

Day of Month	Day of Week.	Remarkable Events.	ASTRONOMICAL NOTES.	Polar Distance of Pole Star.	MATHEMATICAL PROBLEMS.
1	Mond.	Alexander of Russia died, 1825.	Moon near Mars.	0 / //	Prob. 85.—If a round
2	Tuesd.	Bonaparte crowned, 1804.	Jupiter South, 7.12 Ev.	1 26 54	ruler, whose length is 1
3	Wed.	St. Paul's Cathedral finished, 1710	Venus in Sagittarius.	1 26 54	foot and diameter 2 in-
4	Thur.	(3) Flaxman died, 1826.	Venus South, 2.21 Ev.	1 26 54	ches be sawed in two.
5	Friday	Mozart died, 1792.	Moon near Neptune.	1 26 53	lengthwise, the saw en-
6	Satur.	(7) Sidney beheaded, 1683.	Moon near Jupiter.	1 26 53	tering $\frac{1}{2}$ an inch from the
7	SUND.	2nd Sunday in Advent.	Mars in Capricorn.	1 26 53	centre of the end, and
8	Mond.	Mary Queen of Scots born, 1542.	Mercury in Aphelion.	1 26 53	going straight through,
9	Tuesd.	Milton born, 1608.	Moon in perigee.	1 26 52	what will be the surface
10	Wed.	(9) Gay died, 1732.	9th. $\times$ Sup. ϕ . Sun.	1 26 52	and solidity of each
11	Thur.	Charles XII. killed, 1718.	Neptune 90° E. Sun.	1 26 52	part?
12	Friday	Brunel died, 1849.	Moon highest. ϕ peri.	1 26 52	Prob. 86.—If the ruler
13	Satur.	Dr. Johnson died, 1784.	Moon near Saturn.	1 26 51	of Problem 85 be cut by
14	SUND.	3rd Sunday in Advent.		1 26 51	a plane running through
15	Mond.	Earl Stanhope died, 1816.	Venus South, 2.36 Ev.	1 26 51	both ends, at $\frac{1}{2}$ an inch
16	Tuesd.	(15) St. Eustache destroyed, 1837.	Moon near Regulus.	1 26 51	from the centre of one,
17	Wed.	First L. C. Parliament, 1792.	Saturn in Gemini.	1 26 51	and $\frac{1}{4}$ of an inch from
18	Thur.	Bolivar died, 1830.	Jupiter South, 6.12 Ev.	1 26 51	the centre of the other
19	Friday	Lycho Brahe born, 1586.	Uranus in Taurus.	1 26 50	end, on opposite sides of
20	Satur.	Gray died, 1716.	Venus South, 2.41 Ev.	1 26 50	the axis, what will be the
21	SUND.	4th Sunday in Advent.	Sun enters Sagittarius.	1 26 50	solidity and convex sur-
22	Mond.	Schiller died, 1805.	21st. Moon in apogee.	1 26 50	face of each part?
23	Tuesd.	Abdication of James II. 1688.	Jupiter South, 5.54 Ev.	1 26 50	Prob. 87.—The paral-
24	Wed.	Treaty of Ghent, 1814.	Jupiter in Pisces.	1 26 49	lel sides of a trapezoid
25	Thur.	CHRISTMAS.		1 26 49	are 6 and 8 feet, and its
26	Friday	St. Stephen.	Venus South, 2.47 Ev.	1 26 49	height is 5 feet. If it
27	Satur.	Riots at Kingston Jamaica, 1841.	Moon near Mercury.	1 26 49	revolve about the per-
28	SUND.	1st Sunday after Christmas.	Mars near Venus.	1 26 49	pendicular that bisects
29	Mond.	Lord Stafford beheaded, 1689.	Jupiter South, 5.33 Ev.	1 26 49	the parallel sides, what
30	Tuesd.	Order of Jesuits established, 1535.	Moon n'r Venus & Mars	1 26 49	will be the surface and
31	Wed.	St. Sylvester.	Saturn ϕ Sun.	1 26 49	solidity of the solid thus
					made?

