

GENERAL KNOWLEDGE**Indian Standard Time(IST)**

- The Indian Standard Time is calculated from 82°30'E meridian(Indian Standard Meridian) passing through Mirzapur. Therefore, IST is plus 5.30 hours from the GMT.

The standard meridian of India passes through 5 states

- Uttar Pradesh,
- Madhya Pradesh,
- Chattisgarh,
- Orissa,
- Andhra Pradesh

Issues of having a single Time Zone:

- India stretches 3,000km from east to west, spanning roughly around 30 degrees longitude with a two-hour difference in mean solar times. That means the sun rises nearly two hours earlier in the east of India than in the far west.
- The sun rises and sets earlier there than the official working hours, and the states in the northeast lose on the vital daylight.
- Hours of productivity in the eastern region is reduced because the rising and setting of the sun impact our body clocks or circadian rhythm. As it gets darker in the evening, the body starts to produce the sleep hormone melatonin.
- Researchers at the National Physical Laboratory said the single time zone was “badly affecting lives” as the sun rises and sets much earlier than official working hours.
- People in the east start using their lights earlier in the day and hence use more electricity.
- In winters, the problem was said to be worse as the sun set so early that more electricity was consumed “to keep life active”.

Benefits of having two Time Zones in India

- The research paper by National Physical Laboratory establishes that India's potential savings in energy consumption could be around 20 million kWh a year if it follows two time zones as it helps in the usage of many daylight hours, which are now being wasted in the eastern region.
- Synchronises sunrise and sunset timings with office hours. People will be able to work better and plan better, according to natural cycles.
- We would have healthier and happier people who adhere to their circadian rhythm. Even now, unofficially, the tea gardens of Assam have been following 'Chaibagaan time' which is one hour ahead of the IST.
- A reduction in energy consumption will cut down India's [carbon footprint](#). Thus boosting India's resolve to fight climate change.

Problems of having two time zones:

- The possibilities of rail accidents would increase because of the two Time zones. Railway signals are not fully automated, and many routes have single tracks.
- Resetting clocks with each crossing of the time zone.
- The overlap between office timings reduces if there are two time zones. Important sectors like [banks](#), industries and MNCs would face difficulties in adjusting to the new time zones.
- The marking of the dividing line of the two zones would be a problem.
- Two time zones can have adverse political consequences as India apart from getting divided on the lines of religion, caste, race, language, etc, now will get divided on the lines of Time Zones.

MCQ

- The Standard Meridian of India is
 (A) $88\frac{1}{2}^{\circ}\text{E}$ (B) $86\frac{1}{2}^{\circ}\text{E}$ (C) $84\frac{1}{2}^{\circ}\text{E}$ (D) $82\frac{1}{2}^{\circ}\text{E}$
- If it is 10:00 am IST, then what would be the local time at shilong on 92 degree East longitude ?
 (A) 9:38 am (B) 10:38 am (C) 10:22 am (D) 9:22 am
- Which of the following cities is closest to IST (Indian Standard Time) meridian ?
 (A) Rewa (B) Sagar (C) Ujjain (D) Hoshangabad
- How many hours of time difference will be there between the most western village of gujarat and the most Eastern village of Arunachal Pradesh , Walong ?
 (A) One hours (B) Two hours (C) Three hours (D) $\frac{1}{2}$ hours
- When there is midnight at IST meridian, a place observes 6 am the meridian on which the said place is located is
 (A) $7^{\circ} 31\text{E}$ (B) $172^{\circ} 30\text{E}$ (C) $7^{\circ} 30\text{E}$ (D) $127^{\circ} 30\text{W}$

ANSWER KEYS

1. D 2. B 3. A 4. B 5. B

ENGLISH LANGUAGE
Modal Verbs

Modals are different from normal verbs:

- They don't use an 's' for the third person singular.
- They make questions by inversion ('she can go' becomes 'can she go?').
- They are followed directly by the infinitive of another verb (without 'to').

❖ Probability:

First, they can be used when we want to say how sure we are that something happened / is happening / will happen. We often call these 'modals of deduction' or 'speculation' or 'certainty' or 'probability'.

For example:

It's snowing, so it must be very cold outside.
 I don't know where John is. He could have missed the train.
 This bill can't be right. £200 for two cups of coffee!
 Click here to find out more about probability.

❖ Ability

We use 'can' and 'could' to talk about a skill or ability.

For example:

She can speak six languages.
 My grandfather could play golf very well.
 I can't drive.

❖ Obligation and Advice

We can use verbs such as 'must' or 'should' to say when something is necessary or unnecessary, or to give advice.

