

# Question Bank of L.R.P.S

## UNIT 1

- Analogy & Classification

**Q 1.** Which of the given options is correct with respect to the given pair: "Fire: Death"

1. Hunger: Starvation
2. Rain: Snow
3. Fire: Extinguisher
4. Black: Board
5. Pen: Pencil

**Q 2.** Find the odd one out from the given options.

1. Kathakali: Kerala
2. **Mohiniyattam: Tamil Nadu**
3. Sattriya: Assam
4. Kuchipudi: Andhra Pradesh
5. Bharatnatyam: Tamil Nadu

**Q 3.** Out of the given pairs, which of the following is incorrect?

1. Sardar Patel Stadium: Ahmedabad
2. Eden Garden: Kolkata
3. **Jawaharlal Nehru Stadium: New Delhi**
4. M. Chinnaswamy Stadium: Chennai
5. D.Y.Patil Stadium: Mumbai

**Q 4.** From the set of pairs given below, find the odd one out.

1. Australia: Kangaroo
2. Bangladesh: Tiger
3. Canada: North America Beaver
4. Finland: Brown Bear
5. **India: Peacock**

**Q 5.** What will come in place of question marks in the given series?

ABD: FGI :: PQS:?

1. TUW
2. **UVX**
3. XYZ
4. TUV
5. UVW

**Q 6.** Which of the following analogies does not follow the pattern as for 9:3?

1. 16:4

2. **12:4**
3. 121:11
4. 144:12
5. 81:9

**Q 7.** Which of the given analogies is incorrect?

1. Algophobia: phobia of pain
2. Bibliophobia: phobia of books
3. Chronophobia: fear of time
4. **Hematophobia: fear of water**
5. Pharmacophobia: phobia of medication

**Q 8.** Of the following numbers, which can be a part of the given set?

Set: (3, 17, 19, 23)

1. **13**
2. 27
3. 57
4. 93
5. 33

**Q 9.** Find the missing number in the given analogy.

27: 3:: 64: \_\_\_\_

1. 6
2. **4**
3. 7
4. 3
5. 5

**Q 10.** Find the odd one out

1. AD: EH
2. BE: FI
3. CF: GJ
4. DG: HK
5. **EH: IK**

**Q 11.** Which of the given analogies is correct?

1. Australia: Vienna
2. **Canada: Ottawa**
3. Chile Bejing
4. Croatia: Split
5. Egypt: Giza

**Q 12.** Given below is an analogy based on coding-decoding. Fill in the blank based on the given coding

CHAIRS: EJCKTU :: PARROT: \_\_\_\_

1. RCTTQV
2. RCXXRT
3. QCTTRV
4. GHKKXY
5. RCTVQU

**Q 13.** What shall come in place of questions mark (?) in the given analogy?

Painter: Painting:: Architect:?

1. Embroidery
2. Statue
3. **Building**
4. Sculptor
5. Stone

**Q 14.** Find the odd one out in the given options

1. Doctor: Patients
2. Shopkeepers: Customers
3. Teacher: Students
4. **Painter: Paintbrush**

**Q 15.** Based on the given analogy, find the odd one out

35:175

1. 92:460
2. 15:75
3. 3:15
4. **25:100**
5. 32:160

**Q 16.** Which of the given numbers is a part of the given set?

Set: (13, 39, 65, 117)

1. 139
2. 168
3. 253
4. **156**
5. 651

**Q 17.** Based on the given set, which of the following numbers does form a part of the set?

Set: (11, 7, 13, 37, 41)

1. 113
2. 109
3. **87**
4. 89
5. 127

**Q 18.** What shall come in place of question mark (?) in the given analogy?

? : OZKGLK :: HEAVEN : SVZEVM

1. MONDAY
2. DONATE
3. FUTURE
- 4. LAPTOP**
5. SILVER

**Q 19.** Based on the given analogy, find the incorrect one from the given options

BACK: 17

- 1. ROAD: 39**
2. OBEY: 47
3. SAFE: 31
4. NAME: 33
5. QUIZ: 73

**Q 20.** Based on the given analogies, find the odd one out

1. National Anthem: Jana Gana Mana
- 2. National Tree: Indian Neem**
3. National Calendar: Saka Calendar
4. National Bird: Peacock
5. National Animal: Royal Bengal Tiger

- Coding and Decoding

**Q 1.** In a certain code language “CONSTRUCTION” is written as “EMPQVPWAVGQL”. What will be the code for “DESTRUCTION” in the same language?

- 1. FCURTSERKMP**
2. EFTVSVDVJPO
3. FCURTSFSLOQ
4. None of the above
5. Cannot be determined

**Q 2.** In a certain code language, “YEARLY” is written as “BVZIOB”. What will be the code for “ANNUAL” in the same language?

1. ZFMOMMM
2. ZNNFZA
- 3. ZMMFZO**
4. XCADGF
5. ZXAMMO

**Q 3.** In a certain code language “EASY” is written as “5117”. In the same code language, how will “BEAM” be written as?

1. 4512
2. 4567

3. 2513
- 4. 2514**
5. 2563

**Q 4.** "SPECIAL" is written as "65" in a certain code language what will "CONNECT" be coded as?

1. 70
2. 64
3. 32
4. 78
- 5. 74**

**Q 5.** In a certain code language, "ISSUE" is written as "341145", in the same code language what will be the code for "DATES"?

1. 4567
2. 340045
3. 4120519
- 4. 7600**
5. 604

**Q 6.** What will be the code for Regal?

1. %
- 2. \***
3. \$
4. #
5. ?

**Q 7.** What will be the code for "Gold Legacy"?

1. # &
2. % #
- 3. ? %**
4. \* √
5. & \$

**Q 8.** Which word is coded as #?

1. Moral
2. Life
3. Regal
- 4. Monarch**
5. Legacy

**Q 9.** In the given coded language, which of the following words has been coded as &?

1. Gold
2. Life
3. Hope
- 4. Either '2' or '3'**
5. None of the above

**Q 10.** What is the code for royal?

1. %
- 2. @**
3. ?
4. \*
5.  $\forall$

# UNIT NO.1

## Analogies:

1.

Odometer is to mileage as compass is to  
A]speed

B]hiking

C]needle

D]direction

**Answer:** Option D

**Explanation:**

An odometer is an instrument used to measure mileage. A compass is an instrument used to determine direction. Choices a, b, and c are incorrect because none is an instrument.

---

2.

Marathon is to race as hibernation is to

A.winter

B.bear

C.dream

D.sleep

**Answer:** Option D

**Explanation:**

A marathon is a long race and hibernation is a lengthy period of sleep. The answer is not choice a or b because even though a bear and winter are related to hibernation, neither completes the analogy. (Choice c) is incorrect because sleep and dream are not synonymous.

---

3.

Window is to pane as book is to

A.novel

B.glass

C.cover

D.page

**Answer:** Option D

**Explanation:**

A window is made up of panes, and a book is made up of pages. The answer is not (choice a) because a novel is a type of book. The answer is not (choice b) because glass has no relationship to a book. (Choice c) is incorrect because a cover is only one part of a book; a book is not made up of covers.

---

4.

Cup is to coffee as bowl is to

- A.dish
- B.soup
- C.spoon
- D.food

**Answer:** Option B

**Explanation:**

Coffee goes into a cup and soup goes into a bowl. Choices a and c are incorrect because they are other utensils. The answer is not choice d because the word food is too general.

---

5.

Yard is to inch as quart is to

- A.gallon
- B.ounce
- C.milk
- D.liquid

**Answer:** Option B

**Explanation:**

A yard is a larger measure than an inch (a yard contains 36 inches). A quart is a larger measure than an ounce (a quart contains 32 ounces). Gallon (choice a) is incorrect because it is larger than a quart. Choices c and d are incorrect because they are not units of measurement.

6.

Elated is to despondent as enlightened is to

- A.aware
- B.ignorant
- C.miserable
- D.tolerant

**Answer:** Option B

**Explanation:**

Elated is the opposite of despondent; enlightened is the opposite of ignorant.

---

7.

Optimist is to cheerful as pessimist is to

- A.gloomy
- B.mean
- C.petty
- D.helpful

**Answer:** Option A

**Explanation:**

An optimist is a person whose outlook is cheerful. A pessimist is a person whose outlook is gloomy. The answer is not (choice b) because a pessimist does not have to be mean. (Choices c) and d are incorrect because neither adjective describes the outlook of a pessimist.

---

8.

Reptile is to lizard as flower is to

- A.petal
- B.stem
- C.daisy
- D.alligator

**Answer:** Option C

**Explanation:**

A lizard is a type of reptile; a daisy is a type of flower. Choices a and b are incorrect because a petal and a stem are parts of a flower, not types of flowers. (Choice d) is incorrect because an alligator is another type of reptile, not a type of flower.

---

9.

Play is to actor as concert is to

- A.symphony
- B.musician
- C.piano
- D\_percussion

**Answer:** Option B

**Explanation:**

An actor performs in a play. A musician performs at a concert. Choices a, c, and d are incorrect because none is people who perform.

---

10.

Sponge is to porous as rubber is to

- A.massive
- B.solid
- C.elastic
- D.inflexible

**Answer:** Option C

**Explanation:**

A sponge is a porous material. Rubber is an elastic material. (Choice a) is incorrect because rubber would not generally be referred to as massive. The answer is not (choice b) because even though rubber is a solid, its most noticeable characteristic is its elasticity. Choice d is incorrect because rubber has flexibility.

### Analogy:

1.

CUP : LIP :: BIRD : ?

- A.BUSH
- B.GRASS
- C.FOREST
- D.BEAK

**Answer:** Option D

**Explanation:**

Cup is used to drink something with the help of lips. Similarly birds collects grass with the help of beak to make her nest.

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2.

Flow : River :: Stagnant : ?

- A.Rain

- B.Stream
- C.Pool
- D.Canal

**Answer:** Option C

**Explanation:**

As Water of a River flows similarly water of Pool is Stagnant.

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3.

Paw : Cat :: Hoof : ?

- A.Lamb
- B.Elephant
- C.Lion
- D.Horse

**Answer:** Option D

**Explanation:**

As cat has Paw similarly Horse has Hoof.

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4.

Ornithologist : Bird :: Archaeologist : ?

- A.Islands
- B.Mediators
- C.Archaeology
- D.Aquatic

**Answer:** Option C

**Explanation:**

As Ornithologist is a specialist of Birds similarly Archaeologist is a specialist of Archaeology.

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5.

Peacock : India :: Bear : ?

- A.Australia

B.America

C.Russia

D.England

**Answer:** Option C

**Explanation:**

As Peacock is the national bird of India, similarly Bear is the national animal of Russia.

6.

REASON : SFBTPO :: THINK : ?

A.SGHMJ

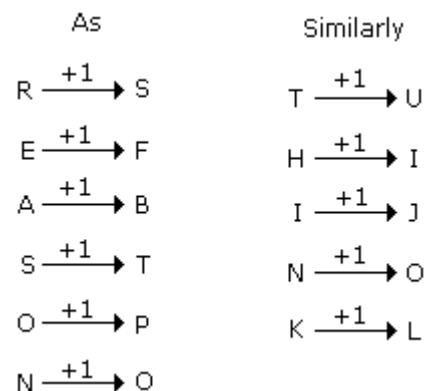
B.UIJOL

C.UHNKI

D.UJKPM

**Answer:** Option B

**Explanation:**



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7.

Carbon : Diamond :: Corundum : ?

A.Garnet

B.Ruby

C.Pukhraj

D.Pearl

**Answer:** Option B

**Explanation:**

As Diamond is made of Carbon similarly Ruby is made of Corundum.

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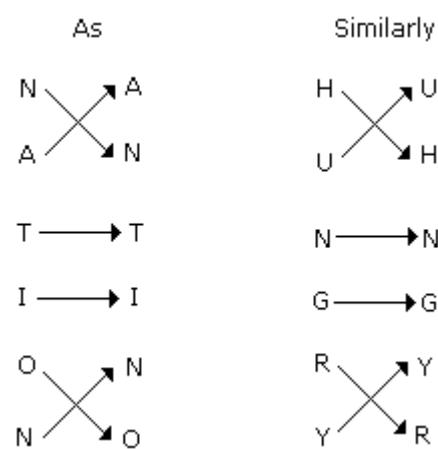
8.

NATION : ANTINO :: HUNGRY : ?

- A.HNUGRY
- B.UHNGYR
- C.YRNNGUH
- D.UNHGYR

**Answer:** Option B

**Explanation:**



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9.

Architect : Building :: Sculptor : ?

- A.Museum
- B.Stone
- C.Chisel
- D.Statue

**Answer:** Option D

**Explanation:**

As 'Architect' makes 'Building' similarly 'Sculptor' makes 'Statue'.

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10.

Eye : Myopia :: Teeth : ?

- A.Pyorrhoea
- B.Cataract

C.Trachoma

D.Eczema

**Answer:** Option A

**Explanation:**

As Myopia is disease of eye similarly pyorrhoea is a disease of teeth.

## NUMBER ANALOGY:

1.

$$14 : 9 :: 26 : ?$$

A.12

B.13

C.31

D.15

**Answer:** Option D

**Explanation:**

$$14 = (2 \times 9 - 4)$$

$$26 = (2 \times 15 - 4)$$

$$? = 15$$

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2.

$$MO : 13\ 11 :: HJ : ?$$

A.19 17

B.18 16

C.8 10

D.16 18

**Answer:** Option B

**Explanation:**

No answer description is available. [Let's discuss.](#)

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3.

$$123 : 13^2 :: 235 : ?$$

A. $23^2$

B. $35^2$

C. $25^3$

D. $25^2$

**Answer:** Option C

**Explanation:**

As,  $123 \rightarrow 13^2$

As,  $235 \rightarrow 25^3$

The middle digit of first term becomes power to the next term.

---

4.

$8 : 28 :: 27 : ?$

A.28

B.8

C.64

D.65

**Answer:** Option D

**Explanation:**

First number = 8 and the sum of the digits of the second number is  $2 + 8 = 10$ .

Thus the difference of the first number and the sum of the digits of second number is  $10 - 8 = 2$ .

Similarly, the sum of the digits of third number is  $2 + 7 = 9$ .

Hence the sum of digits of fourth number should be 2 more than 9 i.e. 11

Hence, fourth number is 65.

---

5.

$3 : 12 :: 5 : ?$

A.25

B.35

C.30

D.15

**Answer:** Option C

**Explanation:**

$$3 \xrightarrow{(3)^2 + 3} 12$$

$$5 \xrightarrow{(5)^2 + 5} 30$$

6.

MXN : 13 x 14 :: FXR : ?

- A.14 x 15
- B.5 x 17
- C.6 x 18
- D.7 x 19

**Answer:** Option C

**Explanation:**

As position of M and N in Eq. alphabets are 13 and 14 respectively.

---

7.

16 : 56 :: 32 : ?

- A.96
- B.112
- C.120
- D.128

**Answer:** Option B

**Explanation:**

As,  $16:56 = (2/7)$

Similarly,  $32:112:(2/7)$

---

8.

4 : 19 :: 7 : ?

- A.52
- B.49

C.28

D.68

**Answer:** Option A

**Explanation:**

As,  $(4)^2 + 3 = 19$

Similarly,  $(7)^2 + 3 = 52$

---

9.

$24 : 60 :: 120 : ?$

A.160

B.220

C.300

D.108

**Answer:** Option C

**Explanation:**

As  $24:60 = (2/5)$

Similarly,  $(120/300) = (2/5)$

---

10.

$335 : 216 :: 987 : ?$

A.868

B.867

C.872

D.888

**Answer:** Option A

**Explanation:**

As  $335 - 216 = 119$

Similarly,  $987 - X = 119$

Therefore,  $X = 987 - 119 = 868.$

## CODING-DECODING:

1.

SCD, TEF, UGH, \_\_\_\_, WKL

- A.CMN
- B.UJI
- C.VIJ
- D.IJT

**Answer:** Option C

**Explanation:**

There are two alphabetical series here. The first series is with the first letters only: STUVW. The second series involves the remaining letters: CD, EF, GH, IJ, KL.

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2.

B<sup>2</sup>CD, \_\_\_\_, BCD<sup>4</sup>, B<sup>5</sup>CD, BC<sup>6</sup>D

- A.B<sub>2</sub>C<sub>2</sub>D
- B.BC<sub>3</sub>D
- C.B<sub>2</sub>C<sub>3</sub>D
- D.BCD<sub>7</sub>

**Answer:** Option B

**Explanation:**

Because the letters are the same, concentrate on the number series, which is a simple 2, 3, 4, 5, 6 series, and follows each letter in order.

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3.

FAG, GAF, HAI, IAH, \_\_\_\_

- A.JAK
- B.HAL
- C.HAK
- D.JAI

**Answer:** Option A

**Explanation:**

The middle letters are static, so concentrate on the first and third letters. The series involves an alphabetical order with a reversal of the letters. The first letters are in alphabetical order: F, G, H, I, J. The second and fourth segments are reversals of the first and third segments. The missing segment begins with a new letter.

---

4.

ELFA, GLHA, ILJA, \_\_\_\_\_, MLNA

- A.OLPA
- B.KLMA
- C.LLMA
- D.KLLA

**Answer:** Option D

**Explanation:**

The second and forth letters in the series, L and A, are static. The first and third letters consist of an alphabetical order beginning with the letter E.

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5.

CMM, EOO, GQQ, \_\_\_\_\_, KUU

- A.GRR
- B.GSS
- C.ISS
- D.ITT

**Answer:** Option C

**Explanation:**

The first letters are in alphabetical order with a letter skipped in between each segment: C, E, G, I, K. The second and third letters are repeated; they are also in order with a skipped letter: M, O, Q, S, U.

6.

ZA<sub>5</sub>, Y<sup>4</sup>B, XC<sub>6</sub>, W<sup>3</sup>D, \_\_\_\_\_

- A.E<sub>7</sub>V
- B.V<sub>2</sub>E

C.VE<sub>5</sub>

D.VE<sub>7</sub>

**Answer:** Option D

**Explanation:**

There are three series to look for here. The first letters are alphabetical in reverse: Z, Y, X, W, V. The second letters are in alphabetical order, beginning with A. The number series is as follows: 5, 4, 6, 3, 7.

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7.

QPO, NML, KJI, \_\_\_\_\_, EDC

A.HGF

B.CAB

C.JKL

D.GHI

**Answer:** Option A

**Explanation:**

This series consists of letters in a reverse alphabetical order.

---

8.

JAK, KBL, LCM, MDN, \_\_\_\_\_

A.OEP

B.NEO

C.MEN

D.PFQ

**Answer:** Option B

**Explanation:**

This is an alternating series in alphabetical order. The middle letters follow the order ABCDE. The first and third letters are alphabetical beginning with J. The third letter is repeated as a first letter in each subsequent three-letter segment.

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9.

BCB, DED, FGF, HIH, \_\_\_\_\_

- A.JKJ
- B.HJH
- C.IJI
- D.JHJ

**Answer:** Option A

**Explanation:**

This series consists of a simple alphabetical order with the first two letters of all segments: B, C, D, E, F, G, H, I, J, K. The third letter of each segment is a repetition of the first letter.

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10.

P<sub>5</sub>QR, P<sub>4</sub>QS, P<sub>3</sub>QT, \_\_\_\_\_, P<sub>1</sub>QV

- A.PQW
- B.PQV<sub>2</sub>
- C.P<sub>2</sub>QU
- D.PQ<sub>3</sub>U

**Answer:** Option C

**Explanation:**

The first two letters, PQ, are static. The third letter is in alphabetical order, beginning with R. The number series is in descending order beginning with 5.

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11.

E↑ E | m↓ m | E↑ w↓ E | w ? w

— — — —  
m E w ?  
(1) (2) (3) (4)

- A.1
- B.2
- C.3
- D.4

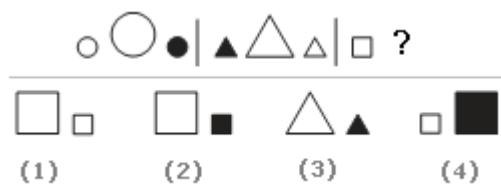
**Answer:** Option C

**Explanation:**

This is an alternating series. In the first segment, the letter "E" faces right, then down, then right. In the second segment, the letters all face down. To follow this pattern, in the fourth segment, the letters must all face up.

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12.



A.1

B.2

C.3

D.4

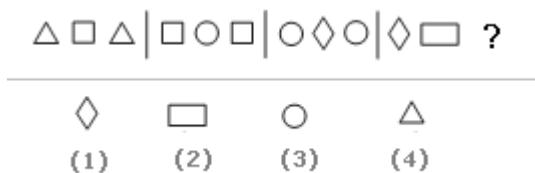
**Answer:** Option B

**Explanation:**

Notice that in each segment, the figures are all the same shape, but the one in the middle is larger than the two on either side. Also, notice that one of the figures is shaded and that this shading alternates first right and then left. To continue this pattern in the third segment, you will look for a square. Choice b is correct because this choice will put the large square between the two smaller squares, with the shading on the right.

---

13.



A.1

B.2

C.3

D.4

**Answer:** Option A

**Explanation:**

Look at each segment. You will notice that in each, the figure on the right and the figure on the left are the same; the figure in between is different. To continue this pattern in the last segment, the diamond on the left will be repeated on the right. Choice a is the only possible answer.

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14.

| ⌠ ⌡ | ⌠ ⌡ ⌠ ⌡ | ?

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A.1

B.2

C.3

D.4

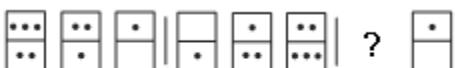
**Answer:** Option D

**Explanation:**

This sequence concerns the number of sides on each figure. In the first segment, the three figures have one side, and then two sides, and then three sides. In the second segment, the number of sides increases and then decreases. In the third segment, the number of sides continues to decrease.

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15.



(1)

(2)

(3)

(4)

A.1

B.2

C.3

D.4

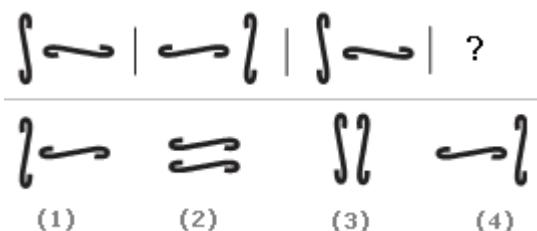
**Answer:** Option A

**Explanation:**

Look carefully at the number of dots in each domino. The first segment goes from five to three to one. The second segment goes from one to three to five. The third segment repeats the first segment.

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16.



- (1)      (2)      (3)      (4)

A.1

B.2

C.3

D.4

**Answer:** Option D

**Explanation:**

Look for opposites in this series of figures. The first and second segments are opposites of each other. The same is true for the third and fourth segments.

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17.



- (1)      (2)      (3)      (4)

A.1

B.2

C.3

D.4

**Answer:** Option C

**Explanation:**

All four segments use the same figures: two squares, one circle, and one triangle. In the first segment, the squares are on the outside of the circle and triangle. In the second segment, the squares are below the other two. In the third segment, the squares are on the inside. In the fourth segment, the squares are above the triangle and circle.

---

18.



- 
- |     |     |     |     |
|-----|-----|-----|-----|
| ●   | ◎   | ◎   | ○   |
| (1) | (2) | (3) | (4) |

A.1

B.2

C.3

D.4

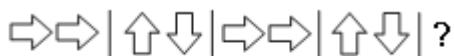
**Answer:** Option C

**Explanation:**

In this series, the shaded part inside the circle gets larger and then smaller.

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19.



