 | 1.8 4.0 | 2.1 4.0 | 2.5 4.0 | 2.8 4.1 | 3.2 4.1 | 3.5 4.1 | 3.9 4.1 | 4.3 4.1 | 4.6 4.1 | 5.0 4.1 | 5.4 4.2 | 5° |
| 6° | 0.0 4.0 | 0.4 4.0 | 0.8 4.0 | 1.3 4.0 | 1.7 4.0 | 2.1 4.0 | 2.5 4.0 | 3.0 4.1 | 3.4 4.1 | 3.8 4.1 | 4.2 4.1 | 4.7 4.1 | 5.1 4.1 | 5.6 4.1 | 6.0 4.1 | 6.5 4.2 | 6° |
| 7° | 0.0 4.0 | 0.5 4.0 | 1.0 4.0 | 1.5 4.0 | 2.0 4.0 | 2.5 4.0 | 3.0 4.1 | 3.5 4.1 | 4.0 4.1 | 4.5 4.1 | 5.0 4.1 | 5.5 4.1 | 6.0 4.1 | 6.5 4.1 | 7.0 4.2 | 7.5 4.2 | 7° |
| 8° | 0.0 4.0 | 0.6 4.0 | 1.1 4.0 | 1.7 4.0 | 2.3 4.0 | 2.8 4.1 | 3.4 4.1 | 4.0 4.1 | 4.5 4.1 | 5.1 4.1 | 5.7 4.1 | 6.3 4.1 | 6.8 4.1 | 7.4 4.1 | 8.0 4.2 | 8.6 4.2 | 8° |
| 9° | 0.0 4.0 | 0.6 4.1 | 1.3 4.1 | 1.9 4.1 | 2.5 4.1 | 3.2 4.1 | 3.8 4.1 | 4.5 4.1 | 5.1 4.1 | 5.7 4.1 | 6.4 4.1 | 7.1 4.1 | 7.7 4.1 | 8.4 4.2 | 9.1 4.2 | 9.7 4.2 | 9° |
| 10° | 0.0 4.1 | 0.7 4.1 | 1.4 4.1 | 2.1 4.1 | 2.8 4.1 | 3.5 4.1 | 4.2 4.1 | 5.0 4.1 | 5.7 4.1 | 6.4 4.1 | 7.1 4.1 | 7.9 4.1 | 8.6 4.2 | 9.3 4.2 | 10.1 4.2 | 10.8 4.2 | 10° |
| 11° | 0.0 4.1 | 0.8 4.1 | 1.6 4.1 | 2.3 4.1 | 3.1 4.1 | 3.9 4.1 | 4.7 4.1 | 5.5 4.1 | 6.3 4.1 | 7.1 4.1 | 7.9 4.1 | 8.7 4.2 | 9.5 4.2 | 10.3 4.2 | 11.1 4.2 | 11.9 4.2 | 11° |
| 12° | 0.0 4.1 | 0.9 4.1 | 1.7 4.1 | 2.6 4.1 | 3.4 4.1 | 4.3 4.1 | 5.1 4.1 | 6.0 4.1 | 6.8 4.1 | 7.7 4.1 | 8.6 4.2 | 9.5 4.2 | 10.4 4.2 | 11.2 4.2 | 12.1 4.2 | 13.1 4.2 | 12° |
| 13° | 0.0 4.1 | 0.9 4.1 | 1.8 4.1 | 2.8 4.1 | 3.7 4.1 | 4.6 4.1 | 5.6 4.1 | 6.5 4.1 | 7.4 4.1 | 8.4 4.2 | 9.3 4.2 | 10.3 4.2 | 11.2 4.2 | 12.2 4.2 | 13.2 4.2 | 14.2 4.3 | 13° |
| 14° | 0.0 4.1 | 1.0 4.1 | 2.0 4.1 | 3.0 4.1 | 4.0 4.1 | 5.0 4.1 | 6.0 4.1 | 7.0 4.2 | 8.0 4.2 | 9.1 4.2 | 10.1 4.2 | 11.1 4.2 | 12.1 4.2 | 13.2 4.2 | 14.2 4.2 | 15.3 4.3 | 14° |
| 15° | 0.0 4.1 | 1.1 4.1 | 2.1 4.1 | 3.2 4.1 | 4.3 4.2 | 5.4 4.2 | 6.5 4.2 | 7.5 4.2 | 8.6 4.2 | 9.7 4.2 | 10.8 4.2 | 11.9 4.2 | 13.1 4.2 | 14.2 4.3 | 15.3 4.3 | 16.5 4.3 | 15° |
| 16° | 0.0 4.2 | 1.1 4.2 | 2.3 4.2 | 3.4 4.2 | 4.6 4.2 | 5.7 4.2 | 6.9 4.2 | 8.1 4.2 | 9.2 4.2 | 10.4 4.2 | 11.6 4.2 | 12.8 4.2 | 14.0 4.3 | 15.2 4.3 | 16.4 4.3 | 17.6 4.3 | 16° |
| 17° | 0.0 4.2 | 1.2 4.2 | 2.4 4.2 | 3.7 4.2 | 4.9 4.2 | 6.1 4.2 | 7.4 4.2 | 8.6 4.2 | 9.8 4.2 | 11.1 4.2 | 12.4 4.2 | 13.6 4.3 | 14.9 4.3 | 16.2 4.3 | 17.5 4.3 | 18.8 4.3 | 17° |
| 18° | 0.0 4.2 | 1.3 4.2 | 2.6 4.2 | 3.9 4.2 | 5.2 4.2 | 6.5 4.2 | 7.8 4.2 | 9.1 4.2 | 10.5 4.2 | 11.8 4.3 | 13.1 4.3 | 14.5 4.3 | 15.8 4.3 | 17.2 4.3 | 18.6 4.3 | 20.0 4.4 | 18° |
| 19° | 0.0 4.2 | 1.4 4.2 | 2.8 4.2 | 4.1 4.2 | 5.5 4.2 | 6.9 4.2 | 8.3 4.3 | 9.7 4.3 | 11.1 4.3 | 12.5 4.3 | 13.9 4.3 | 15.3 4.3 | 16.8 4.3 | 18.2 4.3 | 19.7 4.4 | 21.1 4.4 | 19° |
| 20° | 0.0 4.3 | 1.5 4.3 | 2.9 4.3 | 4.4 4.3 | 5.8 4.3 | 7.3 4.3 | 8.8 4.3 | 10.2 4.3 | 11.7 4.3 | 13.2 4.3 | 14.7 4.3 | 16.2 4.3 | 17.7 4.4 | 19.3 4.4 | 20.8 4.4 | 22.4 4.4 | 20° |
| 21° | 0.0 4.3 | 1.5 4.3 | 3.1 4.3 | 4.6 4.3 | 6.2 4.3 | 7.7 4.3 | 9.2 4.3 | 10.8 4.3 | 12.4 4.3 | 13.9 4.3 | 15.5 4.4 | 17.1 4.4 | 18.7 4.4 | 20.3 4.4 | 21.9 4.4 | 23.6 4.4 | 21° |
| 22° | 0.0 4.3 | 1.6 4.3 | 3.2 4.3 | 4.9 4.3 | 6.5 4.3 | 8.1 4.3 | 9.7 4.3 | 11.4 4.3 | 13.0 4.4 | 14.7 4.4 | 16.3 4.4 | 18.0 4.4 | 19.7 4.4 | 21.4 4.4 | 23.1 4.4 | 24.8 4.5 | 22° |
| 23° | 0.0 4.3 | 1.7 4.3 | 3.4 4.3 | 5.1 4.4 | 6.8 4.4 | 8.5 4.4 | 10.2 4.4 | 11.9 4.4 | 13.7 4.4 | 15.4 4.4 | 17.2 4.4 | 18.9 4.4 | 20.7 4.4 | 22.5 4.5 | 24.3 4.5 | 26.1 4.5 | 23° |
| | 0° | 1° | 2° | 3° | 4° | 5° | 6° | 7° | 8° | 9° | 10° | 11° | 12° | 13° | 14° | 15° | |