For example:

Children must do their homework.
 We have to wear a uniform at work.
 You should stop smoking.
 Click here to find out more about obligation

❖ Permission

We can use verbs such as 'can', 'could' and 'may' to ask for and give permission. We also use modal verbs to say something is not allowed.

For example:

Could I leave early today, please?

You may not use the car tonight.

Can we swim in the lake?

❖ Habits

We can use 'will' and 'would' to talk about habits or things we usually do, or did in the past.

For example:

When I lived in Italy, we would often eat in the restaurant next to my flat.

John will always be late!

Exercise

Direction: Fill in the blank with a suitable modal.

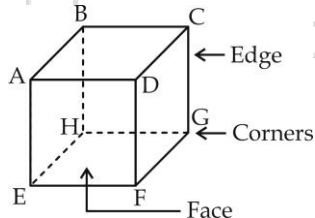
1. How _____ you have left the bathroom in such a mess ?
 (A) couldn't (B) might (C) could (D) will
2. Mat _____ be lazy but he is certainly not stupid.
 (A) needn't (B) mustn't (C) should (D) may
3. I _____ speak Swedish, Dutch and Japanese.
 (A) can (B) may (C) should (D) shouldn't
4. I think we are lost. The man _____ have given us the wrong directions
 (A) might (B) should (C) would (D) will
5. You _____ be serious about swimming outdoors in winter.
 (A) would (B) can't (C) could (D) might
6. Plants _____ have sunlight in order to make food.
 (A) can (B) may (C) must (D) will
7. Since our bags are identical you _____ have taken mine by mistake.
 (A) can (B) will (C) shall (D) could
8. Parents _____ take care of their children.
 (A) may (B) ought to (C) mustn't (D) shouldn't
9. _____ you excuse me for a moment ?
 (A) Would (B) Should (C) Must (D) Needn't
10. She _____ stay up late if she takes a nap now.
 (A) mustn't (B) shouldn't (C) can (D) used to

ANSWER KEYS

1. C 2. D 3. A 4. A 5. B 6. C 7. D 8. B 9. A 10. C

REASONING
DICE

Dice are cube or cuboidal shape objects. It has 8 corners, 12 edges and 6 faces.



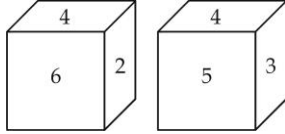
There are certain Rules to be consider while solving questions:

Rule 1:

Two opposite Faces cannot be adjacent to one another.

Example:-

Two different positions of a dice are shown below. Which number will appear on the face opposite to the face number 4?



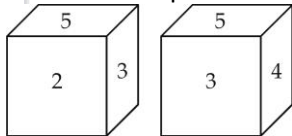
Sol: Face 6, 2, 5 and 3 are adjacent to the face 4. Hence, face 6, 2, 5 and 3 can never be opposite to face 4. Remaining face no. 1 will be opposite to face no.4.

Rule 2:

If two different positions of dice are shown and one of the two common face is in same position then the remaining face will be opposite to each other.

Example:-

Two different position of a dice are shown below.

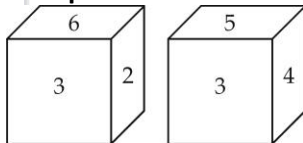


Here, in both positions two faces 5 and 3 are common. The remaining faces are 2 and 4. Hence, face 2 and face 4 are opposite faces.

Rule 3:

If two different positions of dice are shown, the position of a common face be the same, then each of the opposite faces of the remaining faces will be in the same position.

Example:-

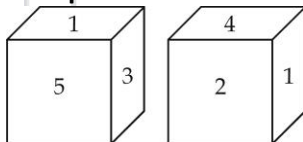


Here, in both the given figure, 3 is common face and is in same position. Therefore, opposite to 5 is 6 and opposite to 4 is 2.

Rule 4:

If two different position of a dice, the position of the common face be not the same, then opposite face of the common face will be that which is not shown on any faces in these two positions. Besides the opposite of the remaining faces will not be the same.