- 
- |     |     |     |     |
|-----|-----|-----|-----|
| ↓↓  | →→  | ↓↑  | ←←  |
| (1) | (2) | (3) | (4) |

A.1

B.2

C.3

D.4

**Answer:** Option B

**Explanation:**

Look at each segment. In the first segment, the arrows are both pointing to the right. In the second segment, the first arrow is up and the second is down. The third segment repeats the first segment. In the fourth segment, the arrows are up and then down. Because this is an alternating series, the two arrows pointing right will be repeated, so option B is the only possible choice.

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20.



- 
- |     |     |     |     |
|-----|-----|-----|-----|
| ∅○  | ○∅  | ○○  | ○∅  |
| (1) | (2) | (3) | (4) |

A.1

B.2

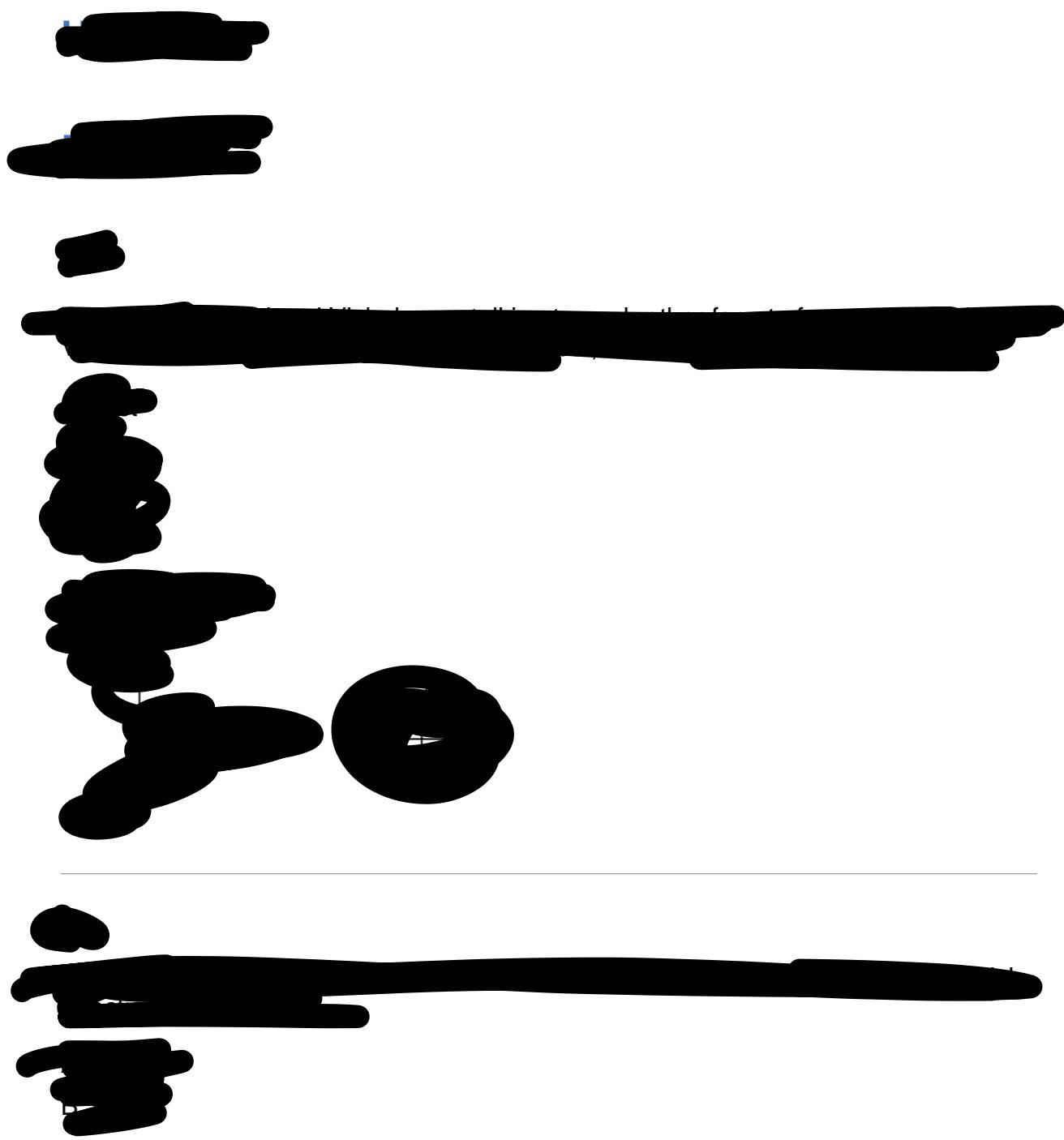
C.3

D.4

**Answer:** Option D

**Explanation:**

This is an alternating series. The first and third segments are repeated. The second segment is simply upside down.



# Question Bank of L.R.P.S

## UNIT 2

- Direction sense Test : Directions and Cardinal Directions ,  
Direction puzzle

Q 1 - Amar started from home towards South-West. Which of the following directions will lead him to the West?

Options :

A - Right-hand side, right-hand side, right-hand side.

B - Left-hand side, left-hand side, left-hand side.

**C - 45 degree Right-hand side, left-hand side.**

D - Left-hand side, left-hand side, right-hand side.

Q 2 - A person walks 10 km to the West and reaches his sister's house. From there, he travels towards North for 10 km to reach his mother-in-law's house. His mother-in-law's house is in which direction of his home?

Options :

A - North

B - West

C - North-East

**D - North-West**

Q 3 - Sita started walking towards North. Which of the following will lead her to the West?

Options :

A - Left-hand side, left-hand side, left-hand side.

**B - Right-hand side, right-hand side, right-hand side.**

C - Left-hand side, right-hand side, left-hand side.

D - Right-hand side, left-hand side, left-hand side.

Q 4 - Bikash started walking towards North. After walking 3km, he turned towards left-hand side and walked 4km. He then turned left-hand side and walked 3 km. He again turned left-hand side and walked 5km. How far is he from his initial position?

Options :

A - 5km

B - 4km

**C - 1km**

D - 2km

Q 5 - Parsuram started walking from home towards South-West. Which of the following will lead him to South-East?

Options :

**A - Right-hand side, right-hand side, right-hand side.**

B - Left-hand side, left-hand side, left-hand side.

C - Right-hand side, left-hand side, left-hand side.

D - Left-hand side, left-hand side, right-hand side.

- Logical Sequence of words : Sequence in process , Sequence in object formation

1)Arrange the words given below in a meaningful sequence.

1.Presentation 2.Recommendation 3. Arrival 4.Discussion 5.Introduction

A) 5, 3, 4, 1, 2

B) 3, 5, 4, 2, 1

C) 3, 5, 1, 4, 2

D) 5, 3, 1, 2, 4

2) Arrange the words given below in a meaningful sequence.

1. Poverty
  2. Population
  3. Death
  4. Unemployment
  5. Disease



C) 2, 4, 1, 5, 3

D) 1, 2, 3, 4, 5

3) Arrange the following in a logical order :

1. Shoulder    2. Wrist    3. Elbow    4. Palm    5. Finger



C) 3, 4, 5, 2, 1

D) 5, 4, 2, 3, 1

4) Arrange the following in a logical order :

1. Euphoria    2. Happiness    3. Ambivalence    4. Ecstasy    5. Pleasure



G) 3 2 5 1 4

D) 4 1 3 2 5

5) Choose the correct order

- 1) is 2) at 3) TV 4) film 5) midnight 6) a 7) on 8) great 9) There

- $$\text{A) } 9 \ 1 \ 6 \ 8 \ 7 \ 4 \ 3 \ 2 \ 5 \quad \text{B) } 9 \ 1 \ 6 \ 8 \ 4 \ 7 \ 3 \ 5 \ 3$$

C) 9 1 6 8 4 7 3 2 5

D) 9 6 1 8 4 7 3 2 5

- Data Sufficiency : Yes/No Questions, Value Questions

**Q 1.** Six Professors have been assigned to take up lectures in a week, starting from Monday till Saturday. The six Professors are Mandeep, Nitin, Ondrilla, Pankhuri, Yukti and Rati. How many Professors conduct lectures before Ondrilla?

**Statement I:** Pankhuri conducts her lecture at least before three people. Mandeep gave the lecture conducted on Philosophy on Tuesday.

**Statement II:** Yukti is given the lecture before at least one of the other lecturers. Ondrilla conducted her Physics lecture immediately on the next day as Pankhuri's lecture.

**Statement III:** A minimum of four lectures were conducted after Nitin's lecture.

1. If data in Statement I alone is sufficient
2. If data in all Statement I, II & III is sufficient
3. If data in only Statement II & III is sufficient
4. If data in only Statement III is sufficient
- 5. If data in only Statement I & II is sufficient**

**Q 2.** Who among the five friends viz. A, B, C, D & E is the tallest?

**Statement I:** B is only taller than D

**Statement II:** A is shorter than E but taller than C

**Statement III:** B is not the shortest

1. If statement II alone is sufficient
- 2. If statement I & II together are sufficient**
3. If statement I, II & III together are not sufficient
4. If statement I & III are sufficient
5. None of the above

**Q 3.** Who is the wife of Z?

**Statement I:** H is the only daughter of X. K is the paternal uncle of X.

**Statement II:** K is the brother-in-law of X

**Statement III:** K and Z are brothers

- 1. If statement I, II & III together are sufficient**
2. If only statement II & III are sufficient
3. If only statement I is sufficient
4. If only statement I & II are sufficient
5. None of the above

**Q 4.** How is M related to N?

**Statement I:** N's sister F has married H's brother G.

**Statement II:** M is the only daughter of G and F.

1. If statement I alone is sufficient
2. If statement II alone is sufficient
- 3. If both statements I and II together are sufficient**
4. If either statement I or II is sufficient
5. If neither statement I and II is sufficient

**Q 5.** What is the code for 'sky' in the code language?

**Statement I:** In the code language, 'get set jet' means 'kite flying sky'.

**Statement II:** In the same code language, 'jet ket pet' means 'sky is blue'.

- If statement I alone is sufficient
- If statement II alone is sufficient

- If statement I and II together are sufficient
  - If neither statement I nor II is sufficient
  - If either statement I or II is sufficient
- 
- Verification of Truth of the Statement: Relationship with the thing mentioned

1) An animal always has

- A. Skin
- B. Heart
- C. Lungs
- D. life**
- E. Ears

2) A race always has

- A. Reward
- B. Rivals**
- C. Spectators
- D. Referee
- E. Victory

3) A book always has

- A. Pages**
- B. Contents
- C. Images
- D. Chapters
- E. Story

4) A factory always has

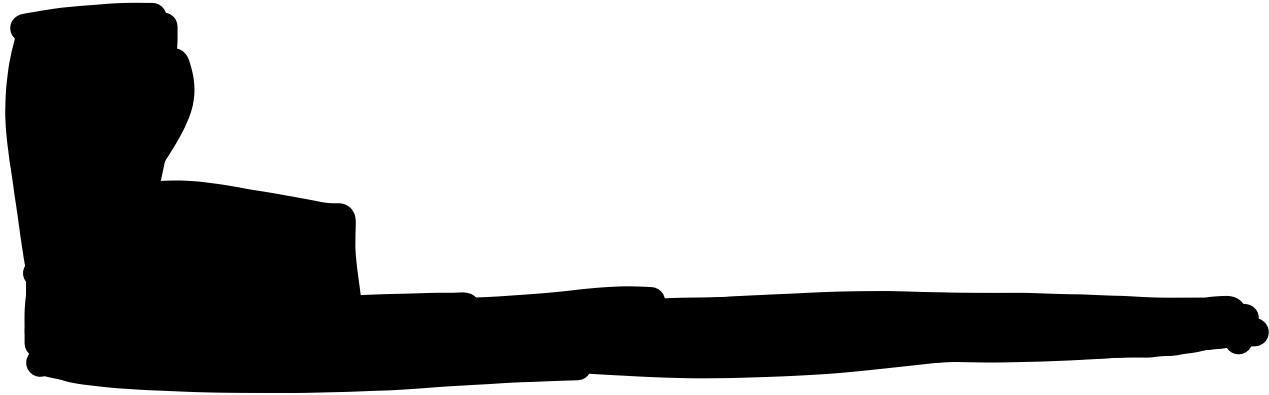
- A. Electricity

- B. Water
- C. Chimney
- D. Files

**E. Workers**

5) A clock always has

- A. Alarm
- B. Battery
- C. Needles**
- D. Numbers
- E. Frame



## UNIT NO.2

### Directions:

1.

One morning Udai and Vishal were talking to each other face to face at a crossing. If Vishal's shadow was exactly to the left of Udai, which direction was Udai facing?

- A.East
- B.West
- C.North
- D.South

**Answer:** Option C

**Explanation:**



2.

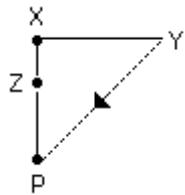
Y is in the East of X which is in the North of Z. If P is in the South of Z, then in which direction of Y, is P?

- A.North
- B.South

- C.South-East
- D.None of these

**Answer:** Option D

**Explanation:**



P is in South-West of Y.

---

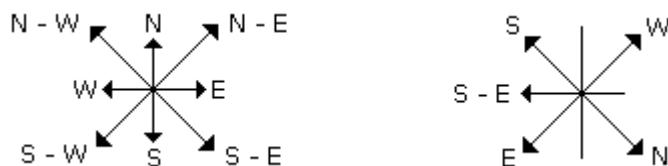
3.

If South-East becomes North, North-East becomes West and so on. What will West become?

- A.North-East
- B.North-West
- C.South-East
- D.South-West

**Answer:** Option C

**Explanation:**



It is clear from the diagrams that new name of West will become South-East.

---

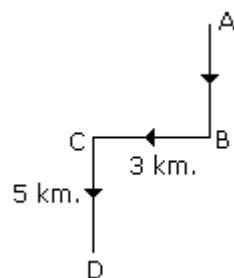
4.

A man walks 5 km toward south and then turns to the right. After walking 3 km he turns to the left and walks 5 km. Now in which direction is he from the starting place?

- A.West
- B.South
- C.North-East
- D.South-West

**Answer:** Option D

**Explanation:**



Hence required direction is South-West.

---

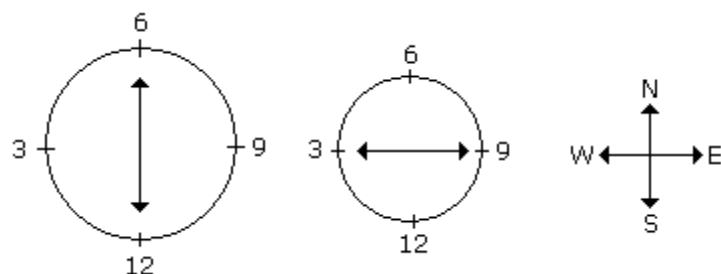
5.

Rahul put his timepiece on the table in such a way that at 6 P.M. hour hand points to North. In which direction the minute hand will point at 9.15 P.M. ?

- A.South-East
- B.South
- C.North
- D.West

**Answer:** Option D

**Explanation:**



At 9.15 P.M., the minute hand will point towards west.

---

6.

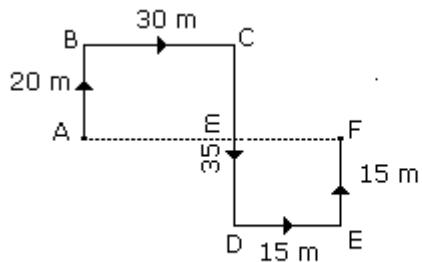
Rasik walked 20 m towards north. Then he turned right and walks 30 m. Then he turns right and walks 35 m. Then he turns left and walks 15 m. Finally he turns left and walks 15 m. In which direction and how many metres is he from the starting position?

- A.15 m West

- B.30 m East
- C.30 m West
- D.45 m East

**Answer:** Option D

**Explanation:**



$$\begin{aligned}
 \text{Required distance} &= AF \\
 &= 30 + 15 \\
 &= 45 \text{ m.}
 \end{aligned}$$

From the above diagram, F is in East direction from A.

Hence the required answer is '45 m East'.

---

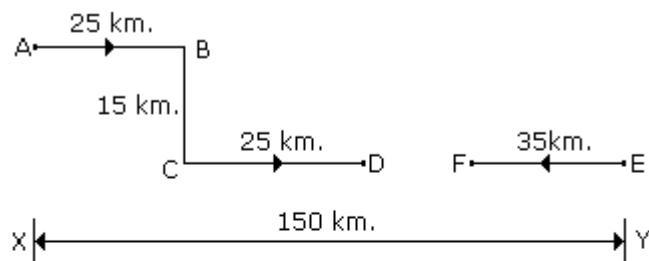
7.

Two cars start from the opposite places of a main road, 150 km apart. First car runs for 25 km and takes a right turn and then runs 15 km. It then turns left and then runs for another 25 km and then takes the direction back to reach the main road. In the mean time, due to minor break down the other car has run only 35 km along the main road. What would be the distance between two cars at this point?

- A.65 km
- B.75 km
- C.80 km
- D.85 km

**Answer:** Option A

**Explanation:**



$$\begin{aligned}
 \text{Required distance} &= DF \\
 &= 150 - (25 + 25 + 35) \\
 &= 150 - 85 \\
 &= 65 \text{ km.}
 \end{aligned}$$


---

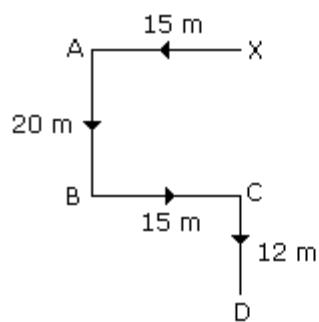
8.

Starting from the point X, Jayant walked 15 m towards west. He turned left and walked 20 m. He then turned left and walked 15 m. After this he turned to his right and walked 12 m. How far and in which directions is now Jayant from X?

- A.32 m, South
- B.47 m, East
- C.42 m, North
- D.27 m, South

**Answer:** Option A

**Explanation:**



$$\begin{aligned}
 \text{Required distance} &= 20 + 12 \\
 &= 32 \text{ m in south direction}
 \end{aligned}$$


---

9.

One evening before sunset Rekha and Hema were talking to each other face to face. If Hema's shadow was exactly to the right of Hema, which direction was Rekha facing?

- A.North
- B.South
- C.East
- D.Data is inadequate

**Answer:** Option B

**Explanation:**



In the evening sun sets in West. Hence then any shadow falls in the East. Since Hema's shadow was to the right of Hema. Hence Rekha was facing towards South.

---

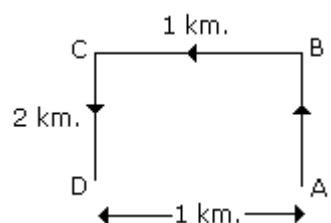
10.

A boy rode his bicycle Northward, then turned left and rode 1 km and again turned left and rode 2 km. He found himself 1 km west of his starting point. How far did he ride northward initially?

- A.1 km
- B.2 km
- C.3 km
- D.5 km

**Answer:** Option B

**Explanation:**



The boy rode 2 km. Northward.

---

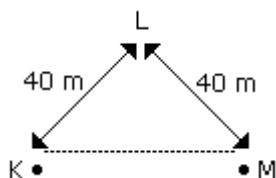
11.

K is 40 m South-West of L. If M is 40 m South-East of L, then M is in which direction of K?

- A.East
- B.West
- C.North-East
- D.South

**Answer:** Option A

**Explanation:**



Hence M is in the East of K.

---

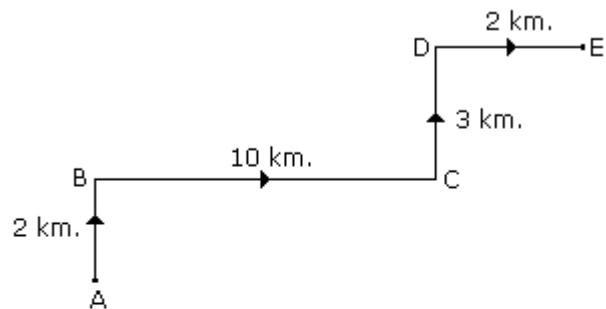
12.

A man walks 2 km towards North. Then he turns to East and walks 10 km. After this he turns to North and walks 3 km. Again he turns towards East and walks 2 km. How far is he from the starting point?

- A.10 km
- B.13 km
- C.15 km
- D.None of these

**Answer:** Option B

**Explanation:**



Required distance = AE

$$= \sqrt{5^2 + 12^2}$$

$$= 13 \text{ km.}$$

---

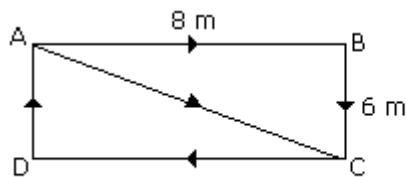
13.

The length and breadth of a room are 8 m and 6 m respectively. A cat runs along all the four walls and finally along a diagonal order to catch a rat. How much total distance is covered by the cat?

- A.10
- B.14
- C.38
- D.48

**Answer:** Option C

**Explanation:**



$$\begin{aligned}\text{Required distance} &= 8 + 6 + 8 + 6 + \sqrt{8^2 + 6^2} \\&= 28 + \sqrt{100} \\&= 28 + 10 \\&= 38 \text{ m}\end{aligned}$$

---

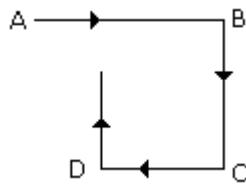
14.

One morning sujata started to walk towards the Sun. After covering some distance she turned to right then again to the right and after covering some distance she again turns to the right. Now in which direction is she facing?

- A.North
- B.South
- C.North-East
- D.South-West

**Answer:** Option A

**Explanation:**



Hence finally Sujata will face towards North.

---

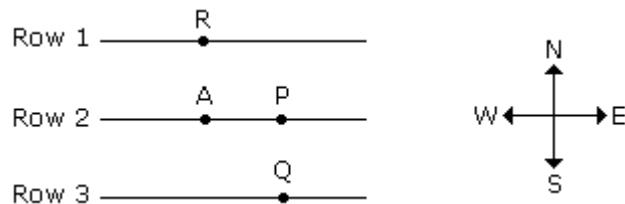
15.

Some boys are sitting in three rows all facing North such that A is in the middle row. P is just to the right of A but in the same row. Q is just behind of P while R is in the North of A. In which direction of R is Q?

- A.South
- B.South-West
- C.North-East
- D.South-East

**Answer:** Option D

**Explanation:**



Q is in South-East of R.

---

16.

One morning after sunrise, Vimal started to walk. During this walking he met Stephen who was coming from opposite direction. Vimal watch that the shadow of Stephen to the right of him (Vimal). To Which direction Vimal was facing?

- A.East
- B.West
- C.South
- D.Data inadequate

**Answer:** Option C

**Explanation:**

Sun rises in the east. So the shadow of a man will always falls towards the west. Since the shadow of Stephen is to the right of Vimal. Hence Vimal is facing towards South.

---

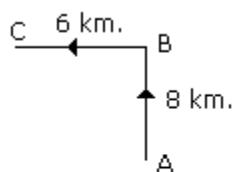
17.

Golu started from his house towards North. After covering a distance of 8 km. he turned towards left and covered a distance of 6 km. What is the shortest distance now from his house?

- A.10 km.
- B.16 km.
- C.14 km
- D.2 km.

**Answer:** Option A

**Explanation:**



Required distance = AC

$$\begin{aligned} &= \sqrt{8^2 + 6^2} \\ &= \sqrt{64 + 36} \\ &= \sqrt{100} \\ &= 10 \text{ km.} \end{aligned}$$

---

18.

P started from his house towards west. After walking a distance of 25 m. He turned to the right and walked 10 m. He then again turned to the right and walked 15 m. After this he is to turn right at  $135^\circ$  and to cover 30 m. In which direction should he go?

