GATE

ALL BRANCHES

GENERAL APTITUDE

Quantitative Aptitude

Lecture No: 13

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TOPICS TO BE COVERED

1. More on Calendar
2. Understanding Concept of Clock
3. Use of Relative Speed in the topic
4. Questionnaire

CALENDAR REPEATS

2000 ⇒ 0

31st Dec, 2000 ⇒ Sun

−6

1999

18th Dec, 2000

1 odd days

Monday

1900 ⇒ 1

1999 ⇒ 5 + 3

99 ⇒ 4

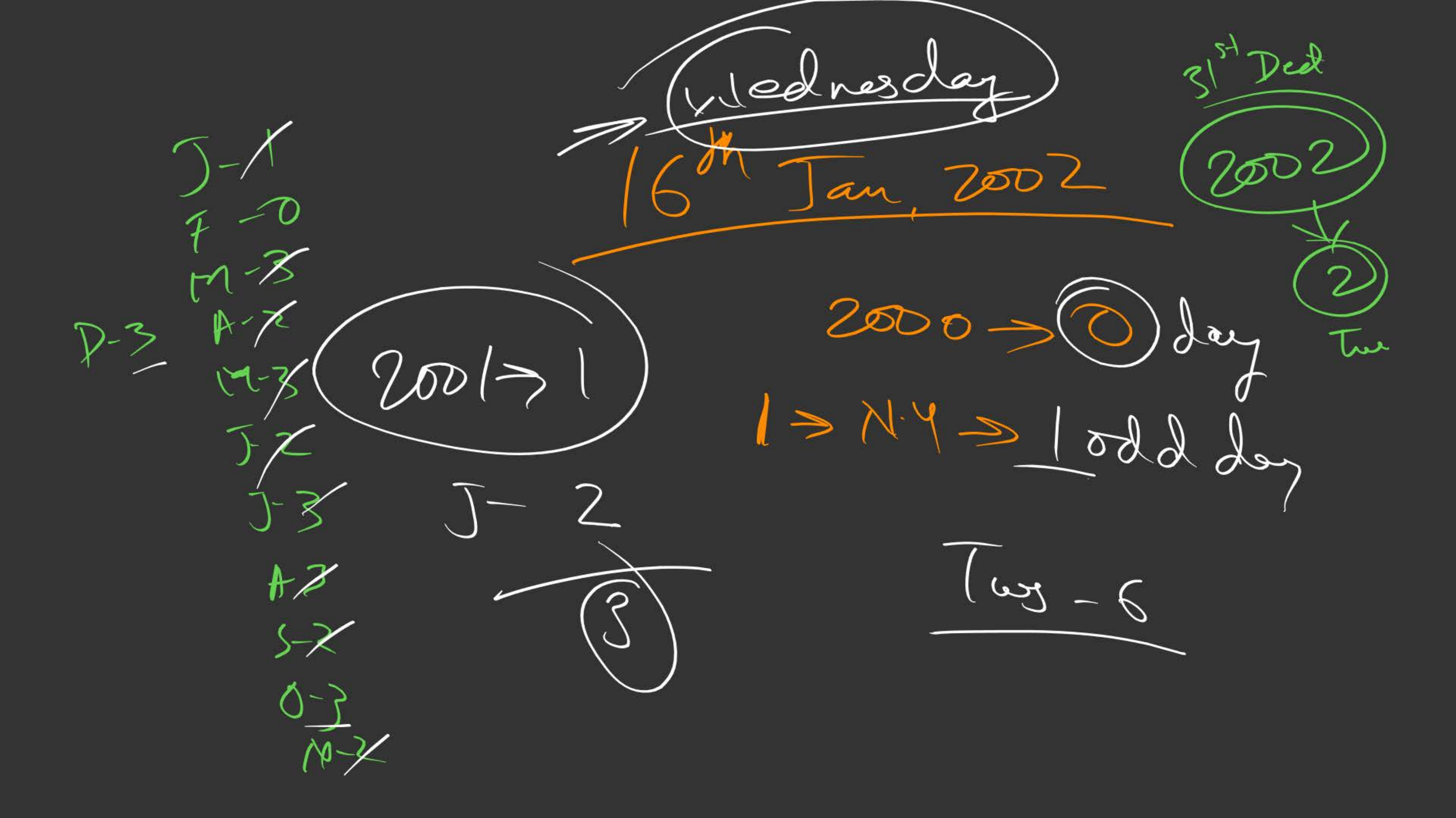
24 | 75

98 | 75

6 | 5

J-2 F-1 M-3 A-2 M-3 J-2 J-3 A-2 S-2 O-2 N-2 D-4

+ 3


Wednesday
16th Jan, 2002
31st Dec
2002
2
Tue
2001 → 1
J - 1
F - 0
M - 3
A - 1
M - 3
J - 1
J - 3
A - 2
S - 1
O - 3
N - 1
D - 3
J - 2
3
2000 → 0 day
1 → N·Y → 1 odd day
Tue - 6

Q. When does 2011 calendar repeats ?

2022

2017 → 1

2018 → 1

2019 → 1

2020 → 2

2021 → 1

2011 → 1

2012 → 2

2013 → 1

2014 → 1

2015 → 1

2016 → 2

Q. 2005 calendar is same as which of the given years?

A. 2009

B. 2016

C. 2011

D. 2015

2006 - 1

2007 - 1

2008 - 2