ANSWERS TO THE EXAMPLES FOR 1855.

Ex. 44.—Let $29=a$, 10 and 10-41ths= b ; then the sides required= $\frac{1}{2}\{b\pm\sqrt{(a^2+b^2)}\pm\text{or}\mp\sqrt{\frac{1}{4}a^2-\frac{1}{2}b^2\mp\frac{1}{2}b\sqrt{(a^2+b^2)}}\}=21\text{ or }20$. Ans.

Ex. 45.— $x=4.016698$; $y=2.825716$. Ans.

Ex. 46.—Let $10=a$, then the diameter= $1.5\text{th } a\sqrt{(50+10\sqrt{5})}=17.013$. Ans.

Ex. 47.—Let $17=2a$, then $8\frac{1}{2}=a$; and diameter of circle= $3.28976=b$. Then $4ax^2-bx^3=4ab^2$, in which the base= $x=4.27612$. The other sides= 8.19412 each, and the angles= $30^\circ 32'$, and $74^\circ 44'$, and $74^\circ 44'$. Ans.

Note.—We think the question will allow of several answers.

Ex. 48.—Let $20=a$, $97=b$, then the legs will= $a+\frac{1}{2}b\pm\text{or}\mp\frac{1}{2}\sqrt{(b^2-4ab-4a^2)}=72\text{ or }65$. Ans.

Ex. 49.—Let $4\sqrt{3}=a$, then the side of the required inscribed triangle= $\frac{1}{2}a\sqrt{3}=6$, and of the circumscribed= $a\sqrt{3}=12$. Ans.

Ex. 50.—Let $137=a$, $111=b$, $124=c$, then the radius required= $\frac{1}{2}\sqrt{\{(b+c-a)(a-b+c)(a+b-c)\}+(a+b+c)}=35$. Ans.

Ex. 51.—Let $8=a$, $6=b$, $7=c$, $x=\text{radius required}$; then $x^3+x^2\left(\frac{ab}{2c}+\frac{ac}{2b}+\frac{bc}{2a}\right)=\frac{1}{2}abc$, from which we find $x=3.443963$. The sides are 11.01, 12.13644, and 13.31718. Ans.

Note.—Will some one favor us with full formulæ for this problem?

Ex. 52.—Let $29=a$, $b=\sqrt{29}(2\sqrt{2}-3)$, and $x=\text{one of the lines}$, and $y=\text{the other}$, then $x=\frac{1}{2}b\pm\sqrt{\{(a^2-b^2)\div(2+\sqrt{2})+\frac{1}{4}b^2\}}$ and $y=\sqrt{\{(a^2-b^2)\div(2+\sqrt{2})+\frac{1}{4}b^2\}}-\frac{1}{2}b$. Now put $m=x$, and $n=y$, then radius of circle= $\sqrt{\{m^2-(a^2+m^2-n^2)\div 4a^2\}}=6$, from whence the sides are easily determined. They are 21 and 20. Ans.

- ☉ First Qu
 ○ Full Mo
 ☾ Last Qu
 ☾ New Mo
 ☾ Perigee.
 ☾ Apogee.

Day Mo.	Yen	Sou	Eve
1 ...	2		
7 ...	2		
13 ...	2		
19 ...	2		
25 ...	2		
30 ...	2		

Day of Month	Day of Week.
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1	Mond.	3
2	Tuesd.	3
3	Wed.	3
4	Thurs.	3
5	Friday	3
6	Satur.	3
7	SUND.	3
8	Mond.	3
9	Tuesd.	3
10	Wed.	3
11	Thur.	3
12	Friday	3
13	Satur.	3
14	SUND.	3
15	Mond.	3
16	Tuesd.	3
17	Wed.	3
18	Thur.	3
19	Friday	3
20	Satur.	3
21	SUND.	3
22	Mond.	3
23	Tuesd.	3
24	Wed.	3
25	Thur.	3
26	Friday	3
27	Satur.	3
28	SUND.	3
29	Mond.	3
30	Tuesd.	3
31	Wed.	3

PROB. 88
 round tin-m
 10 inches;
 filled with
 until the b