



Unlocking the Mystery of The Hebrew Calendar

Winter 2018 - 5778

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חשון / כסלו – “Variable Months”

Month		Days in Month		Days of Rosh Chodesh	
Tishrei – תשרי		30		1	
Cheshvan – חשון		29/30		2	
Kislev – כסלו		29/30		1/2	
Tevet – טבת		29		1/2	
Shevat – שבט		30		1	
Adar I – א' – אדר א'	Adar – אדר	30	29	2	2
Adar II – ב' – אדר ב'		29		2	
Nisan – ניסן		30		1	
Iyar – אייר		29		2	
Sivan – סיון		30		1	
Tamuz – תמוז		29		2	
Av – אב		30		1	
Ellul - אלול		29		2	

Year “Types”

Note: there is no Year with חשון=30 and כסלו=29, because it would achieve the same total number of days annually, and would be redundant.

A.K.A.

* Defective

** Excessive

ח, כ, ש	חשון	כסלו
חסרה Chaseirah Incomplete*	29	29
כסדרה Kesidrah Regular	29	30
שלימה Shleimah Complete**	30	30

Relationship between Molad & Rosh Chodesh

ROSH HASHANAH

is determined by **MOLAD TISHREI**
(with 4 exceptions - Dechiyot)

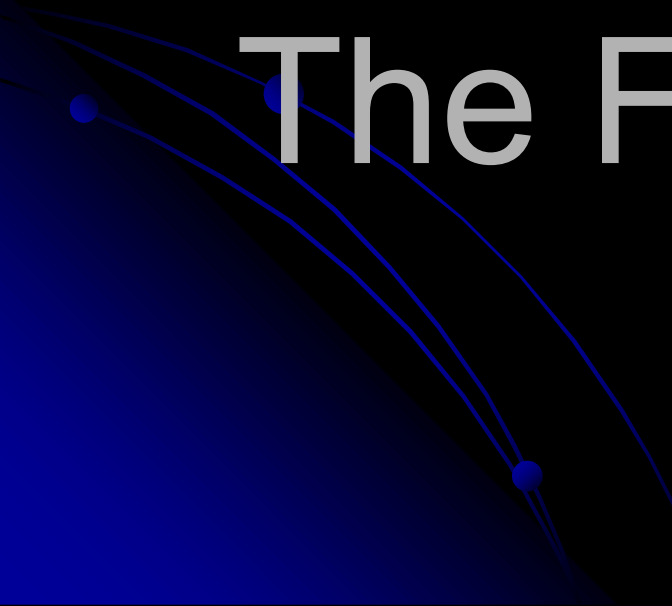
ROSH CHODESH

is determined by the alternating 29-30 day
month cycle

*irrespective of the molad of that
month.*



V. Setting the Holidays: The Four *Dechiyot*



Dechiyot - Postponements

- To ensure that certain holidays do not fall on certain days of the week.
- By shortening / lengthening the year by 1 day.
- Pushing (*Docheh*) RH OFF of MOLAD TISHREI.

1. לא אד"ו ראש

LO AD"U ROSH

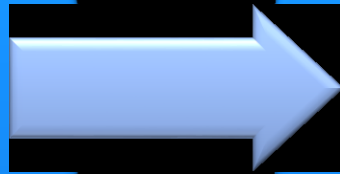
Molad Tishrei

=

1, 4, 6

(Sun, Wed, Fri)

(אד"ו)



RH

postponed
until the next
possible day.

"לא אד"ו ראש"?

RH = Friday ↗

YK on Sunday

➤ Avoid 2 consecutive days without cooking

RH = Wed ↗

YK on Friday

➤ Avoid 2 consecutive days without burial (כבוד המת)

RH = Sun ↗

Hoshana Rabba
on Shabbat

➤ Never cancel the mitzvah of Hakafot with the Aravah.

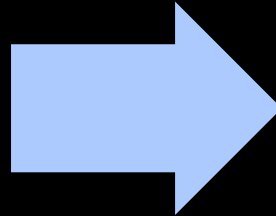
2. מולד זקן בל תדרוש

Molad Zaken

Molad
Tishrei

>

18h / 12pm



Rosh
Hashanah is
postponed to
the next
possible day.

Dechiyot 1 & 2 Together

Molad Tishrei falls on.... RH will be...