| | 16° | 17° | 18° | 19° | 20° | 21° | 22° | 23° | 24° | 25° | 26° | 27° | 28° | 29° | 30° | |
|-----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----|
| 0° | 0.0 4.2 | 0.0 4.2 | 0.0 4.2 | 0.0 4.2 | 0.0 4.3 | 0.0 4.3 | 0.0 4.3 | 0.0 4.3 | 0.0 4.4 | 0.0 4.4 | 0.0 4.5 | 0.0 4.5 | 0.0 4.5 | 0.0 4.6 | 0.0 4.6 | 0° |
| 1° | 1.1 4.2 | 1.2 4.2 | 1.3 4.2 | 1.4 4.2 | 1.5 4.3 | 1.5 4.3 | 1.6 4.3 | 1.7 4.3 | 1.8 4.4 | 1.9 4.4 | 2.0 4.5 | 2.0 4.5 | 2.1 4.5 | 2.2 4.6 | 2.3 4.6 | 1° |
| 2° | 2.3 4.2 | 2.4 4.2 | 2.6 4.2 | 2.8 4.2 | 2.9 4.3 | 3.1 4.3 | 3.2 4.3 | 3.4 4.3 | 3.6 4.4 | 3.7 4.4 | 3.9 4.5 | 4.1 4.5 | 4.3 4.5 | 4.4 4.6 | 4.6 4.6 | 2° |
| 3° | 3.4 4.2 | 3.7 4.2 | 3.9 4.2 | 4.1 4.2 | 4.4 4.3 | 4.6 4.3 | 4.9 4.3 | 5.1 4.4 | 5.3 4.4 | 5.6 4.4 | 5.9 4.5 | 6.1 4.5 | 6.4 4.5 | 6.7 4.6 | 6.9 4.6 | 3° |
| 4° | 4.6 4.2 | 4.9 4.2 | 5.2 4.2 | 5.5 4.2 | 5.8 4.3 | 6.2 4.3 | 6.5 4.3 | 6.8 4.4 | 7.1 4.4 | 7.5 4.4 | 7.8 4.5 | 8.2 4.5 | 8.5 4.5 | 8.9 4.6 | 9.3 4.6 | 4° |
| 5° | 5.7 4.2 | 6.1 4.2 | 6.5 4.2 | 6.9 4.2 | 7.3 4.3 | 7.7 4.3 | 8.1 4.3 | 8.5 4.4 | 8.9 4.4 | 9.3 4.4 | 9.8 4.5 | 10.2 4.5 | 10.7 4.5 | 11.1 4.6 | 11.6 4.6 | 5° |
| 6° | 6.9 4.2 | 7.4 4.2 | 7.8 4.2 | 8.3 4.3 | 8.8 4.3 | 9.2 4.3 | 9.7 4.3 | 10.2 4.4 | 10.7 4.4 | 11.2 4.4 | 11.7 4.5 | 12.3 4.5 | 12.8 4.6 | 13.4 4.6 | 13.9 4.6 | 6° |
| 7° | 8.1 4.2 | 8.6 4.2 | 9.1 4.2 | 9.7 4.3 | 10.2 4.3 | 10.8 4.3 | 11.4 4.3 | 11.9 4.4 | 12.5 4.4 | 13.1 4.4 | 13.7 4.5 | 14.3 4.5 | 15.0 4.6 | 15.6 4.6 | 16.2 4.7 | 7° |
| 8° | 9.2 4.2 | 9.8 4.2 | 10.5 4.2 | 11.1 4.3 | 11.7 4.3 | 12.4 4.3 | 13.0 4.4 | 13.7 4.4 | 14.3 4.4 | 15.0 4.5 | 15.7 4.5 | 16.4 4.5 | 17.1 4.6 | 17.9 4.6 | 18.6 4.7 | 8° |
| 9° | 10.4 4.2 | 11.1 4.2 | 11.8 4.3 | 12.5 4.3 | 13.2 4.3 | 13.9 4.3 | 14.7 4.4 | 15.4 4.4 | 16.2 4.4 | 16.9 4.5 | 17.7 4.5 | 18.5 4.5 | 19.3 4.6 | 20.1 4.6 | 21.0 4.7 | 9° |
| 10° | 11.6 4.2 | 12.4 4.2 | 13.1 4.3 | 13.9 4.3 | 14.7 4.3 | 15.5 4.4 | 16.3 4.4 | 17.2 4.4 | 18.0 4.4 | 18.8 4.5 | 19.7 4.5 | 20.6 4.6 | 21.5 4.6 | 22.4 4.6 | 23.3 4.7 | 10° |
| 11° | 12.8 4.2 | 13.6 4.3 | 14.5 4.3 | 15.3 4.3 | 16.2 4.3 | 17.1 4.4 | 18.0 4.4 | 18.9 4.4 | 19.8 4.5 | 20.8 4.5 | 21.7 4.5 | 22.7 4.6 | 23.7 4.6 | 24.7 4.7 | 25.7 4.7 | 11° |
| 12° | 14.0 4.3 | 14.9 4.3 | 15.8 4.3 | 16.8 4.3 | 17.7 4.4 | 18.7 4.4 | 19.7 4.4 | 20.7 4.4 | 21.7 4.5 | 22.7 4.5 | 23.8 4.5 | 24.8 4.6 | 25.9 4.6 | 27.0 4.7 | 28.1 4.7 | 12° |
| 13° | 15.2 4.3 | 16.2 4.3 | 17.2 4.3 | 18.2 4.3 | 19.3 4.4 | 20.3 4.4 | 21.4 4.4 | 22.5 4.5 | 23.6 4.5 | 24.7 4.5 | 25.8 4.6 | 27.0 4.6 | 28.1 4.6 | 29.3 4.7 | 30.5 4.7 | 13° |
| 14° | 16.4 4.3 | 17.5 4.3 | 18.6 4.3 | 19.7 4.4 | 20.8 4.4 | 21.9 4.4 | 23.1 4.4 | 24.3 4.5 | 25.4 4.5 | 26.6 4.5 | 27.9 4.6 | 29.1 4.6 | 30.4 4.7 | 31.7 4.7 | 33.0 4.8 | 14° |
| 15° | 17.6 4.3 | 18.8 4.3 | 20.0 4.4 | 21.1 4.4 | 22.4 4.4 | 23.6 4.4 | 24.8 4.5 | 26.1 4.5 | 27.3 4.5 | 28.6 4.6 | 30.0 4.6 | 31.3 4.6 | 32.7 4.7 | 34.0 4.7 | 35.5 4.8 | 15° |
| 16° | 18.8 4.3 | 20.1 4.4 | 21.4 4.4 | 22.6 4.4 | 23.9 4.4 | 25.2 4.5 | 26.6 4.5 | 27.9 4.5 | 29.3 4.6 | 30.6 4.6 | 32.1 4.6 | 33.5 4.7 | 34.9 4.7 | 36.4 4.8 | 37.9 4.8 | 16° |
| 17° | 20.1 4.4 | 21.4 4.4 | 22.8 4.4 | 24.1 4.4 | 25.5 4.5 | 26.9 4.5 | 28.3 4.5 | 29.7 4.5 | 31.2 4.6 | 32.7 4.6 | 34.2 4.7 | 35.7 4.7 | 37.3 4.7 | 38.8 4.8 | 40.5 4.8 | 17° |
| 18° | 21.4 4.4 | 22.8 4.4 | 24.2 4.4 | 25.6 4.4 | 27.1 4.5 | 28.6 4.5 | 30.1 4.5 | 31.6 4.6 | 33.2 4.6 | 34.7 4.6 | 36.3 4.7 | 37.9 4.7 | 39.6 4.8 | 41.3 4.8 | 43.0 4.9 | 18° |
| 19° | 22.6 4.4 | 24.1 4.4 | 25.6 4.4 | 27.2 4.5 | 28.7 4.5 | 30.3 4.5 | 31.9 4.6 | 33.5 4.6 | 35.1 4.6 | 36.8 4.7 | 38.5 4.7 | 40.2 4.7 | 42.0 4.8 | 43.7 4.8 | 45.6 4.9 | 19° |
| 20° | 23.9 4.4 | 25.5 4.5 | 27.1 4.5 | 28.7 4.5 | 30.4 4.5 | 32.0 4.6 | 33.7 4.6 | 35.4 4.6 | 37.1 4.7 | 38.9 4.7 | 40.7 4.7 | 42.5 4.8 | 44.4 4.8 | 46.2 4.9 | 48.2 4.9 | 20° |
| 21° | 25.2 4.5 | 26.9 4.5 | 28.6 4.5 | 30.3 4.5 | 32.0 4.6 | 33.8 4.6 | 35.5 4.6 | 37.3 4.7 | 39.2 4.7 | 41.0 4.7 | 42.9 4.8 | 44.8 4.8 | 46.8 4.9 | 48.8 4.9 | 50.8 4.9 | 21° |
| 22° | 26.6 4.5 | 28.3 4.5 | 30.1 4.5 | 31.9 4.6 | 33.7 4.6 | 35.5 4.6 | 37.4 4.7 | 39.3 4.7 | 41.2 4.7 | 43.2 4.8 | 45.2 4.8 | 47.2 4.8 | 49.2 4.9 | 51.3 4.9 | 53.5 5.0 | 22° |
| 23° | 27.9 4.5 | 29.7 4.5 | 31.6 4.6 | 33.5 4.6 | 35.4 4.6 | 37.3 4.7 | 39.3 4.7 | 41.3 4.7 | 43.3 4.8 | 45.4 4.8 | 47.4 4.8 | 49.6 4.9 | 51.7 4.9 | 53.9 5.0 | 56.2 5.0 | 23° |
| | 16° | 17° | 18° | 19° | 20° | 21° | 22° | 23° | 24° | 25° | 26° | 27° | 28° | 29° | 30° | |

| | 31° | 32° | 33° | 34° | 35° | 36° | 37° | 38° | 39° | 40° | 41° | 42° | 43° | 44° | 45° | |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|
| 0° | 0.0 4.7 | 0.0 4.7 | 0.0 4.8 | 0.0 4.8 | 0.0 4.9 | 0.0 4.9 | 0.0 5.0 | 0.0 5.1 | 0.0 5.1 | 0.0 5.2 | 0.0 5.3 | 0.0 5.4 | 0.0 5.5 | 0.0 5.6 | 0.0 5.7 | 0° |
| 1° | 2.4 4.7 | 2.5 4.7 | 2.6 4.8 | 2.7 4.8 | 2.8 4.9 | 2.9 4.9 | 3.0 5.0 | 3.1 5.1 | 3.2 5.1 | 3.4 5.2 | 3.5 5.3 | 3.6 5.4 | 3.7 5.5 | 3.9 5.6 | 4.0 5.7 | 1° |
| 2° | 4.8 4.7 | 5.0 4.7 | 5.2 4.8 | 5.4 4.8 | 5.6 4.9 | 5.8 4.9 | 6.0 5.0 | 6.3 5.1 | 6.5 5.2 | 6.7 5.2 | 7.0 5.3 | 7.2 5.4 | 7.5 5.5 | 7.7 5.6 | 8.0 5.7 | 2° |
| 3° | 7.2 4.7 | 7.5 4.7 | 7.8 4.8 | 8.1 4.8 | 8.4 4.9 | 8.7 5.0 | 9.1 5.0 | 9.4 5.1 | 9.7 5.2 | 10.1 5.2 | 10.4 5.3 | 10.8 5.4 | 11.2 5.5 | 11.6 5.6 | 12.0 5.7 | 3° |
| 4° | 9.6 4.7 | 10.0 4.7 | 10.4 4.8 | 10.8 4.8 | 11.2 4.9 | 11.6 5.0 | 12.1 5.0 | 12.5 5.1 | 13.0 5.2 | 13.4 5.2 | 13.9 5.3 | 14.4 5.4 | 14.9 5.5 | 15.5 5.6 | 16.0 5.7 | 4° |
| 5° | 12.0 4.7 | 12.5 4.7 | 13.0 4.8 | 13.5 4.8 | 14.0 4.9 | 14.6 5.0 | 15.1 5.0 | 15.7 5.1 | 16.2 5.2 | 16.8 5.2 | 17.4 5.3 | 18.1 5.4 | 18.7 5.5 | 19.4 5.6 | 20.1 5.7 | 5° |
| 6° | 14.5 4.7 | 15.1 4.7 | 15.6 4.8 | 16.2 4.9 | 16.9 4.9 | 17.5 5.0 | 18.2 5.0 | 18.8 5.1 | 19.5 5.2 | 20.2 5.3 | 20.9 5.3 | 21.7 5.4 | 22.5 5.5 | 23.3 5.6 | 24.1 5.7 | 6° |
| 7° | 16.9 4.7 | 17.6 4.8 | 18.3 4.8 | 19.0 4.9 | 19.7 4.9 | 20.4 5.0 | 21.2 5.0 | 22.0 5.1 | 22.8 5.2 | 23.6 5.3 | 24.5 5.3 | 25.3 5.4 | 26.2 5.5 | 27.2 5.6 | 28.1 5.7 | 7° |
| 8° | 19.4 4.7 | 20.1 4.8 | 20.9 4.8 | 21.7 4.9 | 22.6 4.9 | 23.4 5.0 | 24.3 5.1 | 25.2 5.1 | 26.1 5.2 | 27.0 5.3 | 28.0 5.4 | 29.0 5.4 | 30.0 5.5 | 31.1 5.6 | 32.2 5.7 | 8° |
| 9° | 21.8 4.7 | 22.7 4.8 | 23.6 4.8 | 24.5 4.9 | 25.4 4.9 | 26.4 5.0 | 27.4 5.1 | 28.4 5.1 | 29.4 5.2 | 30.5 5.3 | 31.6 5.4 | 32.7 5.4 | 33.8 5.5 | 35.1 5.6 | 36.3 5.7 | 9° |
| 10° | 24.3 4.7 | 25.3 4.8 | 26.2 4.8 | 27.3 4.9 | 28.3 5.0 | 29.4 5.0 | 30.5 5.1 | 31.6 5.2 | 32.7 5.2 | 33.9 5.3 | 35.1 5.4 | 36.4 5.5 | 37.7 5.6 | 39.0 5.6 | 40.4 5.7 | 10° |
| 11° | 26.8 4.8 | 27.8 4.8 | 28.9 4.9 | 30.0 4.9 | 31.2 5.0 | 32.4 5.0 | 33.6 5.1 | 34.8 5.2 | 36.1 5.2 | 37.4 5.3 | 38.7 5.4 | 40.1 5.5 | 41.5 5.6 | 43.0 5.7 | 44.5 5.8 | 11° |
| 12° | 29.3 4.8 | 30.4 4.8 | 31.6 4.9 | 32.9 4.9 | 34.1 5.0 | 35.4 5.1 | 36.7 5.1 | 38.1 5.2 | 39.4 5.3 | 40.9 5.3 | 42.3 5.4 | 43.9 5.5 | 45.4 5.6 | 47.0 5.7 | 48.7 5.8 | 12° |
| 13° | 31.8 4.8 | 33.1 4.8 | 34.4 4.9 | 35.7 5.0 | 37.0 5.0 | 38.4 5.1 | 39.9 5.1 | 41.3 5.2 | 42.8 5.3 | 44.4 5.4 | 46.0 5.4 | 47.6 5.5 | 49.3 5.6 | 51.1 5.7 | 52.9 5.8 | 13° |
| 14° | 34.3 4.8 | 35.7 4.9 | 37.1 4.9 | 38.5 5.0 | 40.0 5.0 | 41.5 5.1 | 43.1 5.2 | 44.6 5.2 | 46.3 5.3 | 47.9 5.4 | 49.7 5.5 | 51.5 5.5 | 53.3 5.6 | 55.2 5.7 | 57.1 5.8 | 14° |
| 15° | 36.9 4.8 | 38.4 4.9 | 39.9 4.9 | 41.4 5.0 | 43.0 5.1 | 44.6 5.1 | 46.3 5.2 | 48.0 5.3 | 49.7 5.3 | 51.5 5.4 | 53.4 5.5 | 55.3 5.6 | 57.3 5.7 | 59.3 5.8 | 61.4 5.9 | 15° |
| 16° | 39.5 4.9 | 41.1 4.9 | 42.7 5.0 | 44.3 5.0 | 46.0 5.1 | 47.7 5.1 | 49.5 5.2 | 51.3 5.3 | 53.2 5.4 | 55.1 5.4 | 57.1 5.5 | 59.2 5.6 | 61.3 5.7 | 63.5 5.8 | 65.7 5.9 | 16° |
| 17° | 42.1 4.9 | 43.8 4.9 | 45.5 5.0 | 47.3 5.0 | 49.1 5.1 | 50.9 5.2 | 52.8 5.2 | 54.7 5.3 | 56.7 5.4 | 58.8 5.5 | 60.9 5.5 | 63.1 5.6 | 65.3 5.7 | 67.7 5.8 | 70.1 5.9 | 17° |
| 18° | 44.7 4.9 | 46.5 5.0 | 48.4 5.0 | 50.2 5.1 | 52.1 5.1 | 54.1 5.2 | 56.1 5.3 | 58.2 5.3 | 60.3 5.4 | 62.5 5.5 | 64.7 5.6 | 67.0 5.7 | 69.4 5.8 | 71.9 5.8 | 74.5 5.9 | 18° |
| 19° | 47.4 4.9 | 49.3 5.0 | 51.2 5.0 | 53.2 5.1 | 55.3 5.2 | 57.3 5.2 | 59.5 5.3 | 61.7 5.4 | 63.9 5.4 | 66.2 5.5 | 68.6 5.6 | 71.1 5.7 | 73.6 5.8 | 76.2 5.9 | 78.9 6.0 | 19° |
| 20° | 50.1 5.0 | 52.1 5.0 | 54.2 5.1 | 56.3 5.1 | 58.4 5.2 | 60.6 5.3 | 62.9 5.3 | 65.2 5.4 | 67.5 5.5 | 70.0 5.6 | 72.5 5.6 | 75.1 5.7 | 77.8 5.8 | 80.6 5.9 | 83.4 6.0 | 20° |
| 21° | 52.9 5.0 | 55.0 5.1 | 57.1 5.1 | 59.3 5.2 | 61.6 5.2 | 63.9 5.3 | 66.3 5.4 | 68.7 5.4 | 71.2 5.5 | 73.8 5.6 | 76.5 5.7 | 79.2 5.8 | 82.0 5.9 | 85.0 6.0 | 88.0 6.1 | 21° |
| 22° | 55.6 5.0 | 57.9 5.1 | 60.1 5.1 | 62.5 5.2 | 64.8 5.3 | 67.3 5.3 | 69.8 5.4 | 72.3 5.5 | 75.0 5.6 | 77.7 5.6 | 80.5 5.7 | 83.4 5.8 | 86.3 5.9 | 89.4 6.0 | 92.6 6.1 | 22° |
| 23° | 58.5 5.1 | 60.8 5.1 | 63.2 5.2 | 65.6 5.2 | 68.1 5.3 | 70.7 5.4 | 73.3 5.4 | 76.0 5.5 | 78.8 5.6 | 81.6 5.7 | 84.6 5.8 | 87.6 5.8 | 90.7 5.9 | 93.9 6.0 | 97.3 6.1 | 23° |
| | 31° | 32° | 33° | 34° | 35° | 36° | 37° | 38° | 39° | 40° | 41° | 42° | 43° | 44° | 45° | |

