Calendar

~ Reasoning · SSC Exams ~

← circled = key tricks!

Calendar questions ask you to find the day of the week for a date. The days repeat in a cycle of 7 — the whole trick is counting **odd days**, the leftover days after removing complete weeks.

① Odd Days — the Basic Idea

Odd days = remainder left when the total number of days is divided by 7 (days beyond complete weeks). Only odd days shift the day of the week — a full week never changes anything.

Ordinary year (365 days) = 52 weeks + **1 day** → **1 odd day**.

Leap year (366 days) = 52 weeks + **2 days** → **2 odd days**.

Worked example — adding up odd days

Find the odd days in a span of **5 ordinary years + 1 leap year** (6 years total).

Step 1 — 5 ordinary years × 1 odd day = 5 odd days.

Step 2 — 1 leap year × 2 odd days = 2 odd days.

Step 3 — total = 5 + 2 = 7 ∴ 7 mod 7 = **0**.

Answer → **0 odd days** — the weekday is unchanged after exactly this span! ✅

✓ This notebook covers **every SSC calendar type:** odd days, the leap-year rule, century odd-day tables, the classical & shortcut code methods, reference-date problems, repeating calendars, and day/weekday counting — each with a solved example.

Tip → only count **odd days**, never total days — any multiple of 7 days changes NOTHING about the weekday.

② Ordinary vs Leap Year — the Rule ÷

Rule

A year is a **LEAP** year if divisible by 4 — **EXCEPT** century years (ending 00), which must be divisible by **400** to be leap. Any other century year stays ordinary, however big.

· Divisible by 4, not a century → Leap · Century year ÷400 exact → Leap · Not divisible by 4 → Ordinary

Worked example — check four years

Which of 1900, 2000, 2024, 2100 are leap years?

1900 — century year, 1900÷400 = 4.75 (not exact) → **NOT leap**.

2000 — century year, 2000÷400 = 5 (exact) → **LEAP**.

2024 — 2024÷4 = 506 (exact), not a century → **LEAP**.

2100 — century year, 2100÷400 = 5.25 (not exact) → **NOT leap**.

Answer → leap years here: **2000 and 2024**. ✅

Try this — quick leap check

1996 → **Leap**	1999 → **Ordinary**	2400 → **Leap**
2200 → **Ordinary**	2028 → **Leap**	1800 → **Ordinary**

Century trap → 1900 & 2100 **look** leap (÷4 works) but are **NOT** — for century years always test ÷400.

③ Odd Days in Centuries

100 years = 76 ordinary + 24 leap → odd days = 76×1 + 24×2 = 124 → 124 mod 7 = **5**. The pattern then **repeats every 400 years**.

Years	100	200	300	400
Odd days	5	3	1	0

Notice → 400 years gives **0** odd days, so the calendar loosely resets every 400 years. This is why 400 is never a leap-fraction trap — it's always leap.

④ Classical Method — Day via Odd Days

Rule

1 January, Year 1 (AD) is taken as a MONDAY — *the fixed reference. Count total odd days from Year 1 up to the target date (using the century table + remaining years + months + date), then read the day off the code below.*

Odd days	0	1	2	3	4	5	6
Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun

Worked example — 26 January 1950 (Republic Day)

Step 1 — years before 1950 = 1949 = 1600 + 300 (1601–1900) + 49 (1901–1949).
Step 2 — odd days: 1600 yrs → 0; 300 yrs → 1 (from table).
Step 3 — in 49 yrs (1901–1949): leap yrs = 12 (1904…1948), ordinary = 37 → odd days = 37+2×12 = 61 → 61 mod 7 = 5.
Step 4 — total = 0+1+5 = 6 → code 6 = **Sunday** = weekday of 1 Jan 1950.
Step 5 — add (26−1)=25 days: 6+25=31 → 31 mod 7 = 3 → code 3.
Answer → 26 January 1950 was a **THURSDAY**. ✅ (matches the real Republic Day!)