1d 15h
Sunday 9am

- **MONDAY**
- לא אד"ו ראש

2d 18h
Monday 12pm

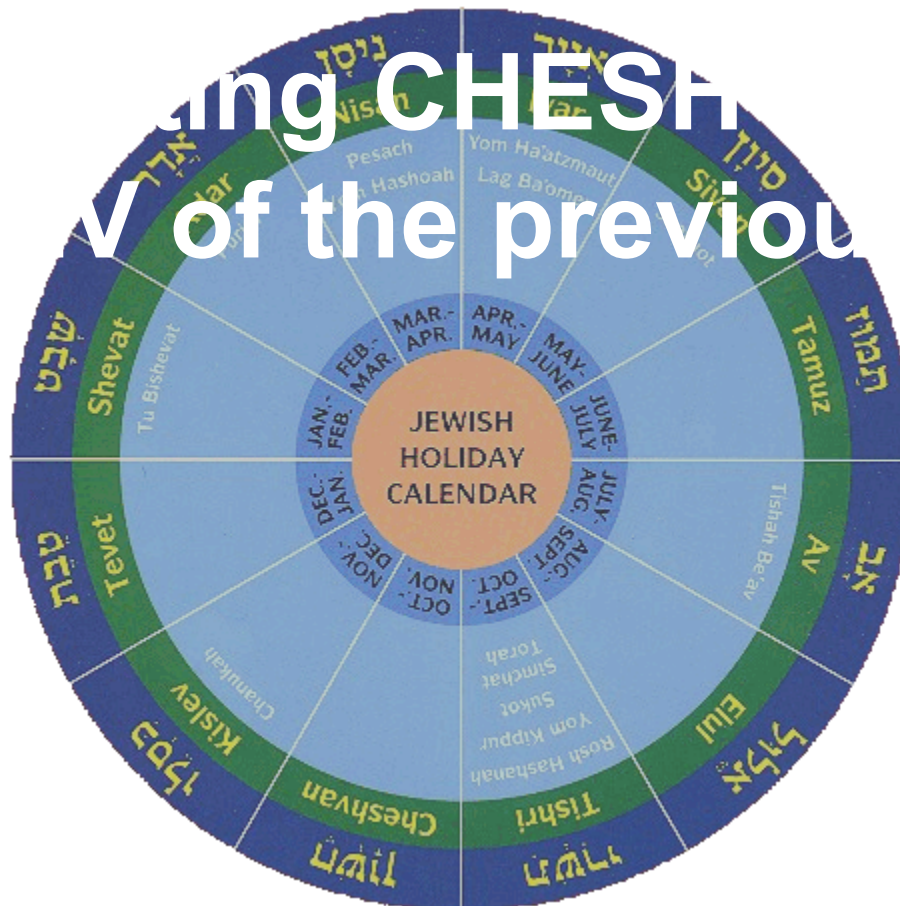
- **TUESDAY**
- מולד זקן

0d 23h
Shabbat 5pm

- **MONDAY**
- מולד זקן + לא אד"ו ראש

The Mechanics of Dechiyot

All Dechiyot of RH are made by
adding CHESHVON &
KISLEV of the previous year



Length of Hebrew Year

Year Type ח, כ, ט	חשון	כסלו	Year Length Regular	Year Length Gravid	How many days does Rosh Hashanah move?	
					Regular	Gravid
חסרה Chaseirah Incomplete	29	29				
כסדרה Kesidrah Regular	29	30				
שלימה Shleimah Complete	30	30				

Length of Hebrew Year

Year Type ח, כ, ט	חשון	כסלו	Year Length Regular	Year Length Gravid	How many days does Rosh Hashanah move?	
					Regular	Gravid
חסרה Chaseirah Incomplete	29	29	353d = 50w 3d	383d =54w 5d		
כסדרה Kesidrah Regular	29	30	354d =50w 4d	384d =54w 6d		
שלימה Shleimah Complete	30	30	355d =50w 5d	385d =55w 0d		

Length of Hebrew Year

Year Type ח, כ, ט	חשון	כסלו	Year Length Regular	Year Length Gravid	How many days does Rosh Hashanah move?	
					Regular	Gravid
חסרה Chaseirah Incomplete	29	29	353d = 50w 3d	383d =54w 5d	3	5
כסדרה Kesidrah Regular	29	30	354d =50w 4d	384d =54w 6d	4	6
שלימה Shleimah Complete	30	30	355d =50w 5d	385d =55w 0d	5	0