| | 46° | 47° | 48° | 49° | 50° | 51° | 52° | 53° | 54° | 55° | 56° | 57° | 58° | 59° | 60° | |
|-----|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----|
| 0° | 0.0 5.8 | 0.0 5.9 | 0.0 6.0 | 0.0 6.1 | 0.0 6.2 | 0.0 6.4 | 0.0 6.5 | 0.0 6.6 | 0.0 6.8 | 0.0 7.0 | 0.0 7.2 | 0.0 7.3 | 0.0 7.5 | 0.0 7.8 | 0.0 8.0 | 0° |
| 1° | 4.1 5.8 | 4.3 5.9 | 4.4 6.0 | 4.6 6.1 | 4.8 6.2 | 4.9 6.4 | 5.1 6.5 | 5.3 6.6 | 5.5 6.8 | 5.7 7.0 | 5.9 7.2 | 6.2 7.3 | 6.4 7.5 | 6.7 7.8 | 6.9 8.0 | 1° |
| 2° | 8.3 5.8 | 8.6 5.9 | 8.9 6.0 | 9.2 6.1 | 9.5 6.2 | 9.9 6.4 | 10.2 6.5 | 10.6 6.7 | 11.0 6.8 | 11.4 7.0 | 11.9 7.2 | 12.3 7.3 | 12.8 7.6 | 13.3 7.8 | 13.9 8.0 | 2° |
| 3° | 12.4 5.8 | 12.9 5.9 | 13.3 6.0 | 13.8 6.1 | 14.3 6.2 | 14.8 6.4 | 15.4 6.5 | 15.9 6.7 | 16.5 6.8 | 17.2 7.0 | 17.8 7.2 | 18.5 7.4 | 19.2 7.6 | 20.0 7.8 | 20.8 8.0 | 3° |
| 4° | 16.6 5.8 | 17.2 5.9 | 17.8 6.0 | 18.4 6.1 | 19.1 6.2 | 19.8 6.4 | 20.5 6.5 | 21.3 6.7 | 22.1 6.8 | 22.9 7.0 | 23.8 7.2 | 24.7 7.4 | 25.6 7.6 | 26.7 7.8 | 27.8 8.0 | 4° |
| 5° | 20.8 5.8 | 21.5 5.9 | 22.3 6.0 | 23.1 6.1 | 23.9 6.2 | 24.8 6.4 | 25.7 6.5 | 26.6 6.7 | 27.6 6.8 | 28.6 7.0 | 29.7 7.2 | 30.9 7.4 | 32.1 7.6 | 33.4 7.8 | 34.7 8.0 | 5° |
| 6° | 24.9 5.8 | 25.8 5.9 | 26.8 6.0 | 27.7 6.1 | 28.7 6.3 | 29.7 6.4 | 30.8 6.5 | 32.0 6.7 | 33.2 6.8 | 34.4 7.0 | 35.7 7.2 | 37.1 7.4 | 38.5 7.6 | 40.1 7.8 | 41.7 8.0 | 6° |
| 7° | 29.1 5.8 | 30.2 5.9 | 31.3 6.0 | 32.4 6.1 | 33.5 6.3 | 34.8 6.4 | 36.0 6.5 | 37.3 6.7 | 38.7 6.9 | 40.2 7.0 | 41.7 7.2 | 43.3 7.4 | 45.0 7.6 | 46.8 7.8 | 48.7 8.1 | 7° |
| 8° | 33.4 5.8 | 34.5 5.9 | 35.8 6.0 | 37.1 6.2 | 38.4 6.3 | 39.8 6.4 | 41.2 6.6 | 42.7 6.7 | 44.3 6.9 | 46.0 7.0 | 47.8 7.2 | 49.6 7.4 | 51.5 7.6 | 53.6 7.8 | 55.8 8.1 | 8° |
| 9° | 37.6 5.8 | 38.9 5.9 | 40.3 6.1 | 41.8 6.2 | 43.3 6.3 | 44.8 6.4 | 46.5 6.6 | 48.2 6.7 | 50.0 6.9 | 51.8 7.1 | 53.8 7.2 | 55.9 7.4 | 58.1 7.6 | 60.4 7.9 | 62.9 8.1 | 9° |
| 10° | 41.8 5.8 | 43.3 6.0 | 44.9 6.1 | 46.5 6.2 | 48.2 6.3 | 49.9 6.5 | 51.7 6.6 | 53.6 6.7 | 55.6 6.9 | 57.7 7.1 | 59.9 7.3 | 62.2 7.5 | 64.7 7.7 | 67.3 7.9 | 70.0 8.1 | 10° |
| 11° | 46.1 5.9 | 47.8 6.0 | 49.5 6.1 | 51.2 6.2 | 53.1 6.3 | 55.0 6.5 | 57.0 6.6 | 59.1 6.8 | 61.3 6.9 | 63.6 7.1 | 66.0 7.3 | 68.6 7.5 | 71.3 7.7 | 74.1 7.9 | 77.2 8.1 | 11° |
| 12° | 50.4 5.9 | 52.2 6.0 | 54.1 6.1 | 56.0 6.2 | 58.1 6.4 | 60.2 6.5 | 62.4 6.6 | 64.6 6.8 | 67.0 7.0 | 69.6 7.1 | 72.2 7.3 | 75.0 7.5 | 78.0 7.7 | 81.1 7.9 | 84.4 8.2 | 12° |
| 13° | 54.8 5.9 | 56.7 6.0 | 58.8 6.1 | 60.9 6.3 | 63.1 6.4 | 65.3 6.5 | 67.7 6.7 | 70.2 6.8 | 72.8 7.0 | 75.6 7.2 | 78.4 7.3 | 81.5 7.5 | 84.7 7.7 | 88.1 8.0 | 91.6 8.2 | 13° |
| 14° | 59.2 5.9 | 61.3 6.0 | 63.5 6.2 | 65.7 6.3 | 68.1 6.4 | 70.6 6.6 | 73.1 6.7 | 75.8 6.9 | 78.6 7.0 | 81.6 7.2 | 84.7 7.4 | 88.0 7.6 | 91.4 7.8 | 95.1 8.0 | 99.0 8.2 | 14° |
| 15° | 63.6 6.0 | 65.9 6.1 | 68.2 6.2 | 70.6 6.3 | 73.2 6.4 | 75.8 6.6 | 78.6 6.7 | 81.5 6.9 | 84.5 7.0 | 87.7 7.2 | 91.0 7.4 | 94.6 7.6 | 98.3 7.8 | 102.2 8.0 | 106.4 8.3 | 15° |
| 16° | 68.1 6.0 | 70.5 6.1 | 73.0 6.2 | 75.6 6.3 | 78.3 6.5 | 81.2 6.6 | 84.1 6.8 | 87.2 6.9 | 90.5 7.1 | 93.9 7.3 | 97.4 7.4 | 101.2 7.6 | 105.2 7.9 | 109.4 8.1 | 113.8 8.3 | 16° |
| 17° | 72.6 6.0 | 75.1 6.1 | 77.8 6.3 | 80.6 6.4 | 83.5 6.5 | 86.5 6.6 | 89.7 6.8 | 93.0 7.0 | 96.4 7.1 | 100.1 7.3 | 103.9 7.5 | 107.9 7.7 | 112.1 7.9 | 116.6 8.1 | 121.4 8.4 | 17° |
| 18° | 77.1 6.1 | 79.9 6.2 | 82.7 6.3 | 85.7 6.4 | 88.7 6.5 | 92.0 6.7 | 95.3 6.8 | 98.8 7.0 | 102.5 7.2 | 106.3 7.3 | 110.4 7.5 | 114.7 7.7 | 119.2 7.9 | 123.9 8.2 | 129.0 8.4 | 18° |
| 19° | 81.7 6.1 | 84.6 6.2 | 87.6 6.3 | 90.8 6.4 | 94.0 6.6 | 97.5 6.7 | 101.0 6.9 | 104.7 7.0 | 108.6 7.2 | 112.7 7.4 | 117.0 7.6 | 121.5 7.8 | 126.3 8.0 | 131.3 8.2 | 136.7 8.5 | 19° |
| 20° | 86.4 6.1 | 89.5 6.2 | 92.6 6.4 | 96.0 6.5 | 99.4 6.6 | 103.0 6.8 | 106.8 6.9 | 110.7 7.1 | 114.8 7.2 | 119.1 7.4 | 123.7 7.6 | 128.4 7.8 | 133.5 8.0 | 138.8 8.3 | 144.5 8.5 | 20° |
| 21° | 91.1 6.2 | 94.3 6.3 | 97.7 6.4 | 101.2 6.5 | 104.8 6.7 | 108.6 6.8 | 112.6 7.0 | 116.7 7.1 | 121.1 7.3 | 125.6 7.5 | 130.4 7.7 | 135.5 7.9 | 140.8 8.1 | 146.4 8.3 | 152.4 8.6 | 21° |
| 22° | 95.9 6.2 | 99.3 6.3 | 102.8 6.4 | 106.5 6.6 | 110.4 6.7 | 114.3 6.9 | 118.5 7.0 | 122.9 7.2 | 127.4 7.3 | 132.2 7.5 | 137.3 7.7 | 142.6 7.9 | 148.2 8.1 | 154.1 8.4 | 160.4 8.6 | 22° |
| 23° | 100.7 6.3 | 104.3 6.4 | 108.0 6.5 | 111.9 6.6 | 115.9 6.8 | 120.1 6.9 | 124.5 7.1 | 129.1 7.2 | 133.9 7.4 | 138.9 7.6 | 144.2 7.8 | 149.8 8.0 | 155.7 8.2 | 161.9 8.4 | 168.5 8.7 | 23° |
| | 46° | 47° | 48° | 49° | 50° | 51° | 52° | 53° | 54° | 55° | 56° | 57° | 58° | 59° | 60° | |