2009 - 1

2010 - 1

Q. When does 2012 calendar repeats ?

+28

2040

Direct way:

2005
+6
2011

2023
2032

2004
+28
2032

2016
+28
2044

L.Y. → 28 yrs

N.Y → 6 yrs

N.Y → 11 years

N.Y. → 11 years

L.Y. → 28 yrs

2017
+6
2023

CONDITIONAL QUESTIONS

100 → 5 Fri ✓

200 — 3 Wed ✓

300 — 1 Mon ✓

400 — 0 days ✓

800 days

Tue Thu Sat

11 days

11) 800 (

Q. Mahatma Gandhi was born on 2nd October 1869. What was the week Day?

A. Monday

B. Thursday

C. Tuesday

D. Saturday

Q. The day of the March 16th of any year is the same day of the week as the corresponding date in which month of the same year?

Assignment

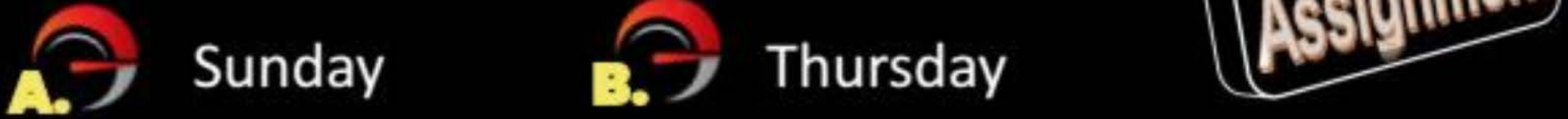
A. November

B. July

C. September

D. April

Q. If January 1st 1992 was a Wednesday. What day of the week was January 1st 2003?



A. Sunday

B. Thursday

C. Friday

D. Wednesday

Clock

Relative Speed

Opp (+)

Same (−)

Relative Speed:

Minimum Hands (N)

2

H. H.

M. H.

Hands

2 Hands

H.H M.H.