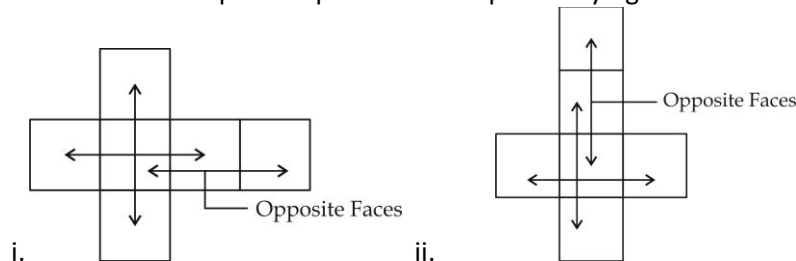
Example:-

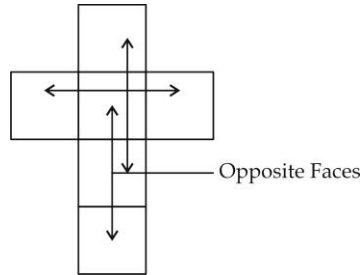
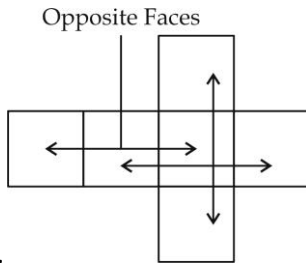


Here in two positions of dice, the face opposite to the face with no. 1 is no. 6.

EXPLANATORY FIGURE OF DICE:

There are four important positions of explanatory figure:





iii.

iv.

1. The four-different positions of a dice are given below:



(i)



(ii)



(iii)



(iv)

Which number is one the face opposite 6?

(A) 1

(B) 2

(C) 3

(D) 4

2. How many dots are there on the dice face opposite the one with three dots?



(i)



(ii)



(iii)



(iv)

(A) 2

(B) 4

(C) 5

(D) 6

3. What number is opposite 3, if four different positions of a dice are as shown below?



(i)



(ii)



(iii)



(iv)

(A) 6

(B) 4

(C) 3

(D) 2

4. Show below are four different positions of the same dice are shown. Find the number on the face opposite the face showing 6.



(i)



(ii)



(iii)



(iv)

(A) 1

(B) 2

(C) 4

(D) 5

5. Which number is on the face opposite 4, if the four different positions of a dice are as shown in the figures given below.



(i)



(ii)



(iii)



(iv)

(A) 5

(B) 3

(C) 2

(D) 1

MATH

$$\frac{(ax+k)^n}{a} = \text{Remainder always } k^n$$

$$\frac{(ax+k)^n}{a} = \frac{(ax+k) \times (ax+k) \times (ax+k) \dots n \text{ times}}{a}$$

$$\text{Remainder} = k \times k \times k \dots n \text{ times} = k^n$$

$$\frac{(ax-k)^n}{a} = \text{Remainder} = (-k)^n$$

$$\frac{(ax+1)^n}{a} = \text{Remainder} = 1^n = 1$$

$$\frac{(ax-1)^n}{a} = \text{Remainder} =$$

$$(-1)^n \begin{cases} \text{even} = 1 \\ \text{Odd} = -1 \end{cases}$$

Find the Remainder

1. $\frac{59^{637}}{58}$
 (A) 1 (B) 0 (C) -1 (D) 2
2. $\frac{471^{344}}{118}$
 (A) 1 (B) 0 (C) -1 (D) 2
3. $\frac{257^{1008}}{64}$
 (A) 1 (B) 2 (C) 0 (D) -1
4. $\frac{7^{84}}{342}$
 (A) 2 (B) -1 (C) 0 (D) 1
5. $\frac{2^{92}}{7}$
 (A) 1 (B) 4 (C) 7 (D) 6

