Clocks and Calendars

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Placement for All.. All for Placement

This Video Completely covers the problems on"Clocks and Calendars" which is more than sufficient for all kind of placement Exams eg: TCS/WIPRO/AMCAT/ELITMUS/CoCubes and all other placement Exams.

Clocks and Calendars by: Pratik Shrivastava(10 years of industry experience and best Aptitude trainer)

Clocks and Calendars

Concept :

Minute hand / Second hand / Hour hand

1. In 60 min minute hand will cover 360 degree. So in 1 min 360/60 = 6 degree
2. Angle traced by hour hand in 12 hrs= 360 degree
3. In 1 hr Minute hand and hour hand will coincide for 1 time.
4. In 12hr Minute hand and hour hand will coincide for 11 time.
5. In 24hr Minute hand and hour hand will coincide for 22 time.
6. Right Angle (90 degree) in an hour = 2times
7. Right Angle (90 degree) in 12 hour = 22times
8. Right Angle (90 degree) in 24 hour = 44times
9. Straight line (180 degree) in an hour = 2times
10. Straight line (180 degree) in 12 hour = 11times
11. Straight line (180 degree) in 24 hour = 22times

Clocks and Calendars

Concept :

Minute hand / Second hand / Hour hand [TCS NQT 2020]

1. In 60 min minute hand will cover 360 degree. So in 1 min 360/60 = 6 degree
2. Angle traced by hour hand in 12 hrs= 360 degree, 1 hr: $\frac{360}{12} = 30^\circ$
3. In 1 hr Minute hand and hour hand will coincide for 1 time.
4. In 12hr Minute hand and hour hand will coincide for 11 time.
5. In 24hr Minute hand and hour hand will coincide for 22 time.
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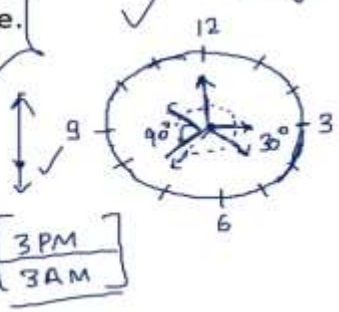


Clocks and Calendars

Concept based on Angles:

Internal Angle and External Angles

$$\frac{11}{2}M = 30h \pm \theta$$

formula

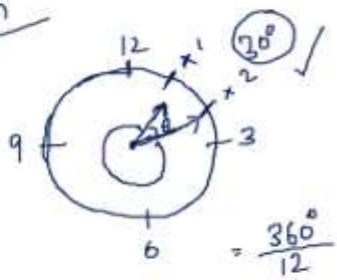
Example : What is the angle when time is 1:10PM

1hr 10min

$$\frac{11}{2} * 10 = 30 * 1 \pm \theta$$

$$55 - 30 = \theta$$

$$\theta = 25\ degree.$$



$$\frac{11}{2}M = 30h \pm \theta$$

$$\frac{11}{2} \times 10 = 30 \times 1 \pm \theta$$

$$55 - 30 = \theta$$

$$25° = \theta$$

$$= \frac{360°}{12} = 30°$$

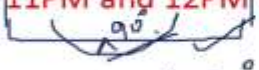
$360° - 25° = 335°$

Clocks and Calendars

Concept based on Angles:

Q1) In between 11PM and 12PM when there will be a 90 degree angle.

Solutions:



$\theta = 90°$

$h = 11$

$$\frac{11}{2}M = 30h \pm \theta$$

$$\frac{11}{2}M = 30 \times 11 \pm 90°$$

$$\frac{11}{2}M = 330 - 90°$$

$$\frac{11}{2}M = 240$$

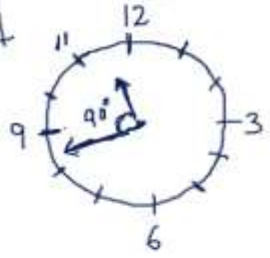
$$11M = 480 \quad M = \frac{480}{11} = 43\frac{7}{11}\ min$$

$11 : 45$

11hrs $43\frac{7}{11}$ min

very good

11hrs $43\frac{7}{11}$ min



11) 480 (43
44
40
33
7

11) 840 (76
77
70
66
4

$\frac{11}{2}M = 420$

$11M = 840 \Rightarrow M = \frac{840}{11} \Rightarrow 76\ min$

11hrs + 1hr + 16 = 12hr 16min

Clocks and Calendars

Q2) what is the angle between the two needles if it is just 12.30 minutes in the pratik's clock.?

a) 180degree b)165degree c)167.5 degree d) can not be determined.