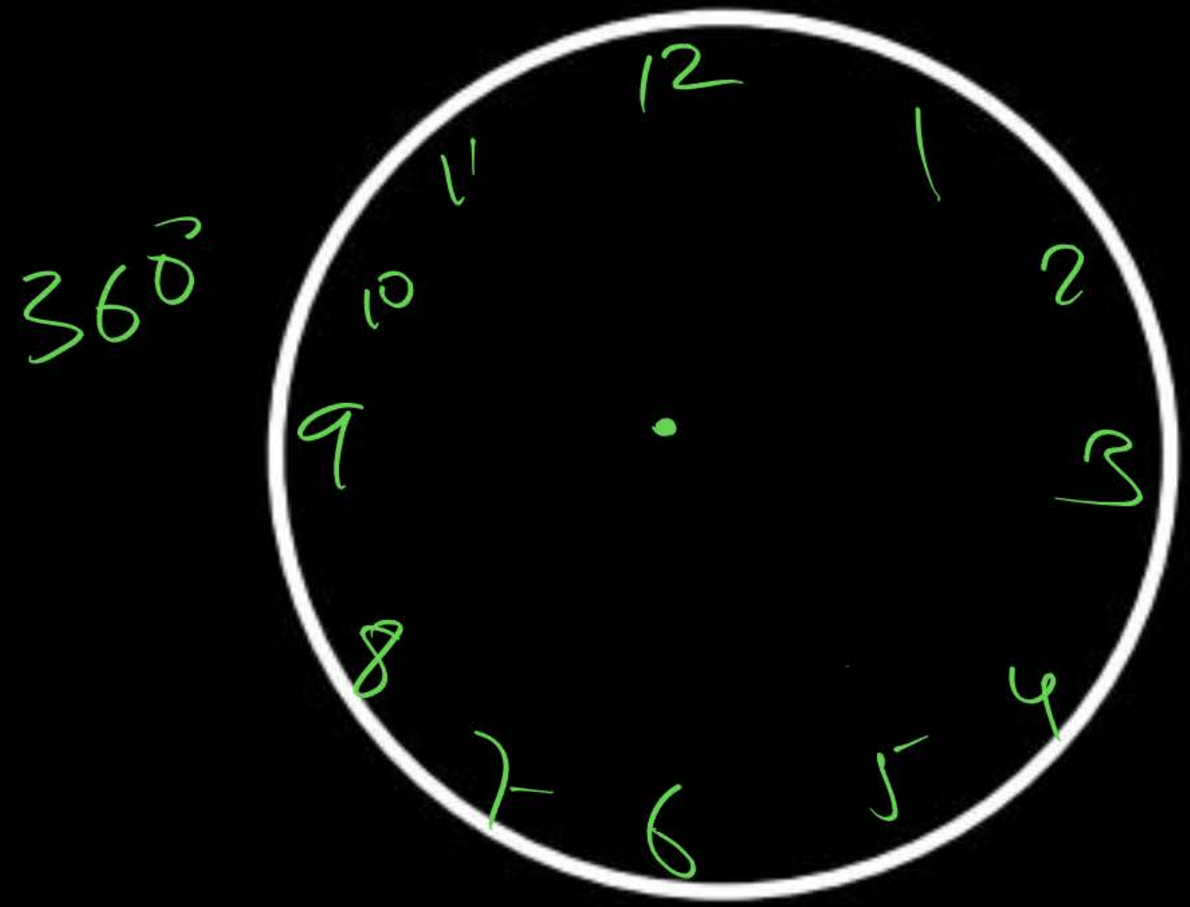
- **Movement**

Same

Relative Speed?

Subtract

Dial of a CLOCK:



Dial of a CLOCK:

$$\frac{360^\circ}{12} = 30^\circ$$

$$M.H = \frac{30^\circ}{5} = 6^\circ/\text{min}$$

$$H.H. = \frac{30^\circ}{60} = \frac{1}{2}^\circ/\text{min}$$

$$30 = 0.5^\circ/\text{m}$$

NOTE:

R.S. = 5.5°/min

- ✓ Minute Hand Covers 30° in 5 minutes 30°/5 =

  6°/min.

- ✓ Hour Hand Covers 30° in 60 minutes 30°/60

  = ½ ° / min

  or

  0.5°/min

RELATIVE SPEED

HOUR HAND & MINUTE HAND

= 5.5° / Minute

1. Time → Angle
2. Angle
3. Gain / Lose

Question Pattern:

1. Time ⇒ Angle?

2. Angle ⇒ Time?

3. Gain / Loss

TIME (given) — Angle ?

