

SPECIAL PROBLEMS.

5.—If a round
ose length is 1
iameter 2 in-
awed in two,
e, the saw en-
h inch from the
the end, and
ight through,
be the surface
ity of each

3.—If the ruler
n 85 be cut by
unning through
, at $\frac{1}{2}$ an inch
centre of one,
an inch from
e of the other
posite sides of
hat will be the
nd convex sur-
ch part?

7.—The paral-
of a trapezoid
8 feet, and its
5 feet. If it
bouts the per-
r that bisects
el sides, what
e surface and
the solid thus

$b^2) \pm$ or $\mp \sqrt{\quad}$

$x^2 - bx^3 = 4ab^2$,
the angles =

72 or 65. Ans.
6, and of the

$-a) (a-b+c)$

$= \frac{1}{2} abc$, from

31718. Ans.

?, then $x = \frac{1}{2} b$

$\left\{ -\frac{1}{2} b. \right.$

$b^2) + 4a^2 \} = 6$,
Ans.

MOON'S PHASES.

	D.	Toronto.	Quebec.
		<i>h m</i>	<i>h m</i>
☾ First Quarter ...	4	10 9 ev	10 41 ev
☾ Full Moon	11	2 56 ev	3 28 ev
☾ Last Quarter ...	18	1 26 mo	1 59 mo
☾ New Moon	27	3 28 mo	4 0 mo
☾ Perigee.....	5	51 mo	6 23 mo
☾ Apogee.....	21	0 27 mo	0 59 mo

Twilight or Daylight begins and ends at—

	Toronto.		Halifax.		Montreal.		Fredrick.		Quebec.	
Days.	Beg.	End	Beg.	End	Beg.	End	Beg.	End	Beg.	End
A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	P. M.
1 ...	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
7 ...	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
13 ...	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
19 ...	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
25 ...	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
30 ...	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m

Ephemeris of the Planets, &c.

Day Mo.	Venus South Even.	Mars South Even.	Jupiter South Even.	Saturn South Even.	Sun's Longi- tude.	Sun's Right Ascen.	Venus Right Ascen.	Mars Right Ascen.	Jupiter Right Ascen.	Saturn Right Ascen.	Venus Decl. South.	Mars Decl. South.	Jupiter Decl. South.	Saturn Decl. North.
	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>° /</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>° /</i>	<i>° /</i>	<i>° /</i>	<i>° /</i>
1 ...	2 17	3 8	7 16	2 16	249 46	16 32	19 0	19 52	0 0	6 56	24 36	22 21	1 34	22 13
7 ...	2 25	3 4	6 53	1 50	255 52	16 59	19 32	20 11	0 1	6 55	23 44	21 21	1 27	22 16
13 ...	2 33	3 0	6 31	1 25	261 58	17 25	20 3	20 31	1 2	6 53	22 27	20 16	1 17	22 18
19 ...	2 40	2 56	6 9	0 55	268 4	17 52	20 34	20 56	0 4	6 51	20 47	19 1	1 5	22 21
25 ...	2 46	2 51	5 47	0 34	274 11	18 21	21 4	21 5	0 6	6 49	18 47	17 46	0 50	22 25
30 ...	2 51	2 46	5 26	0 08	279 17	18 45	21 33	21 24	0 8	6 47	16 28	16 21	0 32	22 28