Solution:

(b) 165°

T = 12:30M

h = 12

M = 30

$11 \times 15 = 165$

$$\frac{11}{2}M = 30h \pm \theta$$

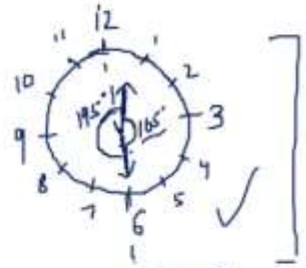
$$\frac{11}{2} \times 30 = 30 \times 12 \pm \theta$$

$$165 = 360 \pm \theta$$

$$\theta = 360 - 165 = 195°$$

$\theta = 195°$

$360° - 195° = 165°$



$< 180°$

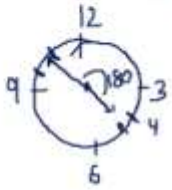
Clocks and Calendars

Q3. At what time between 4 and 5 o'clock will the hands of a watch point in opposite directions?

A) 54 past 4 B) (53 + 7/11) past 4

C) (54 + 8/11) past 4 D) (54 + 6/11) past 4

Solution:



$\theta = 180^\circ$

$h = 4$

$M = 54\frac{6}{11}$ ✓

$\frac{11}{2}M = 30h \pm \theta$

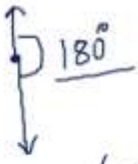
$\frac{11}{2}M = 30 \times 4 \pm 180^\circ$

$\frac{11}{2}M = 120 + 180^\circ$

$\frac{11}{2}M = 300^\circ$

$11M = 600$

$M = \frac{600}{11}$



$11\overline{)600}\,(54$

55

50

44

6

$54\frac{6}{11}$ past 4 ✓

Clocks and Calendars

Q4. At what time between 2 and 3 o'clock will the hands of a clock be together?

A) (9 + 10/11) min past 2 B) (10 + 10/11) min past 2

C) (11 + 10/11) min past 2 D) (12 + 10/11) min past 2

Solution:

$\frac{11}{2}M = 30h \pm \theta$

$\frac{11}{2} \times M = 30 \times 2 \pm 0^\circ$

$\frac{11}{2}M = 60$

$M = \frac{120}{11}$

$11\overline{)120}\,(10$

110

10

$10\frac{10}{11}$ min past 2

Clocks and Calendars

Concept based on Mirror Images:

Q5. what is the mirror image of 1:35.

a)10:25 b)11:15 c)12:15 d)10:20

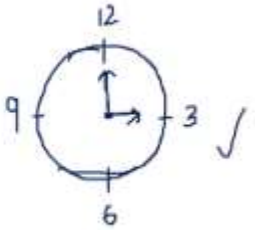
Solution:

Time = 01:35

✓ 12:00 or 11:60

= 11:60 − 01:35

= 10:25 ✓



✓

12:00 + 03:00

= 09:00 ✓

Q6. what is the mirror image of 6:45.

a)5:15 b)11:15 c)12:15 d)10:20

Solution:

T = 06:45

= 11:60 − 06:45

= 05:15 ✓

Clocks and Calendars

Q7. London time is five and half hours behind Delhi time. What time is it in London if it is 02:35 in Delhi.

a)07:05 b)08:05 c)21:05 d)21:35

Solution:

-5:30 ✓ 02:35 ✓

London = 21:05 ↑
INDIA = 02:35

(a) 07:05
5:30
12:35

(b) ✗ 08:05
5:30
01:35

21:05
09:05
05:30
14:35
02:35 ✓

Clocks and Calendars

Q8. A clock is started at noon, By 10minutes past 5, the hour hand has turned through.

a)155 degree b)145 degree c)160 degree d)150degree [TCS NQT 2020]

Solution:

12:00 PM – 5:00PM
5:10

12 hours → 360° [hour hand]