| | 61° | 62° | 63° | 64° | 65° | 66° | 67° | 68° | 69° | 70° | |
|-----|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|-----|
| 0° | 0.0 8.3 | 0.0 8.5 | 0.0 8.8 | 0.0 9.1 | 0.0 9.5 | 0.0 9.8 | 0.0 10.2 | 0.0 10.7 | 0.0 11.2 | 0.0 11.7 | 0° |
| 1° | 7.2 8.3 | 7.5 8.5 | 7.9 8.8 | 8.2 9.1 | 8.6 9.5 | 9.0 9.8 | 9.4 10.2 | 9.9 10.7 | 10.4 11.2 | 11.0 11.7 | 1° |
| 2° | 14.4 8.3 | 15.1 8.5 | 15.7 8.8 | 16.4 9.1 | 17.2 9.5 | 18.0 9.8 | 18.9 10.2 | 19.8 10.7 | 20.8 11.2 | 22.0 11.7 | 2° |
| 3° | 21.7 8.3 | 22.6 8.5 | 23.6 8.8 | 24.6 9.1 | 25.8 9.5 | 27.0 9.8 | 28.3 10.3 | 29.7 10.7 | 31.3 11.2 | 33.0 11.7 | 3° |
| 4° | 28.9 8.3 | 30.1 8.5 | 31.5 8.8 | 32.9 9.1 | 34.4 9.5 | 36.0 9.9 | 37.8 10.3 | 39.7 10.7 | 41.7 11.2 | 44.0 11.7 | 4° |
| 5° | 36.2 8.3 | 37.7 8.6 | 39.4 8.8 | 41.1 9.2 | 43.0 9.5 | 45.0 9.9 | 47.2 10.3 | 49.6 10.7 | 52.2 11.2 | 55.1 11.7 | 5° |
| 6° | 43.5 8.3 | 45.3 8.6 | 47.3 8.9 | 49.4 9.2 | 51.7 9.5 | 54.1 9.9 | 56.7 10.3 | 59.6 10.7 | 62.8 11.2 | 66.2 11.8 | 6° |
| 7° | 50.8 8.3 | 52.9 8.6 | 55.2 8.9 | 57.7 9.2 | 60.3 9.5 | 63.2 9.9 | 66.3 10.3 | 69.6 10.8 | 73.3 11.2 | 77.3 11.8 | 7° |
| 8° | 58.1 8.3 | 60.6 8.6 | 63.2 8.9 | 66.0 9.2 | 69.1 9.6 | 72.3 9.9 | 75.9 10.3 | 79.7 10.8 | 83.9 11.3 | 88.5 11.8 | 8° |
| 9° | 65.5 8.4 | 68.3 8.6 | 71.2 8.9 | 74.4 9.2 | 77.8 9.6 | 81.5 10.0 | 85.5 10.4 | 89.8 10.8 | 94.6 11.3 | 99.7 11.8 | 9° |
| 10° | 72.9 8.4 | 76.0 8.7 | 79.3 8.9 | 82.9 9.3 | 86.7 9.6 | 90.8 10.0 | 95.2 10.4 | 100.0 10.8 | 105.3 11.3 | 111.0 11.9 | 10° |
| 11° | 80.4 8.4 | 83.8 8.7 | 87.4 9.0 | 91.3 9.3 | 95.5 9.6 | 100.1 10.0 | 105.0 10.4 | 110.3 10.9 | 116.1 11.4 | 122.4 11.9 | 11° |
| 12° | 87.9 8.4 | 91.6 8.7 | 95.6 9.0 | 99.9 9.3 | 104.5 9.7 | 109.4 10.1 | 114.8 10.5 | 120.6 10.9 | 126.9 11.4 | 133.8 12.0 | 12° |
| 13° | 95.5 8.5 | 99.5 8.7 | 103.8 9.0 | 108.5 9.4 | 113.5 9.7 | 118.8 10.1 | 124.7 10.5 | 131.0 11.0 | 137.8 11.5 | 145.4 12.0 | 13° |
| 14° | 103.1 8.5 | 107.5 8.8 | 112.1 9.1 | 117.2 9.4 | 122.5 9.8 | 128.3 10.1 | 134.6 10.6 | 141.4 11.0 | 148.9 11.5 | 157.0 12.1 | 14° |
| 15° | 110.8 8.5 | 115.5 8.8 | 120.5 9.1 | 125.9 9.4 | 131.7 9.8 | 137.9 10.2 | 144.7 10.6 | 152.0 11.1 | 160.0 11.6 | 168.7 12.1 | 15° |
| 16° | 118.6 8.6 | 123.6 8.9 | 129.0 9.2 | 134.7 9.5 | 140.9 9.8 | 147.6 10.2 | 154.8 10.6 | 162.7 11.1 | 171.2 11.6 | 180.6 12.2 | 16° |
| 17° | 126.4 8.6 | 131.8 8.9 | 137.5 9.2 | 143.7 9.5 | 150.3 9.9 | 157.4 10.3 | 165.1 10.7 | 173.4 11.2 | 182.5 11.7 | 192.5 12.2 | 17° |
| 18° | 134.3 8.7 | 140.1 9.0 | 146.1 9.3 | 152.7 9.6 | 159.7 10.0 | 167.3 10.3 | 175.4 10.8 | 184.3 11.2 | 194.0 11.7 | 204.6 12.3 | 18° |
| 19° | 142.4 8.7 | 148.4 9.0 | 154.9 9.3 | 161.8 9.7 | 169.2 10.0 | 177.2 10.4 | 185.9 10.8 | 195.3 11.3 | 205.6 11.8 | 216.8 12.4 | 19° |
| 20° | 150.5 8.8 | 156.9 9.1 | 163.7 9.4 | 171.0 9.7 | 178.9 10.1 | 187.4 10.5 | 196.5 10.9 | 206.5 11.4 | 217.3 11.9 | 229.2 12.4 | 20° |
| 21° | 158.7 8.8 | 165.5 9.1 | 172.7 9.4 | 180.4 9.8 | 188.7 10.1 | 197.6 10.5 | 207.3 11.0 | 217.7 11.4 | 229.2 12.0 | 241.7 12.5 | 21° |
| 22° | 167.0 8.9 | 174.1 9.2 | 181.7 9.5 | 189.8 9.8 | 198.6 10.2 | 208.0 10.6 | 218.1 11.0 | 229.2 11.5 | 241.2 12.0 | 254.4 12.6 | 22° |
| 23° | 175.5 9.0 | 183.0 9.3 | 190.9 9.6 | 199.5 9.9 | 208.6 10.3 | 218.5 10.7 | 229.2 11.1 | 240.8 11.6 | 253.4 12.1 | 267.3 12.7 | 23° |
| | 61° | 62° | 63° | 64° | 65° | 66° | 67° | 68° | 69° | 70° | |

7.6 Depression Angles & Adjustments

The following is a table of depression angles used in halakha. An explanation of each degree number is as follows (Braunfeld, *Dvar Yom*). Note that very early “Gra” times are not listed, as they are not in wide use and since the stars are never visible that early. For smaller depression angles, using the angle times the minutes per degree figure in the following table is adequate. As angles get larger (and the minutes per degree is higher) this figure begins to become inaccurate. For increased accuracy at higher depression angles, multiply the minutes-per-degree figure by the “mult by” figure below. Arithmetically it will often be easier to use the original value and then subtracting the result of the minutes-per-degree figure times the difference between original angle and the modified angle.