4:00

120°

7:00

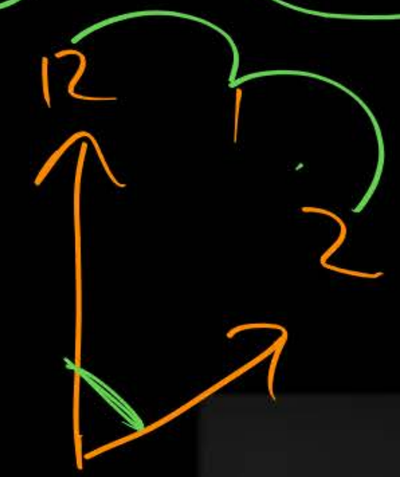
210°

60°

2:00

270°

9:00



Random:

10:45 → 52.5°

10 ⇒ 300

45 × 5.5 ⇒ 247.5°

52.5°

9:15 ⇒ 187.5° e

9 → 270° e

15 × 5.5 ⇒ 82.5° e

(Diff) 187.5°

Q.

5:30 → 15°

345°

5 → 150°

30 × 5.5 → 165°

15°

Q.

352.5°

3:15 → 7.5°

3 ⇒ 90°

15 × 5.5 ⇒ 82.5°

7.5°

Q.

4:40 → 180° ←

4 ⇒ 120°

40 × 5·5 ⇒ 220°

100°

260°

Q. At 9:45, the two hands of a clock make an angle of?

A. 60°

B. 45°

C. 33⅓°

D. 22½°

$9 \rightarrow 270^\circ$

$45 \times 5.5 \rightarrow 247.5$

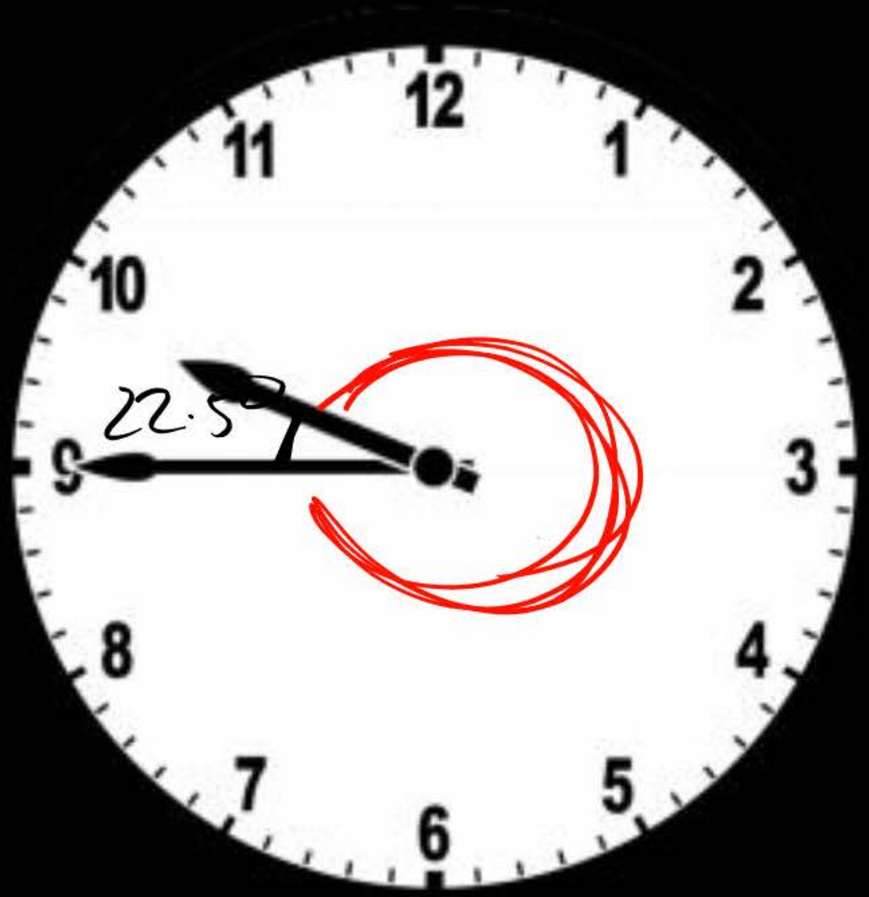
22.5°

337.5°

22.5°

$360 - 22.5^\circ$

$= 337.5^\circ$



