

### KSIĘŻYC

| d                    | Wsch. | Kulm. | Zach. | A <sub>w</sub> | A <sub>z</sub> | α                 | δ        | D    | F     |
|----------------------|-------|-------|-------|----------------|----------------|-------------------|----------|------|-------|
|                      | λ=0°  |       | φ=50° |                |                | 0 <sup>h</sup> UT |          |      |       |
| <b>LISTOPAD 2018</b> |       |       |       |                |                |                   |          |      |       |
|                      | h m   | h m   | h m   | -°             | +°             | h m s             | ° ' "    | ' "  |       |
| 1                    | —     | 6 35  | 14 12 | —              | 116            | 9 01 05           | 18 03.0  | 32.3 | -0.47 |
| 2                    | 0 01  | 7 30  | 14 45 | 113            | 109            | 9 58 24           | 14 43.7  | 32.2 | -0.35 |
| 3                    | 1 18  | 8 22  | 15 12 | 106            | 102            | 10 53 42          | 10 34.0  | 32.2 | -0.25 |
| 4                    | 2 35  | 9 13  | 15 38 | 98             | 94             | 11 47 11          | 5 50.5   | 32.1 | -0.16 |
| 5                    | 3 51  | 10 03 | 16 02 | 90             | 86             | 12 39 22          | 0 50.5   | 31.9 | -0.09 |
| 6                    | 5 06  | 10 52 | 16 26 | 82             | 78             | 13 30 51          | - 4 09.1 | 31.7 | -0.04 |
| 7                    | 6 20  | 11 41 | 16 52 | 74             | 71             | 14 22 12          | - 8 52.3 | 31.4 | -0.01 |
| 8                    | 7 32  | 12 30 | 17 21 | 67             | 65             | 15 13 52          | -13 04.7 | 31.1 | 0.00  |
| 9                    | 8 41  | 13 21 | 17 54 | 62             | 60             | 16 06 02          | -16 33.7 | 30.7 | 0.02  |
| 10                   | 9 46  | 14 11 | 18 33 | 58             | 57             | 16 58 39          | -19 10.0 | 30.4 | 0.06  |
| 11                   | 10 44 | 15 01 | 19 18 | 56             | 55             | 17 51 25          | -20 47.4 | 30.1 | 0.11  |
| 12                   | 11 35 | 15 51 | 20 09 | 55             | 56             | 18 43 52          | -21 23.6 | 29.9 | 0.18  |
| 13                   | 12 18 | 16 40 | 21 05 | 57             | 58             | 19 35 31          | -20 59.8 | 29.7 | 0.26  |
| 14                   | 12 54 | 17 27 | 22 05 | 60             | 62             | 20 25 59          | -19 39.6 | 29.6 | 0.35  |
| 15                   | 13 24 | 18 12 | 23 08 | 65             | 67             | 21 15 05          | -17 28.8 | 29.6 | 0.44  |
| 16                   | 13 50 | 18 57 | —     | 70             | —              | 22 02 55          | -14 33.8 | 29.6 | 0.54  |
| 17                   | 14 14 | 19 41 | 0 12  | 76             | 73             | 22 49 48          | -11 01.4 | 29.8 | 0.63  |
| 18                   | 14 36 | 20 25 | 1 17  | 83             | 79             | 23 36 13          | - 6 58.8 | 30.1 | 0.72  |
| 19                   | 14 57 | 21 09 | 2 24  | 90             | 87             | 0 22 48           | - 2 33.6 | 30.4 | 0.81  |
| 20                   | 15 20 | 21 56 | 3 34  | 98             | 94             | 1 10 17           | 2 05.1   | 30.8 | 0.88  |
| 21                   | 15 44 | 22 45 | 4 45  | 105            | 102            | 1 59 25           | 6 46.2   | 31.2 | 0.94  |
| 22                   | 16 12 | 23 37 | 5 59  | 112            | 109            | 2 50 54           | 11 15.8  | 31.6 | 0.98  |
| 23                   | 16 47 | —     | 7 14  | 118            | 116            | 3 45 18           | 15 17.0  | 32.0 | 1.00  |
| 24                   | 17 29 | 0 32  | 8 29  | 122            | 121            | 4 42 48           | 18 31.0  | 32.3 | -0.99 |
| 25                   | 18 21 | 1 31  | 9 39  | 124            | 124            | 5 43 01           | 20 39.6  | 32.5 | -0.96 |
| 26                   | 19 24 | 2 32  | 10 42 | 124            | 124            | 6 44 53           | 21 28.7  | 32.6 | -0.90 |
| 27                   | 20 35 | 3 32  | 11 34 | 121            | 122            | 7 46 56           | 20 52.4  | 32.6 | -0.82 |
| 28                   | 21 50 | 4 31  | 12 16 | 115            | 118            | 8 47 41           | 18 54.7  | 32.5 | -0.72 |
| 29                   | 23 07 | 5 27  | 12 50 | 109            | 112            | 9 46 06           | 15 47.3  | 32.3 | -0.62 |
| 30                   | 24 24 | 6 20  | 13 19 | 100            | 104            | 10 41 53          | 11 46.6  | 32.2 | -0.50 |

|                  |       |                                 |       |                   |         |       |
|------------------|-------|---------------------------------|-------|-------------------|---------|-------|
| nów:             | 7 XI  | 16 <sup>h</sup> 02 <sup>m</sup> | 6 XI  | 2.4 <sup>h</sup>  | Wenus   | 10°S  |
| pierwsza kwadra: | 15 XI | 14 <sup>h</sup> 54 <sup>m</sup> | 8 XI  | 17.7 <sup>h</sup> | Jowisz  | 4°S   |
| pełnia:          | 23 XI | 5 <sup>h</sup> 39 <sup>m</sup>  | 9 XI  | 11.6 <sup>h</sup> | Merkury | 7°S   |
| ostatnia kwadra: | 30 XI | 0 <sup>h</sup> 19 <sup>m</sup>  | 11 XI | 15.6 <sup>h</sup> | Saturn  | 1.4°S |
|                  |       |                                 | 16 XI | 4.4 <sup>h</sup>  | Mars    | 1°N   |
| apogeum:         | 14 XI | 15 <sup>h</sup> 59 <sup>m</sup> | 17 XI | 6.1 <sup>h</sup>  | Neptun  | 3°N   |
| perygeum:        | 26 XI | 12 <sup>h</sup> 10 <sup>m</sup> | 20 XI | 19.8 <sup>h</sup> | Uran    | 5°N   |