*This method is **correct but slow** — the Month-Code shortcut on the next page gives the same answer in one line. Most SSC aspirants use that in the exam.*

*Note → this "Mon=0…Sun=6" code is **only** for this classical method. The shortcut method (next page) uses a different code (Sun=0…Sat=6) — don't mix the two!*

⑤ The Month-Code / Day-Code Method

Formula (the exam shortcut)

Total = Date + Month code + Last 2 digits of year + ⌊Last 2 digits ÷ 4⌋ + Century code.

Then **Total mod 7** gives the Day code below.

Table A — Century Code (repeats every 400 yrs)

1600s	1700s	1800s	1900s	2000s	2100s	2200s	2300s
6	4	2	0	6	4	2	0

Table B — Month Code (Jan/Feb change in a leap year!)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	3	3	6	1	4	6	2	5	0	3	5
leap 6	leap 2	unchanged in a leap year									

Table C — Day Code

0	1	2	3	4	5	6
Sun	Mon	Tue	Wed	Thu	Fri	Sat

Memorise Tables A, B, C cold — every code-method question is then a 10-second sum. Worked examples on the next 2 pages.

Code Method — Worked Examples

15 August 1947 (Independence Day)

Century 1900s = **0**; last 2 digits = 47; ⌊47÷4⌋ = **11**; month code Aug = **2**; date = 15.

Total = 15+2+47+11+0 = **75** → 75 mod 7 = **5**.

Answer → code 5 = **FRIDAY**. ✅

26 January 1950 (cross-check with page 3!)

Century **0**; last 2 digits = 50; ⌊50÷4⌋ = **12**; month code Jan (non-leap) = **0**; date = 26.

Total = 26+0+50+12+0 = **88** → 88 mod 7 = **4**.

Answer → code 4 = **THURSDAY**. ✅ Same as the classical method — both agree!

2 October 1869 (Gandhi Jayanti)

Century 1800s = **2**; last 2 digits = 69; ⌊69÷4⌋ = **17**; month code Oct = **0**; date = 2.

Total = 2+0+69+17+2 = **90** → 90 mod 7 = **6**.

Answer → code 6 = **SATURDAY**. ✅

Try this — 2 June 1953 (Coronation Day)

Century **0**; last2 = 53; ⌊53÷4⌋=13; month code Jun=**4**; date=2. Total = 2+4+53+13+0 = **72** → 72 mod 7 = **2** → **TUESDAY**. ✅

Leap-year check → 29 February 2000: century 2000s=6, last2=00, ⌊0÷4⌋=0, Feb **leap** code=2, date=29. Total=29+2+0+0+6=37→37mod7=2→TUESDAY. ✅ (real fact!)

More Code-Method Practice

1 January 2000 (Y2K)

Century 2000s=**6**; last2=00; ⌊0÷4⌋=0; Jan **leap** (2000 is leap) code=**6**; date=1.

Total = 1+6+0+0+6 = **13** → 13 mod 7 = **6** → **SATURDAY**. ✅

15 April 2024

Century **6**; last2=24; ⌊24÷4⌋=6; month code Apr=**6**; date=15.

Total = 15+6+24+6+6 = **57** → 57 mod 7 = **1** → **MONDAY**. ✅

13 July 2026 — today's date! 😀

Century **6**; last2=26; ⌊26÷4⌋=6; month code Jul=**6**; date=13.

Total = 13+6+26+6+6 = **57** → 57 mod 7 = **1** → **MONDAY**. ✅

Quick-recall gallery

1900s & 2000s pair: codes 0 & 6

Leap Jan/Feb: 6 & 2 (not 0 & 3)

Day code: Sun=0…Sat=6

Formula order: Date+Month+YY+⌊YY/4⌋+Century

Always reduce your grand total to a remainder **0–6** before reading the Day Code — a leftover of 7 or more means you divided wrong.

✓ Practice the formula on 5 random dates daily — it becomes a 10-second mental sum with repetition.

⑥ Find the Day When Another Date Is Known →

Rule

Given one date's weekday, find another's by counting the **net number of days** between them and shifting on the 7-day cycle. Later date → **ADD** odd days. Earlier date → **SUBTRACT** odd days.