Year Type Possibilities

Rosh Hashanah THIS year	Rosh Hashanah NEXT Year		
	Chaseirah 353 (+3)	Kesidrah 354 (+4)	Shleimah 355 (+5)
Mon	Thursday	Friday	Shabbat
Tues	Friday	Shabbat	Sunday
Thurs	Sunday	Monday	Tuesday
Shabbat	Tuesday	Wednesday	Thursday

Rosh Hashanah THIS Leap Year	Rosh Hashanah NEXT Year		
	Chaseirah 383 (+5)	Kesidrah 384 (+6)	Shleimah 385 (+0)
Mon	Shabbat	Sunday	Monday
Tues	Sunday	Monday	Tuesday
Thurs	Tuesday	Wednesday	Thursday
Shabbat	Thursday	Friday	Shabbat

Year Type Possibilities

Rosh Hashanah THIS year	Rosh Hashanah NEXT Year		
	Chaseirah 353 (+3)	Kesidrah 354 (+4)	Shleimah 355 (+5)
Mon	1. Thursday	Friday	2. Shabbat
Tues	Friday	3. Shabbat	Sunday
Thurs	Sunday	4. Monday	5. Tuesday
Shabbat	6. Tuesday	Wednesday	7. Thursday

Rosh Hashanah THIS Leap Year	Rosh Hashanah NEXT Year		
	Chaseirah 383 (+5)	Kesidrah 384 (+6)	Shleimah 385 (+0)
Mon	Shabbat	Sunday	Monday
Tues	Sunday	Monday	Tuesday
Thurs	Tuesday	Wednesday	Thursday
Shabbat	Thursday	Friday	Shabbat

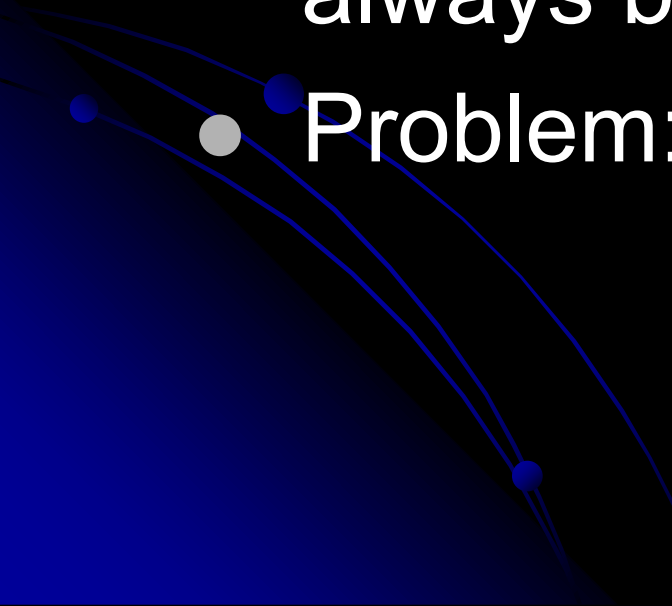
Year Type Possibilities

Rosh Hashanah THIS year	Rosh Hashanah NEXT Year		
	Chaseirah 353 (+3)	Kesidrah 354 (+4)	Shleimah 355 (+5)
Mon	1. Thursday	Friday	2. Shabbat
Tues	Friday	3. Shabbat	Sunday
Thurs	Sunday	4. Monday	5. Tuesday
Shabbat	6. Tuesday	Wednesday	7. Thursday

Rosh Hashanah THIS Leap Year	Rosh Hashanah NEXT Year		
	Chaseirah 383 (+5)	Kesidrah 384 (+6)	Shleimah 385 (+0)
Mon	8. Shabbat	Sunday	9. Monday
Tues	Sunday	10. Monday	Tuesday**
Thurs	11. Tuesday	Wednesday	12. Thursday
Shabbat	13. Thursday	Friday	14. Shabbat

** This never occurs. If RH of a leap year is Tuesday, the year is always *kesidrah*, because the *molad* of the year following is Sunday or before noon on Monday, so there is never a reason to push RH off to Tuesday.