| Angle | Mult by: | Explanation |
|--------|----------|--|
| 0°50' | 0°50' | Sunrise/sunset. It might be surprising that sunrise and sunset are not 0°! Since the sun is not a single point and the top of the sun is visible even when its center is below the horizon, and because of atmospheric refraction making the sun visible even when its true position is below the horizon, an angle of 50' is the conventional definition of sunrise and sunset. |
| 6° | 5°59' | A time sometimes used for nightfall for purposes of ending minor fasts. It is also civil twilight, the time when outdoor activities can begin in the morning, or conclude in the evening, without need for artificial light |
| 6°27' | 6°26' | An earlier time for nightfall often used to conclude minor fasts. |
| 7°5' | 7°4' | A nightfall time used by the United Synagogue in Britain, and by some other European communities (generally adding 7 minutes for havdala). It is sometimes used as the conclusion for minor fasts. |
| 8°30' | 8°28' | The most widely used time for nightfall to end Shabbat in America and some communities elsewhere. Sometimes used as a later misheyakir zman. |
| 10°12' | 10°9' | A widely-used time for misheyakir |
| 11° | 10°56' | A widely-used time for misheyakir |
| 11°30' | 11°25' | A widely-used time for misheyakir |
| 12° | 11°55' | This time is not used halakhically (to the author's knowledge), but it is equal to nautical twilight, and is included for reference and for checking the computed values vs published twilight values |
| 14° | 13°52' | A time some use for dawn (Montreal Luach) |
| 16°6' | 15°53' | A widely used time for dawn. It also is sometimes used for nightfall. It corresponds to the depression angle 72 minutes after sunset at the equinoxes at approximately the latitude of Israel and Babylonia |
| 18° | 17°42' | A time some use for dawn (MTJ Luach). It matches astronomical twilight. Times later than this are difficult to understand, as astronomers report that even dim stars are visible at this point. |
| 19°40' | 19°22' | An earlier opinion for dawn and a later opinion for nightfall, corresponding to the depression angle 72 minutes after sunset at the equinoxes at approximately the latitude of Israel and Babylonia. Some keep Shabbat until this time, which is called the "ochtal" in Yiddish (since 90 minutes is an eighth of 12 hours). In practice, because of the impracticability of such a late time in the summer, most who keep this zman simply use a fixed 90 minutes after sunset. |
| 26° | 25°7' | A late nightfall time, equivalent to the depression angle 120 minutes after sunset at the equinoxes in Israel and Babylonia. This is the time called the "zekstal" (one sixth of 12 hours). In practice, because of the impracticability of such a late time in the summer, most who keep this zman simply use a fixed 120 minutes after sunset. |

7.7 Multiplication Table

This table allows faster calculation of minutes from a given depression angle and minutes per degree figure. Useful depression angles are on the top row. Each row is simply the number in the first column times the angle (adjusted for more precision to account for $\sin x$ not being a perfect approximation of x). To use this table, look up your desired depression angle times the number of minutes per degree. Then look up your desired depression angle times the number of seconds per degree. Then add the results. This table is in base 60. Depending on the inputs, the result may be in hours and minutes, minutes and seconds, or seconds and sixtieths of a second.

| | 0°50' | 6° | 6°30' | 7°5' | 8°30' | 10°12' | 11° | 11°30' | 12° | 14° | 16°6' | 18° | 19°45' | 26° |
|-----|-------|------|-------|------|-------|--------|------|--------|-------|-------|-------|-------|--------|-------|
| 4.0 | 3.3 | 24.0 | 25.9 | 28.3 | 33.9 | 40.6 | 43.7 | 45.7 | 47.6 | 55.4 | 63.6 | 70.8 | 77.4 | 100.5 |
| 4.1 | 3.4 | 24.6 | 26.6 | 29.0 | 34.7 | 41.6 | 44.8 | 46.8 | 48.8 | 56.8 | 65.1 | 72.6 | 79.4 | 103.0 |
| 4.2 | 3.5 | 25.2 | 27.2 | 29.7 | 35.6 | 42.6 | 45.9 | 48.0 | 50.0 | 58.2 | 66.7 | 74.4 | 81.3 | 105.5 |
| 4.3 | 3.6 | 25.8 | 27.9 | 30.4 | 36.4 | 43.6 | 47.0 | 49.1 | 51.2 | 59.6 | 68.3 | 76.1 | 83.3 | 108.0 |
| 4.4 | 3.7 | 26.4 | 28.5 | 31.1 | 37.3 | 44.6 | 48.1 | 50.3 | 52.4 | 61.0 | 69.9 | 77.9 | 85.2 | 110.5 |
| 4.5 | 3.7 | 27.0 | 29.2 | 31.8 | 38.1 | 45.7 | 49.2 | 51.4 | 53.6 | 62.4 | 71.5 | 79.7 | 87.1 | 113.0 |
| 4.6 | 3.8 | 27.5 | 29.8 | 32.5 | 39.0 | 46.7 | 50.3 | 52.5 | 54.8 | 63.8 | 73.1 | 81.4 | 89.1 | 115.5 |
| 4.7 | 3.9 | 28.1 | 30.5 | 33.2 | 39.8 | 47.7 | 51.4 | 53.7 | 56.0 | 65.1 | 74.7 | 83.2 | 91.0 | 118.0 |
| 4.8 | 4.0 | 28.7 | 31.1 | 33.9 | 40.7 | 48.7 | 52.5 | 54.8 | 57.2 | 66.5 | 76.3 | 85.0 | 92.9 | 120.6 |
| 4.9 | 4.1 | 29.3 | 31.8 | 34.6 | 41.5 | 49.7 | 53.6 | 56.0 | 58.4 | 67.9 | 77.9 | 86.8 | 94.9 | 123.1 |
| 5.0 | 4.2 | 29.9 | 32.4 | 35.3 | 42.3 | 50.7 | 54.7 | 57.1 | 59.6 | 69.3 | 79.4 | 88.5 | 96.8 | 125.6 |
| 5.1 | 4.2 | 30.5 | 33.1 | 36.0 | 43.2 | 51.7 | 55.8 | 58.3 | 60.8 | 70.7 | 81.0 | 90.3 | 98.7 | 128.1 |
| 5.2 | 4.3 | 31.1 | 33.7 | 36.7 | 44.0 | 52.8 | 56.8 | 59.4 | 61.9 | 72.1 | 82.6 | 92.1 | 100.7 | 130.6 |
| 5.3 | 4.4 | 31.7 | 34.4 | 37.4 | 44.9 | 53.8 | 57.9 | 60.5 | 63.1 | 73.5 | 84.2 | 93.8 | 102.6 | 133.1 |
| 5.4 | 4.5 | 32.3 | 35.0 | 38.2 | 45.7 | 54.8 | 59.0 | 61.7 | 64.3 | 74.8 | 85.8 | 95.6 | 104.6 | 135.6 |
| 5.5 | 4.6 | 32.9 | 35.7 | 38.9 | 46.6 | 55.8 | 60.1 | 62.8 | 65.5 | 76.2 | 87.4 | 97.4 | 106.5 | 138.1 |
| 5.6 | 4.7 | 33.5 | 36.3 | 39.6 | 47.4 | 56.8 | 61.2 | 64.0 | 66.7 | 77.6 | 89.0 | 99.2 | 108.4 | 140.7 |
| 5.7 | 4.7 | 34.1 | 37.0 | 40.3 | 48.3 | 57.8 | 62.3 | 65.1 | 67.9 | 79.0 | 90.6 | 100.9 | 110.4 | 143.2 |
| 5.8 | 4.8 | 34.7 | 37.6 | 41.0 | 49.1 | 58.8 | 63.4 | 66.3 | 69.1 | 80.4 | 92.2 | 102.7 | 112.3 | 145.7 |
| 5.9 | 4.9 | 35.3 | 38.3 | 41.7 | 50.0 | 59.9 | 64.5 | 67.4 | 70.3 | 81.8 | 93.7 | 104.5 | 114.2 | 148.2 |
| 6.0 | 5.0 | 35.9 | 38.9 | 42.4 | 50.8 | 60.9 | 65.6 | 68.5 | 71.5 | 83.2 | 95.3 | 106.2 | 116.2 | 150.7 |
| 6.1 | 5.1 | 36.5 | 39.6 | 43.1 | 51.7 | 61.9 | 66.7 | 69.7 | 72.7 | 84.6 | 96.9 | 108.0 | 118.1 | 153.2 |
| 6.2 | 5.2 | 37.1 | 40.2 | 43.8 | 52.5 | 62.9 | 67.8 | 70.8 | 73.9 | 85.9 | 98.5 | 109.8 | 120.0 | 155.7 |
| 6.3 | 5.2 | 37.7 | 40.9 | 44.5 | 53.4 | 63.9 | 68.9 | 72.0 | 75.0 | 87.3 | 100.1 | 111.5 | 122.0 | 158.2 |
| 6.4 | 5.3 | 38.3 | 41.5 | 45.2 | 54.2 | 64.9 | 70.0 | 73.1 | 76.2 | 88.7 | 101.7 | 113.3 | 123.9 | 160.7 |
| 6.5 | 5.4 | 38.9 | 42.2 | 45.9 | 55.0 | 66.0 | 71.1 | 74.2 | 77.4 | 90.1 | 103.3 | 115.1 | 125.8 | 163.3 |
| 6.6 | 5.5 | 39.5 | 42.8 | 46.6 | 55.9 | 67.0 | 72.2 | 75.4 | 78.6 | 91.5 | 104.9 | 116.9 | 127.8 | 165.8 |
| 6.7 | 5.6 | 40.1 | 43.5 | 47.3 | 56.7 | 68.0 | 73.2 | 76.5 | 79.8 | 92.9 | 106.5 | 118.6 | 129.7 | 168.3 |
| 6.8 | 5.7 | 40.7 | 44.1 | 48.0 | 57.6 | 69.0 | 74.3 | 77.7 | 81.0 | 94.3 | 108.0 | 120.4 | 131.7 | 170.8 |
| 6.9 | 5.7 | 41.3 | 44.8 | 48.7 | 58.4 | 70.0 | 75.4 | 78.8 | 82.2 | 95.6 | 109.6 | 122.2 | 133.6 | 173.3 |
| 7.0 | 5.8 | 41.9 | 45.4 | 49.5 | 59.3 | 71.0 | 76.5 | 80.0 | 83.4 | 97.0 | 111.2 | 123.9 | 135.5 | 175.8 |
| 7.1 | 5.9 | 42.5 | 46.1 | 50.2 | 60.1 | 72.0 | 77.6 | 81.1 | 84.6 | 98.4 | 112.8 | 125.7 | 137.5 | 178.3 |
| 7.2 | 6.0 | 43.1 | 46.7 | 50.9 | 61.0 | 73.1 | 78.7 | 82.2 | 85.8 | 99.8 | 114.4 | 127.5 | 139.4 | 180.8 |
| 7.3 | 6.1 | 43.7 | 47.3 | 51.6 | 61.8 | 74.1 | 79.8 | 83.4 | 87.0 | 101.2 | 116.0 | 129.2 | 141.3 | 183.4 |
| 7.4 | 6.2 | 44.3 | 48.0 | 52.3 | 62.7 | 75.1 | 80.9 | 84.5 | 88.2 | 102.6 | 117.6 | 131.0 | 143.3 | 185.9 |
| 7.5 | 6.2 | 44.9 | 48.6 | 53.0 | 63.5 | 76.1 | 82.0 | 85.7 | 89.3 | 104.0 | 119.2 | 132.8 | 145.2 | 188.4 |
| 7.6 | 6.3 | 45.5 | 49.3 | 53.7 | 64.4 | 77.1 | 83.1 | 86.8 | 90.5 | 105.3 | 120.8 | 134.6 | 147.1 | 190.9 |
| 7.7 | 6.4 | 46.1 | 49.9 | 54.4 | 65.2 | 78.1 | 84.2 | 88.0 | 91.7 | 106.7 | 122.3 | 136.3 | 149.1 | 193.4 |
| 7.8 | 6.5 | 46.7 | 50.6 | 55.1 | 66.1 | 79.1 | 85.3 | 89.1 | 92.9 | 108.1 | 123.9 | 138.1 | 151.0 | 195.9 |
| 7.9 | 6.6 | 47.3 | 51.2 | 55.8 | 66.9 | 80.2 | 86.4 | 90.2 | 94.1 | 109.5 | 125.5 | 139.9 | 153.0 | 198.4 |
| 8.0 | 6.7 | 47.9 | 51.9 | 56.5 | 67.8 | 81.2 | 87.5 | 91.4 | 95.3 | 110.9 | 127.1 | 141.6 | 154.9 | 200.9 |
| 8.1 | 6.7 | 48.5 | 52.5 | 57.2 | 68.6 | 82.2 | 88.6 | 92.5 | 96.5 | 112.3 | 128.7 | 143.4 | 156.8 | 203.4 |
| 8.2 | 6.8 | 49.1 | 53.2 | 57.9 | 69.4 | 83.2 | 89.6 | 93.7 | 97.7 | 113.7 | 130.3 | 145.2 | 158.8 | 206.0 |
| 8.3 | 6.9 | 49.7 | 53.8 | 58.6 | 70.3 | 84.2 | 90.7 | 94.8 | 98.9 | 115.0 | 131.9 | 147.0 | 160.7 | 208.5 |
| 8.4 | 7.0 | 50.3 | 54.5 | 59.3 | 71.1 | 85.2 | 91.8 | 96.0 | 100.1 | 116.4 | 133.5 | 148.7 | 162.6 | 211.0 |
| 8.5 | 7.1 | 50.9 | 55.1 | 60.1 | 72.0 | 86.2 | 92.9 | 97.1 | 101.3 | 117.8 | 135.1 | 150.5 | 164.6 | 213.5 |
| 8.6 | 7.2 | 51.5 | 55.8 | 60.8 | 72.8 | 87.3 | 94.0 | 98.2 | 102.4 | 119.2 | 136.6 | 152.3 | 166.5 | 216.0 |
| 8.7 | 7.2 | 52.1 | 56.4 | 61.5 | 73.7 | 88.3 | 95.1 | 99.4 | 103.6 | 120.6 | 138.2 | 154.0 | 168.4 | 218.5 |
| 8.8 | 7.3 | 52.7 | 57.1 | 62.2 | 74.5 | 89.3 | 96.2 | 100.5 | 104.8 | 122.0 | 139.8 | 155.8 | 170.4 | 221.0 |