Worked example — across a leap year

If **1 January 2024** was a **Monday**, what day was **1 January 2025**?
Step 1 — 2024 is a leap year → 2 odd days between the two Jan-1 dates.
Step 2 — Monday + 2 = Wednesday.
Answer → 1 January 2025 was a **WEDNESDAY**. ✅ (matches the code method!)

Worked example — within the same year

If **10 March** (non-leap year) is a **Sunday**, what day is **25 April** of the same year?
Step 1 — days remaining in March after the 10th = 31−10 = 21; plus 25 days into April = **46 days** gap.
Step 2 — 46 mod 7 = 4 (46 = 42+4).
Step 3 — Sunday + 4 = Thursday.
Answer → 25 April is a **THURSDAY**. ✅

Try this — leap day falls inside the gap

If **5 December 2023** is a **Tuesday**, what day is **5 December 2024**? Since 29 Feb 2024 falls **between** the two dates, the span = 366 days = 2 odd days. Tuesday+2 = **THURSDAY**. ✅

Count days **FORWARD** from the earlier date to the later one — and always check whether a 29 February falls inside the gap before assuming 365 days.

⑦ Repeating Calendar Year 🔁

Rule

A year's calendar repeats only when **(a)** both years are the same type (leap↔leap, ordinary↔ordinary) and **(b)** the odd days elapsed between them are an exact multiple of 7.
· **6-yr gap** works with exactly 1 leap year between (5×1+1×2=7). · **11-yr gap** works with exactly 3 leap years between (8×1+3×2=14). · **28-yr gap** is the safe universal cycle (21×1+7×2=35).

Worked example — verify 2009 & 2015

Step 1 — years 2009–2014 contain exactly **1** leap year (2012).
Step 2 — odd days = 5×1 + 1×2 = 7 → 7 mod 7 = **0**.
Answer → 2009 and 2015 have the **IDENTICAL calendar** — both start on a Thursday! ✅

Verified repeat-pairs

Pair	Gap	Leap yrs between	1 Jan is
2009 & 2015	6 yrs	1 (2012)	**Thursday**
2003 & 2014	11 yrs	3 (04,08,12)	**Wednesday**
1988 & 2016	28 yrs	7	**Friday**

💡 Century trap → near 1900/2100 the missing leap year breaks the usual 6/11/28 pattern — always re-check with the leap-year rule first.

⑧ Days Between Two Dates 𝍸

Rule

Count: days remaining in the start month + full days of every in-between month + the date-number in the end month. Read the question carefully — "between" usually **excludes** the start date.

Worked example

Days from 15 January to 10 March of a non-leap year (excluding 15 Jan, including 10 Mar)?

Step 1 — remaining days in Jan after 15th = 31−15 = 16.

Step 2 — full February = 28.

Step 3 — days into March = 10.

Answer → 16+28+10 = **54 days**. ✅

⑨ Counting a Weekday in a Period 𝍸

In any 28 days, EVERY weekday occurs exactly 4 times (28 = 4×7). Extra days beyond a multiple of 7 repeat the **first few weekdays** of that period one more time.

A month has **30 days**; the 1st is a **Wednesday**. How many Mondays & Wednesdays does it have?

Step 1 — 30 = 4×7 + 2 extra days.

Step 2 — the extra 2 days repeat the first 2 weekdays of the month: **Wed & Thu** occur 5 times; every other day occurs 4 times.

Answer → Mondays = **4**, Wednesdays = **5**. ✅

Try this → a non-leap year (365 days) starts on a Tuesday — which weekday occurs 53 times?
365=52×7+1 extra → the extra day repeats the FIRST weekday → **Tuesday** occurs 53 times.

Traps, Master Table & Quick Revision

1→ Century years need **÷400**, not just ÷4, to be leap — the #1 SSC trap.

2→ In the code method, a leap year's Jan/Feb use the **special codes 6 & 2** — not the ordinary 0 & 3.

3→ **Endpoint counting** — check whether the question wants dates included or excluded before counting days.

4→ Repeating-calendar questions need leap↔leap and ordinary↔ordinary — a jump across an odd leap-count will **NOT** repeat.