1 hour → $\frac{360}{12} = 30°$ ✓

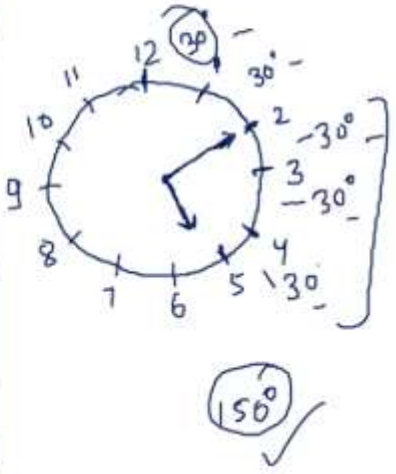
60min → 30°

1min = $\frac{30°}{60} = \frac{1}{2}°$

10 min = $\frac{1}{2} \times 10 = 5°$

12-5
5 hrs
5×30° = 150° ✓

150° – 5hr
5 – 10min
155°



150° ✓

Clocks and Calendars

Concepts:

Week in a day and code:

Monday – 1

Tuesday – 2

Wednesday – 3

Thursday – 4

Friday – 5

Saturday – 6

Sunday – 7/0

* A leap year has 366days and it will be divisible completely by 4.

Clocks and Calendars

Concepts:

Week in a day and code:

- Monday – 1
- Tuesday – 2
- Wednesday – 3
- Thursday – 4
- Friday – 5
- Saturday – 6
- Sunday – 7/0

Remainder = 1

2020 / 4 = 505 : leap year → feb ⇒ 29 days

General year = 365 days

Leap year = 366 days

[2020]

* A leap year has 366days and it will be divisible completely by 4.

Clocks and Calendars

Q9. if Today is Tuesday then what will be the day after 66 days

a. Monday b. Saturday c. Wednesday d.Friday

Solution:

Tuesday = 2 3 4 5

+3

5 → friday

T W T F

66/7 = 7) 66 (9
63
3 - Remainder

Q If today is friday, after 39 days:

F S S M T

Tuesday 7) 39 (5
35
4R

Clocks and Calendars

code for Month

- January - 0
- February - 3
- March -3
- April - 6
- May - 1
- June - 4
- July - 6
- August - 2
- September - 5
- October – 0
- November – 3
- December - 5

0336
1462
5035

remember

Clocks and Calendars

Lets learn to calculate the day if asked in between(1900-1999)

Q10. find the day – 27th January 1951.

Solution:

{Date +Month + Year + Leap Year } / 7

Normal Year = 365 days and Leap year= 366 (Leap year should be divided by 4)

Step1 : divide 51/4 = 12(quotient) that means 12 leap year.

Step2: date(27) + month(0) + year -last two digit(51) +12 = 90/7 = 6

6 means Saturday.

$\Rightarrow [27 + 0 + 51 + 12] / 7$

$90 / 7 \Rightarrow$

R=6

M-1 T-4
T-2 F-5
W-3 S-6

Clocks and Calendars

Lets learn to calculate the day if asked in between(1900-1999)

Q11. What was the day on 15th august 1947 ?

A) Friday B) Saturday C) Sunday D) Thursday

Solution:

$\Rightarrow$ [Date + Month + Year + Leap year] / 7

$\Rightarrow [15 + 2 + 47 + 11] / 7$

$= 75 / 7$

R=5 Friday

M-1
T-2
W-3
T-4
F-5

Clocks and Calendars

Lets learn to calculate the day if asked in between(2000-2099)

Q12. find the day – 20th September 2019

Solution:

{Date +Month + Year + Leap Year } / 7

Normal Year = 365 days and Leap year= 366 (Leap year should be divided by 4)

Step1 : whenever year is more then 2000 subtract 1900 from that.(2019-1900=119)

Sterp2: divide 119/4 = 29(quotient) that means 29 leap year.

Step2: date(20) + month(5) + 119 +29 = 173/7 = 5.

5 means friday.

$= [20 + 5 + 119 + 29] / 7$

$173 / 7$

Clocks and Calendars

Lets learn to calculate the day if asked in between(2000-2099)

Q13. find the day – 19th may 2016

a. Monday b. Thursday c.Friday d.Saturday

Solution:

19th may 2016

→ [Date + Month + year + leap year] / 7

[19 + 1 + 116 + 29] / 7

= [115 + 50] / 7

= 165 / 7 ⇒ 23 Remainder = 4

M-1
T-2
W-3
T

2016
1900
116

4) 116 (29
8
36

Clocks and Calendars

Q14. If 10th march of a month is Monday then in the same year 15th October will be which day?

a.Monday b.Tuesday c.Wednesday d.Friday

Solution:

10th March → Monday

days

10th – March – 31st march ⇒ 21

April → 30

May → 31

June → 30

July → 31

Aug – 31

Sept – 30

Oct – 15

219 days

days / 7

M-1
T-2

7) 219 (31
21
9
7

2 Remainder