7.8 Minute Correction Table

This is a table to account for the fact that $\arcsin x \approx x$ (when both as expressed as radians) only is true for smaller values of x . Values of 230 minutes or more are indeterminate, as the sun never passes the desired depression angle at the desired latitude and declination combination.

| For time in range: | Add: |
|--------------------|------|
| 1 - 53 | 0:00 |
| 54 - 1:16 | 0:01 |
| 1:17 - 1:30 | 0:02 |
| 1:31 - 1:40 | 0:03 |
| 1:41 - 1:48 | 0:04 |
| 1:49 - 1:55 | 0:05 |
| 1:56 - 2:01 | 0:06 |
| 2:02 - 2:06 | 0:07 |
| 2:07 - 2:11 | 0:08 |
| 2:12 - 2:15 | 0:09 |
| 2:16 - 2:19 | 0:10 |
| 2:20 - 2:23 | 0:11 |
| 2:24 - 2:26 | 0:12 |
| 2:27 - 2:28 | 0:13 |
| 2:30 - 2:32 | 0:14 |
| 2:33 - 2:35 | 0:15 |
| 2:36 - 2:38 | 0:16 |
| 2:39 - 2:40 | 0:17 |
| 2:41 - 2:43 | 0:18 |
| 2:44 - 2:45 | 0:19 |
| 2:46 - 2:47 | 0:20 |
| 2:48 - 2:49 | 0:21 |
| 2:50 - 2:51 | 0:22 |
| 2:52 - 2:53 | 0:23 |
| 2:54 - 2:55 | 0:24 |
| 2:57 - 2:57 | 0:25 |
| 2:58 - 2:59 | 0:26 |
| 3:00 | 0:27 |
| 3:01 - 3:02 | 0:28 |
| 3:03 | 0:29 |
| 3:04 - 3:05 | 0:30 |
| 3:06 | 0:31 |
| 3:07 - 3:08 | 0:32 |
| 3:09 | 0:33 |
| 3:10 | 0:34 |
| 3:11 | 0:35 |
| 3:12 - 3:13 | 0:36 |

| For time in range: | Add: |
|--------------------|------|
| 3:04 | 0:37 |
| 3:05 | 0:38 |
| 3:06 | 0:39 |
| 3:07 | 0:40 |
| 3:08 | 0:41 |
| 3:09 | 0:42 |
| 3:10 | 0:43 |
| 3:11 | 0:44 |
| 3:12 | 0:45 |
| 3:13 | 0:46 |
| 3:14 | 0:48 |
| 3:15 | 0:49 |
| 3:16 | 0:50 |
| 3:17 | 0:51 |
| 3:18 | 0:53 |
| 3:19 | 0:54 |
| 3:20 | 0:56 |
| 3:21 | 0:57 |
| 3:22 | 0:59 |
| 3:23 | 1:00 |
| 3:24 | 1:02 |
| 3:25 | 1:04 |
| 3:26 | 1:06 |
| 3:27 | 1:08 |
| 3:28 | 1:10 |
| 3:29 | 1:12 |
| 3:30 | 1:15 |
| 3:31 | 1:18 |
| 3:32 | 1:20 |
| 3:33 | 1:24 |
| 3:34 | 1:27 |
| 3:35 | 1:31 |
| 3:36 | 1:36 |
| 3:37 | 1:41 |
| 3:38 | 1:49 |
| 3:39 | 2:02 |

7.9 Time Zone Table

This is a table of timezones. To obtain the conversion minutes for a location, find the number of degrees for the timezone and subtract the longitude of a location (noting that the longitude will be negative for places in the Western hemisphere). The letters match those sometimes used on maps. A dash in the “major locations” column indicates that the only places in this timezone have no territory with a large population. Some time zones that are not a whole numbers of hours offset which have very small populations (such as the Marquesas Islands or Eucla, Australia) are not included, but the degrees can still be obtained by multiplying the UTC offset hours by 15.

DST offsets are not included in this list. If your location observes Daylight Saving Time, add the DST offset (in nearly all locations this is one hour) when “summer time” is in effect.

| UTC offset | Letter Code | Degrees | Time Zones and Countries |
|------------|-------------|---------|--|
| -12:00 | Y | -180° | - |
| -11:00 | X | -165° | Niue, American Samoa |
| -10:00 | W | -150° | Aleutian Islands, Hawai'i, French Polynesia, Cook Islands |
| -09:00 | V | -135° | Alaska |
| -08:00 | U | -120° | Pacific Time (US and Canada), Northwest Time (Mexico), Pitcairn Islands |
| -07:00 | T | -105° | Mountain Time (US and Canada), Pacific Time (Mexico) |
| -06:00 | S | -90° | Central Time (US, Canada, and Mexico), Central America (except Panama), Galápagos Islands |
| -05:00 | R | -75° | Eastern Time (US and Canada), Quintana Roo (Mexico), Bahamas, Haiti, Cuba, Panama, Colombia, Peru, Ecuador, Acre Time (Brazil) |
| -04:00 | Q | -60° | Atlantic Time (US and Canada), Antigua and Barbuda, Barbados, Amazon Time (Brazil) |
| -03:30 | - | -52.5° | Newfoundland Time (Canada) |
| -03:00 | P | -45° | Brasilia Time (Brazil), Uruguay, Argentina, Suriname |
| -02:00 | O | -30° | Greenland |
| -01:00 | N | -15° | Cape Verde, Azores |
| 00:00 | Z | 0° | Greenwich Mean Time, Western European Time, Burkina Faso, Ivory Coast, the Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, São Tomé and Príncipe, Senegal, Sierra Leone, Togo |
| +01:00 | A | 15° | Central European Time, West Africa Time |
| +02:00 | B | 30° | Eastern European Time, Central Africa Time, Israel, Lebanon, Cyprus |
| +03:00 | C | 45° | Moscow Time (Russia), Belarus, Turkey, Syria, Iraq, Jordan, Kuwait, Saudi Arabia, Yemen, East Africa Time |
| +03:30 | - | 52.5° | Iran |
| +04:00 | D | 60° | Samara Time (Russia), Armenia, Azerbaijan, Georgia, UAE, Oman, Seychelles, Mauritius |
| +04:30 | - | 60° | Afghanistan |
| +05:00 | E | 75° | Yekaterinburg Time (Russia), Aktobe Time (Kazakhstan), Uzbekistan, Turkmenistan, Tajikistan, Pakistan |
| +05:30 | - | 82.5° | India, Sri Lanka |
| +05:45 | - | 86.25° | Nepal |
| +06:00 | F | 90° | Omsk Time (Russia), Almaty Time (Kazakhstan), Kyrgyzstan, Bangladesh |
| +06:30 | F | 97.5° | Myanmar |
| +07:00 | G | 105° | Krasnoyarsk Time (Russia), Laos, Thailand, Cambodia, Vietnam, Western Indonesia Time |
| +08:00 | H | 120° | Irkutsk Time (Russia), Mongolia, China, Philippines, Singapore, Malaysia, Central Indonesia Time, Australian Western Time |
| +09:00 | I | 135° | Yakutsk Time (Russia), Korea, Japan, Palau, Eastern Indonesia Time |
| +09:30 | - | 142.5° | Australian Central Time |
| +10:00 | K | 150° | Vladivostok Time (Russia), Guam, Micronesia, Papua New Guinea, Australian Eastern Time |
| +11:00 | L | 165° | Magadan Time (Russia), Solomon Islands, Vanuatu |
| +12:00 | M | 180° | Kamchatka Time (Russia), Marshall Islands, Tuvalu, Fiji, New Zealand |
| +13:00 | - | -165° | Samoa, Tonga |

7.10 Sample Calculations

7.10.1 Example 1

A Jewish passenger aboard the RMS *Titanic* has been among the first rescued in the early morning of April 15 following the ship's sinking. He wants to know whether *misheyakir* is soon enough to be worth staying awake to daven, or if he should nap now. The date is 15 April, and his watch is set to the *Titanic*'s ship's time as of 14 April, which is 2:58 behind GMT. Because the ship is moving picking up survivors, the position is rounded to approximately 41°N 50°W.

Our passenger is able to borrow the nautical almanac from the bridge while the crew is distracted picking up survivors. The equation of time is zero minutes, and the declination is 10°N. Per the chart, the zero-degree offset is 31 minutes, and the time per degree is 5:22. Since being rescued from a boat that sunk is a exigent circumstance, our protagonist is willing to use a lenient early depression angle of 11°30', if it enables him to daven soon and then get some sleep. Per the multiplication table, $5 \times 11^\circ 30'$ (adjusted) is 57:07, and $22 \times 11^\circ 30'$ is 4:11. $31 + 57 + 4$ yields 1:32. Per the correction table, we must add 3 minutes to this zman, for a total of 1:35. Since we are looking for a morning zman the result is 1:35 before 6am, or 4:25am solar time (which is equivalent to 4:25am local time since the equation of time is zero).

Titanic's ship's time is not in a time zone, so the time zone offset must be computed manually. Multiply the offset from GMT by 15 to get a number of degrees, so -2:58 times 15 is -44°30'. The longitude is 50°W (expressed normally as -50°), so the offset for the time zone is four times 5°30', or 24 minutes. Noting the signs in the formula for time zone offset, this time must be subtracted to get our zman. The result is 4:04am *Titanic* ship's time. Since the first passengers were rescued at 4am, *misheyakir* will occur soon, and it is worth davening now before trying to get some sleep.

7.10.2 Example 2

A group of Briskers who keep the “ochtal” are shipwrecked on Nelsons Island in the Indian Ocean. What time is havdala for them on August 26? Their position is 5°41'S 72°19'E, and their watches are still set to Israeli summer time from their origin.