Why Molad Zaken 1

- The new moon isn't visible until 6-12 hours after the Molad.
 - Molad Zaken (18h+) supposedly ensures that the New Moon will always be seen on RH itself.
 - Problem: math doesn't fit!
- 

Why Molad Zaken 2

“The Calendar makers wanted to make sure that no month would begin before the actual setting in of the New Moon (molad)”

- Wolfgang Alexander Shocken, The Calculated Confusion of Calendars (see www.geocities.com/Athens/1584)

Leap Year - Molad Shevat

Molad Tishrei n	3d	21h	68p
+ 4 Month shift	6d	2h	1012p
= Molad Shevat n	3d	0h	0p

⇒ RC Shevat needs to be MONDAY (118 days after RH)
⇒ MOLAD Shevat falls on TUESDAY!!
⇒ Need to add a day.

Leap Year Kesidrah – 384 days

Molad Tishrei n	3d	21h	68p
+ Leap Year Shift	5d	21h	589p
= Molad Tishrei n+1	2d	18h	657p

⇒ Molad Zaken can be postponed as late as 18h 657p
⇒ rounded off to 18h

The Great “Calendar Controversy” of 920 CE

- Year 920CE, R. Aaron ben Meir of Palestine advocated changing the rules of this *dechiya* to **18h 642p**
- R. Saadya Gaon of Babylon fought to preserve the status quo
- Several years of 2 calendars!! (2 days apart!)

3. גטר"ד בפשוטה גרוש

MOLAD גטר"ד Simple Year				
Tuesday	3d	9h	204p	RH Tuesday
+ Tekufah Shift	4d	8h	876p	
Next Molad	7d	18h	0p	Zaken & AD"U RH should be <u>Monday</u>

Rosh Hashanah THIS year	Rosh Hashanah NEXT Year		
	Chaseirah 353 (+3)	Kesidrah 354 (+4)	Shleimah 355 (+5)
Mon	1. Thursday	Friday	2. Shabbat
👉 Tues	Friday	3. Shabbat	Sunday
Thurs	Sunday	4. Monday	5. Tuesday
Shabbat	6. Tuesday	Wednesday	7. Thursday

Not possible! Would require a year of 356 days!

גטר"ד Rule of

When *Molad Tishrei* falls 9h 204p or later on Tuesday of a Simple Year, Rosh Hashanah is postponed from Tuesday to Thursday

4. בט"ו תקפ"ט אחר העיבור עקור מלשרוש

MOLAD AFTER a Leap Year בט"ו תקפ"ט				
Tuesday noon+	3d	18h	0p	Zaken & Ad"u (<u>RH Thursday</u>)
+ Gravid Tekufah Shift	5d	21h	589p	
Next Molad	2d	15h	589p	RH should be <u>Monday</u>

Rosh Hashanah THIS Leap Year	Rosh Hashanah NEXT Year		
	Chaseirah 383 (+5)	Kesidrah 384 (+6)	Shleimah 385 (+0)
Mon	8. Shabbat	Sunday	9. Monday
Tues	Sunday	10. Mon	Tuesday**
☞ Thurs	11. Tuesday	Wednesday	12. Thursday
Shabbat	13. Thursday	Friday	14. Shabbat

Not possible! Would require a year of 382 days!

Rule of בט"ו תקפ"ט

**When *Molad Tishrei*
following a leap year falls on
Monday 15h 589p or later,
Rosh Hashanah is
postponed from Monday to
Tuesday.**