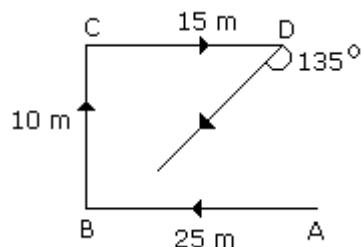
- A.West
- B.South

C.South-West

D.South-East

**Answer:** Option C

**Explanation:**



Hence he should go in the South-West direction.

---

19.

X started to walk straight towards south. After walking 5 m he turned to the left and walked 3 m. After this he turned to the right and walked 5 m Now to which direction X is facing?

A.North-East

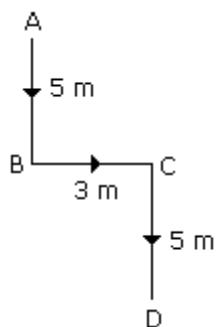
B.South

C.North

D.South-West

**Answer:** Option B

**Explanation:**



Hence X will face in the end towards South.

---

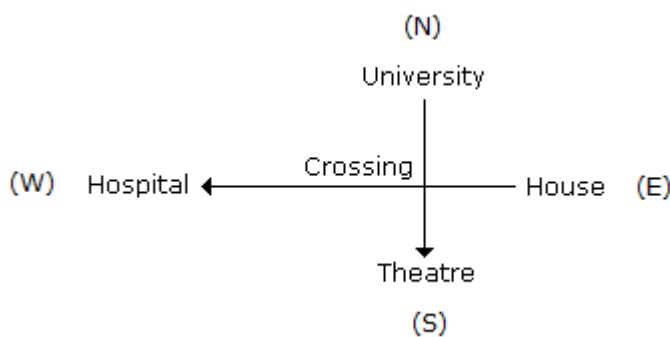
20.

Hemant in order to go to university started from his house in the east and came to a crossing. The road to the left ends in a theatre, straight ahead is the hospital. In which direction is the university?

- A.North
- B.South
- C.East
- D.West

**Answer:** Option A

**Explanation:**



Therefore university is in North.

## Blood Relation:

1.

Pointing to a photograph of a boy Suresh said, "He is the son of the only son of my mother." How is Suresh related to that boy?

- A. Brother
- B. Uncle
- C. Cousin
- D. Father

**Answer:** Option D

**Explanation:**

The boy in the photograph is the only son of the son of Suresh's mother i.e., the son of Suresh. Hence, Suresh is the father of boy.

2.

If A + B means A is the mother of B; A - B means A is the brother of B; A % B means A is the father of B and A x B means A is the sister of B, which of the following shows that P is the maternal uncle of Q?

- A. Q - N + M x P
- B. P + S x N - Q
- C. P - M + N x Q
- D. Q - S % P

**Answer:** Option C

**Explanation:**

P - M → P is the brother of M

M + N → M is the mother of N

N x Q → N is the sister of Q

Therefore, P is the maternal uncle of Q.

---

3.

If A is the brother of B; B is the sister of C; and C is the father of D, how D is related to A?

- A. Brother
- B. Sister
- C. Nephew
- D. Cannot be determined

**Answer:** Option D

**Explanation:**

If D is Male, the answer is Nephew.

If D is Female, the answer is Niece.

As the sex of D is not known, hence, the relation between D and A cannot be determined.

Note: Niece - A daughter of one's brother or sister, or of one's brother-in-law or sister-in-law. Nephew - A son of one's brother or sister, or of one's brother-in-law or sister-in-law.

---

4.

If  $A + B$  means A is the brother of B;  $A - B$  means A is the sister of B and  $A \times B$  means A is the father of B. Which of the following means that C is the son of M?

- A.  $M - N \times C + F$
- B.  $F - C + N \times M$
- C.  $N + M - F \times C$
- D.  $M \times N - C + F$

**Answer:** Option D

**Explanation:**

$M \times N \rightarrow M$  is the father of N

$N - C \rightarrow N$  is the sister of C

and  $C + F \rightarrow C$  is the brother of F.

Hence, M is the father of C or C is the son of M.

---

5.

Introducing a boy, a girl said, "He is the son of the daughter of the father of my uncle." How is the boy related to the girl?

- A. Brother
- B. Nephew
- C. Uncle
- D. Son-in-law

**Answer:** Option A

**Explanation:**

The father of the boy's uncle  $\rightarrow$  the grandfather of the boy and daughter of the grandfather  $\rightarrow$  sister of father.

---

6.

Pointing to a photograph Lata says, "He is the son of the only son of my grandfather." How is the man in the photograph related to Lata?

- A. Brother
- B. Uncle

- C. Cousin
- D. Data is inadequate

**Answer:** Option A

**Explanation:**

The man in the photograph is the son of the only son of Lata's grandfather i.e., the man is the son of Lata's father. Hence, the man is the brother of Lata.

---

7.

If  $A + B$  means A is the brother of B;  $A \times B$  means A is the son of B; and  $A \% B$  means B is the daughter of A then which of the following means M is the maternal uncle of N?

- A.  $M + O \times N$
- B.  $M \% O \times N + P$
- C.  $M + O \% N$
- D. None of these

**Answer:** Option D

**Explanation:**

Because the sex of O is not known.

---

8.

If D is the brother of B, how B is related to C? To answer this question which of the statements is/are necessary?

- 1. The son of D is the grandson of C.
  - 2. B is the sister of D.
- A. Only 1
  - B. Only 2
  - C. Either 1 or 2
  - D. 1 and 2 both are required

**Answer:** Option D

**Explanation:**

Given: D is the brother of B.

From statement 1, we can detect that D is son of C (son of D is the grandson of C).

From statement 2, we can detect that B is 'Female' (sister of D).

Therefore, B is daughter of C.

---

9.

If A + B means A is the father of B; A - B means A is the brother of B; A % B means A is the wife of B and A x B means A is the mother of B, which of the following shows that M is the maternal grandmother of T?

- A. M x N % S + T
- B. M x N - S % T
- C. M x S - N % T
- D. M x N x S % T

**Answer:** Option A

**Explanation:**

M x N → M is the mother of N

N % S → N is the wife of S

and S + T → S is the father of T.

Hence, M is the maternal grandmother of T.

---

10.

Pointing to a photograph. Bajpai said, "He is the son of the only daughter of the father of my brother." How Bajpai is related to the man in the photograph?

- A. Nephew
- B. Brother
- C. Father
- D. Maternal Uncle

**Answer:** Option D

**Explanation:**

The man in the photo is the son of the sister of Bajpai. Hence, Bajpai is the maternal uncle of the man in the photograph.

---

11.

Deepak said to Nitin, "That boy playing with the football is the younger of the two brothers of the daughter of my father's wife." How is the boy playing football related to Deepak?

- A. Son
- B. Brother
- C. Cousin
- D. Brother-in-law

**Answer:** Option B

**Explanation:**

Father's wife → mother. Hence, the daughter of the mother means sister and sister's younger brother means brother. Therefore, the boy is the brother of Deepak.

---

12.

Pointing a photograph X said to his friend Y, "She is the only daughter of the father of my mother." How X is related to the person of photograph?

- A. Daughter
- B. Son
- C. Nephew
- D. Cannot be decided

**Answer:** Option B

**Explanation:**

'The only daughter of the father of X's mother' means mother of X.

Hence X is the son of the lady in the photograph.

Note: Still have doubt like "How X is a male?" - [Let's see the discussions.](#)

---

13.

Veena who is the sister-in-law of Ashok, is the daughter-in-law of Kalyani. Dheeraj is the father of Sudeep who is the only brother of Ashok. How Kalyani is related to Ashok?

- A. Mother-in-law
- B. Aunt
- C. Wife
- D. None of these

**Answer:** Option D

**Explanation:**

Ashok is the only brother of Sudeep and Veena is the sister-in-law of Ashok. Hence Veena is the wife of Sudeep. Kalyani is the mother-in-law of Veena. Kalyani is the mother of Ashok.

---

14.

If A + B means A is the sister of B; A x B means A is the wife of B, A % B means A is the father of B and A - B means A is the brother of B. Which of the following means T is the daughter of P?

- A. P x Q % R + S - T
- B. P x Q % R - T + S
- C. P x Q % R + T - S
- D. P x Q % R + S + T

**Answer:** Option B

**Explanation:**

P x Q → P is the wife of Q

Q % R → Q is the father of R

R - T → R is the brother of T

T + S → T is the sister of S.

Therefore, T is the daughter of P.

---

15.

Pointing to a woman, Abhijit said, "Her granddaughter is the only daughter of my brother." How is the woman related to Abhijit?

- A. Sister
- B. Grandmother
- C. Mother-in-law
- D. Mother

**Answer:** Option D

**Explanation:**

Daughter of Abhijit's brother → niece of Abhijit. Thus the granddaughter of the woman is Abhijit's niece.

Hence, the woman is the mother of Abhijit.

---

16.

Amit said - "This girl is the wife of the grandson of my mother". How is Amit related to the girl?

- A. Brother
- B. Grandfather
- C. Husband
- D. Father-in-law

**Answer:** Option D

**Explanation:**

The girl is the wife of grandson of Amit's mother i.e., the girl is the wife of son of Amit. Hence, Amit is the father-in-law of the girl.

---

17.

A and B are children of D. Who is the father of A? To answer this question which of the statements (1) and (2) is necessary?

- 1. C is the brother of A and the son of E.
  - 2. F is the mother B.
- A. Only (1)
  - B. Only (2)
  - C. Either (1) or (2)
  - D. (1) and (2) both

**Answer:** Option B

**Explanation:**

A and B are children of D.

From (1), C is the brother B and son of E.

Since, the sex of D and E are not known. Hence (1) is not sufficient to answer the question.

From (2). F is the mother of B. Hence, F is also the mother of A. Hence D is the father of A.

Thus, (2) is sufficient to answer the question.

---

18.

Pointing towards a man, a woman said, "His mother is the only daughter of my mother." How is the woman related to the man?

- A. Mother
- B. Grandmother
- C. Sister
- D. Daughter

**Answer:** Option A

**Explanation:**

Only daughter of my mother → myself.

Hence, the woman is the mother of the man.

---

19.

If P \$ Q means P is the brother of Q; P # Q means P is the mother of Q; P \* Q means P is the daughter of Q in A # B \$ C \* D, who is the father?

- A. D
- B. B
- C. C
- D. Data is inadequate

**Answer:** Option A

**Explanation:**

A is the mother of B, B is the brother of C and C is the daughter of D. Hence, D is the father.

A (Parents) D | | | B - is - Brother - of - C

---

20.

Introducing Sonia, Aamir says, "She is the wife of only nephew of only brother of my mother." How Sonia is related to Aamir?

- A. Wife

- B. Sister
- C. Sister-in-law
- D. Data is inadequate

**Answer:** Option A

**Explanation:**

Brother of mother means maternal uncle. Hence only nephew of Aamir's maternal uncle means Aamir himself. Therefore Sonia is the wife of Aamir.

### Logical Sequence of words:

1.

Arrange the words given below in a meaningful sequence.

---

1. Key	2. Door	3. Lock
4. Room	5. Switch on	

- A. 5, 1, 2, 4, 3
- B. 4, 2, 1, 5, 3
- C. 1, 3, 2, 4, 5
- D. 1, 2, 3, 5, 4

**Answer:** Option C

**Explanation:**

The correct order is :

---

Key	Lock	Door	Room	Switch on
1	3	2	4	5

2.

Arrange the words given below in a meaningful sequence.

---

1. Word	2. Paragraph	3. Sentence
4. Letters	5. Phrase	

- A. 4, 1, 5, 2, 3
- B. 4, 1, 3, 5, 2

- C. 4, 2, 5, 1, 3  
D. 4, 1, 5, 3, 2

**Answer:** Option D

**Explanation:**

The correct order is :

Letters	Word	Phrase	Sentence	Paragraph
4	1	5	3	2

---

3.

Arrange the words given below in a meaningful sequence.

1. Police    2. Punishment    3. Crime  
4. Judge    5. Judgement

- A. 3, 1, 2, 4, 5  
B. 1, 2, 4, 3, 5  
C. 5, 4, 3, 2, 1  
D. 3, 1, 4, 5, 2

**Answer:** Option D

**Explanation:**

The correct order is :

Crime	Police	Judge	Judgement	Punishment
3	1	4	5	2

---

4.

Arrange the words given below in a meaningful sequence.

1. Family    2. Community    3. Member  
4. Locality    5. Country

- A. 3, 1, 2, 4, 5  
B. 3, 1, 2, 5, 4  
C. 3, 1, 4, 2, 5  
D. 3, 1, 4, 5, 2

**Answer:** Option A

**Explanation:**

The correct order is :

Member	Family	Community	Locality	Country
3	1	2	4	5

---

5.

Arrange the words given below in a meaningful sequence.

- |                 |               |          |
|-----------------|---------------|----------|
| 1. Poverty      | 2. Population | 3. Death |
| 4. Unemployment | 5. Disease    |          |

- A. 2, 3, 4, 5, 1
- B. 3, 4, 2, 5, 1
- C. 2, 4, 1, 5, 3
- D. 1, 2, 3, 4, 5

**Answer:** Option C

**Explanation:**

The correct order is :

Population	Unemployment	Poverty	Disease	Death
2	4	1	5	3

---

6.

Arrange the words given below in a meaningful sequence.

- |         |           |         |
|---------|-----------|---------|
| 1. Leaf | 2. Fruit  | 3. Stem |
| 4. Root | 5. Flower |         |

- A. 3, 4, 5, 1, 2
- B. 4, 3, 1, 5, 2
- C. 4, 1, 3, 5, 2
- D. 4, 3, 1, 2, 5

**Answer:** Option B

**Explanation:**

The correct order is :

Root	Stem	Leaf	Flower	Fruit
4	3	1	5	2

---

7.

Arrange the words given below in a meaningful sequence.

---

1. Nation    2. Village    3. City  
4. District    5. State

- A. 2, 3, 4, 5, 1
- B. 2, 3, 4, 1, 5
- C. 1, 3, 5, 4, 2
- D. 1, 2, 3, 4, 5

**Answer:** Option A

**Explanation:**

The correct order is :

---

Village	City	District	State	Nation
2	3	4	5	1

---

8.

Arrange the words given below in a meaningful sequence.

---

1. Caste    2. Family    3. Newly married Couple  
4. Clan    5. Species

- A. 2, 3, 1, 4, 5
- B. 3, 4, 5, 1, 2
- C. 3, 2, 1, 4, 5
- D. 4, 5, 3, 2, 1

**Answer:** Option C

**Explanation:**

The correct order is :

---

Newly married Couple	Family	Caste	Clan	Species
3	2	1	4	5

---

9.

Arrange the words given below in a meaningful sequence.

---

1. Cut    2. Put on    3. Mark  
4. Measure    5. Tailor

- A. 3, 1, 5, 4, 2
- B. 2, 4, 3, 1, 5
- C. 1, 3, 2, 4, 5

D. 4, 3, 1, 5, 2

**Answer:** Option D

**Explanation:**

The correct order is :

Measure	Mark	Cut	Tailor	Put on
4	3	1	5	2

---

10.

Arrange the words given below in a meaningful sequence.

1. House    2. Street    3. Room  
4. Town    5. District

- A. 3, 2, 1, 4, 5  
B. 3, 1, 4, 2, 5  
C. 3, 1, 2, 4, 5  
D. 3, 1, 2, 5, 4

**Answer:** Option C

**Explanation:**

The correct order is :

Room	House	Street	Town	District
3	1	2	4	5

---

11.

Arrange the words given below in a meaningful sequence.

1. Wall    2. Clay    3. House  
4. Room    5. Bricks

- A. 5, 2, 1, 4, 3  
B. 2, 5, 4, 1, 3  
C. 2, 5, 1, 4, 3  
D. 1, 2, 3, 4, 5

**Answer:** Option C

**Explanation:**

The correct order is :

Clay	Bricks	Wall	Room	House
------	--------	------	------	-------

---

2      5      1      4      3

---

12.

Arrange the words given below in a meaningful sequence.

---

1. Probation	2. Interview	3. Selection
4. Appointment	5. Advertisement	6. Application

---

- A. 5, 6, 3, 2, 4, 1
- B. 5, 6, 4, 2, 3, 1
- C. 5, 6, 2, 3, 4, 1
- D. 6, 5, 4, 2, 3, 1

**Answer:** Option C

**Explanation:**

The correct order is :

---

Advertisement	Application	Interview	Selection	Appointment	Probation
5	6	2	3	4	1

---

13.

Arrange the words given below in a meaningful sequence.

---

1. Elephant	2. Cat	3. Mosquito
4. Tiger	5. Whale	

---

- A. 5, 3, 1, 2, 4
- B. 3, 2, 4, 1, 5
- C. 1, 3, 5, 4, 2
- D. 2, 5, 1, 4, 3

**Answer:** Option B

**Explanation:**

The correct order is :

---

Mosquito	Cat	Tiger	Elephant	Whale
3	2	4	1	5

---

14.

Arrange the words given below in a meaningful sequence.

1. Yarn	2. Plant	3. Saree
4. Cotton	5. Cloth	

- A. 2, 4, 5, 1, 3
- B. 2, 4, 3, 5, 1
- C. 2, 4, 1, 5, 3
- D. 2, 4, 5, 3, 1

**Answer:** Option C

**Explanation:**

The correct order is :

Plant	Cotton	Yarn	Cloth	Saree
2	4	1	5	3

---

15.

Arrange the words given below in a meaningful sequence.

1. Infant	2. Old	3. Adult
4. Adolescent	5. Child	

- A. 5, 4, 3, 2, 1
- B. 3, 4, 2, 1, 5
- C. 2, 3, 4, 5, 1
- D. 1, 5, 4, 3, 2

**Answer:** Option D

**Explanation:**

The correct order is :

Infant	Child	Adolescent	Adult	Old
1	5	4	3	2

---

16.

Arrange the words given below in a meaningful sequence.

- 1. Never   2. Sometimes   3. Generally   4. Seldom   5. Always

- A. 5, 2, 1, 3, 4
- B. 5, 2, 4, 3, 1
- C. 5, 3, 2, 1, 4

D. 5, 3, 2, 4, 1

**Answer:** Option D

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

17.

Arrange the words given below in a meaningful sequence.

1. Index 2. Contents 3. Title 4. Chapters 5. Introduction

- A. 2, 3, 4, 5, 1
- B. 3, 2, 5, 1, 4
- C. 3, 2, 5, 4, 1
- D. 5, 1, 4, 2, 3

**Answer:** Option C

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

18.

Arrange the words given below in a meaningful sequence.

1. Income 2. Status 3. Education 4. Well-being 5. Job

- A. 1, 2, 5, 3, 4
- B. 1, 3, 2, 5, 4
- C. 3, 1, 5, 2, 4
- D. 3, 5, 1, 2, 4

**Answer:** Option D

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

19.

Arrange the words given below in a meaningful sequence.

1. Table   2. Tree   3. Wood   4. Seed   5. Plant

- A. 1, 2, 3, 4, 5
- B. 1, 3, 2, 4, 5
- C. 4, 5, 2, 3, 1
- D. 4, 5, 3, 2, 1

**Answer:** Option C

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

20.

Arrange the words given below in a meaningful sequence.

1. Windows   2. Walls   3. Floor   4. Foundation   5. Roof   6. Room

- A. 4, 1, 5, 6, 2, 3
- B. 4, 2, 1, 5, 3, 6
- C. 4, 3, 5, 6, 2, 1
- D. 4, 5, 3, 2, 1, 6

**Answer:** Option B

**Explanation:**

No answer description is available. [Let's discuss.](#)

## Data Sufficiency:

**Directions to Solve**

In each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and Give answer

- (A) If the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question
- (B) If the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question
- (C) If the data either in statement I alone or in statement II alone are sufficient to answer the question
- (D) If the data given in both statements I and II together are not sufficient to answer the question and

- (E) If the data in both statements I and II together are necessary to answer the question.
- 

1.

**Question:** In which year was Rahul born ?

**Statements:**

- I. Rahul at present is 25 years younger to his mother.
- II. Rahul's brother, who was born in 1964, is 35 years younger to his mother.
  - A. I alone is sufficient while II alone is not sufficient
  - B. II alone is sufficient while I alone is not sufficient
  - C. Either I or II is sufficient
  - D. Neither I nor II is sufficient
  - E. Both I and II are sufficient

**Answer:** Option E

**Explanation:**

From both I and II, we find that Rahul is  $(35 - 25) = 10$  years older than his brother, who was born in 1964. So, Rahul was born in 1954.

---

2.

**Question:** What will be the total weight of 10 poles, each of the same weight ?

**Statements:**

- I. One-fourth of the weight of each pole is 5 kg.
- II. The total weight of three poles is 20 kilograms more than the total weight of two poles.
  - A. I alone is sufficient while II alone is not sufficient
  - B. II alone is sufficient while I alone is not sufficient
  - C. Either I or II is sufficient
  - D. Neither I nor II is sufficient
  - E. Both I and II are sufficient

**Answer:** Option C

**Explanation:**

From I, we conclude that weight of each pole =  $(4 \times 5)$  kg = 20 kg.

So, total weight of 10 poles =  $(20 \times 10)$  kg = 200 kg.

From II, we conclude that:

Weight of each pole = (weight of 3 poles) - (weight of 2 poles) = 20 kg.

So, total weight of 10 pojes =  $(20 \times 10)$  kg = 200 kg.

---

3.

**Question:** How many children does M have ?

**Statements:**

- I. H is the only daughter of X who is wife of M.
- II. K and J are brothers of M.
  - A. I alone is sufficient while II alone is not sufficient
  - B. II alone is sufficient while I alone is not sufficient
  - C. Either I or II is sufficient
  - D. Neither I nor II is sufficient
  - E. Both I and II are sufficient

**Answer:** Option D

**Explanation:**

From I, we conclude that H is the only daughter of M. But this does not indicate that M has no son. The information given in II is immaterial.

---

4.

**Question:** How much was the total sale of the company ?

**Statements:**

- I. The company sold 8000 units of product A each costing Rs. 25.
- II. This company has no other product line.
  - A. I alone is sufficient while II alone is not sufficient
  - B. II alone is sufficient while I alone is not sufficient
  - C. Either I or II is sufficient
  - D. Neither I nor II is sufficient
  - E. Both I and II are sufficient

**Answer:** Option E

**Explanation:**

From I, total sale of product A = Rs.  $(8000 \times 25)$  = Rs. 200000.

From II, we know that the company deals only in product A.

This implies that sale of product A is the total sale of the company, which is Rs. 200000.

---

5.

**Question:** The last Sunday of March, 2006 fell on which date ?

**Statements:**

- I. The first Sunday of that month fell on 5th.
  - II. The last day of that month was Friday.
- A. I alone is sufficient while II alone is not sufficient
  - B. II alone is sufficient while I alone is not sufficient
  - C. Either I or II is sufficient
  - D. Neither I nor II is sufficient
  - E. Both I and II are sufficient

**Answer:** Option C

**Explanation:**

From I, we conclude that 5th, 12th, 19th and 26th of March, 2006 were Sundays.

So, the last Sunday fell on 26th.

From II, we conclude that 31st March, 2006 was Friday. Thus, 26th March, 2006 was the last Sunday of the month.

---

6.

**Question:** What is the code for 'sky' in the code language ?

**Statements:**

- I. In the code language, 'sky is clear' is written as 'de ra fa'.
  - II. In the same code language, 'make it clear' is written as 'de ga jo'.
- A. I alone is sufficient while II alone is not sufficient
  - B. II alone is sufficient while I alone is not sufficient
  - C. Either I or II is sufficient
  - D. Neither I nor II is sufficient
  - E. Both I and II are sufficient

**Answer:** Option D

**Explanation:**

The only word common to I and II is 'clear' and as such, only the code for 'clear' can be ascertained from the given information.