Angle Given: Time?

0° or Coincide:

12 hrs = 11 times

24 hrs = 22 times

180° or Opposite to each other:

2 times

12 hrs = 11 times

24 hrs = 22 times

0° & 180°

90° or Right angle:

Any degree except 0° & 180°

12 hours = 22 times

24 hours = 44 times

Q. In between 2 O' clock and 3 O' clock at what time the hands of clock form 90°?

$2:27\frac{3}{11}$

$\frac{3}{11} \times 60$

$= \frac{180}{11}$

$= 16\frac{4}{11}$ sec

$\frac{150^\circ \times 2}{5.5 \times 2} = \frac{300}{11}$

$= 27\frac{3}{11}$ min

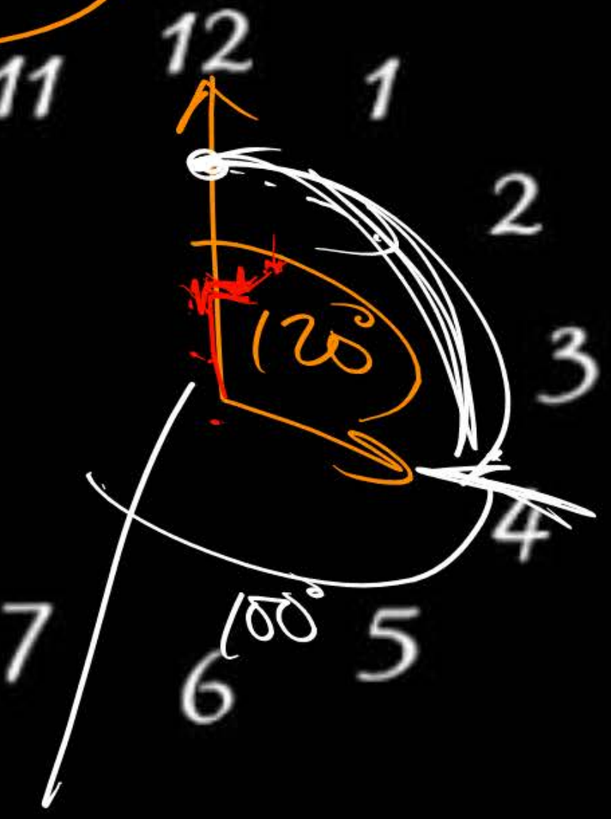
Q. In between 4 O' clock and 5 O' clock at what time the hands of clock form 100°?