Summary: 4 Dechiyot

**לא אד"ו
ראש**

RH can never fall on Sunday,
Wednesday or Friday

**מולד זקן בל
תדרוש**

When Molad Tishrei falls
18h+ (noon), RH is postponed
to the next available day

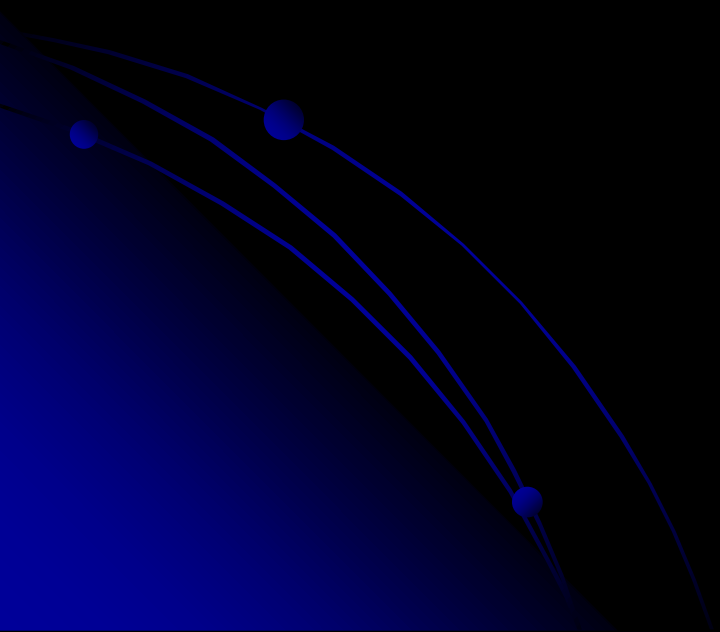
**גמר"ד בפשוטה
גרוע**

When Molad Tishrei introducing a
simple year falls 3d 9h 204p or later,
RH is postponed from Tues to Thurs

**בט"ו תקפ"ט אחר
העיבור עקור
מלשרוש**

When Molad Tishrei following a
gravid year falls 2d 15h 589p, RH is
postponed from Mon to Tues

VI. The קביע (*K'vi'a*) 14 Year Types



Year Type Possibilities

Rosh Hashanah THIS year	Rosh Hashanah NEXT Year		
	Chaseirah 353 (+3)	Kesidrah 354 (+4)	Shleimah 355 (+5)
Mon	1. Thursday	Friday	2. Shabbat
Tues	Friday	3. Shabbat	Sunday
Thurs	Sunday	4. Monday	5. Tuesday
Shabbat	6. Tuesday	Wednesday	7. Thursday

Rosh Hashanah THIS Leap Year	Rosh Hashanah NEXT Year		
	Chaseirah 383 (+5)	Kesidrah 384 (+6)	Shleimah 385 (+0)
Mon	8. Shabbat	Sunday	9. Monday
Tues	Sunday	10. Monday	Tuesday**
Thurs	11. Tuesday	Wednesday	12. Thursday
Shabbat	13. Thursday	Friday	14. Shabbat

** This never occurs. If RH of a leap year is Tuesday, the year is always *kesidrah*, because the *molad* of the year following is Sunday or before noon on Monday, so there is never a reason to push RH off to Tuesday.

14 Year Types

RH THIS year	Rosh Hashanah NEXT Year					
	<u>Chaseirah</u>		<u>Kesidrah</u>		<u>Shleimah</u>	
	<u>Simple</u>	<u>Gravid</u>	<u>Simple</u>	<u>Gravid</u>	<u>Simple</u>	<u>Gravid</u>
Mon	1. Thursday	2. Shabbat	Friday	Sunday	3. Shabbat	4. Monday
Tues	Friday	Sunday	5. Shabbat	6. Monday	Sunday	Tuesday
Thurs	Sunday	7. Tuesday	8. Monday	Wed	9. Tuesday	10. Thurs.
Shabbat	11. Tuesday	12. Thursday	Wed	Friday	13. Thurs.	14. Shabbat

Holiday Dates

Relationship between Pesach & RH	
Fixed Months	Days Remaining
Nisan	15
Iyar	29
Sivan	30
Tamuz	29
Av	30
Ellul	29
Tishrei (RH)	1
Pesach III = RH I	163 days = 23w <u>2d</u>

Relationship between Holidays & Pesach		
Day of Pesach	Letter	1 st day of ...
א	ת	תשעה באב
ב	ש	שבועות
ג	ר	ראש השנה
ד	ק	שמחת תורה (קריאה)
ה	צ	יום צום כפור
ו	פ	פורים
ז	ע	יום העצמאות