ANSWER KEYS

1. A 2. A 3. A 4. D 5. B

EXPLANATIONS

1. (A); $\frac{59^{637}}{58}$
 $= \frac{(58+1)^{637}}{58} = (1)^{637} = 1$

2. (A); $\frac{471^{344}}{118}$

$$= \frac{(472-1)^{344}}{118}$$

$$= \frac{(118 \times 4 - 1)^{344}}{118}$$

$$= (-1)^{344}$$

Remainder = 1

3. (A); $\frac{257^{1008}}{64}$

$$= \frac{(256+1)^{1008}}{64} = (1)^{1008}$$

Remainder = 1

4. (D); $\frac{7^{84}}{342}$

$$= \frac{(7^3)^{28}}{342}$$

$$= \frac{(343)^{28}}{342}$$

$$= \frac{(342-1)^{28}}{342} = (-1)^{28}$$

Remainder = 1

5. (B); $\frac{2^{92}}{7}$

$$= \frac{(2^3)^{30} \times 2^2}{7}$$

$$= \frac{(7+1)^{30} \times 2^2}{7} = 1 \times 4 = 4$$

Remainder = 4

ODIA LANGUAGE

ସାହାଯ୍ୟକାରୀ କ୍ରିୟାଦ୍ୱାରା ଗଠିତ କେତେକ ମିଶ୍ରକ୍ରିୟା

- ଉଠ୍ - ଗର୍ଜିଉଠିଲା, ମାଡ଼ିଉଠିଲା, କହିଉଠିଲା, ଫୁଲିଉଠିଲା, ହସିଉଠିଲା ।
- ପଢ଼୍ - ଢେଙ୍କଠପଢ଼ିବା, ଖସିପଢ଼ିବା, ଭାଙ୍ଗିପଢ଼ିବା, ଲାଗିପଢ଼ିବା, ବସିପଢ଼ିବା ।
- ପକା - କାନ୍ଦିପକାଇବା, କହିପକାଇବା, ମୃତ୍ତିପକାଇବା, ଗିଳିପକାଇଲା ।
- ପାର୍ - ପଢ଼ିପାରିବା, କରିପାରିବା, ଶୁଣିପାରିବା, ମାରିପାରିବା, ଲେଖିପାରିବା, ଗଣିପାରିବା ।
- ସାର୍ - ଲେଖିସାରିବା, ଖାଇସାରିବା, ପଢ଼ିସାରିବା, ଖେଳିସାରିବା, କହିସାରିବା ।
- ଦେ - ଦେଇଦେବା, କହିଦେବା, ହସିଦେବା, ଚାହିଁଦେବା, ମାରିଦେବା, ସାରିଦେବା ।
- ଥାଶ୍ - ବୋହିଥାଣିବା, ମାଗିଥାଣିବା, କିଣିଥାଣିବା, ଗୋଡ଼େଇଥାଣିବା, ଉଠାଇଥାଣିବା ।
- ଯା(ଗମ୍)- ପଢ଼ିଯିବା, ନେଇଯିବା, ଚାଲିଯିବା, ଖାଇଯିବା, ଧାଇଁଯିବା, ଉଡ଼ିଯିବା, ଶଢ଼ିଯିବା, ସରିଯିବା ।
- ଡିନି ବା ଡହିରୁ ଅଧିକ କ୍ରିୟାତ୍ୱକ ମିଶ୍ରକ୍ରିୟାର ଉଦାହରଣ -
- (କ) ସେ ଏକଥା କହିଥାଇପାରନ୍ତି । (କହି + ଥାଇ + ପାରନ୍ତି)
- (ଖ) ମୁନା ଔଷଧତକ ଖାଇଦେଇଥିବ । (ଖାଇ + ଦେଇ + ଥିବ)
- (ଗ) ମନସ୍କିନୀ ଏଠାରୁ ପଢ଼ିସାରିଗଲା । (ପଢ଼ି + ସାରି + ଗଲା)

- (ଘ) ମୁମ୍ମେ ମୋଠାରୁ ଶୁଣିକରି ଯିବ । (ଶୁଣି + କରି + ଯିବ)
 (ଙ) ଖେଳାଳିମାନେ କଲିକତାରୁ ଫେରିଆସୁଥାଇପାରନ୍ତି । (ଚାରୋଟି କ୍ରିୟା) (ଫେରି + ଆସୁ + ଥାଇ + ପାରନ୍ତି)
୧. 'ହସିଦେବା' କ୍ରିୟା ପଦରେ ସାହାଯ୍ୟକାରୀ କ୍ରିୟାପଦଟିକୁ ନିର୍ଣ୍ଣୟ କର ?
 (A) ବା (B) ପା
 (C) ଦେବା (D) ଉଭୟ (A) ଓ (B) ଠିକ୍
୨. ଅସଙ୍ଗତକୁ ପୃଥକ କର ?
 (A) କହି (B) ଥାଇ (C) ପାରନ୍ତି (D) କେଉଁଟି ବି ନୁହେଁ
୩. ଅସଙ୍ଗତକୁ ସୁରାଅ ?
 (A) ନେବା (B) ବୋହିନେବା (C) ଦେଖିନେବା (D) ମାରିଦେବା
୪. ଅସଙ୍ଗତକୁ ନିର୍ଣ୍ଣୟ କର ?
 (A) ହସିଦେବା (B) ହସନ୍ତେ (C) କହିଦେବା (D) ଚାହିଁଦେବା
୫. ଦୁଇ ବା ତହିଁରୁ ଅଧିକ କ୍ରିୟା ପଦ କେଉଁ ଶ୍ରେଣୀର ସୁରାଅ ?
 (A) ଏକକ କ୍ରିୟା (B) ଯୌଗିକ କ୍ରିୟା
 (C) ମିଶ୍ର କ୍ରିୟା (D) ଉଭୟ (B) ଓ (C) ଠିକ୍
- 1- C, 2-C, 3-A, 4-B, 5-D

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