---

7.

**Question:** How many children are there between P and Q in a row of children ?

**Statements:**

- I. P is fifteenth from the left in the row.
- II. Q is exactly in the middle and there are ten children towards his right.
  - A. I alone is sufficient while II alone is not sufficient
  - B. II alone is sufficient while I alone is not sufficient
  - C. Either I or II is sufficient
  - D. Neither I nor II is sufficient
  - E. Both I and II are sufficient

**Answer:** Option E

**Explanation:**

From II, Q being in the middle, there are 10 children to his right as well as to his left.

So, Q is 11th from the left. From I, P is 15th from the left.

Thus, from both I and II, we conclude that there are 3 children between P and Q.

---

8.

**Question:** How is T related to K?

**Statements:**

- I. R's sister J has married Ts brother L, who is the only son of his parents.
- II. K is the only daughter of L and J.
  - A. I alone is sufficient while II alone is not sufficient
  - B. II alone is sufficient while I alone is not sufficient
  - C. Either I or II is sufficient
  - D. Neither I nor II is sufficient
  - E. Both I and II are sufficient

**Answer:** Option E

**Explanation:**

From I, we know that L is T's brother and J's husband. Since L is the only son of his parents, T is L's sister.

From II, we know that K is L's daughter.

Thus, from I and II, we conclude that T is the sister of K's father i.e. T is K's aunt.

---

9.

**Question:** How is J related to P ?

**Statements:**

- I. M is brother of P and T is sister of P.
- II. P's mother is married to J's husband who has one son and two daughters.
  - A. I alone is sufficient while II alone is not sufficient
  - B. II alone is sufficient while I alone is not sufficient
  - C. Either I or II is sufficient
  - D. Neither I nor II is sufficient
  - E. Both I and II are sufficient

**Answer:** Option B

**Explanation:**

From II, we know that P's mother is married to J's husband, which means that J is P's mother.

---

10.

**Question:** How is X related to Y ?

**Statements:**

- I. Y and Z are children of D who is wife of X.
- II. R's sister X is married to Y's father.
  - A. I alone is sufficient while II alone is not sufficient
  - B. II alone is sufficient while I alone is not sufficient
  - C. Either I or II is sufficient
  - D. Neither I nor II is sufficient
  - E. Both I and II are sufficient

**Answer:** Option C

**Explanation:**

From I, we conclude that Y is the child of D who is wife of X i.e. X is Y's father.

From II, X is married to Y's father. This implies that X is Y's mother.

---

### Directions to Solve

In each of the following problems, there is one question and three statements I, II and III given below the question. You have to decide whether the data given in the statements is sufficient to answer the question. Read all the statements carefully and find which of the statements is/are sufficient to answer the given question. Choose the correct alternative in each question.

---

1.

**Question:** What is Suman's rank from the top in a class of forty students ?

**Statements:**

- I. Suman is 3 ranks below Deepak from the top.
  - II. Deepak's rank from the bottom is 23.
  - III. Suman is 3 ranks above Deepak from the bottom.
- A. Any two of the three
  - B. Only I and II
  - C. Only II and III
  - D. All I, II and III
  - E. Only II and either I or III

**Answer:** Option E

**Explanation:**

From II, we conclude that in a class of 40, Deepak ranks 23rd from the bottom i.e. 18th from the top.

From I and II, we find that Suman is 3 ranks below 18th rank from the top i.e. she ranks 21st from the top.

From II and III, we find that Suman is 3 ranks above 23rd rank from the bottom i.e. she ranks 20th from the bottom or 21st from the top.

---

2.

**Question:** Five persons - A, B, C, D and E are sitting in a row. Who is sitting in the middle?

**Statements:**

- I. B is between E and C.

- II. B is to the right of E.
- III. D is between A and E.
  - A. Only I and II
  - B. Only II and III
  - C. Only I and III
  - D. All I, II and III
  - E. None of these

**Answer:** Option D

**Explanation:**

From I, the order is : E, B, C or C, B, E.

From II, the order is : E, B.

From III, the order is : A, D, E.

Combining the above three, we get the order as : A, D, E, B, C. Clearly, E is sitting in the middle.

---

3.

**Question:** How is 'DATE' written in the code language ?

**Statements:**

- I. DEAR is written as \$#@? in that code.
- II. TREAT is written as %?#@% in that code.
- III. TEAR is written as %#@? in that code,
  - A. Only I and II
  - B. Only II and III
  - C. All I, II and III
  - D. Only I and either II or III
  - E. None of these

**Answer:** Option D

**Explanation:**

Observing I, II and III, we find that similar letters have similar code symbols at the corresponding places in the code. So, this is direct-coding.

Thus, to find the code for DATE, we need the code for D which can be obtained from I only (i.e. \$.) and the codes for A, T and E which can be obtained either from II or III (@, # and % respectively).

---

4.

**Question:** In which year was Sanjay born ?

**Statements:**

- I. Sanjay is six years older than Gopal.
  - II. Gopal's brother was born in 1982.
  - III. Sanjay's brother is two years younger than Gopal's brother who was eight years younger than Gopal.
- A. Only I and II
  - B. Only II and III
  - C. Only I and III
  - D. All I, II and III
  - E. None of these

**Answer:** Option D

**Explanation:**

From II, we know that Copal's brother was born in 1982.

From III, we find that Gopal's brother was 8 years younger to him i.e. Gopal was born in 1974.

From I, we find that Sanjay is 6 years older than Gopal. Thus, Sanjay was born in 1968.

---

5.

**Question:** Who among Siddhartha, Nikunj, Vipul and Mukul is the youngest?

**Statements:**

- I. Vipul is younger than Mukul but older than Siddhartha and Nikunj.
  - II. Mukul is the oldest.
  - III. Siddhartha is older than Nikunj.
- A. Only I
  - B. Only I and II
  - C. Only II and III
  - D. Only I and III
  - E. None of these

**Answer:** Option D

### **Explanation:**

From I, we have: M > V, V > S, V > N ... (i)

From II, we have: Mukul is the oldest ... (ii)

From III, we have: S > N ... (iii)

Combining (i) and (iii), we get :M > V, V > S > N or M > V > S > N. Clearly, Nikunj is the youngest.

---

6.

**Question:** In a certain code, 'XYZ' means 'We are friends'. Which letter stands for 'We' ?

### **Statements:**

- I. 'PYN' means 'They are classmates'.
- II. 'ZMS' means 'We love them'.
- III. 'PX' means 'Hello friends',
  - A. Only II
  - B. Only I and III
  - C. All I, II and III
  - D. Either I only or II only
  - E. None of these

**Answer:** Option E

### **Explanation:**

To find the code for 'we', we need to have any of the following:

- (i) 'We are friends' should have only 'We' common with another statement, as in II;
  - (ii) 'We are friends' should have only 'are' and 'friends' common with another single or two statements, as in I and III. Thus, we need Either II only or I and III only.
- 

7.

**Question:** Among P, Q, R, S and T, Q is the second tallest and S is immediate taller than the shortest. Who among them is in the middle when they stand in the order of their heights ?

### **Statements:**

- I. T is not the shortest.

- II. R is taller than S but shorter than Q.
- III. P ranks third in height above S when all are arranged in the order of height.
  - A. Only I and II
  - B. Either II only or I and III only
  - C. Only II
  - D. Only II and III
  - E. None of these

**Answer:** Option B

**Explanation:**

From the given statement, the descending order of heights is : \_\_, Q, \_\_, S, \_\_.

From II, we have the order: \_\_, Q, R, S, \_\_. Thus, R is in the middle.

From III, we have the order : P, Q, \_\_, S, \_\_. But, according to I, T is not the shortest.

So, R is the shortest. Thus, we have the order : P, Q, T, S, R. So, T is in the middle.

---

8.

**Question:** Four subjects - Physics, Chemistry, Mathematics and Biology - were taught in four consecutive periods of one hour each starting from 8.00 a.m. At what time was the Chemistry period scheduled ?

**Statements:**

- I. Mathematics period ended at 10.00 a.m., which was preceded by Biology.
- II. Physics was scheduled in the last period.
- III. Mathematics period was immediately followed by Chemistry.
  - A. Only I
  - B. Either I only or II only
  - C. Only II
  - D. Only II and III
  - E. Only I and either II or III

**Answer:** Option E

**Explanation:**

From I and II, we conclude that Mathematics period began at 9.00 a.m., Biology period began at 8.00 a.m. and Physics period began at 11 a.m. So, the Chemistry period began at 10.00 a.m.

From I and III, we conclude that Mathematics period ended and Chemistry period began at 10.00 a.m.

---

9.

**Question:** What is the total monthly salary of Vasu ?

**Statements:**

- I. Vasu's basic salary is Rs 100 more than Rajan's salary who also serves in Vasu's company.
- II. Other allowances drawn by Rajan besides his basic salary are Rs 2000 per month which is Rs 50 less than Vasu's salary.
- III. Rajan's basic salary is Rs 1550 per month,
  - A. Only II
  - B. Only II and III
  - C. Only I and II
  - D. Only I and III
  - E. All I, II and III

**Answer:** Option E

**Explanation:**

From III, we have: Rajan's basic salary = Rs. 1550.

From I, we have: Vasu's basic salary = Rs.  $(1550 + 100) = \text{Rs. } 1650$ .

From II, we have: Rajan's other allowances = Rs. 2000 and Vasu's other allowances = Rs. 2050.

Therefore Vasu's monthly salary = Rs.  $(1650 + 2050) = \text{Rs. } 3700$ .

---

10.

**Question:** Who is the tallest among six boys P, T, N, D, Q and R ?

**Statements:**

- I. P is taller than D and N but not-as tall as T.
- II. R is taller than Q but not as tall as T.
- III. Q is not taller than T and R.
  - A. Only I and II
  - B. Only II and III

- C. Only I and III
- D. All I, II and III
- E. Only I and either II or III

**Answer:** Option A

**Explanation:**

From I, we have:  $P > D$ ,  $P > N$ ,  $T > P$  i.e.  $T > P > D > N$  or  $T > P > N > D$  ... (i)

From II, we have:  $R > Q$ ,  $T > R$  i.e.  $T > R > Q$  ... (ii)

From III, we have:  $T > Q$ ,  $R > Q$  ... (iii)

Clearly, from (i) and (ii), we conclude that T is taller than each one of P, N, D, R and Q. So, T is the tallest.

### Verification of Truth :

1.

A train always has

- A. Rails
- B. Driver
- C. Guard
- D. Engine

**Answer:** Option D

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

2.

Which one of the following is always found in 'Bravery'?

- A. Experience
- B. Power
- C. Courage
- D. Knowledge

**Answer:** Option C

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

3.

A song always has

- A. Word
- B. Chorus
- C. Musician
- D. Tymbal

**Answer:** Option A

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

4.

Yesterday I saw an ice cube which had already melted due to heat of a nearby furnace.

- A. Always
- B. Never
- C. Often
- D. Sometimes

**Answer:** Option B

**Explanation:**

Since the ice cube had already melted due to the heat of a nearby furnace so after this ice cannot remain as ice cube.

---

5.

What is found necessarily in milk?

- A. Cream
- B. Curd
- C. Water
- D. Whiteness

**Answer:** Option D

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

6.

Which one of the following is always with 'Bargain'?

- A. Exchange
- B. Sumptuousness
- C. Triviality
- D. Eloquence

**Answer:** Option A

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

7.

Which one of the following a 'Drama' must have?

- A. Actors
- B. Story
- C. Sets
- D. Director

**Answer:** Option B

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

8.

A boy is sitting at the back seat of a car. When the driver suddenly starts moving the car (in forward direction), the boy experiences a backward force?

- A. Always
- B. Never
- C. Often
- D. Sometimes

**Answer:** Option A

**Explanation:**

When a car suddenly starts the lower part of the boy's body will be in the motion while his upper will be at rest.

Hence he will always experience backward force:

---

9.

Which one of the following is always found in 'Wonder'?

- A. Crowd
- B. Lumber
- C. Astonishment
- D. Rustic

**Answer:** Option C

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

10.

Disclosure always involves

- A. Agents
- B. Display
- C. Exposition
- D. Secrets

**Answer:** Option D

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

11.

A bulb always has

- A. Glass
- B. Current
- C. Filament
- D. Light

**Answer:** Option C

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

12.

A mirror always

- A. Retracts
- B. Distorts
- C. Refracts
- D. Reflects

**Answer:** Option D

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

13.

A lotus flower always has

- A. Mud
- B. Petals
- C. Root
- D. Water

**Answer:** Option B

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

14.

In India a widow can marry her brother-in-law although a man cannot marry the sister of his dead wife:

- A. Always
- B. Never
- C. Often
- D. Sometimes

**Answer:** Option D

**Explanation:**

As there is no such tradition hence this will happen sometimes.

---

15.

Which one of the following is always found in 'Remedy of fault'?

- A. Punishment
- B. Remedy
- C. Fault
- D. Scolding

**Answer:** Option C

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

16.

A car always has

- A. Driver
- B. Wheels
- C. Bonnet
- D. Bumper

**Answer:** Option B

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

17.

Danger always involves

- A. Enemy
- B. Attack
- C. Fear
- D. Help

**Answer:** Option C

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

18.

A disease always has

- A. Cure
- B. Germs
- C. Cause
- D. Patient

**Answer:** Option C

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

19.

Management always involves

- A. Regulation
- B. Counsel
- C. Exhortation
- D. Coercion

**Answer:** Option A

**Explanation:**

No answer description is available. [Let's discuss.](#)

---

20.

Which one of the following is always found in 'Phrase'?

- A. Nomenclature
- B. Manifestation
- C. Pictorial effect
- D. Glossary

**Answer:** Option D

**Explanation:**

# UNIT 3

## LOGICAL DEDUCTION

### 1. LOGIC

The word 'Logic' is derived from the Greek noun 'logos' meaning both 'thought' and 'the word expressing thought'.

Thus, LOGIC is the 'science of thought as expressed in language'. This means that the questions on logic are to be solved as per the information given without any concern of the formal validity or truth of the statements i.e. conclusion should follow directly from the statements given.

With this unique characteristic, the Logic Test becomes an instrument of teaching the candidates to follow the rules and work as per the instructions without an error. Thus, it prepares the mind for all types of reasoning practices and teaches how to detect and avoid mistakes in the same.

#### LOGICAL REASONING

In Logic, any statement is termed as the **Proposition**. Thus, a *Proposition is a statement expressing certain relation between two or more terms*, analogous to a sentence in grammar.

The Proposition consists of three parts :

1. **Subject** : The Subject is that about which something is said.
2. **Predicate** : The Predicate is the part of the Proposition denoting that which is affirmed or denied about the subject.
3. **Copula** : The Copula is that part of the Proposition which denotes the relation between the Subject and the Predicate.

Consider the Proposition '*Man is cultured*'.

Here an information is given about the man. So 'Man' is the Subject.

'Cultured' is the quality affirmed for this Subject. So it is the Predicate.

'is' denotes the relation between the Subject and the Predicate. So, it is the Copula.

#### Four Fold Classification of Propositions :

'Propositions' can be classified into four types :

1. **Universal Affirmative Proposition** (denoted by A) : It distributes *only the subject* i.e., the Predicate is not interchangeable with the subject while maintaining the validity of the Proposition. e.g.,

All men are animals.

This is Proposition A since we cannot say 'All animals are men.'

2. **Universal Negative Proposition** (denoted by E) : It distributes *both the Subject and the Predicate* i.e., an entire class of predicate term is denied to the entire class of the subject term, as in the proposition. e.g.

No boy is intelligent.

3. **Particular Affirmative Proposition** (denoted by I) : It distributes *neither the Subject nor the Predicate*. e.g.

Some people are foolish.

Here, the subject term 'Some people' is used not for all but only for some men and similarly the predicate term 'foolish' is affirmed for a part of subject class. So, both are undistributed.

#### 4. Particular Negative Proposition (denoted by O) :

It distributes only the *Predicate*. e.g.,

Some animals are not wild.

Here the subject term 'some animals' is used only for a part of its class and hence is undistributed while the predicate term 'wild' is denied in entirety to the subject term and hence is distributed.

These facts can be summarised as follows :

Proposition	Type
(a) (A) distributes subject only.	All S is P.
(b) (E) distributes subject and predicate both.	No S is P.
(c) (I) distributes neither.	Some S is P.
(d) (O) distributes predicate only.	Some S is not P.

**SYLLOGISM** : In Logic, we are required to deal with a particular type, termed as Syllogism. It was introduced by Aristotle.

In Syllogism, a *conclusion* has to be drawn from two propositions, referred to as the Premises.

- Example :**
1. All lotus are flowers.
  2. All flowers are beautiful.
  3. All lotus are beautiful.

Clearly, the propositions 1 and 2 are the Premises and the proposition 3, which follows from the first two propositions, is called the Conclusion.

**Term** : In Logic, a TERM is a word or a combination of words, which by itself can be used as a subject or predicate of a proposition.

Syllogism is concerned with three terms :

- 1. Major Term** : It is the *predicate of the conclusion* and is denoted by P (first letter of 'Predicate').
- 2. Minor Term** : It is the *subject of the conclusion* and is denoted by S (first letter of 'Subject').
- 3. Middle Term** : It is the *term common to both the premises* and is denoted by M (first letter of 'Middle').

Note that the middle term does not occur in the conclusion.

- Example : Premises :**
1. All dogs are animals.
  2. Tiger is a dog.

**Conclusion :** Tiger is an animal.

Here, 'animal' is the predicate of the conclusion and so, it is the Major Term, P. 'Tiger' is the subject of the conclusion and so, it is the Minor Term, S.

'Dog' is the term common to both the premises and so, it is the Middle Term, M.

**Major and Minor Premise** : Of the two premises, the *major premise* is that in which the middle term is the subject and the *minor premise* is that in which the middle term is the predicate.

**Rules for deriving the conclusion :**

1. *The conclusion does not contain the middle term.*

- Example :** Statements :
1. All men are girls.
  2. Some girls are students.

- Conclusions :*
1. All girls are men.
  2. Some students are girls.

Since both the conclusions 1 and 2 contain the middle term 'girls', so neither of them can follow.

**2. No term can be distributed in the conclusion unless it is distributed in the premises.**

- Example :** *Statements :*
1. Some dogs are goats.
  2. All goats are cows.

- Conclusions :*
1. All cows are goats.
  2. Some dogs are cows.

*Statement 1 is an I type proposition which distributes neither the subject nor the predicate. Statement 2 is an A type proposition which distributes the subject. i.e. 'goats' only.*

*Conclusion 1 is an A type proposition which distributes the subject 'cow' only.*

Since the term 'cow' is distributed in conclusion 1 without being distributed in the premises, so conclusion 1 cannot follow.

**3. The middle term (M) should be distributed at least once in the premises. Otherwise, the conclusion cannot follow.**

For the middle term to be distributed in a premise,

- (i) M must be the Subject if premise is an A proposition.
- (ii) M must be Subject or Predicate if premise is an E proposition.
- (iii) M must be Predicate if premise is an O proposition.

Note that in an I proposition, which distributes neither the Subject nor the Predicate, the middle term cannot be distributed.

- Example :** *Statements :*
1. All fans are watches.
  2. Some watches are black.

- Conclusions :*
1. All watches are fans.
  2. Some fans are black.

In the premises, the middle term is 'watches'. Clearly, it is not distributed in the first premise which is an A proposition as it does not form its subject. Also, it is not distributed in the second premise which is an I proposition. Since the middle term is not distributed at least once in the premises, so no conclusion follows.

**4. No conclusion follows**

**(a) if both the premises are particular**

- Example :** *Statements :*
1. Some books are pens.
  2. Some pens are erasers.

- Conclusions :*
1. All books are erasers.
  2. Some erasers are books.

Since both the premises are particular, no conclusion follows.

**(b) if both the premises are negative**

- Example :** *Statements :*
1. No flower is mango.
  2. No mango is cherry.

- Conclusions :*
1. No flower is cherry.
  2. Some cherries are mangoes.

Since both the premises are negative, neither conclusion follows.

**(c) if the major premise is particular and the minor premise is negative.**

**Example :** Statements : 1. Some dogs are bulls.

2. No tigers are dogs

Conclusions : 1. No dogs are tigers.

2. Some bulls are tigers.

Here the first premise containing the middle term 'dogs' as the Subject is the major premise and the second premise containing the middle term 'dogs' as the Predicate is the minor premise. Since the major premise is particular and the minor premise is negative, so no conclusion follows.

**5. If the middle term is distributed twice, the conclusion cannot be universal.**

**Example :** Statements : 1. All fans are chairs.

2. No tables are fans.

Conclusions : 1. No tables are chairs.

2. Some tables are chairs.

Here, the first premise is an A proposition and so, the middle term 'fans' forming the subject is distributed. The second premise is an E proposition and so, the middle term 'fans' forming the predicate is distributed. Since the middle term is distributed twice, so the conclusion cannot be universal.

**6. If one premise is negative, the conclusion must be negative.**

**Example :** Statements : 1. All grasses are trees.

2. No tree is shrub.

Conclusions : 1. No grasses are shrubs.

2. Some shrubs are grasses.

Since one premise is negative, the conclusion must be negative. So, conclusion 2 cannot follow.

**7. If one premise is particular, the conclusion is particular.**

**Example :** Statements : 1. Some boys are thieves.

2. All thieves are dacoits.

Conclusions : 1. Some boys are dacoits.

2. All dacoits are thieves.

Since one premise is particular, the conclusion must be particular. So, conclusion 2 cannot follow.

**8. If both the premises are affirmative, the conclusion would be affirmative.**

**Example :** Statements : 1. All women are mothers.

2. All mothers are sisters.

Conclusions : 1. All women are sisters.

2. Some women are not sisters.

**9. If major premise be affirmative, the conclusion must be particular.**

**Example :** Statements : 1. All plays are stories.

2. Some poems are plays.

Conclusions : 1. Some poems are stories.

2. All stories are poems.

The first premise containing the middle term 'plays' as the subject is the major premise. Also, it is affirmative. So, the conclusion must be particular. Hence, conclusion 2 cannot follow.

# Question Bank of L.R.P.S

## UNIT 3

Logic : Logical Reasoning, Logical Deduction , Two- Premise Arguments, Three- Premise Arguments

1) Statements:

- I) All heroes are villains.
- II) All villains are zeros.
- III) Some heroes are jokers.

Conclusion:

- i) Some Jokers are heroes
  - ii) Some villains are jokers
  - iii) Some zeros are villains
- A. Only I, II follow
- B. All I, II, III follows**
- C. Only I, III follow
- D. Only I, II follow
- E. None of these

2) Statements:

- I) Some parrots are owls.
- II) All owls are pigeons.
- III) All pigeons are snakes.

Conclusion:

- i) Some parrots are pigeons
- ii) Some pigeons are parrots
- iii) All owls are snakes

**A. All follow**

- B. Only I, III follow
- C. Only II, III follow
- D. Only I, II follow
- E. None of these

3) Statements:

- I) All crows are foxes.
- II) All cats are jaguars.
- III) Some cats are crows.