As these Briskers lack an almanac, they must use the date table. The zman must be calculated from scratch since all the gavras were too busy looking at a heftza to notice when the sun set. The declination on this day is 10°N and the equation of time is two minutes. From the declination-latitude table, the 0° offset is between 3 and 4 minutes (let's go with 3), and the time per degree is 4:04. In the multiplication table the result of 19°45' times 4 is 1:17, so the result is one hour seventeen minutes plus one minute seventeen seconds. Rounding to the nearest minute, the result is 1:18. Our selected date is in winter, the total time is 1:18-3, which is 1:15. Per the correction table, we must add one minute to this time, which yields 1:16, or 7:16pm solar time. Add 2 minutes from the equation of time, for 7:18pm local time. The UTC offset for Israeli time is +2 hours, but only +1 hours for summer time, which translates to 15° in the time zone table. 15° minus 72°19' is -56°41', to convert to minutes multiply by 4, which yields -1:47. The result is then 5:31pm Israel summer time.

7.10.3 Example 3

A Jewish resident of Tristan da Cunha (37°4'S 12°19'W, observes UTC with no offset) in 2023 wishes to participate in the festivities of Ratting Day on Friday June 2nd, but will need to make sure to know when to light Shabbat candles. Equation of time is -2, declination is 22°N. The offset is 69 minutes (negative since it's wintertime), the minutes per degree is 5:24. 5:24 times 50' works out to about 4:30, let's use 4 minutes to be slightly more stringent so the error in the declination and equation of time won't combine to give us less time before sunset than planned. -69+4 is 65, to which we add one minute per the correction table. Sunset is at 4:55pm solar time, which is 4:53pm local time. 12°19'W times four is 49:16, we'll round to 49 minutes (which need to be added, since our location is West of the center of the time zone). Sunset is at approximately 5:42pm, and with a standard candle lighting time of 18 minutes before sunset, candles should be lit at 5:24.

Since the counting and measuring of rat tails does not take place until 5:30pm, our protagonist will sadly not be present to see who wins the awards for “most tails” and “longest tail”.

7.10.4 Example 4

Chabad of Rockall ($57^{\circ}36'N$ $13^{\circ}41'W$, would presumably observe GMT if it had any residents⁵) has shaharit at 10am. Will this Chabad reach sof zeman tefila on June 18th?

The equation of time is 1 minute, and declination is $23^{\circ}N$. The o° offset is 149 minutes (1:29), and the minutes per degree is 7:59 (since close to the solstice declination is a bit higher than $23^{\circ}N$, let's round it to an even 8 minutes). 8 minutes times 50' is 6:40 per the multiplication table. Since it's summer, both these figures are positive, so the total is 2:37. To this we must add 16 minutes per the correction table, so a total of 2:53. This works out to 3:07am solar time.

As noted in the instructions, we can save ourselves some work by calculating the zman in solar time, then converting to local time (and then standard time), taking advantage of the fact that 12 noon is hatzos. The time from sunrise to noon is 8:53. Divided into 6 equal hours yields 1:29. Two of these proportional hours before noon is 9:02am.

We then add one minute for the equation of time (9:03am). For the time zone correction, $13^{\circ}41'$ times four is 55 minutes (to be added). Sof zeman tefila will be 9:58am. If, however, Rockall observes DST along with Britain, the time would be an hour later, at 10:58am. For the sake of those davening at Chabad of Rockall, we'd better hope that Rockall observes DST.

7.10.5 Example 5

The hypothetical Jewish community of the Pitcairn Islands ($25^{\circ}S$) wants to use a fixed number of minutes after sunset to make havdala, based on how many minutes are needed to get to a depression angle of $8^{\circ}30'$ all year round.

The highest value for minutes per degree (at the solstices) is 4:48. Since the absolute highest declination is a little less than 23.5° , let's extrapolate that to 4:49.

There are two ways to compute the amount of time. First, manually. Sunset is 50', the adjusted depression angle is $8^{\circ}28'$, so we must multiply 4:49 by $7^{\circ}38'$. The result is 28 minutes plus 343 seconds plus 152 seconds plus 31 seconds, or expressed more conventionally, 36:46 (round to 37 minutes).

The multiplication table can also be used. Using the column for sunset with 4:49, sunset is $3:20 + 41$ seconds = 4 minutes after the sun is at 0° (this can be determined even more easily by estimating based on the values for 4 and 5 in the sunset column). Using the $8^{\circ}30'$ column, havdala is 33:53 plus 6:54 after 0° , for a total of 41 minutes. Since we're interested in time after sunset, the result is 37 minutes, the same as the previous method.

Before telling everyone to make havdala 37 minutes after sunset, we need to check whether any correction is necessary. At the summer solstice, when the o° offset and the time for degrees are both positive, is when the correction factor from the correction table will be highest. The offset is about 46 minutes, for a total of 1:23. Per the correction table, we'll need to add two minutes, so the standard time for havdala should be 39 minutes after sunset.

⁵Though it is geographically better suited to Cape Verde and Azores time, I'm assuming residents would find it convenient to share a time zone with the UK and Ireland

Part II

Selected Halakhot for Gabbaim

Chapter 8

Liturgical Halakhot

8.1 Introduction

This guide is intended as a quick-reference for liturgical questions that come up frequently and require an immediate answer, and are more in-depth than siddur instructions typically have. It therefore omits discussion of the obligation of prayer, times for the different liturgies, attire for prayer, and other more regularly-occurring matters of ritual law. It also omits significant amounts of halakhic discussion and relevant details for the sake of conciseness.

Given that this guide is a summary of summaries, it should not be used as an authoritative halakhic guide. When possible a more comprehensive text should be consulted. This text is designed for when doing so would cause undue interruption or a burden on the congregation.

The guide is primarily based on the English translation of Peninei Halakha. When it cites major codes, the citations are referenced here. This has been supplemented by references to the Kitzur Shulḥan Arukh and other sources as noted. Citations to the Shulḥan Arukh are abbreviated to the section (“OC” or “YD”) and Siman.

8.2 Situations where Prayer is Forbidden

It is forbidden to pray near uncovered excrement, smelly garbage, or other foul smells. A person must be four cubits (approximately 2 meters or $6\frac{1}{2}$ feet) from the source of the smell or where they cannot smell it, whichever is further, even if they themselves cannot smell it (*PH Prayer*, 3:9 citing OC 79).

The above does not apply to feces of babies who do not eat much solid food, since it does not smell as bad as that of adults or animals (*ibid.*, 4:3 citing OC 81). Diapers, catheters, and the like are considered “covered” (*ibid.*, 4:4).

One may not hold an item they are afraid will fall during prayer, unless they would be afraid the item would be stolen and that would interfere with proper attention to praying (*ibid.*, 5:7 citing OC 96).

One may not pray when they need to use the toilet (*ibid.*, 5:8 citing Berakhot 15a).

A person who is tipsy should not pray, but if they do so their obligation is fulfilled. A person who is inebriated may not pray (*ibid.*, 5:11 citing OC 99).

8.3 A Diminished Minyan

If a portion of the minyan leaves during any prayer requiring a minyan, the prayer may be completed as long as the majority of the minyan remains (*ibid.*, 2:10 citing OC 55).

The repetition of the Amidah is considered the same prayer, but Birkat Kohanim and the Torah service are not. In Ashkenazi practice, kaddishes after the Amidah up to and including the following Full Kaddish are considered the same prayer. The blessings of Shema and the Amidah that follows are considered different prayers (*ibid.*).

If a minyan was absent for Pesukei DeZimra and Yishtabah was recited, and then a minyan was formed, a few verses should be read before Half Kaddish is recited (*Kitzur SA*, 15:1)

8.4 Interruptions in Liturgy

8.4.1 During Pesukei DeZimra

Pesukei DeZimra is the portion of the service between Barukh She'amar and Yishtabah. Needless interruptions are forbidden during that period, with the following exceptions (based on *Koren Siddur*, “Table of Permitted Responses” and *PH Prayer*, 16:5):

- Answering “amen” to a blessing
- The congregational response to kedusha and barekhu
- Reciting modim derabbanan
- Answering אָמֵן יְהִי שְׁמֵהּ רַבָּא וְכוּ' in kaddish
- Reciting the first verse of shema with the congregation
- Reciting the blessing after using the toilet, on thunder, or on lightening
- Respond to a respected person’s greeting, or greet a person out of fear
- Between paragraphs: greet a respected person, or respond to anyone’s greeting
- Receive an aliya (though such a person shouldn’t be given an aliya unless they’re the only Kohen or Levi)

In all these cases it is preferable to interrupt between paragraphs if possible, and the interruption should be between verses.

Between Pesukei DeZimra and Shaḥarit it is permitted to make communal announcements that cannot wait until after Full Kaddish (*ibid.*, 16:2). Otherwise, any interruption at this point is forbidden, besides those permitted during Pesukei DeZimra.

8.4.2 During the Shema and its Blessings

During the Shema and its blessings, interruptions are forbidden with the following exceptions (based on *Koren Siddur*, “Table of Permitted Responses” and *PH Prayer*, 16:5):

- The congregational response to kedusha (but only the lines beginning קְדוּשָׁה and בְּרוּךְ) and barekhu
- Reciting only the words מוֹדִים אֲנַחְנוּ לָךְ from modim derabbanan
- Answering אָמֵן יְהִי שְׁמֵהּ רַבָּא וְכוּ' in kaddish
- Receive an aliya (but not in the middle of the first verse of the Shema)
- Respond to a respected person’s greeting, or greet a person out of fear
- Between paragraphs, greet a respected person, or respond to anyone’s greeting
- Between paragraphs, recite the blessing on thunder and lighting
- Between paragraphs, answer אָמֵן to a blessing

8.4.3 During the Amidah

Interruptions during the Amidah are forbidden, even congregational responses to Kaddish and Kedusha. It is considered an interruption to put on a tallit if it has fallen off (though it may be adjusted, *OC* 97:4). It is permitted to walk to somewhere else if there is a distraction preventing prayer in the original location (*ibid.*, 17:15).

If an interruption is long enough that one could have finished the Amidah in the length of the interruption, the Amidah must be started again (PH Prayer 18:1).

8.5 Time-Related Errors in Liturgy

In all these cases, if the shaliaḥ tzibbur makes a mistake in their silent Amidah they need not repeat it even if it would normally be required if this would cause undo delay for the community (*Kitzur SA*, 19:13)

8.5.1 Requests for Rain

Mashiv HaRuah Mashiv haRuah is recited beginning at Musaf on the first day of Pesah until Musaf on Shemini Atzeret. If it is omitted in winter or recited in summer, one must begin the Amidah again (unless the berakha has not been completed, in which case resume from the point of the error). But if “Morid HaTal” was recited in summer, the Amidah may be continued as normal (*PH Prayer*, 18:4-5 citing OC 114).

If Mashiv haRuah was recited during Arvit or shaḥarit on Shemini Atzeret, or omitted on Pesah, the Amidah need not be repeated (*Kitzur SA*, 19:2, 4).

Tal uMatar The request for rain in the weekday Amidah is recited during the rainy season. In the Land of Israel it is begun on the 7th of Marḥeshvan at Arvit (i.e. the beginning of the 7th) (*PH Prayer*, 18:5 citing OC 117).