5→ Always reduce your final total to **0–6** before reading the day code — never leave a leftover multiple of 7.

Under time pressure, the **Month-Code method (Section ⑤)** is fastest — memorise Tables A, B, C cold.

Quick Facts Gallery — one-glance revision

Ordinary year: 1 odd day

Leap year: 2 odd days

100/200/300/400 yrs: 5/3/1/0

Century codes: 1900s=0, 2000s=6

Day code: Sun=0…Sat=6

28 days: every weekday exactly 4 times

Leap Jan/Feb code: 6 & 2

Safe repeat gap: 28 years

Exercise — Test Yourself

Solve every question on paper first, then check the Answer Key on the next page.

Q1. If 1 Jan 2023 was Sunday, what day was 1 Jan 2024?
(1) Sunday (2) Monday (3) Tuesday (4) Saturday

Q2. How many odd days are there in 400 years?
(1) 1 (2) 0 (3) 5 (4) 3

Q3. Which of these is a leap year?
(1) 1900 (2) 2100 (3) 2400 (4) 1800

Q4. Day of the week on 15 August 1947?
(1) Thursday (2) Friday (3) Saturday (4) Wednesday

Q5. Day of the week on 26 January 1950?
(1) Wednesday (2) Thursday (3) Friday (4) Sunday

Q6. Using the code method, find the day for 2 October 1869.
(1) Friday (2) Sunday (3) Saturday (4) Monday

Q7. If 10 March (non-leap yr) is Sunday, what day is 25 April?
(1) Wednesday (2) Thursday (3) Friday (4) Tuesday

Q8. Which pair of years has the same calendar?
(1) 2009 & 2015 (2) 2009 & 2014 (3) 2009 & 2013 (4) 2009 & 2016

Q9. Calendar of 2003 repeats (11-yr gap) in which year?
(1) 2011 (2) 2013 (3) 2014 (4) 2017

Q10. Days from 15 Jan to 10 Mar (non-leap yr, excl. 15 Jan, incl. 10 Mar)?
(1) 52 (2) 53 (3) 54 (4) 55

Q11. A 30-day month starts on Wednesday. How many Mondays?
(1) 4 (2) 5 (3) 3 (4) 6

Q12. Day-code index 5 (Sun=0…) corresponds to?
(1) Thursday (2) Friday (3) Saturday (4) Wednesday

✓ Write out the code-method sum for every date question — then flip the page to check.

✅ Answer Key

Q1 → **Monday** — 2023 is ordinary → 1 odd day → Sunday+1=**Monday**.

Q2 → **0** — 400 years always give 0 odd days (from the century table).

Q3 → **2400** — 2400÷400=6 exact; 1900, 2100, 1800 all fail ÷400.

Q4 → **Friday** — code sum 15+2+47+11+0=75→75mod7=5=**Friday**.

Q5 → **Thursday** — code sum 26+0+50+12+0=88→88mod7=4=**Thursday**.

Q6 → **Saturday** — code sum 2+0+69+17+2=90→90mod7=6=**Saturday**.

Q7 → **Thursday** — gap=21+25=46 days→46mod7=4→Sunday+4=**Thursday**.

Q8 → **2009 & 2015** — 6-yr gap with exactly 1 leap year (2012) between → odd days=7≡0.

Q9 → **2014** — 11-yr gap with exactly 3 leap years (04,08,12) between → odd days=14≡0.

Q10 → **54** — 16 (Jan) + 28 (Feb) + 10 (Mar) = **54 days**.

Q11 → **4** — 30=4×7+2; extra days repeat Wed & Thu (5 times each); Monday stays at **4**.

Q12 → **Friday** — Day code: Sun=0,Mon=1,Tue=2,Wed=3,Thu=4,**Fri=5**,Sat=6.

Score yourself

10–12 correct → **excellent**, Calendar is your strength! 6–9 → **good**, revisit pages 4–7. Below 6 → **redo** the odd-days basics on pages 1–3 slowly.

☆ Count the odd days, crack any calendar! ☆