Conclusion:

- I) Some jaguars are crows
  - II) Some foxes are jaguars
  - III) Some crows are Jaguars
- A. Only I, II follow
- B. All I, II, III follow**
- C. Only I, III follow
  - D. Only II, III follows
  - E. None of these

4) Statements:

- I) All ducks are rats
- II) Some rats are hats
- III) All hats are leaves

Conclusion:

- I) Some leaves are ducks
- II) Some hats are ducks
- III) Some leaves are rats

- A. Only I follow
- B. Only II follows
- C. Only III follows**
- D. Only II and III follow

5) Statements:

- I) All stones are flowers
- II) All flowers are cars
- III) Some cars are trucks

Conclusions:

- I) Some trucks are stones
- II) Some cars are stones
- III) Some trucks are flowers

- A. Only II follows**
- B. Only II and III follow
- C. Only I follow
- D. Only III follows
- E. None follows

### Statement – Arguments : Strong arguments and weak Arguments

1. Statement: Should words like ‘smoking is injurious to health’ essentially appear on cigarette packs?

Arguments:

- I. Yes, it is a sort of brainwash to make the smokers realize that they are inhaling poisonous stuff.
- II. No, it hampers the enjoyment of smoking.

Solution: We need to check which reasoning is weak or strong. Now, in option I, The reasoning is strong as we can relate to the practical aspect which may be useful to others whereas in option II, the reasoning is just enjoyment despite the fact that it is injurious to health. So the reasoning is weak and therefore, the correct answer should be option I.

2. Statement: Should those who receive dowry, despite the law prohibiting it, be punished?

Arguments:

- I. Yes, those who violate the law, must be punished.
- II. No, dowry system is firmly rooted in the society since time immemorial.

Solution: In this case, a positive response is given in option I as it can lessen the problem and reasoning is also strong. On the other hand, in option II, there is a negative impact or weak reasoning for the statement given.

3. Statement: Should officers accepting bribe be punished?

Arguments:

- I. Yes, They should do their job they are entrusted with, honestly.
- II. No, certain circumstances may have compelled them to take bribe.

Solution: Honesty is the best policy. So, option I goes with this fact and logic whereas option II is giving options to continue bribe. So, option I should be the correct.

4 Statement :

Should India go in for computerization in all possible sectors ?

Arguments :

- I. Yes. It will bring efficiency and accuracy in the work.
- II. No. It will be an injustice to the monumental human resources which are at present underutilized.
- III. No. Computerization demands a lot of money. We should not waste money on it.
- IV. Yes. When advanced countries are introducing computers in every field, how can India afford to lag behind ?

A. Only I is strong

B. Only I and II are strong

C. Only I and III are strong

D. Only II and III are strong

5)Statement :

Should India immediately stop digging coal from its mines ?

Arguments :

- I. Yes. The present stock of coal will not last long if we continue mining at the present rate.
- II. No. We do not have alternate energy source of sufficient quantity.
- III. No. This will put millions of people at a disadvantage and their lives will get adversely affected and also the industry.

- A. Only I and II are strong
- B. Only II and III are strong
- C. Only I and III are strong

**Statement –assumption : Type 1- implicit statement, Type2-Implicit in Context**

1. Statement: Astha is an intelligent girl and she is expected to do well in the entrance exam.
  1. Intelligent girls are expected to do well in the entrance exam.
  2. Foolish girls perform poorly in entrance exam.
  3. Astha has always done well in her exams
  4. None of the above

Ans. (a) because we cannot assume anything about Astha in the past and also about foolish girls.

2. Statement: Johnson Baby Moisturizer is rich in milk protein and the babies who use Johnson Baby Moisturizer have soft skin.
  - a) Baby moisturizer is used to make the skin soft
  - b) Milk protein helps in making the baby skin soft.
  - c) Both (a)and(b)
  - d) None of these
3. It is expected from an Indian citizen to start earning by the age of 24 years.
  1. Every Indian Citizen must be a graduate by the age of 24.
  2. Government of India should employ every Indian citizen who is 24 years old.
  3. Both (a) and (b)
  4. Neither (a) nor (b)

Ans. (d) because neither of the assumption is implicit. For example: person can also start earning before graduation and can also start earning by getting a job on their own in the private sector.

Statement: Maggi is one of the most popular snack among children but Government has restricted 5 Maggi packets per child per month.

Assumption A: Sellers of Maggi do not want to sell Maggi

Assumption B: No child wants to eat more than 5 Maggi packets a month.

1. Only Assumption A is implicit
2. Only Assumption B is implicit
3. Neither A nor B is implicit

4. Both A and B are implicit
5. Either A or B is implicit.

Ans. (c) because there could be various assumptions but the given two assumptions are not implicit in the Statement.

Statement: Good ethics and values must be imparted in children from the age of 4 years.

Assumption A: It will make them loved by all and popular.

Assumption B: It is the best age for them to learn good ethics and values and they also start understanding things at that age.

1. Only Assumption A is implicit
2. Only Assumption B is implicit
3. Neither A nor B is implicit
4. Both A and B are implicit
5. Either A or B is implicit.

Ans. (b) because Statement A is predicting the future, it cannot be implicit.

## Statement –Conclusions : Direct / indirect implications of conclusions

*Example 1. Statement:* These apples are too expensive to be bad.

*Conclusions:*

- (I) When apples are in short supply, the prices go up.
- (II) The higher the selling price, the superior is the quality of the commodity.

*Solution:*

(b), Clearly, 'Too expensive to be bad' means that it cannot be bad because it is expensive it means that apples with higher cost are good. But conclusion I, short supply favours rising of price is irrelevant to the statement.

*Example 2. Statement:* Cases of bride burning for dowry are not uncommon.

*Conclusions:*

- (I) Inspite of anti-dowry laws, the ill practice continues.
- (II) The punishment inflicted on the party concerned is not sufficient.

*Solution:*

(a), These cases are not uncommon means inspite of anti-dowry laws, the ill practice continues.

*Example 3. Statement:* Only good men die on time.

*Conclusions:*

- (I) No good people live till being old.
- (II) Every person who live till being old is bad.

*Solution:*

(d), Both conclusions have the same meaning. Means bad person live till they are old. But according to statement, only good men die in time. Hence, neither I nor II follows.

*Example 4. Statement:* 60% of government employees went on strike.

Mr. Gopal is a government employee.

*Conclusions:*

- (I) Mr Gopal went on strike.
- (II) Mr Gopal did not participate in the strike.

*Solution:*

(d), Either of the situation is possible. If Mr. Gopal was one of the member of 60% employers, then he went on strike. If he was not in group of 60%, then he did not participate in the strike.

Hence, either conclusion I or II follows.

*Example 5. Statement:*

Lawyers marry only fair girls.

Shobha is very fair.

*Conclusions:*

- (I) Shobha is married to a lawyer.

(II) Shobha is not married to a lawyer.

*Solution:*

(d), The statement I is talking about a condition with the lawyer that they marry only fair girls. But it is not talking about any condition with Shobha. So, Shobha can marry either a lawyer or anyone else.

# Logical Reasoning :: Statement and Assumption

## Directions to Solve

In each question below is given a statement followed by two assumptions numbered I and II. You have to consider the statement and the following assumptions and decide which of the assumptions is implicit in the statement.

Give answer

- (A) If only assumption I is implicit
  - (B) If only assumption II is implicit
  - (C) If either I or II is implicit
  - (D) If neither I nor II is implicit
  - (E) If both I and II are implicit.
- 

**Statement:** "You are hereby appointed as a programmer with a probation period of one year and your performance will be reviewed at the end of the period for confirmation." - A line in an appointment letter.

### Assumptions:

1. The performance of an individual generally is not known at the time of appointment offer.
2. Generally an individual tries to prove his worth in the probation period.
  - A. Only assumption I is implicit
  - B. Only assumption II is implicit
  - C. Either I or II is implicit
  - D. Neither I nor II is implicit

**E. Both I and II are implicit**

Answer: Option E

Explanation:

The performance of the individual has to be tested over a span of time as the statement mentions. So, I is implicit. The statement mentions that the individual's worth shall be reviewed (during probation period) before confirmation. So, II is also implicit.

---

**2) Statement:** It is desirable to put the child in school at the age of 5 or so.

### Assumptions:

1. At that age the child reaches appropriate level of development and is ready to learn.
2. The schools do not admit children after six years of age.

**A. Only assumption I is implicit**

- B. Only assumption II is implicit
- C. Either I or II is implicit
- D. Neither I nor II is implicit
- E. Both I and II are implicit

**Answer:** Option A

**Explanation:**

Since the statement talks of putting the child in school at the age of 5, it means that the child is mentally prepared for the same at this age. So, I is implicit. But nothing about admission after 6 years of age is mentioned in the statement. So, II is not implicit.

---

- 3) **Statement:** "In order to bring punctuality in our office, we must provide conveyance allowance to our employees." - In charge of a company tells Personnel Manager.

**Assumptions:**

1. Conveyance allowance will not help in bringing punctuality.
2. Discipline and reward should always go hand in hand.
  - A. Only assumption I is implicit
  - B. Only assumption II is implicit**
  - C. Either I or II is implicit
  - D. Neither I nor II is implicit
  - E. Both I and II are implicit

**Answer:** Option B

**Explanation:**

Assumption I goes against the statement. So, it is not implicit. The allowance will serve as a reward to the employees and shall provoke them to come on time. So, II is implicit.

---

- 4) **Statement:** Unemployment allowance should be given to all unemployed Indian youth above 18 years of age.

**Assumptions:**

1. There are unemployed youth in India who needs monetary support.
2. The government has sufficient funds to provide allowance to all unemployed youth.

**A. Only assumption I is implicit**

- B. Only assumption II is implicit
- C. Either I or II is implicit
- D. Neither I nor II is implicit
- E. Both I and II are implicit

**Answer:** Option A

**Explanation:**

I directly follows from the statement and so is implicit. Also, the statement is a suggestion and does not tell about a government policy or its position of funds. So, II is not implicit.

---

**5.Statement:** "If you trouble me, I will slap you." - A mother warns her child.

**Assumptions:**

1. With the warning, the child may stop troubling her.
2. All children are basically naughty.

**A. Only assumption I is implicit**

- B. Only assumption II is implicit
- C. Either I or II is implicit
- D. Neither I nor II is implicit
- E. Both I and II are implicit

**Answer:** Option A

**Explanation:**

The mother warns her child with the expectation that he would stop troubling her. So, I is implicit. The general nature of children cannot be derived from the statement. So, II is not implicit.

---

**6.Statement:** The State government has decided to appoint four thousand primary school teachers during the next financial year.

**Assumptions:**

1. There are enough schools in the state to accommodate four thousand additional primary school teachers.
2. The eligible candidates may not be interested to apply as the government may not finally appoint such a large number of primary school teachers.

**A. Only assumption I is implicit**

- B. Only assumption II is implicit
- C. Either I or II is implicit
- D. Neither I nor II is implicit
- E. Both I and II are implicit

**Answer:** Option A

### **Explanation:**

Such decisions as given in the statement are taken only after taking the existing vacancies into consideration. So, I is implicit while II isn't.

---

**7.Statement:** A warning in a train compartment - "To stop train, pull chain. Penalty for improper use Rs. 500."

### **Assumptions:**

1. Some people misuse the alarm chain.
2. On certain occasions, people may want to stop a running train.
  - A. Only assumption I is implicit
  - B. Only assumption II is implicit
  - C. Either I or II is implicit
  - D. Neither I nor II is implicit

### **E. Both I and II are implicit**

**Answer:** Option E

### **Explanation:**

Clearly, the penalty is imposed to prevent people from misusing the alarm chain. This means that some people misuse it. So, I is implicit. The alarm chain is provided to stop the running train in times of urgency. So, II is also implicit.

---

**8.Statement:** If it is easy to become an engineer, I don't want to be an engineer.

### **Assumptions:**

1. An individual aspires to be professional.
2. One desires to achieve a thing which is hard earned.
  - A. Only assumption I is implicit
  - B. Only assumption II is implicit
  - C. Either I or II is implicit
  - D. Neither I nor II is implicit
  - E. Both I and II are implicit

**Answer:** Option B

### **Explanation:**

Clearly, nothing is mentioned about the professional nature of the job. So, I is not implicit. The statement hints that one rejects a thing that is easy to achieve. So, II is implicit.

---

**9.Statement:** The concession in rail fares for the journey to hill stations has been cancelled because it is not needed for people who can spend their holidays there.

**Assumptions:**

1. Railways should give concession only to needy persons.
2. Railways should not encourage people to spend their holidays at hill stations.

**A. Only assumption I is implicit**

- B. Only assumption II is implicit
- C. Either I or II is implicit
- D. Neither I nor II is implicit
- E. Both I and II are implicit

**Answer: Option A**

**Explanation:**

The statement mentions that concessions should not be given to people who can afford to spend holidays in hill stations. This means they should be given only to needy persons. So, I is implicit. But, II does not follow from the statement and is not implicit.

---

**10. Statement:** "The bridge was built at the cost of Rs. 128 crores and even civil bus service is not utilizing it, what a pity to see it grossly underutilized." - A citizen's view on a new flyover linking east and west sides of a suburb.

**Assumptions:**

1. The building of such bridges does not serve any public objective.
2. There has to be some accountability and utility of money spent on public projects.
  - A. Only assumption I is implicit
  - B. Only assumption II is implicit**
  - C. Either I or II is implicit
  - D. Neither I nor II is implicit
  - E. Both I and II are implicit

**Answer: Option B**

**Explanation:**

Clearly, the statement expresses grave concern over a newly-built flyover not being utilized by public. This implies that such projects need to be taken up only after working out their utility and that the huge expenditure incurred on building such structures is worthwhile only if they prove useful for the public. Thus, only II is implicit.

---

**11. Statement:** The Government has decided to levy 2 percent on the tax amount payable for funding drought relief programmes.

**Assumptions:**

1. The Government does not have sufficient money to fund drought relief programmes.
2. The amount collected by way of surcharge may be adequate to fund these drought relief programmes.

- A. Only assumption I is implicit
- B. Only assumption II is implicit
- C. Either I or II is implicit
- D. Neither I nor II is implicit

**E. Both I and II are implicit**

**Answer:** Option E

**Explanation:**

Since a surcharge has been levied to fund drought relief programmes, it follows that the Government does not have sufficient money for the same. So, I is implicit. Besides, the percentage of surcharge must have been decided after studying the expected inflow in relation to amount of funds required. So, II is also implicit.

---

**12. Statement:** Detergents should be used to clean clothes.

**Assumptions:**

- 1. Detergents form more lather.
- 2. Detergents help to dislodge grease and dirt.
  - A. Only assumption I is implicit
  - B. Only assumption II is implicit**
  - C. Either I or II is implicit
  - D. Neither I nor II is implicit
  - E. Both I and II are implicit

**Answer:** Option B

**Explanation:**

Nothing is mentioned about lather formation by the detergent. So, I is not implicit. Also, detergents should be used as they clean clothes better and more easily. So, II is implicit.

---

**13. Statement:** It will be a substantial achievement in the field of education if one provides one school for every village in our country and enforce attendance.

**Assumptions:**

- 1. Children in villages do not attend school regularly.
- 2. Providing school to every village is desirable.
  - A. Only assumption I is implicit
  - B. Only assumption II is implicit
  - C. Either I or II is implicit
  - D. Neither I nor II is implicit
  - E. Both I and II are implicit**

**Answer:** Option E

**Explanation:**

The statement lays stress on enforcing attendance. This implies that children in villages do not attend school regularly. So, I is implicit. Besides, the statement calls 'one school for every village' a 'substantial achievement'. So, II is also implicit.

---

**14. Statement:** The government has decided to disinvest large chunk of its equity in select public sector undertakings for a better fiscal management.

**Assumptions:**

1. The amount generated out of the disinvestment process may reduce substantially the mounting fiscal deficits.
2. There will be enough demand in the market for the shares of these undertakings.

**A. Only assumption I is implicit**

- B. Only assumption II is implicit
- C. Either I or II is implicit
- D. Neither I nor II is implicit
- E. Both I and II are implicit

**Answer:** Option A

**Explanation:**

The fact given in I directly follows from the phrase '..... for a better fiscal management' in the statement. So, I is implicit. However, the public response to the new policy cannot be ascertained. So, II is not implicit.

---

**15. Statement:** Never before such a lucid book was available on the topic.

**Assumptions:**

1. Some other books were available on this topic.
2. You can write lucid books on very few topics.

**A. Only assumption I is implicit**

- B. Only assumption II is implicit
- C. Either I or II is implicit
- D. Neither I nor II is implicit
- E. Both I and II are implicit

**Answer:** Option A

**Explanation:**

It follows from the statement that books on this topic were available before also but they were not 'lucid'. So, I is implicit. But a general comment as II cannot be made from the given statement. So, II is not implicit.

## Logical Reasoning :: Statement and Argument

### Directions to Solve

Each question given below consists of a statement, followed by two arguments numbered I and II. You have to decide which of the arguments is a 'strong' argument and which is a 'weak' argument.

Give answer:

- (A) If only argument I is strong
- (B) If only argument II is strong
- (C) If either I or II is strong
- (D) If neither I nor II is strong and

- (E) If both I and II are strong.

**1.Statement:** Should India encourage exports, when most things are insufficient for internal use itself?

**Arguments:**

1. Yes. We have to earn foreign exchange to pay for our imports.
2. No. Even selective encouragement would lead to shortages.

**A. Only argument I is strong**

- B. Only argument II is strong
- C. Either I or II is strong
- D. Neither I nor II is strong
- E. Both I and II are strong

**Answer:** Option A

**Explanation:**

Clearly, India can export only the surplus and that which can be saved after fulfilling its own needs, to pay for its imports. Encouragement to export cannot lead to shortages as it shall provide the resources for imports. So, only argument I holds.

---

**2.Statement:** Should all the drugs patented and manufactured in Western countries be first tried out on sample basis before giving licence for sale to general public in India?

**Arguments:**

1. Yes. Many such drugs require different doses and duration for Indian population and hence it is necessary.
2. No. This is just not feasible and hence cannot be implemented.

**A. Only argument I is strong**

- B. Only argument II is strong
- C. Either I or II is strong
- D. Neither I nor II is strong
- E. Both I and II are strong

**Answer:** Option A

**Explanation:**

Clearly, health of the citizens is an issue of major concern for the Government. So, a product like drugs, must be first studied and tested in the Indian context before giving licence for its sale. So, only argument I holds strong.

---

**3.Statement:** Should India make efforts to harness solar energy to fulfil its energy requirements?

**Arguments:**

1. Yes, Most of the energy sources used at present is exhaustible.
2. No. Harnessing solar energy requires a lot of capital, which India lacks in.

**A. Only argument I is strong**

- B. Only argument II is strong

- C. Either I or II is strong
- D. Neither I nor II is strong
- E. Both I and II are strong

**Answer:** Option A

**Explanation:**

Clearly, harnessing solar energy will be helpful as it is an inexhaustible resource unlike other resources. So, argument I holds. But argument II is vague as solar energy is the cheapest form of energy.

---

**4.Statement:** Should there be students union in college/university?

**Arguments:**

- 1. No. This will create a political atmosphere in the campus.
- 2. Yes, it is very necessary Students are future political leaders.
  - A. Only argument I is strong
  - B. Only argument II is strong
  - C. Either I or II is strong
  - D. Neither I nor II is strong
  - E. Both I and II are strong**

**Answer:** Option E

**Explanation:**

The students union formation shall be a step towards giving to students the basic education in the field of politics. However, it shall create the same political atmosphere in the campus. Thus, both the arguments hold strong.

---

**5.Statement:** Should India give away Kashmir to Pakistan?

**Arguments:**

- 1. No. Kashmir is a beautiful state. It earns a lot of foreign exchange for India.
- 2. Yes. This would help settle conflicts.
  - A. Only argument I is strong**
  - B. Only argument II is strong
  - C. Either I or II is strong
  - D. Neither I nor II is strong
  - E. Both I and II are strong

**Answer:** Option A

**Explanation:**

Clearly, India cannot part with a state that is a major foreign exchange earner to it. So, argument I holds strong. Further, giving away a piece of land unconditionally and unreasonably is no solution to settle disputes. So, argument II is vague.

**6.Statement:** Should cottage industries be encouraged in rural areas?

**Arguments:**

- 1. Yes. Rural people are creative.

2. Yes. This would help to solve the problem of unemployment to some extent.

- A. Only argument I is strong
- B. Only argument II is strong**
- C. Either I or II is strong
- D. Neither I nor II is strong
- E. Both I and II are strong

**Answer:** Option B

**Explanation:**

Clearly, cottage industries need to be promoted to create more job opportunities for rural people in the villages themselves. The reason that rural people are creative is vague. So, only argument II holds.

---

7.**Statement:** Should young entrepreneurs be encouraged?

**Arguments:**

- 1. Yes. They will help in industrial development of the country.
- 2. Yes. They will reduce the burden on employment market.
  - A. Only argument I is strong
  - B. Only argument II is strong
  - C. Either I or II is strong
  - D. Neither I nor II is strong
  - E. Both I and II are strong**

**Answer:** Option E

**Explanation:**

Clearly, encouraging the young entrepreneurs will open up the field for the establishment of new industries. Thus, it shall help in industrial development and not only employ the entrepreneurs but create more job opportunities for others as well. So, both the arguments hold strong.

---

8.**Statement:** Should all the annual examinations up to Std. V be abolished?

**Arguments:**

- 1. Yes. The young students should not be burdened with such examinations which hampers their natural growth.
- 2. No. The students will not study seriously as they will get automatic promotion to the next class and this will affect them in future.
  - A. Only argument I is strong
  - B. Only argument II is strong
  - C. Either I or II is strong
  - D. Neither I nor II is strong
  - E. Both I and II are strong**

**Answer:** Option E

**Explanation:**

Clearly, neither the students can be burdened with studies at such a tender age, nor can they be left free to take studies casually, as this shall weaken their basic foundation. So, both the arguments follow.

---

**9.Statement:** Should Indian scientists working abroad be called back to India?

**Arguments:**

1. Yes. They must serve the motherland first and forget about discoveries, honours, facilities and all.
2. No. We have enough talent; let them stay where they want.
  - A. Only argument I is strong
  - B. Only argument II is strong
  - C. Either I or II is strong
  - D. Neither I nor II is strong**
  - E. Both I and II are strong

**Answer:** Option D

**Explanation:**

Clearly, every person must be free to work wherever he wants and no compulsion should be made to confine one to one's own country. So, argument I is vague. However, talented scientists can be of great benefit to the nation and some alternatives as special incentives or better prospects may be made available to them to retain them within their motherland. So, argument II also does not hold.

---

**10.Statement:** Should we scrap the system of formal education beyond graduation?

**Arguments:**

1. Yes. It will mean taking employment at an early date.
2. No. It will mean lack of depth of knowledge.
  - A. Only argument I is strong
  - B. Only argument II is strong**
  - C. Either I or II is strong
  - D. Neither I nor II is strong
  - E. Both I and II are strong

**Answer:** Option B

**Explanation:**

Clearly, argument I is vague because at present too, many fields are open to all after graduation. However, eliminating the post-graduate courses would abolish higher and specialized studies which lead to understanding things better and deeply. So, argument II is valid.

---

**11.Statement:** Should there be an upper age limit of 65 years for contesting Parliamentary/Legislative Assembly elections?

**Arguments:**

1. Yes. Generally, people above the age of 65 lose their dynamism and will power.
2. No. The life span is so increased that people remain physically and mentally active even up to the age of 80.
  - A. Only argument I is strong
  - B. Only argument II is strong
  - C. Either I or II is strong
  - D. Neither I nor II is strong**
  - E. Both I and II are strong

**Answer:** Option D

**Explanation:**

The age of a person is no criterion for judging his mental capabilities and administrative qualities. So, none of the arguments holds strong.