Elsewhere it is begun 60 days after the Autumnal Equinox, which for this purpose is reckoned according to the Julian calendar (Tekufat Shemuel). In the 21st century this works out to 'Arvit on December 4th, or December 5th in years immediately before a civil leap year. It moves one day on the Gregorian calendar later every time there is a Julian leap year that is not a Gregorian leap year, which occurs every Gregorian year that is divisible by 100 but not by 400. When such a year occurs, treat the year before as the year before a leap year. Then in the non-leap year the request for rain moves one year later. For example, in the year 2099 the request will begin December 5th, and on December 5th (or 6th, in years before a leap year) thereafter until 2198.

In both locations it is said until Passover. If it was forgotten and the blessing was concluded, it should be inserted in the blessing of שְׁמַע קוֹלֵנוּ (before עֲנֵנוּ if on a fast). If that blessing was concluded, return to the blessing of “mevarekh hashanim”. If the Amidah was completed, it must be recited again (ibid.).

8.5.2 Shabbat and Festival Liturgical Texts

On Shabbat and Festivals, the blessing of Hashkiveinu is concluded with הַפֹּרֶס סֶכֶת שְׁלוֹם וְכוּ' instead of the weekday text, שׁוֹמֵר עִמּוֹ יִשְׂרָאֵל לְעַד. If the weekday text was said by mistake and the error was not caught immediately, one need not repeat the blessing.

If the weekday Amidah was mistakenly said on Shabbat or a Festival and the mistake was realized during the middle portion of the Amidah, the blessing currently being said is completed, and the middle blessing for Shabbat or Festivals should be recited and the Amidah continued as usual (*Kitzur SA*, 76:16). This does not apply to Musaf, where one should not complete the blessing currently being recited (ibid., 76:19). If the mistake was realized during the concluding three blessings, stop and return to the middle blessing for Shabbat or Festivals and continue as usual. If the Amidah was already completed, recite the Amidah from the beginning with the correct text (ibid., 76:18).

If the Shabbat Amidah was recited on a Festival or the reverse, if the central blessing was recited incorrectly one must return to the beginning of the central blessing of the Amidah. If the Amidah was completed it must be recited over again. The same applies to erroneously including or omitting reference to Shabbat in the concluding berakha, and to mentioning the wrong holiday (*PH Festivals*, 2:3:4)

If the text of the Amidah was substituted on Shabbat between Arvit, Shaḥarit, and Minḥa, and the mistake was not realized until after concluding the blessing מְקַדֵּשׁ הַשַּׁבָּת, the Amidah need not be repeated. This does not apply to Musaf, where reciting Musaf instead of another prayer, or another prayer in place of Musaf, requires reciting the correct Amidah (*Kitzur SA*, 76:21-22).

8.5.3 Holiday Liturgical Additions

Havdalah in the Amidah is recited at the end of Shabbat and Festivals. If forgotten the Amidah is not repeated, since Havdalah will also be said separately (*PH Prayer*, 18:2 citing OC 422).

Ya'aleh veYavo is recited on festivals and Rosh Hodesh. If omitted, the Amidah must be repeated, except at Arvit on Rosh Hodesh. If the omission is realized before the Amidah is complete, return to Retzei and continue from there (*ibid.*).

Al Hanisim is recited on Hanukkah and Purim. If omitted the Amidah is not repeated (*ibid.*, citing OC 682).

If Aneinu, recited on fast days, is forgotten, the Amidah is not repeated (*ibid.*, citing OC 565). It may be inserted in שמע קולינו, or if it is forgotten there, during the paragraph following the Amidah before taking three steps backwards.

During the Ten Days of Repentance, if ה' הקדוש is forgotten and the error is not fixed within a moment, return to the beginning of the Amidah. Other additions do not require repeating the Amidah.

If a holiday addition was mistakenly recited on a weekday, return to the beginning of the berakha if the berakha has not been concluded. If the berakha has been completed, continue as usual without returning or repeating.

8.5.4 Cases of Doubt

If one is unsure whether they included a special insertion to the Amidah that is required, they must assume they omitted it and repeat the Amidah. The same is true for the requests for rain (or lack thereof) within 30 days of beginning / ending including the request. In such a case, one should have in mind that if they did recite the correct text, the repeated text should be considered a voluntary extra prayer (*ibid.*, 18:6).

8.6 Birkat Hamazon

8.6.1 When to Recite Birkat Hamazon

Birkat Hamazon is recited after a meal where an olive's size of bread is eaten. It should be recited within 72 minutes of the end of the meal. If this time already elapsed, it may be recited as long as one is not yet hungry (*Kitzur SA*, 44:8).

Birkat Hamazon should be recited at the same location as the meal. If a person forgot and went somewhere else, they may eat some bread at the new location and recite Birkat Hamazon there. If not, they must return to the location of the meal if possible. If that is impossible or the time to recite Birkat Hamazon would pass, it is recited at the new location (*ibid.*, 44:9).

8.6.2 Errors in Additions to Birkat Hamazon

In all below cases, if a berakha has been partially said, if only ברוך אתה ה' has been said, conclude the line לְמַדְנִי הַקִּיָּי, which forms a complete verse (Psalms 119:12), and proceed as though the berakha had not been begun. If אֱהִינּוּ was said, the berakha cannot be un-said, and either continue with the berakha or return to the beginning, depending on the rule for the specific case.

Retzei and Ya'aleh veYavo Retzei is added on Shabbat, and Ya'aleh veYavo is added on Festivals and Rosh Hodesh. If forgotten and the berakha of בונה ירושלים has not been said, return and say Retzei or Ya'aleh veYavo and continue as usual from there. If forgotten and the next berakha has already been begun (the one that begins ברוך אתה ה' אֱהִינּוּ (מלך העולם ה' אבינו וכו')):

- On Shabbat and festivals at the evening or first daytime meal, repeat Birkat Hamazon
- On Shabbat and festivals at the third meal, do not repeat Birkat Hamazon
- On Rosh Hodesh, do not repeat Birkat Hamazon
- On Hol HaMo'ed, do not repeat Birkat Hamazon

If the berakha of בונה ירושלים has been completed but the next berakha has not begun, add a compensatory blessing. The texts are as follows:

ברוך אתה יי אלהינו מלך העולם אשר נתן...

- If Retzei was forgotten on Shabbat:
שבתות למנוחה לעמו ישראל באהבה לאות ולברית: ברוך אתה יי מקדש השבת:
- If Ya'aleh veYavo was forgotten on Festivals. On Shabbat if Retzei was forgotten as well, add the words in parentheses.
(שבתות למנוחה לעמו ישראל באהבה לאות ולברית ו) ימים טובים לששון ולשמחה את-יום חג ...
הזה: ברוך אתה יי מקדש (השבת ו) ישראל והזמנים:
- If Ya'aleh veYavo was forgotten on Rosh Hodesh. On Shabbat if Retzei was forgotten as well, add the words in parentheses.
(שבתות למנוחה לעמו ישראל באהבה לאות ולברית ו) ראשי חודשים לזכרון: (ברוך אתה יי מקדש השבת ו) ישראל וראשי חודשים:

Al haNisim Al haNisim is recited on Hanukka and Purim. If forgotten, Birkat haMazon is not repeated. If the mistake is realized before completing Birkat Hamazon, add to the הרחמן הוא יעשה לנו נסים ונפלאות section הרחמן followed by the text for that day, beginning with either בימי מרדכי or בימי מתתיהו (ibid., 44:16).

8.7 Priority List for Aliyot

A Kohen receives the first aliya, and a Levi the second. If there is no Kohen, a Levi need not be called first (or second). If there is no Levi, the same Kohen is called for the first two aliyot. In a case of great need the Kohen may be asked to leave so a Yisrael can be called instead.

There are variations in local custom of the priority list for aliyot. This is one such list (ibid., 78:11):

1. A person getting married that day
2. A
3. A child reaching Bar-Mitzva, either on a weekday or on the following Shabbat
4. A new parent
5. On Shabbat, a person who got married the previous week on Wednesday or later
6. Someone observing a Yortzeit
7. On Shabbat, a parent whose son will get a Brit Mila in the following week
8. Someone who needs to recite Gomel or is leaving on a journey

A person may waive their precedence to receive an aliya.

Chapter 9

Problems in Sifrei Torah

The following are considered errors in the Sefer Torah (Ganzfried, *Kitzur SA*, 24:1):

- A missing letter that changes the meaning of the word, including grammatical gender. A change of spelling that does not affect the meaning does not invalidate the Torah, though it should be fixed ¹
- An extra letter (unless the mistake is between a *haser* and *malei* spelling)
- One letter split such that it looks like two letters
- Two letters joined together to look like one letter
- One letter substituted for another
- An incorrect paragraph division, either missing or superfluous
- The majority of the seam between two sheets is torn (though if no other Torah is available it may be used if the tear is in a different book of the Torah. If it is in that book, it may be used if there is no other Torah if five seams remain)
- Wax or a similar substance obscures the words of the portion being read

In a case of doubt, a child is shown the doubtful letter. If they read it correctly, the Torah may be used, if not it is invalid.

9.1 When an Invalidation is Found

When a problem in a Sefer Torah is discovered between aliyot, the reading is continued with the next aliya from a kosher Sefer Torah from the point the previous aliya ended. If a problem is discovered in the middle of an aliya, a kosher Torah is taken out and the reading is resumed without interruption. If the error occurred in the middle of a sentence, the reading in the kosher Torah should resume from the beginning of that sentence. No new initial berakha on the aliya should be recited (so long as the oleh does not do any unnecessary conversation while the scrolls are swapped), and the concluding blessing should be recited as usual on the kosher Sefer Torah. If there are less than three verses remaining in the aliya, the reader should go back and repeat verses from the kosher Sefer Torah so that three verses are read from the kosher Sefer Torah (*ibid.*, 24:8).

The following are exceptions to the above:

- If the mistake is in a place where the aliya may be ended (three or more verses from a paragraph break and not in the curses), customs vary. Some end the aliya there, the oleh recites the blessing, and the next aliya begins from the kosher Sefer Torah. This is the recommendation of the Rema (*PH Prayer*, 22:2 citing OC 146).

¹Note that ׀ can be part of the root even if it does not have an independent vowel associated with it, in which case it missing the letter would invalidate the Torah. For example, if in the phrase אל תירא הגר it was spelled תרא the Torah is invalid (*Kitzur SA*, 24:1)

- If the problem is discovered in Maftir, a new Torah need not be brought out. Instead, the Maftir is completed as usual, but no concluding berakha on the aliya is recited. This applies only when the Maftir is a portion repeated from the last aliya. If the Maftir is from a second Torah, the rules as on other occasions apply (*Kitzur SA*, 78:8).
- On a Shabbat Mincha, Monday, or Thursday, if the problem is found in the final aliya and in a location where the aliya can be ended (not within 3 verses of a paragraph break and after 3 verses), the reading can be concluded at that spot. The concluding blessing is recited and the service continues as usual.

On Shabbat, if possible, Hosafot should be added to make the remaining reading into 7 aliyot (*ibid.*, 24:7).

On a day when multiple Sifrei Torah are used, the other scrolls already used or planned to be used should not be used to replace the invalid scroll. Instead a third or fourth Torah should be used, if available (*ibid.*, 78:10).

If no kosher Sefer Torah is available, the readings may proceed from an invalid one, but without the blessings on the aliyot. In such a case the berakhot on the Haftarah are not recited either (*ibid.*, 79:10)

If no other Torah is available, an invalid Sefer Torah may be used if the error is not in the book currently being read. This leniency does not apply to Shabbat afternoon (*ibid.*, 24:10).