$4:03\frac{7}{11}$

$4:40$

$$\frac{20^\circ}{5.5} = \frac{40}{11} = 3\frac{7}{11}\text{ min}$$

$$\frac{220^\circ}{5.5} = \frac{440}{11} = 40$$



Q. In between 6 O' clock and 7 O' clock at what time the hands of clock form 60°?

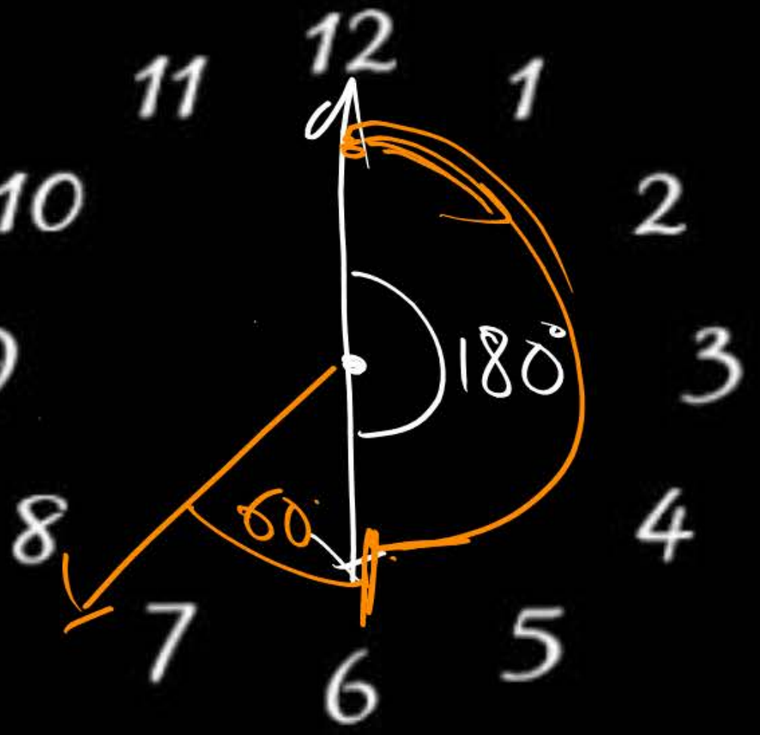
$6:21\frac{9}{11}$

$6:43\frac{7}{11}$

$$\frac{120^\circ}{5.5} = \frac{240}{11}$$

$$= 21\frac{9}{11} \text{ min}$$

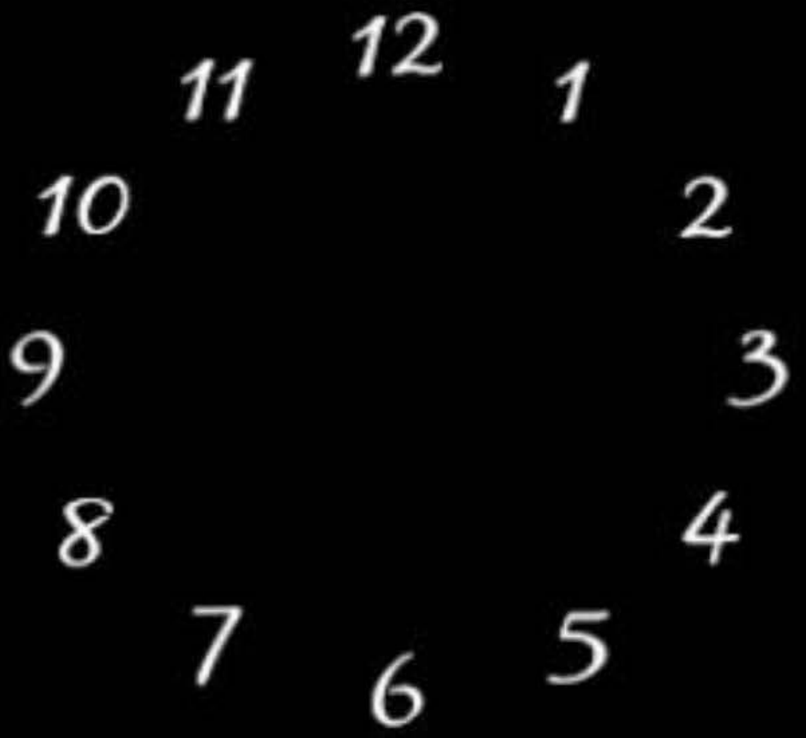
$$\frac{240^\circ}{5.5} = \frac{480}{11} = 43\frac{7}{11} \text{ min}$$



2 Answers

Assignment

Q. In between 1 O' clock and 2 O' clock at what time the hands of clock form 100°?



Thank You!