---

**12. Statement:** Should new big industries be started in Mumbai?

**Arguments:**

1. Yes. It will create job opportunities.
2. No. It will further add to the pollution of the city.
  - A. Only argument I is strong
  - B. Only argument II is strong
  - C. Either I or II is strong**
  - D. Neither I nor II is strong
  - E. Both I and II are strong

**Answer:** Option C

**Explanation:**

Opening up of new industries is advantageous in opening more employment avenues, and disadvantageous in that it adds to the pollution. So, either of the arguments holds strong.

---

13.

**Statement:** Should high chimneys be installed in industries?

**Arguments:**

1. Yes. It reduces pollution at ground level.
2. No. It increases pollution in upper atmosphere.

- A. Only argument I is strong**
- B. Only argument II is strong
- C. Either I or II is strong
- D. Neither I nor II is strong
- E. Both I and II are strong

**Answer:** Option A

**Explanation:**

Pollution at ground level is the most hazardous in the way of being injurious to human and animal life. So, argument I alone holds.

---

14.

**Statement:** Does India need so many plans for development?

**Arguments:**

1. Yes. Nothing can be achieved without proper planning.
2. No. Too much time, money and energy is wasted on planning.

**A. Only argument I is strong**

- B. Only argument II is strong
- C. Either I or II is strong
- D. Neither I nor II is strong
- E. Both I and II are strong

**Answer:** Option A

**Explanation:**

Before indulging in new development programme it is much necessary to plan the exact target, policies and their implementation and the allocation of funds which shows the right direction to work. So, argument I holds strong. Also, planning ensures full utilization of available resources and funds and stepwise approach towards the target. So, spending a part of money on it is no wastage. Thus, argument II is not valid.

---

15.

**Statement:** Should articles of only deserving authors be allowed to be published?

**Arguments:**

1. Yes. It will save a lot of paper which is in short supply.
  2. No. It is not possible to draw a line between the deserving and the undeserving.
- A. Only argument I is strong
- B. Only argument II is strong**
- C. Either I or II is strong
  - D. Neither I nor II is strong
  - E. Both I and II are strong

**Answer:** Option B

**Explanation:**

Clearly, I does not provide a strong reason in support of the statement. Also, it is not possible to analyze the really deserving and not deserving. So/argument II holds strong.

## Logical Reasoning :: Statement and Conclusion

### Directions to Solve

In each question below is given a statement followed by two conclusions numbered I and II. You have to assume everything in the statement to be true, then consider the two conclusions together and decide which of them logically follows beyond a reasonable doubt from the information given in the statement.

Give answer:

- (A) If only conclusion I follows

- 
- (B) If only conclusion II follows
  - (C) If either I or II follows
  - (D) If neither I nor II follows and
  - (E) If both I and II follow.

1.

**Statements:** In a one day cricket match, the total runs made by a team were 200. Out of these 160 runs were made by spinners.

**Conclusions:**

- 1. 80% of the team consists of spinners.
  - 2. The opening batsmen were spinners.
- A. Only conclusion I follows  
B. Only conclusion II follows  
C. Either I or II follows  
**D. Neither I nor II follows**  
E. Both I and II follow

**Answer:** Option D

**Explanation:**

According to the statement, 80% of the total runs were made by spinners. So, I does not follow. Nothing about the opening batsmen is mentioned in the statement. So, II also does not follow.

---

2.

**Statements:** The old order changed yielding place to new.

**Conclusions:**

- 1. Change is the law of nature.
  - 2. Discard old ideas because they are old.
- A. Only conclusion I follows**  
B. Only conclusion II follows  
C. Either I or II follows  
D. Neither I nor II follows  
E. Both I and II follow

**Answer:** Option A

**Explanation:**

Clearly, I directly follows from the given statement. Also, it is mentioned that old ideas are replaced by new ones, as thinking changes with the progressing time. So, II does not follow.

---

3.

**Statements:** Government has spoiled many top ranking financial institutions by appointing bureaucrats as Directors of these institutions.

**Conclusions:**

1. Government should appoint Directors of the financial institutes taking into consideration the expertise of the person in the area of finance.
2. The Director of the financial institute should have expertise commensurate with the financial work carried out by the institute.
  - A. Only conclusion I follows
  - B. Only conclusion II follows
  - C. Either I or II follows
  - D. Neither I nor II follows
  - E. Both I and II follow**

**Answer:** Option E

**Explanation:**

According to the statement, Government has spoiled financial institutions by appointing bureaucrats as Directors. This means that only those persons should be appointed as Directors who are experts in finance and are acquainted with the financial work of the institute. So, both I and II follow.

---

4.

**Statements:** Population increase coupled with depleting resources is going to be the scenario of many developing countries in days to come.

**Conclusions:**

1. The population of developing countries will not continue to increase in future.
2. It will be very difficult for the governments of developing countries to provide its people decent quality of life.
  - A. Only conclusion I follows
  - B. Only conclusion II follows**
  - C. Either I or II follows
  - D. Neither I nor II follows
  - E. Both I and II follow

**Answer:** Option B

**Explanation:**

The fact given in I is quite contrary to the given statement. So, I does not follow. II mentions the direct implications of the state discussed in the statement. Thus, II follows.

---

5.

**Statements:** Prime age school-going children in urban India have now become avid as well as more regular viewers of television, even in households without a TV. As a result there has been an alarming decline in the extent of readership of newspapers.

**Conclusions:**

1. Method of increasing the readership of newspapers should be devised.
2. A team of experts should be sent to other countries to study the impact of TV. on the readership of newspapers.
  - A. Only conclusion I follows
  - B. Only conclusion II follows

- C. Either I or II follows
- D. Neither I nor II follows**
- E. Both I and II follow

**Answer:** Option D

**Explanation:**

The statement concentrates on the increasing viewership of TV. and does not stress either on increasing the readership of newspapers or making studies regarding the same. So, neither I nor II follows.

---

6.

**Statements:** In Japan, the incidence of stomach cancer is very high, while that of bowel cancer is very low. But Japanese immigrate to Hawaii, this is reversed - the rate of bowel cancer increases but the rate of stomach cancer is reduced in the next generation. All this is related to nutrition - the diets of Japanese in Hawaii are different than those in Japan.

**Conclusions:**

- 1. The same diet as in Hawaii should be propagated in Japan also.
  - 2. Bowel cancer is less severe than stomach cancer.
- 
- A. Only conclusion I follows
  - B. Only conclusion II follows
  - C. Either I or II follows
  - D. Neither I nor II follows**
  - E. Both I and II follow

**Answer:** Option D

**Explanation:**

The statement neither propagates the diet of any of the countries nor compares the two types of cancer. So, neither I nor II follows.

---

7.

**Statements:** The Government run company had asked its employees to declare their income and assets but it has been strongly resisted by employees union and no employee is going to declare his income.

**Conclusions:**

- 1. The employees of this company do not seem to have any additional undisclosed income besides their salary.
  - 2. The employees union wants all senior officers to declare their income first.
- 
- A. Only conclusion I follows
  - B. Only conclusion II follows
  - C. Either I or II follows
  - D. Neither I nor II follows**
  - E. Both I and II follow

**Answer:** Option D

**Explanation:**

Nothing about the details of the employees' income or the cause of their refusal to declare their income and assets, can be deduced from the given statement. So, neither I nor II follows.

---

8.

**Statements:** Monitoring has become an integral part in the planning of social development programmes. It is recommended that Management Information System be developed for all programmes. This is likely to give a feedback on the performance of the functionaries and the efficacy with which services are being delivered.

**Conclusions:**

1. All the social development programmes should be evaluated.
2. There is a need to monitor the performance of workers.
  - A. Only conclusion I follows
  - B. Only conclusion II follows
  - C. Either I or II follows
  - D. Neither I nor II follows
  - E. Both I and II follow**

**Answer:** Option E

**Explanation:**

According to the statement, monitoring and evaluation of social development programmes - their function, performance and efficiency - is absolutely essential. So, both I and II follow.

---

9.

**Statements:** The T.V. programmes, telecast specially for women are packed with a variety of recipes and household hints. A major portion of magazines for women also contains the items mentioned above.

**Conclusions:**

1. Women are not interested in other things.
2. An average woman's primary interest lies in home and specially in the kitchen.
  - A. Only conclusion I follows
  - B. Only conclusion II follows**
  - C. Either I or II follows
  - D. Neither I nor II follows
  - E. Both I and II follow

**Answer:** Option B

**Explanation:**

Clearly, nothing about 'other things' is mentioned in the statement. So, I does not follow, Also, since it is mentioned that programmes and magazines for women are stuffed with kitchen recipes and other household hints, it means that women have special interest in these areas. So, II follows.

---

10.

**Statements:** The distance of 900 km by road between Bombay and Jafra will be reduced to 280 km by sea. This will lead to a saving of Rs. 7.92 crores per annum on fuel.

**Conclusions:**

1. Transportation by sea is cheaper than that by road.
  2. Fuel must be saved to the greatest extent
- A. Only conclusion I follows  
**B. Only conclusion II follows**  
C. Either I or II follows  
D. Neither I nor II follows  
E. Both I and II follow

**Answer:** Option B

**Explanation:**

According to the statement, sea transport is cheaper than road transport in the case of route from Bombay to Jafra, not in all the cases. So, conclusion I does not follow. The statement stresses on the saving of fuel. So, conclusion II follows.

---

11.

**Statements:** The manager humiliated Sachin in the presence of his colleagues.

**Conclusions:**

1. The manager did not like Sachin.
  2. Sachin was not popular with his colleagues.
- A. Only conclusion I follows  
B. Only conclusion II follows  
C. Either I or II follows  
**D. Neither I nor II follows**  
E. Both I and II follow

**Answer:** Option D

**Explanation:**

The manager might have humiliated Sachin not because of his dislike but on account of certain negligence or mistake on his part. So, I does not follow. Also, nothing about Sachin's rapport with his colleagues can be deduced from the statement. So, II also does not follow.

---

12.

**Statements:** Women's organisations in India have welcomed the amendment of the Industrial Employment Rules 1946 to curb sexual harassment at the work place.

**Conclusions:**

1. Sexual harassment of women at work place is more prevalent in India as compared to other developed countries.
  2. Many organisations in India will stop recruiting women to avoid such problems.
- A. Only conclusion I follows

- B. Only conclusion II follows
- C. Either I or II follows
- D. Neither I nor II follows**
- E. Both I and II follow

**Answer:** Option D

**Explanation:**

The fact that a certain rule has been more welcomed in a certain country does not imply that the problem is more prevalent there. So, I does not follow. Also, the amendment seeks to discourage only sexual harassment of women and shall in no way discourage employment of women. So, II also does not follow.

---

13.

**Statements:** Nation X faced growing international opposition for its decision to explode eight nuclear weapons at its test site.

**Conclusions:**

- 1. The citizens of the nation favoured the decision.
  - 2. Some powerful countries do not want other nations to become as powerful as they are.
- 
- A. Only conclusion I follows
  - B. Only conclusion II follows
  - C. Either I or II follows
  - D. Neither I nor II follows**
  - E. Both I and II follow

**Answer:** Option D

**Explanation:**

Neither the citizens response to the decision nor the reason for opposition by other nations can be deduced from the statement. So, neither I nor II follows.

---

14.

**Statements:** In a highly centralised power structure, in which even senior cabinet ministers are prepared to reduce themselves to pathetic countries or yesmen airing views that are primarily intended to anticipate or reflect the Prime Minister's own performances, there can be no place for any consensus that is quite different from real or contrived unanimity of opinion, expressed through a well orchestrated endorsement of the leader's actions.

**Conclusions:**

- 1. The Ministers play safe by not giving anti-government views.
  - 2. The Prime Minister does not encourage his colleagues to render their own views.
- 
- A. Only conclusion I follows**
  - B. Only conclusion II follows
  - C. Either I or II follows
  - D. Neither I nor II follows
  - E. Both I and II follow

**Answer:** Option A

### **Explanation:**

According to the statement, even senior cabinet ministers are always ready to conform to the Prime Minister's views. So, I follows. However, II contradicts the given statement and so does not follow.

---

15.

**Statements:** National Aluminium Company has moved India from a position of shortage to self-sufficiency in the metal.

### **Conclusions:**

1. Previously, India had to import aluminium.
  2. With this speed, it can soon become a foreign exchange earner.
- A. Only conclusion I follows  
B. Only conclusion II follows  
C. Either I or II follows  
D. Neither I nor II follows  
**E. Both I and II follow**

**Answer:** Option E

### **Explanation:**

According to the statement, National Aluminium Company has moved India from a position of shortage in the past to self-sufficiency in the present. This means that previously, India had to import aluminium. So, I follows. Also, it can be deduced that if production increases at the same rate, India can export it in future. So, II also follows.

# Chapter 17

# Mirror and Water Images

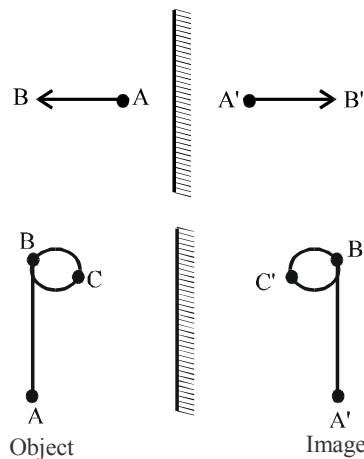
## Mirror Images

In this category questions are based on the criteria that a few figures are given and you have to find out which one is the exact image of the given figure in a mirror placed in front of it. This image formation is based on the principle of 'lateral inversion' which implies that size of the image is equal to the size of the object but both sides are interchanged. The left portion of the object is seen on the right side and right portion of the object is seen on the left side. For example, mirror image of ABC = A<sup>BC</sup>

**Note :** There are '11' letters in English Alphabet which have identical mirror images: A, H, I, M, O, T, U, V, W, X, Y.

### Characteristics of Reflection by plane mirror

1. Perpendicular distance of object from mirror = Perpendicular distance of image from mirror.
2. The image is laterally inverted.



3. The line joining the object point with its image is normal to the reflecting surface.
4. The size of the image is the same as that of the object.

**E.g-1:** Mirror-images of certain words are given below :

(1) F U N : N U F

(2) GOLKONDA : DOKNOKL

**E.g-2:** Mirror-image of certain combinations of alphabets and numbers are given below :

(1) BMC49JN2317 : 731N949MCB

(2) 15bg82XQh : hQX28g5p1

## I. Mirror Images of Capital Letters

A	A	N	N
B	B	O	O
C	C	P	Q
D	D	Q	Q
E	E	R	R
F	F	S	S
G	G	T	T
H	H	U	U
I	I	V	V
J	J	W	W
K	K	X	X
L	L	Y	Y
M	M	Z	Z

## II Mirror Images of Small Letters

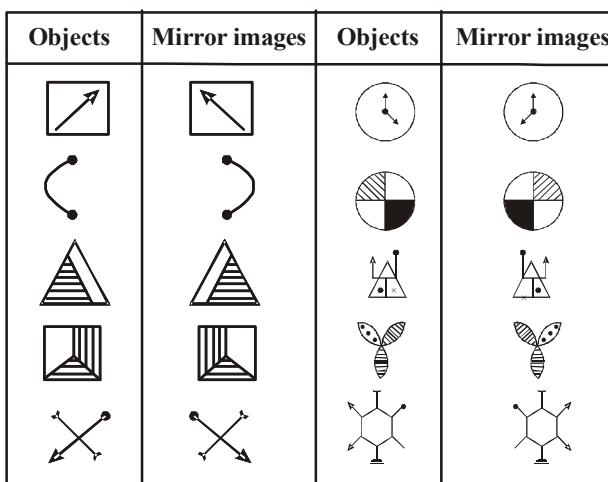
a	s	n	ñ
b	d	o	o
c	o	p	q
d	b	q	p
e	ə	r	τ
f	τ	s	z
g	g	t	ž
h	d	u	u
i	i	v	v
j	j	w	w
k	k	x	x
l	l	y	χ
m	m	z	z

## III. Mirror Images of Numbers

0	0	6	ə
1	1	7	˥
2	᷂	8	8
3	᷃	9	᷄
4	᷄	10	᷅
5	᷅		

Examples of lateral inversion of few figures and words are given below :

#### IV. Mirror Images of Various Objects :



#### V. Mirror Images of Certain Words and Numbers:

Words	Mirror images	Numbers	Mirror images
PREDICTION	PREDICITION	32596	69523
HOSPITAL	HOSPLAT	8932	2398
DARPARAN	DARPANA	868	888
STRIDENT	STRIDENT	786	687
OPULENT	OPULENT	10190	01901
SARCASM	SARCASTM	5693	3965
LIBERAL	LIBERAL	8964	4698
OFFENCE	OFFENCE	7362	2637
ADVANCE	ADVANCE	5893	3985
IMAGES	IMAGES	7839	9387

#### VI. Mirror Images of Clock:

There are certain questions in which the position of the hour-hand and the minute-hand of a clock as seen in a mirror are given. On the basis of the time indicated by the mirror-image of the clock we have to detect the actual time in the clock. In the solution of such questions we use the fact that if an object A is the mirror-image of another object B then B is the mirror-image of A.

##### Time of image in plane mirror

- Real time =  $X^H$ , Image time =  $12^H - X^H$  ( $H$  = hours)
- Real time =  $X^H Y^M$ , Image time =  $11^H 60^M - X^H Y^M$  ( $M$  = minutes)
- Real time =  $X^H Y^M Z^S$ , Image time =  $11^H 59^M 60^S - X^H Y^M Z^S$  ( $S$  = seconds)
- if  $X^H Y^M Z^S > 11^H 59^M 60^S$ , image time =  $23^H 59^M 60^S - X^H Y^M Z^S$

##### Quick Tip

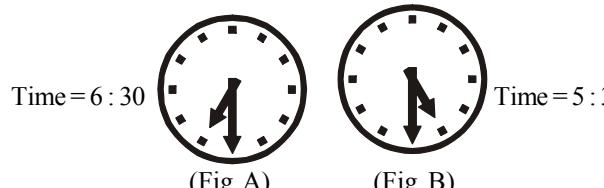
Whenever you have to solve a mirror image question, imagine a mirror placed in front of the object and then try to find its inverted image. The portion of the object that is near the mirror will now be the portion of the image near to the mirror in the inverted form.

#### ILLUSTRATION 1:

By looking in a mirror, it appears that it is 6 : 30 in the clock. What is the real time ?

- 6 : 30
- 5 : 30
- 6 : 00
- 4 : 30

Sol. (2)

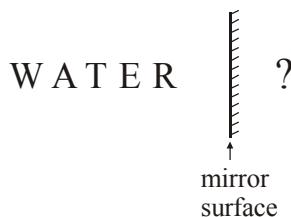


Clearly, fig (A) shows the time (6 : 30) in the clock as it appears in a mirror. Then its mirror-image i.e. Fig (B) shows the actual time in the clock i.e. 5 : 30. You can solve it quickly if you remember that the sum of actual time and image time is always 12 hours.

#### DIRECTIONS (ILLUSTRATION 2-6):

Find the correct option for the mirror image for the following examples.

#### ILLUSTRATION 2:



- W A T E R
- R E T A W
- W A R E T A
- T E R A W

Sol. (4) We have to find the correct mirror image for the word 'WATER' for which we need to find the mirror image for each letter separately and then arrange it, like the mirror image for the letters W is W, A is A, T is T, E is Ξ and R is Υ. Since, the word ends with R, i.e., where the mirror is placed, therefore the mirror image will start from the mirror images of R, i.e.; Υ. Thus the mirror image for water is ΥΞΤΑW



Thus option (4) is the correct answer.

#### ILLUSTRATION 3:

d e a r || ?

- b e a r
- t s e b
- d e s t
- t e s b

Sol. (2) Mirror image for 'd' is 'b', 'e' is 't', 'a' is 's' and 'r' is 't'



Thus, option (2) is the correct answer.

**ILLUSTRATION4:**

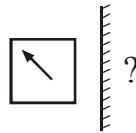
8 6 9 5 2 | ?

- (1) 8 ♂ 9 ♂ 5 ♂      (2) 8 9 ♂ 5 ♂  
 (3) 8 ♂ ♂ 5 ♂      (4) 5 ♂ ♂ 8 ♂

**Sol.** (4) Mirror image for '8' is '8', '6' is '♂', '9' is '♀', '5' is '♂' and '2' is '♀'.

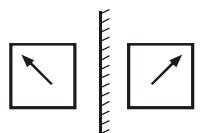
8 6 9 5 2 | ♀ ♀ ♂ ♂ ♂ ♂

Thus, option (4) is the answer.

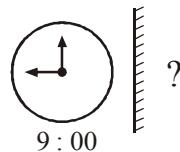
**ILLUSTRATION5:**

- (1)      (2)   
 (3)      (4)

**Sol.** (1) The mirror image of a square remains a square while the arrow inside it will be changed.

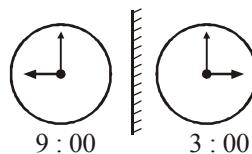


is the mirror image for the given image. Thus option (1) is the correct answer.

**ILLUSTRATION6:**

- (1) 12:00      (2) 5:00  
 (3) 3:00      (4) 6:00

**Sol.** (3) The mirror image of circle remains a circle, and the arrow facing north also remains the same but the arrow facing will face East in its mirror image.



Thus, answer is 3 : 00, i.e., option C.

**Water Image**

The reflection of an object as seen in water is called its water image. It is the inverted image obtained by turning the object upside down.

**Water-images of capital letters**

Letters	A B C D E F G H I J K L M
Water-image	Ⱶ B C D E E C H I I K G W
Letters	N O P Q R S T U V W X Y Z
Water-image	И О Ъ Б К Г С Т У А М Х Я З

**Water-images of small letters**

Letters	a b c d e f g h i j k l m
Water-image	ſ p c q e t ñ p ! ? k i w
Letters	n o p q r s t u v w x y z
Water-image	u o b d l s t n a m x l x

**Water-images of numbers**

Letters	0 1 2 3 4 5 6 7 8 9
Water-image	0 1 5 3 4 2 6 7 8 9

**Note :**

1. The letters whose water-images are identical to the letter itself are : C, D, E, H, I, K, O, X
2. Certain words which have water-images identical to the word itself are :  
KICK, KID, CHIDE, HIKE, CODE, CHICK

**Quick Tip**

Whenever we have to analyze the water image of an object, imagine a mirror or a surface that forms an image just under the given object. The portion of the object that is near the water surface will be inverted but will be near the water surface in the image as well.

**DIRECTIONS (ILLUSTRATION 7-11) :**

Find the correct option for the water images for the following examples.

**ILLUSTRATION7:**

STORE  
 ┌─────────┐ ← water surface  
 ?

- (1) S ↘ O ↗ R ↗ E      (2) S ↗ O ↗ R ↗ E  
 (3) S ↗ O ↗ E      (4) S ↗ O ↗ B ↗ E

**Sol.** (4) In case of water image, the water reflection will usually be formed under the object / word.

In this case, the water image of the word will be an outcome of the water images of each of the letters like, the water images of S is ↗, T is ↗, O is O, R is B and E is E. Thus the water image of the word 'STORE' is 'S ↗ O ↗ B ↗ E'.

STORE  
 ┌─────────┐  
 S ↗ O ↗ B ↗ E

**ILLUSTRATION 8:**

scary  
?

- (1) (2)   
 (3) (4)

**Sol.** (1) The water image of 's' is 's', 'c' is 'c', 'a' is 'g', 'r' is 'l' and 'y' is 'λ'

Thus the water images of scary is 's c a r y'.

**ILLUSTRATION 9:**

1 6 8 9 2  
?

- (1) (2)   
 (3) (4)

**Sol.** (2) The water image of '1' is 'l', '6' is 'e', '8' is 'g', '9' is 'θ' and '2' is 'ς'.

Thus, the water image of 1 6 8 9 2 is l e g θ ς

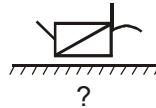
**ILLUSTRATION 10:**

?