Day of Month	Day of Week	Day of Year.	Calendar for Upper Canada and Nova Scotia.			Calendar for Lower Canada and New Brunswick.			DEPARTMENT FOR ALL OF UPPER AND LOWER CANADA.									
			Sun Rises.	Sun Sets.	Moon Sets.	Sun Rises.	Sun Sets.	Moon Sets.	Pole Star in Meridian Evening.	Shadow at Noon Mark.	Moon's Age Noon.	Moon South Even.	Moon's Place at 7 P. M.	Sun's Declination South.				
			<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m</i>	<i>h m s</i>	<i>h m s</i>	<i>days</i>	<i>h m</i>	<i>s</i>	<i>° /</i>	<i>° /</i>	<i>° /</i>	<i>° /</i>	<i>° /</i>
1 Mond.	336	7 16	4 28	7 55	7 28	4 10	7 46	8 22	5	11 49	29	4.1	3 25	13	1 21	55	59	
2 Tuesd.	337	7 17	4 22	9 8	7 29	4 10	9 1	8 18	53	11 49	52	5.1	4 18	do.	14 22	4 49		
3 Wed.	338	7 18	4 22	10 23	7 30	4 10	10 18	8 15	1	11 50	16	6.1	5 1	do.	28 22	13 13		
4 Thurs.	339	7 19	4 22	11 37	7 31	4 10	11 35	8 11	4	11 50	41	7.1	5 57	☾	11 22	21 11		
5 Friday	340	7 20	4 22	Morn	7 32	4 16	Morn	8 7	8	11 51	6	8.1	6 45	do.	25 22	28 44		
6 Satur.	341	7 21	4 22	52	7 33	4 10	51	8 3	12	11 51	32	9.1	7 38	☾	9 22	35 49		
7 SUND.	342	7 22	4 22	2	6 33	4 10	2 8	7 59	17	11 51	58	10.1	8 22	do.	24 22	42 28		
8 Mond.	343	7 23	4 22	3 23	7 35	4 10	3 27	7 55	18	11 52	24	11.1	9 15	☾	8 22	48 41		
9 Tuesd.	344	7 24	4 21	4 41	7 36	4 10	4 48	7 51	22	11 52	51	12.1	10 11	do.	23 22	54 26		
10 Wed.	345	7 25	4 21	6 2	7 37	4 10	6 11	7 47	25	11 53	19	13.1	11 12	☾	8 22	59 44		
11 Thur.	346	7 26	4 21	Rises	7 38	4 10	Rises	7 43	28	11 53	47	14.1	Morn	do.	22 23	4 35		
12 Friday	347	7 27	4 22	5 37	7 38	4 10	4 51	7 39	32	11 54	15	15.1	0 10	☾	7 23	8 59		
13 Satur.	348	7 28	4 22	6 9	7 39	4 10	6 57	7 35	35	11 54	43	16.1	1 14	do.	21 23	12 55		
14 SUND.	349	7 28	4 22	7 21	7 40	4 10	7 12	7 31	38	11 55	12	17.1	2 18	☾	4 23	16 23		
15 Mond.	350	7 29	4 22	8 33	7 40	4 10	8 25	7 27	42	11 55	41	18.1	3 18	do.	17 23	19 23		
16 Tuesd.	351	7 30	4 22	9 59	7 41	4 10	9 34	7 23	47	11 56	16	19.1	4 2	do.	30 23	21 56		
17 Wed.	352	7 30	4 23	10 44	7 42	4 10	10 42	7 19	49	11 56	40	20.1	4 47	☾	12 23	24 0		
18 Thur.	353	7 31	4 23	11 45	7 43	4 11	11 45	7 15	52	11 57	9	21.1	5 29	do.	24 23	25 36		
19 Friday	354	7 32	4 23	Morn	7 43	4 11	Morn	7 11	56	11 57	35	22.1	6 8	☾	6 23	26 44		
20 Satur.	355	7 32	4 24	46	7 44	4 11	46	7 7	59	11 58	9	23.1	6 47	do.	18 23	27 24		
21 SUND.	356	7 33	4 24	1 48	7 45	4 11	1 52	7 4	2	11 58	39	24.1	7 27	do.	30 23	27 35		
22 Mond.	357	7 33	4 25	2 52	7 46	4 12	2 57	7 0	6	11 59	9	25.1	8 8	☾	13 23	27 18		
23 Tuesd.	358	7 33	4 25	3 56	7 46	4 13	4 4	6 56	9	11 59	39	26.1	8 52	do.	24 23	26 53		
24 Wed.	359	7 34	4 26	5 47	7 46	4 14	5 13	6 52	12	Evening.	27.1	9 39	☾	6 23	25 19			
25 Thur.	360	7 34	4 26	6 12	7 46	4 14	6 22	6 48	16	12 0	46	28.1	10 31	do.	18 23	23 38		
26 Friday	361	7 35	4 27	7 16	7 46	4 14	7 28	6 44	19	12 1	9	29.1	11 26	☾	1 23	21 27		
27 Satur.	362	7 35	4 28	Sets.	7 46	4 16	Sets.	6 40	22	12 1	39	0.2	Ev. 23	do.	14 23	18 49		
28 SUND.	363	7 35	4 29	5 44	7 47	4 17	5 34	6 36	25	12 2	9	1.3	1 14	do.	27 23	15 42		
29 Mond.	364	7 35	4 29	6 59	7 47	4 17	6 40	6 32	27	2	2 38	2.3	2 14	☾	11 23	12 8		
30 Tuesd.	365	7 36	4 30	8 14	7 48	4 18	8 8	6 28	30	2	3 7	3.3	3 6	do.	24 23	8 5		
31 Wed.	366	7 36	4 31	9 29	7 48	4 19	9 25	6 24	35	12 3	36	4.3	3 55	☾	8 23	3 34		

Prob. 88.—The diameter at the top of a round tin-measure is 4 inches and at the bottom 10 inches; its height is 4 inches. If it be filled with water, and then it be poured out until the bottom appears, what will be the

convex surface and solidity of the water left in, and of the empty space.

Prob. 89.—Required the surface and solidity of a solid bounded by eight equilateral triangles each side of which is 8 feet.