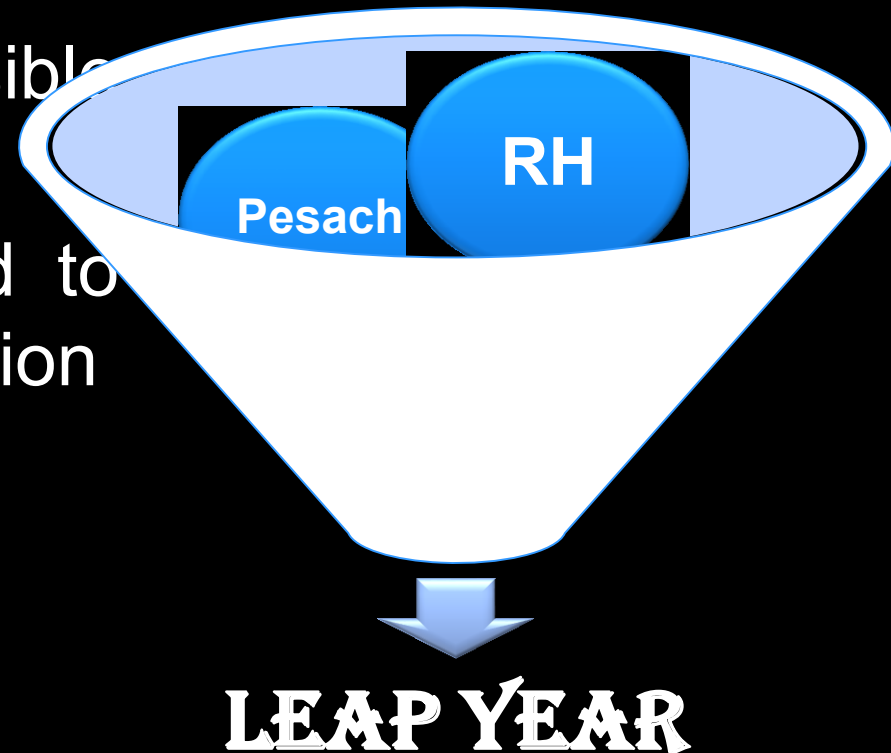
לא אד"ו ראש = לא בד"ו פסח

RH THIS year	Rosh Hashanah NEXT Year					
	<u>Chaseirah</u>		<u>Kesidrah</u>		<u>Shleimah</u>	
	<u>Simple</u>	<u>Gravid</u>	<u>Simple</u>	<u>Gravid</u>	<u>Simple</u>	<u>Gravid</u>
Mon	1. Thursday	2. Shabbat	Friday	Sunday	3. Shabbat	4. Monday
Tues	Friday	Sunday	5. Shabbat	6. Monday	Sunday	Tuesday
Thurs	Sunday	7. Tuesday	8. Monday	Wed	9. Tuesday	10. Thurs.
Shabbat	11. Tuesday	12. Thursday	Wed	Friday	13. Thurs.	14. Shabbat

RH THIS year	1 ST DAY OF PESACH THIS YEAR					
	<u>Chaseirah</u>		<u>Kesidrah</u>		<u>Shleimah</u>	
	<u>Simple</u>	<u>Gravid</u>	<u>Simple</u>	<u>Gravid</u>	<u>Simple</u>	<u>Gravid</u>
Mon	1. Tuesday	2. Thursday	Wed.	Friday	3. Thursday	4. Shabbat
Tues	Wed.	Friday	5. Thursday	6. Shabbat	Friday	Sunday
Thurs	Friday	7. Sunday	8. Shabbat	Monday	9. Sunday	10. Tues.
Shabbat	11. Sunday	12. Tuesday	Monday	Wed.	13. Tues.	14. Thurs.

RH THIS year	1 ST DAY OF PESACH THIS YEAR					
	<u>Chaseirah</u>		<u>Kesidrah</u>		<u>Shleimah</u>	
	<u>Simple</u>	<u>Gravid</u>	<u>Simple</u>	<u>Gravid</u>	<u>Simple</u>	<u>Gravid</u>
Mon	1. Tuesday	2. Thursday	Wed.	Friday	3. Thursday	4. Shabbat
Tues	Wed.	Friday	5. Thursday	6. Shabbat	Friday	Sunday
Thurs	Friday	7. Sunday	8. Shabbat	Monday	9. Sunday	10. Tues.
Shabbat	11. Sunday	12. Tuesday	Monday	Wed.	13. Tues.	14. Thurs.

- 4 Variables with 14 possible configurations
- Only 3 variables needed to determine year configuration



The K'vi'ah (קביעה)

The following three variables define a K'vi'ah. They also tell us if the year is a Simple or Gravid year.

1 st Day RH	ז-א	0-6 (0=Shabbat)
Year Type	ח, ט, י	0 = Chaseirah 1 = Kesidrah 2 = Shleimah
1 st Day Pesach	ז-א	0-6 (0=Shabbat)