- (1) (2)   
 (3) (4)

**Sol.** (1) Since, the teddy bear is facing west, in its water image also it will face west. Therefore, options (2) & (3) are ruled out.

Now among options (1) & (4) check the ears and nose of the bear in the actual diagram, it does not have a nose, but the image in option (4) has a nose. Therefore, option (1) is the correct representation.

**ILLUSTRATION 11:**

- (1) (2)   
 (3) (4)

**Sol.** (3) Observe the object carefully, the rectangle will remain a rectangle, the diagonal in the object starts from near the water surface in the west side and so will start in the image on the west side. And the arc that is facing North west, will face south-west in the image. Thus option (3) is the correct answer.

**Quick Tips**

- (i) While solving a question, try eliminating some options and solving the questions will become easier. To eliminate options, keep in mind the pattern used in the object (given diagram whose image is to be formed) as well as the position of mirror or water such that the portion of the object near to the mirror / water will produce the same portion near the mirror / water in an inverted form.
- (ii) Images are images, be it water or mirror, in both the cases an inverted image of the alphabets / numerals / clocks / any other object are formed by inverting the object. Inverting of the object solely depends upon the position of mirror or water surface w.r.t. the object.

## Exercise 1 Mirror Images

**DIRECTIONS (Q.1 to Q.15)** : Find the correct option for the mirror images for the following questions.

1. DREAM ?

- (1) (2)   
 (3) (4)

2. NEWS ?

- (1) (2)   
 (3) (4)

3. jealous ?

- (1) (2)   
 (3) (4)

4. 3 1 2 5 6 8 ?

- (1) (2)   
 (3) (4)

5. Rotate the mirror image 90° clockwise.

- (1) (2)   
 (3) (4)

6. Rotate the mirror image  $90^\circ$  anticlockwise.

- (1) (2)   
 (3) (4)

7. Rotate the mirror image  $90^\circ$  clockwise.

- (1) (2)   
 (3) (4)

8. Rotate the mirror image of the given clock  $90^\circ$  clockwise and the time will be.

- (1) 4:45 (2) 5:45  
 (3) 3:45 (4) 4:30

9. Rotate the mirror image  $90^\circ$  clockwise.

- (1) (2)   
 (3) (4)

- 10.

9 :15

- (1) 2:45 (2) 3:15  
 (3) 9:15 (4) 9:45

- 11.

- (1) (2)   
 (3) (4)

12. Rotate the mirror image  $90^\circ$  anticlockwise.

- (1) (2)   
 (3) (4)

13. Rotate the mirror image  $90^\circ$  anticlockwise.

- (1) (2)   
 (3) (4)

14. Rotate the mirror image  $90^\circ$  anticlockwise.

- 5 :55  
 (1) 6 :15 (2) 6 :05  
 (3) 5 :05 (4) 5 :15

- 15.

- (1) (2)   
 (3) (4)

**DIRECTIONS (Qs. 16-18) :** In each of the following questions, you are given a combination of alphabets and/or numbers followed by alternatives (1), (2), (3) and (4). Choose the alternative which most closely resembles the mirror image of the given combination.

16. NATIONAL

- (1) (2)   
 (3) (4)

17. ANS43Q12

- (1) (2)   
 (3) (4)

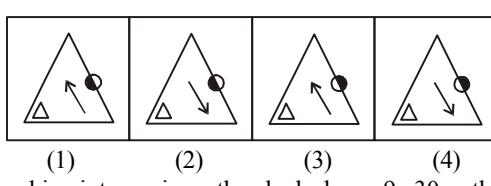
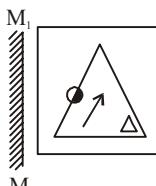
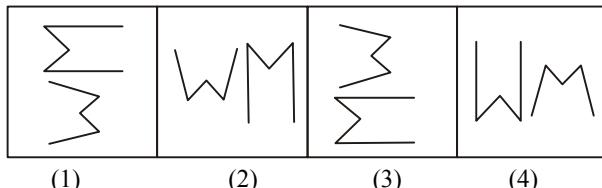
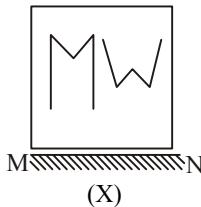
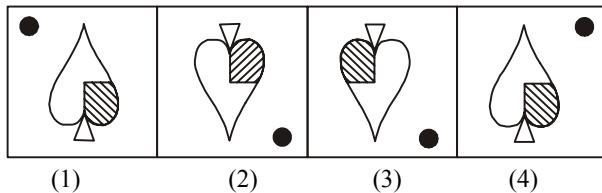
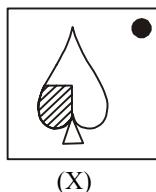
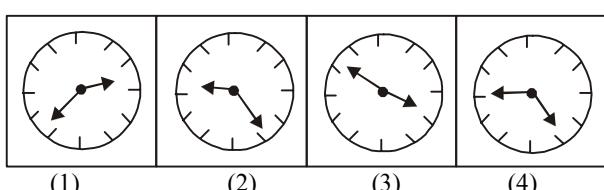
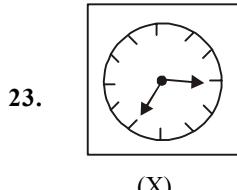
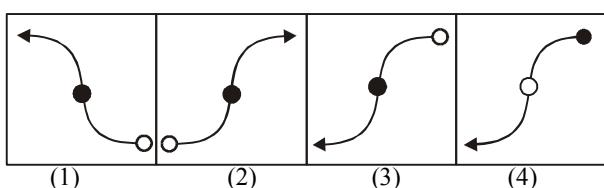
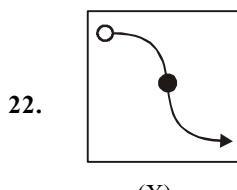
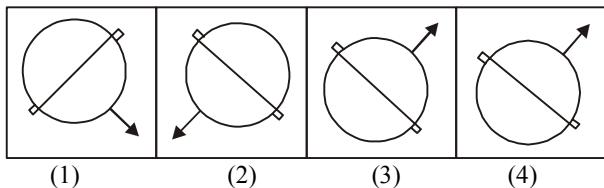
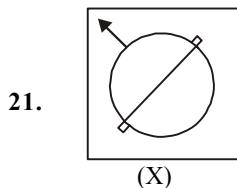
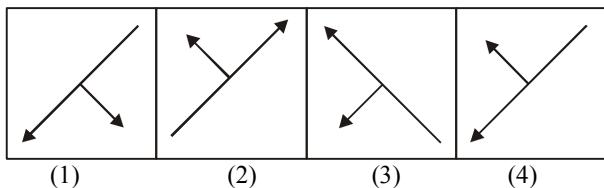
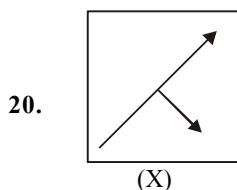
18. 1965INDOPAK

- (1) (2)   
 (3) (4)

19. Which of the following collection of letters will look the same in the mirror ?

- (1) OSMIHAM (2) VHRTRVH  
 (3) HIMOSTA (4) AOVIVOA

**DIRECTIONS (Qs. 20-28) :** In each of the following questions, choose the correct mirror-image of the Fig. (X) from amongst the four alternatives (1), (2), (3) and (4) given along with it.



27. Looking into a mirror, the clock shows 9 : 30 as the time. The actual time is  
(1) 2 : 30                                  (2) 3 : 30  
(3) 4 : 30                                    (4) 6 : 30

28. A clock seen through a mirror shows quarter to three. What is the correct time shown by the clock ?  
(1) 8 : 15                                    (2) 9 : 12  
(3) 8 : 17                                    (4) 9 : 15

**DIRECTIONS (Qs. 29-32) :** In each of the following questions, you are given a combination of alphabets and/or numbers followed by four alternatives (1), (2), (3) and (4). Choose the alternative which most closely resembles the mirror-image of the given combination.

## 30. TERMINATE

- (1) TERMINATE (2) TERMINATE  
(3) TERMINATE (4) TERMINATE

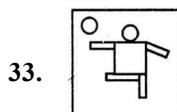
## 31. REASONING

- (1) GINOSAER (2) REASONING  
(3) GINOSAER (4) REASONING

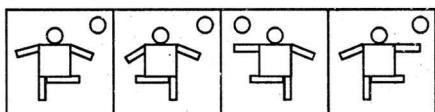
## 32. BR4AQ16HI

- (1) BR4AQ16HI (2) BR4AQ16HI  
(3) BR4AQ16HI (4) BR4AQ16HI

**DIRECTIONS (Qs. 33-40) :** In each of the following questions, choose the correct mirror-image of the Fig. (X) from amongst the four alternatives (1), (2), (3) and (4) given along with it.



33.



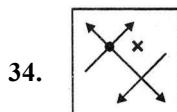
(X)

(1)

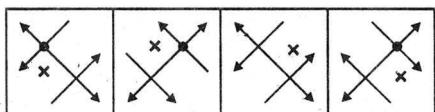
(2)

(3)

(4)



34.



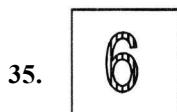
(X)

(1)

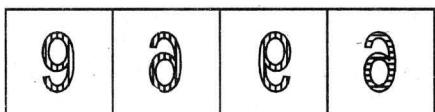
(2)

(3)

(4)



35.



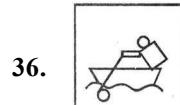
(X)

(1)

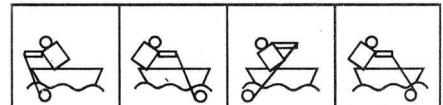
(2)

(3)

(4)



36.



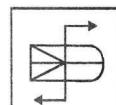
(X)

(1)

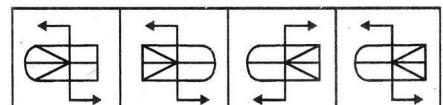
(2)

(3)

(4)



37.



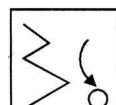
(X)

(1)

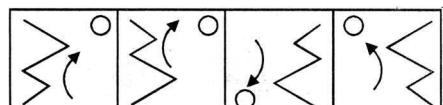
(2)

(3)

(4)



38.



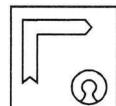
(X)

(1)

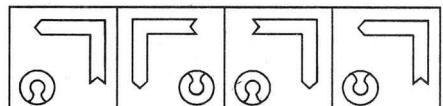
(2)

(3)

(4)



39.



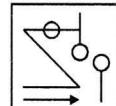
(X)

(1)

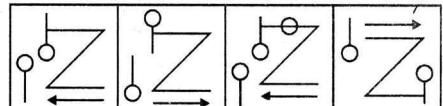
(2)

(3)

(4)



40.



(X)

(1)

(2)

(3)

(4)

**Exercise****2****Water Images****DIRECTIONS (for Q.1 to Q.15)**

Find the correct option for the water images for the following questions.

**PLEDGE**

1. ?

- (1) PΓΞEDGE (2) ȢΓΞEDGE  
(3) ȢΓEDGE (4) ȢΓΞDGE

**HELP**

2. ?

- (1) ȢȢȢȢ (2) ȢȢȢȢ  
(3) ȢȢȢȢ (4) ȢȢȢȢ

**DOLLAR**

3. ?

- (1) DOLLAR (2) DOLLAR  
(3) DOLLAR (4) DOLLAR

**absence**

4. ?

- (1) s̄ēs̄ēn̄c̄e (2) ēs̄ēs̄ēn̄c̄e  
(3) s̄ēs̄ēn̄c̄e (4) s̄ēs̄ēn̄c̄e

**918423**

5. ?

- (1) ȢȢȢȢȢȢ (2) ȢȢȢȢȢȢ  
(3) ȢȢȢȢȢȢ (4) ȢȢȢȢȢȢ

6. What will be the water image of given diagram?

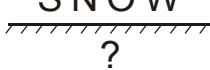
**?**

- (1) Ȣ (2) Ȣ  
(3) Ȣ (4) Ȣ

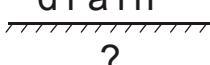
**g L a d**

7. ?

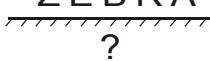
- (1) ȢȢȢȢ (2) ȢȢȢȢ  
(3) ȢȢȢȢ (4) ȢȢȢȢ

8.   
?

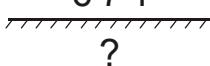
- (1) S W O N S      (2) S W O N S  
(3) S W O N S      (4) S W O N S

9.   
?

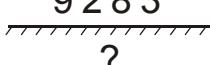
- (1) d r a i n      (2) u i s r b  
(3) q r a i n      (4) n i s r b

10.   
?

- (1) Z E B R A      (2) Z E B R A  
(3) Z E B R A      (4) A R B E Z

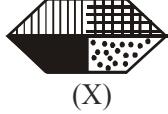
11.   
?

- (1) 9 7 1      (2) 0 7 1  
(3) 0 7 1      (4) 0 7 1

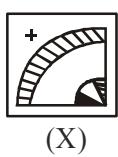
12.   
?

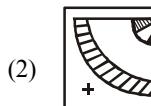
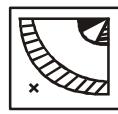
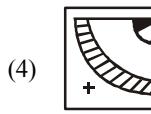
- (1) 3 8 2 6      (2) 0 5 8 3  
(3) 0 5 8 3      (4) 6 5 8 3

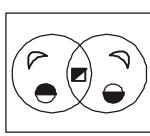
**DIRECTIONS (Qs. 13-20) :** In each of the following questions, choose the correct **water image** of the figure (X) from amongst the four alternatives (1), (2), (3), (4) given alongwith it.

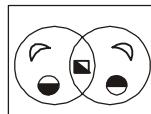
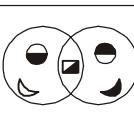
13.   
(X)

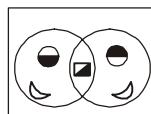
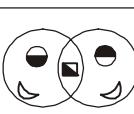
- (1)   
(2)   
(3)   
(4) 

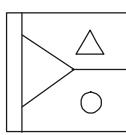
14.   
(X)

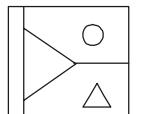
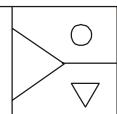
- (1)   
(2)   
(3)   
(4) 

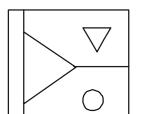
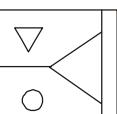
15.   
(X)

- (1)   
(2) 

- (3)   
(4) 

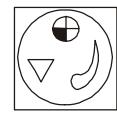
16.   
(X)

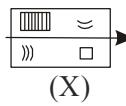
- (1)   
(2) 

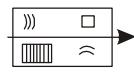
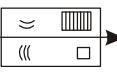
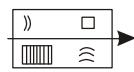
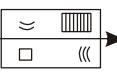
- (3)   
(4) 

17.   
(X)

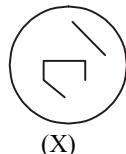
- (1)   
(2) 

- (3)   
(4) 

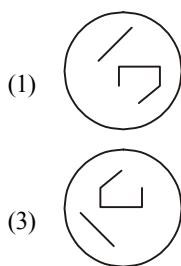
18.   
(X)

- (1)   
(2)   
(3)   
(4) 

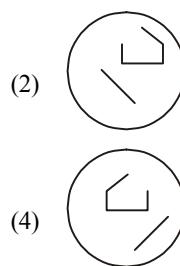
19.



(X)



(1)



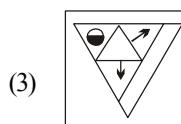
(2)



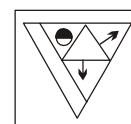
(3)



(4)



(3)

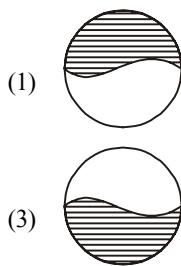


(4)

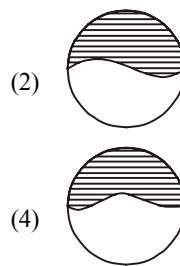
20.



(X)



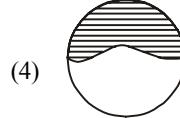
(1)



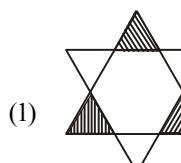
(2)



(3)



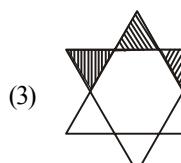
(4)



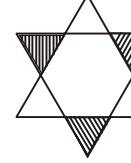
(X)



(2)

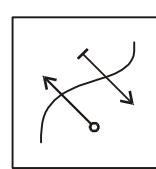


(3)

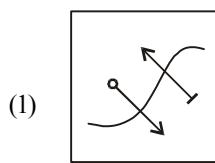


(4)

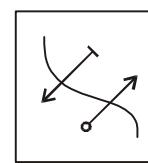
27.



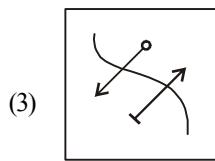
(X)



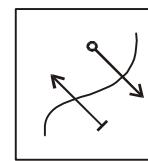
(1)



(2)



(3)

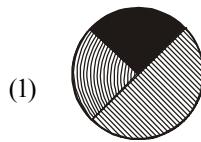


(4)

28.



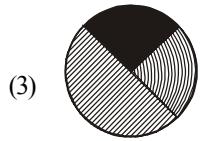
(X)



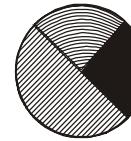
(1)



(2)



(3)



(4)

**DIRECTIONS (Qs. 21-24) :** In each of the following questions, you are given a combination of alphabets and/or numbers followed by four alternatives (1), (2), (3) and (4). Choose the alternative which most closely resembles the water image of the given combination.

21. FROG

- (1) E K O C      (2) GORF  
 (3) D O R G      (4) E K O G

22. U 4 P 1 5 B 7

- (1) U 4 B 1 2 B 7      (2) U B 2 I P 4 U  
 (3) U 4 B 1 2 B 7      (4) U B 2 I 4 U

23. G R 9 8 A P 7 6 E S

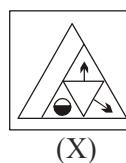
- (1) CK68AV19E2  
 (2) CR68AV19E2  
 (3) CK68AV19E2  
 (4) CK68AV19E2

24. A 1 M 3 b

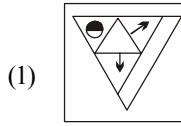
- (1) D3MIA      (2) D6MIA  
 (3) D3MIA      (4) D6MIA

**DIRECTIONS (Qs. 25-28) :** In each of the following questions, choose the correct water image of the figure (X) from amongst the four alternatives (1), (2), (3) and (4) given along with it.

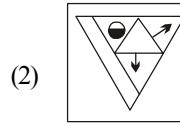
25.



(X)



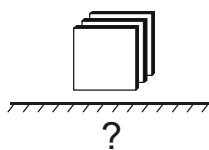
(1)



(2)

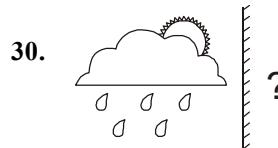
## Questions for NTSE

29. Observe the figures below :



First rotate the figure by 90° in clockwise direction and find out its water reflection from the given alternatives (NTSE)

- (1)
- (2)
- (3)
- (4)



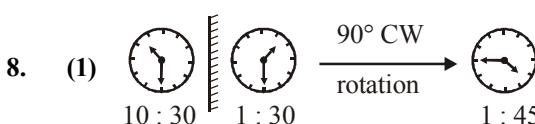
If the mirror image of the figure is rotated to 90° in clockwise direction, it will look like :

- (1)
- (2)
- (3)
- (4)

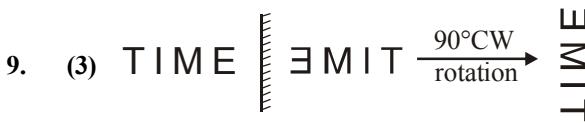
## Hints & Solutions —

### Exercise - 1

1. (3) Mirror image for the letters 'D' is '▷', 'R' is '◁', 'E' is 'Ξ', 'A' is 'Α' and 'M' is 'Μ'. Since the word ends with M, i.e., where the mirror is placed, therefore the mirror image will start from the mirror image of M, i.e., M. Thus the mirror image for water is DREAM.
2. (1) Mirror image for the letters 'N' is 'Ν', 'E' is 'Ξ', 'W' is 'W' and 'S' is 'Ƨ'.
3. (4) Mirror image for the letters 'j' is ι, 'e' is 'Ξ', 'a' is 'σ', 'L' is Λ, 'O' is 'Ο', 'u' is 'υ' and 'S' is 'Ƨ'
4. (4) Mirror image of numbers—'3' is 'ε', '1' is '↑', '2' is 'Σ', '5' is 'ε', '6' is 'θ' and '8' is '8'.
5. (2) If we rotate the mirror image, i.e., 'B' 90° clockwise, then it will be 'm'.
6. (3) If we rotate the mirror image, i.e., 'ΣΔ' to 90° anticlockwise, then it will be 'κι'.
7. (4) If we rotate the mirror image, i.e., '→' to 90° clockwise, then it will be '↓'.

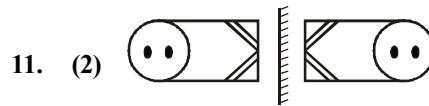


Hence, option (1) is the answer.



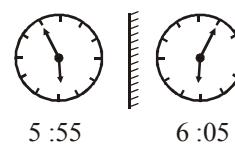
Hence, option (3) is the correct answer.

10. (1) The mirror image of circle remains a circle and the arrow facing west will face towards east and arrow facing east will face towards west. Thus, time will be 2 : 45.

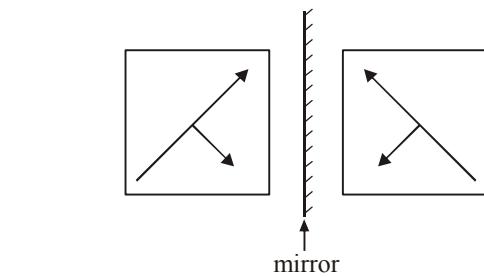


Hence option (2) is the answer.

11. (2)
12. (1) If we rotate the mirror image, i.e., 'ς' to 90° anti-clockwise, then it will be ς. Thus, option (1) is the answer.
13. (2) If we rotate the mirror image i.e., 'ΤΗΑ' to 90° anti-clockwise, then it will be ΤΑ. Thus, option B is the answer.
14. (2) The mirror image of circle remains a circle. The arrow facing south will also remain the same. But the arrow facing north-west will face north-east.



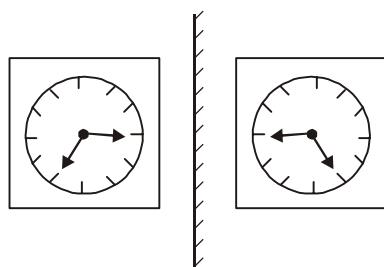
15. (4) Mirror images for the numbers '8' is '8', '9' is '9', '3' is 'ε' and '4' is 'θ'.
16. (2)      17. (2)      18. (4)      19. (4)
20. (3) Assume that the mirror is placed on the right hand side of the given object, unless mentioned or drawn near the object.

**Exercise - 2**

21. (3)

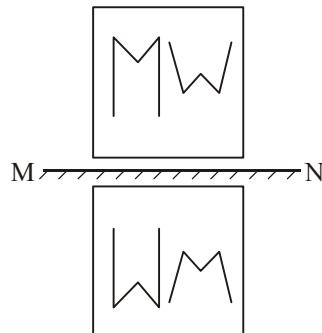
22. (3)

23. (4)

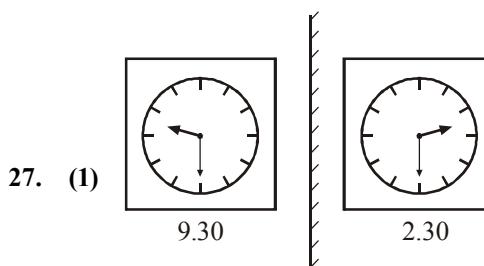


24. (1)

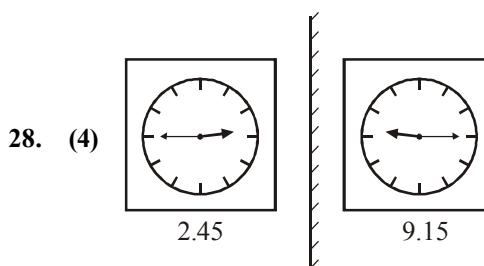
25. (2) This object has mirror placed under the object.



26. (1)



27. (1)



29. (3)

30. (3)

33. (4)

34. (2)

37. (4)

38. (3)

31. (2)

35. (2)

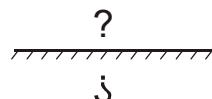
39. (1)

32. (1)

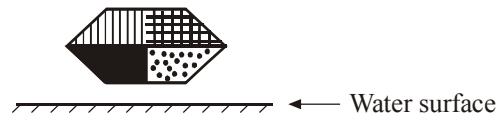
36. (4)

40. (3)

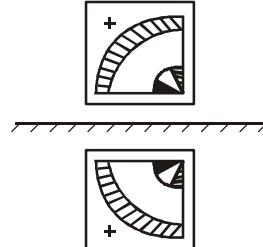
1. (3) The water image of 'P' is 'b', 'L' is 'T', 'E' is 'E', 'D' is 'D', 'G' is 'G' and 'E' is 'E'.
2. (2) The water image of 'h' is 'μ', 'e' is 'ε', 'L' is 'Γ' and 'P' is 'b'.
3. (2) The water image of 'D' is 'D', 'O' is 'O', 'L' is 'Γ', 'A' is 'Α' and 'R' is 'B'.
4. (1) The water image of 'a' is 'g', 'b' is 'p', 'S' is 'Z', 'e' is 'ε', 'n' is 'υ', 'c' is 'c' and 'e' is 'ε'.
5. (4) The water image of number — '9' is 'θ', '1' is ↓, '8' is '8', '4' is 'τ', '2' is 'ς' and '3' is '3'
6. (2) The water image of '?' is 'ς'.



7. (3) The water image of 'g' is 'g', 'L' is 'Γ', 'a' is 'g' and 'd' is 'q'.
8. (1) The water image of 'S' is 'Z', 'N' is 'Η', 'O' is 'Ο' and 'W' is 'Μ'
9. (2) The water image of 'd' is 'q', 'r' is 'τ', 'a' is 'g', 'i' is 'ι' and 'n' is 'υ'
10. (3) The water image of 'Z' is 'ς', 'E' is 'Ε', 'B' is Β, 'R' is 'B' and 'A' is 'Α'
11. (2) The water image of '6' is 'θ', '7' is 'Δ' and '1' is ↓.
12. (3) The water image of '9' is 'θ', '2' is 'ς', '8' is '8' and '3' is '3'.
13. (1) Since, in case of water images, usually the image drawn is just under the actual object. So the shaded and dotted portion will come up on their respective sides, because the portion of the object near water surface will remain near the water surface in case of the image as well.

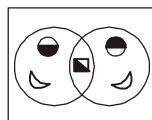
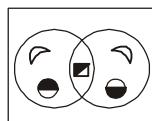


14. (4)

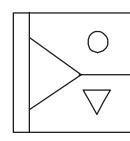
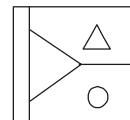


## Solution &amp; Hints for NTSE Questions

15. (4)



16. (2)



17. (3)



20. (3)



21. (1)

22. (3)

23. (3)

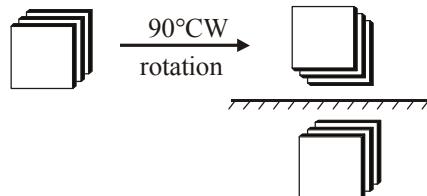
24. (3) 25. (4)

26. (4)

27. (3)

28. (4)

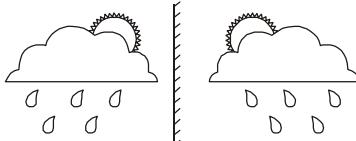
29. (2)



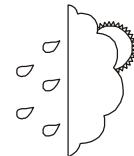
This is the final image

Thus option (2) is the correct answer.

30. (2)



90° CW rotation



Final image

Hence option (2) is the answer.

# Question Bank of L.R.P.S

## UNIT 4

### Part 2 Cubes and Dices

Q 1. In the figures below four different dices are shown. When the dice is as shown in the figure than what must be the value at the bottom face of the dice?



(i)



(ii)



(iii)



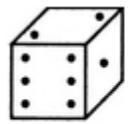
(iv)

A. 2                      B. 1

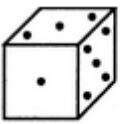
C. 4                      D. 5

Ans: For these type of questions look for the number that is common in the figure. In this question, this number is 4. And from the figure 1, 2, and 4 you can see four numbers that are adjacent to the number 4. Therefore the remaining the number 3 will lie opposite to 4 and vice versa. While in the only figure without 4 i.e. the figure 3 opposite to the number 3 will be 4. Thus the correct option is (3)

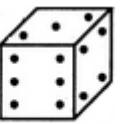
Q 2. If in the below figures the total value of the opposite value is always seven than which figure is the correct one?



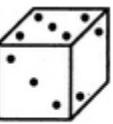
(1)



(2)



(3)



(4)

1. Figure 1

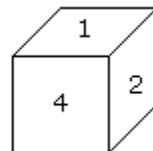
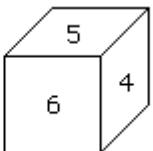
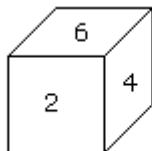
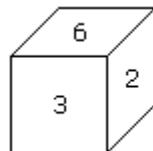
B. Figure 2

3. Figure 3

D. Figure 4

Ans: In figure 1; 1, 2, and 6 are there on the dice the remaining 3, 4, and 5 cannot be arranged in any way which can make the opposite total to 7. In figure 3; 3, 4, and 6 are given. The remaining 1, 2, and 5 cannot be arranged to make the sum of all the opposite faces to 7. In figure 4, only two opposite faces can make the sum 7. The only figure left is the option (2) wherein you can use the remaining values and the sum of the opposite faces will be 7.

Q 3. Which number in the below figures will be opposite to the number 6?



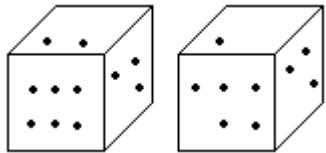
A. 1      B. 2

C. 3      D. 4

Ans: From the figure 1, 2, and 3 the numbers that are adjacent to 6 can be found out. They are 2, 3, 4, and 5. The only number that is left is 1 which is opposite to 6. Thus the correct option is (1).

More for practise

Q 1. Given in the figure are two dices. When two dots are at the bottom, how many dots will be at the top? (10)

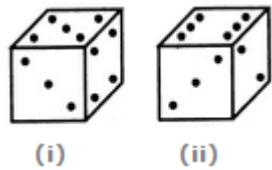


1. 4      2. 3

3. 2      4. 1

The answer is (4).

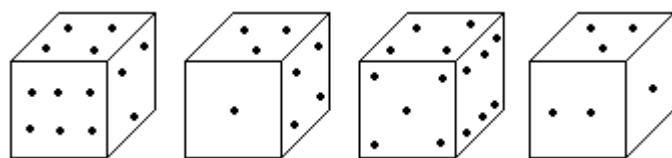
Q 2. The position of two dices is shown in the figure. If one dot is at the bottom than how many dots will be at the top of the dice?



1. 1                  2. 2
3. 3                  4. 4

The answer is (3).

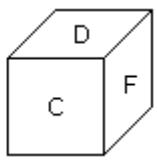
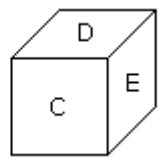
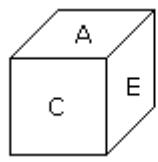
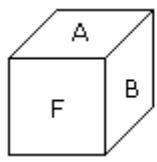
Q 3. In the below figure, four dices are positioned. What will be the opposite face of the one that has 3 dots?



1. 3                  2. 4
3. 2                  4. 5

The answer is (4).

Q 4. Based on the position of alphabets in the cube, what letter will be the opposite of A?



1. B

2. D

3. C

4. F

The answer is (2).

# UNIT 4

## Mirror Images

### Mirror-Images of Capital letters, Small letters

#### Directions to Solve

In each of the following questions you are given a combination of alphabets and/or numbers followed by four alternatives (1), (2), (3) and (4). Choose the alternative which is closely resembles the mirror image of the given combination.

---

1.

Choose the alternative which is closely resembles the mirror image of the given combination.

**ANS43Q12**

- (1) ANS43Q12      (2) S1Q34NS  
(3) S1Q34NS      (4) SNS3412

1

2

3

4

**Answer:** Option B

---

2.

Choose the alternative which is closely resembles the mirror image of the given combination.

**TARA IN 1014A**

- (1) A4101N1014T      (2) A1014N1A10T  
(3) NIARATA1014A      (4) A4101N1A10T

1

2

3

4

**Answer:** Option D

---

3.

Choose the alternative which is closely resembles the mirror image of the given combination.

**1965 INDOPAK**

- (1) 1965INDIKA<sup>(2)</sup> 1965INDOPAK<sup>(3)</sup>  
(4) 1965INDOPAK<sup>(5)</sup>

1

2

3

4

**Answer:** Option D

---

4.

Choose the alternative which is closely resembles the mirror image of the given combination.

**MALAYALAM**

- (1) MALAYALAM<sup>(2)</sup> MAJAYAJAM<sup>(3)</sup>  
(4) MAGAYAGAM

1

2

3

4

**Answer:** Option B

---

5.

Choose the alternative which is closely resembles the mirror image of the given combination.

**EFFECTIVE**

- (1) EFFECITVE<sup>(2)</sup> EVITCEFFE<sup>(3)</sup>  
(4) EVITCEFFE

1

2

3

4

**Answer:** Option A

---

6.

Choose the alternative which is closely resembles the mirror image of the given combination.

**UTZFY6KH**

- (1) HK6YFZTU (2) KHZYFZTU  
(3) UTZAY6KH (4) UTZFY6KH

1

2

3

4

**Answer:** Option D

---

7.

Choose the alternative which is closely resembles the mirror image of the given combination.

**AN54WMG3**

- (1) AN54WMG3 (2) AN54WMG3  
(3) AN54WMG3 (4) AN54WMG3

1

2

3

4

**Answer:** Option B

---

8.

Choose the alternative which is closely resembles the mirror image of the given combination.

**SUPERVISOR**

- (1) SUPERVISOR (2) SUpERVISOR  
(3) VIsEROSUP (4) SUpERVISOR

1

2

3

4

**Answer:** Option A

**Directions to Solve**

In each of the following questions, choose the correct mirror images of the given image of the Fig.(X) from amongst the four alternatives (1), (2), (3) and (4) given along with it.

**Numbers and figures**

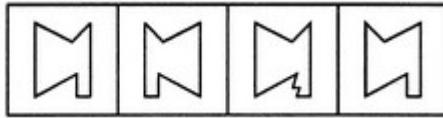
---

1.

Choose the correct mirror image of the given figure (X) from amongst the four alternatives.



(X)



(1)

(2)

(3)

(4)

1

2

3

4

**Answer:** Option D

---

2.

Choose the correct mirror image of the given figure (X) from amongst the four alternatives.



(X)



(1)

(2)

(3)

(4)

1

2

3

4

**Answer:** Option D

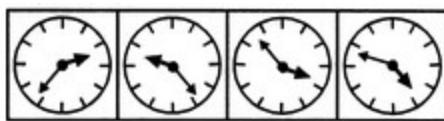
---

3.

Choose the correct mirror image of the given figure (X) from amongst the four alternatives.



(X)



(1)

(2)

(3)

(4)

1

2

3

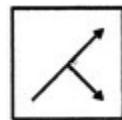
4

**Answer:** Option D

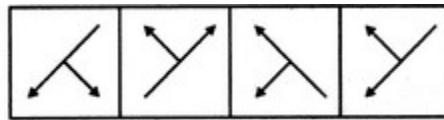
---

4.

Choose the correct mirror image of the given figure (X) from amongst the four alternatives.



(X)



(1)

(2)

(3)

(4)

1

2

3

4

**Answer:** Option C

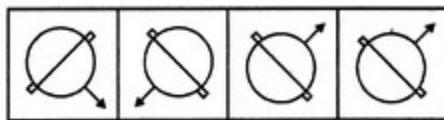
---

5.

Choose the correct mirror image of the given figure (X) from amongst the four alternatives.



(X)



(1)

(2)

(3)

(4)

1

2

3

4

**Answer:** Option C

6.

Choose the correct mirror image of the given figure (X) from amongst the four alternatives.



(X)



(1)

(2)

(3)

(4)

1

2

3

4

**Answer:** Option B

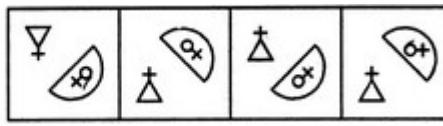
---

7.

Choose the correct mirror image of the given figure (X) from amongst the four alternatives.



(X)



(1)

(2)

(3)

(4)

1

2

3

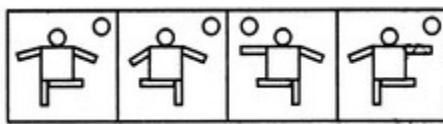
4

**Answer:** Option B

---

8.

Choose the correct mirror image of the given figure (X) from amongst the four alternatives.



- (X)      (1)      (2)      (3)      (4)
- 1  
2  
3  
4

**Answer:** Option D

---

## Water Images

### Water-Images of Capital letters, Small letters

#### Directions to Solve

In each of the following questions, you are given a combination of alphabets and/or numbers followed by four alternatives (1), (2), (3) and (4). Choose the alternative which is closely resembles the water-image of the given combination.

---

1.

Choose the alternative which is closely resembles the water-image of the given combination.

**NUCLEAR**

- (1) **НУСГЕАВ**      (2) **ИУСЛЕАВ**  
(3) **ИУСГЕАВ**      (4) **ИУСГЕАВ**

1

2

3

4

**Answer:** Option D

---

2.

Choose the alternative which is closely resembles the water-image of the given combination.

**bridge**

- (1) **брідг**      (2) **брідг**  
(3) **брідг**      (4) **брідг**

1

2

3

4

**Answer:** Option B

---

3.

Choose the alternative which is closely resembles the water-image of the given combination.

**GR98AP76ES**

- (1) **G968A919E2**      (2) **S9619A98E2**  
(3) **G98A98E2**      (4) **S9919A98E2**

1

2

3

4

**Answer:** Option C

---

4.

Choose the alternative which is closely resembles the water-image of the given combination.

**A1M3b**

- (1) **dEM1A (2)**  
(3) **d3MfA (4)**

1

2

3

4

**Answer:** Option C

---

5.

Choose the alternative which is closely resembles the water-image of the given combination.

**E8t4e9C**

- (1) **C9e4f8E (2)**  
(3) **C9e4f8E (4)**

1

2

3

4

**Answer:** Option D

6.

Choose the alternative which is closely resembles the water-image of the given combination.

**ab45CD67**

- (1) **a b 4 5 C D 6 7**      (2) **a b 4 5 C D 6 1**  
(3) **1 6 C D 6 4 d a**      (4) **1 6 C D 6 4 d a**

1

2

3

4

**Answer:** Option B

---

7.

Choose the alternative which is closely resembles the water-image of the given combination.

**ACOUSTIC**

- (1) **CITSUOCA** (2) **CITSUOCA**  
(3) **CITSUOCA** (4) **ACONSTIC**

1

2

3

4

**Answer:** Option B

---

8.

Choose the alternative which is closely resembles the water-image of the given combination.

**monday**

- (1) **yadnom**      (2) **ysdnom**  
(3) **λənbəm**      (4) **λənbəm**

- 1
- 2
- 3
- 4

**Answer:** Option D

Directions to Solve

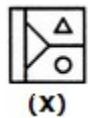
## Numbers and figures

In each of the following questions, choose the water image of the Fig.(X) from amongst the four alternatives (1), (2), (3) and (4) given along with it.

---

1.

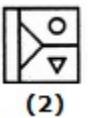
Choose the correct water image of the given figure (X) from amongst the four alternatives.



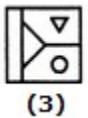
(X)



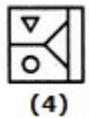
(1)



(2)



(3)



(4)

- 1
- 2
- 3
- 4

**Answer:** Option B

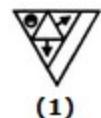
---

2.

Choose the correct water image of the given figure (X) from amongst the four alternatives.



(X)



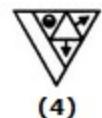
(1)



(2)



(3)



(4)

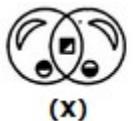
- 1
- 2
- 3
- 4

**Answer:** Option B

---

3.

Choose the correct water image of the given figure (X) from amongst the four alternatives.



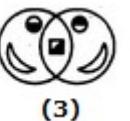
(X)



(1)



(2)



(3)



(4)

1

2

3

4

**Answer:** Option D

---

4.

Choose the correct water image of the given figure (X) from amongst the four alternatives.



(X)



(1)



(2)



(3)



(4)

1

2

3

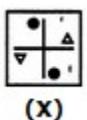
4

**Answer:** Option A

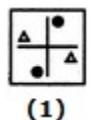
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5.

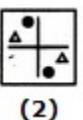
Choose the correct water image of the given figure (X) from amongst the four alternatives.



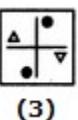
(X)



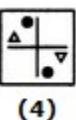
(1)



(2)



(3)



(4)

1

2

3

4

**Answer:** Option C

---

6.

Choose the correct water image of the given figure (X) from amongst the four alternatives.



(X)



(1)



(2)



(3)



(4)

1

2

3

4

**Answer:** Option D

---

7.

Choose the correct water image of the given figure (X) from amongst the four alternatives.



(X)



(1)



(2)



(3)



(4)

1

2

3

4

**Answer:** Option C

---

8.

Choose the correct water image of the given figure (X) from amongst the four alternatives.



(X)



(1)



(2)



(3)



(4)

1

2

3

**Answer:** Option D

## Cubes and Dice

### Directions to Solve

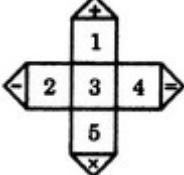
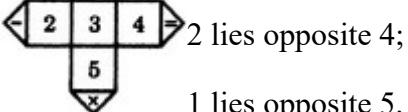
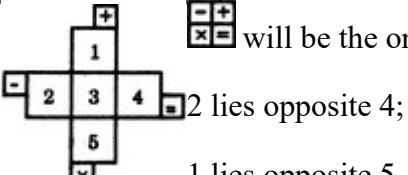
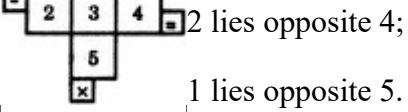
The sheet of paper shown in the figure (X) given on the left hand side, in each problem, is folded to form a box. Choose from amongst the alternatives (1), (2), (3) and (4), the boxes that are similar to the box that will be formed.

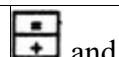
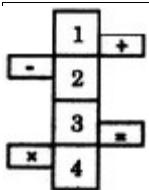
---

### Construction of Boxes:

The details of the cube formed when a sheet is folded to form a box:

<b>Form I</b>	<b>In this case:</b> 1 lies opposite 5; 2 lies opposite 4; 3 lies opposite 6.
<b>Form II</b>	<b>In this case:</b> 1 lies opposite 6; 2 lies opposite 4; 3 lies opposite 5.
<b>Form III</b>	<b>In this case:</b> 1 lies opposite 4; 2 lies opposite 6; 3 lies opposite 5.

<b>Form IV</b>	<b>In this case:</b> 1 lies opposite 4; 2 lies opposite 5; 3 lies opposite 6.
<b>Form V</b>	<b>In this case:</b> 1 lies opposite 3; 2 lies opposite 5; 4 lies opposite 6.
<b>Form VI</b>	<b>In this case:</b>  will be the one of the faces of the cube and it lies opposite 3;  2 lies opposite 4; 1 lies opposite 5.
<b>Form VII</b>	<b>In this case:</b>  will be the one of the faces of the cube and it lies opposite 3;  2 lies opposite 4; 1 lies opposite 5.
<b>Form VIII</b>	<b>In this case:</b>



and are two faces of the cube that lie opposite to each other.

1 lies opposite 3;

2 lies opposite 4;

### Directions to Solve

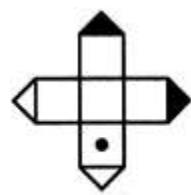
#### 2D and 3D cubes

The sheet of paper shown in the figure (X) given on the left hand side, in each problem, is folded to form a box. Choose from amongst the alternatives (1), (2), (3) and (4), the boxes that are similar to the box that will be formed.

---

1.

Choose the box that is similar to the box formed from the given sheet of paper (X).



(X)



(1)



(2)



(3)



(4)

A.1 and 2 only

B.2 and 4 only

C.2 and 3 only

D.1 and 4 only

**Answer:** Option C

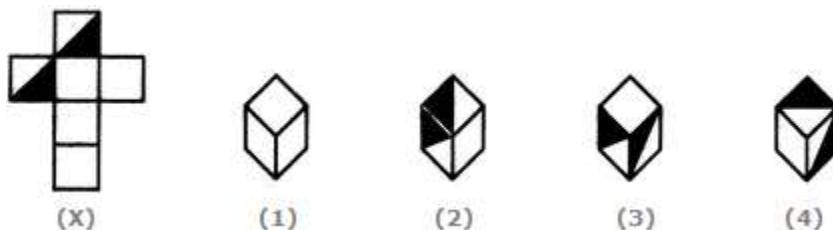
**Explanation:**

The fig. (X) is similar to the [Form VI](#). So, when a cube is formed by folding the sheet shown in fig. (X), then is one of the faces of the cube. However, the cube in fig. (1) has two such faces and fig. (4) has a face which is completely shaded. So, these two cubes cannot be formed. Hence, only the cubes in figures (2) and (3) can be formed.

---

2.

Choose the box that is similar to the box formed from the given sheet of paper (X).



A. 1 and 4 only

B. 3 and 4 only

C. 1 and 2 only

D. 2 and 3 only

**Answer:** Option A

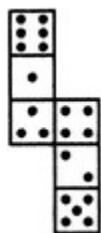
**Explanation:**

The fig. (X) is similar to the [Form I](#). So, when the sheet shown in fig. (X) is folded to form a cube then one of the two half-shaded faces lies opposite to one of the blank faces and the other half-shaded face lies opposite to another blank face. The two remaining blank faces lie opposite to each other. Thus, both the cubes shown in figures (1).and (4) can be formed when the sheet shown in fig. (X) is folded. Also, though the cubes shown in figures (2) and (3) have faces that can appear adjacent to each other but the cube formed by folding the sheet in fig. (X) cannot be rotated to form either of the two. Hence, the cubes in figures (2) and (3) cannot be formed.

---

3.

How many dots lie opposite to the face having three dots, when the given figure is folded to form a cube?



A. 2

B. 4

C. 5

D. 6

**Answer:** Option D

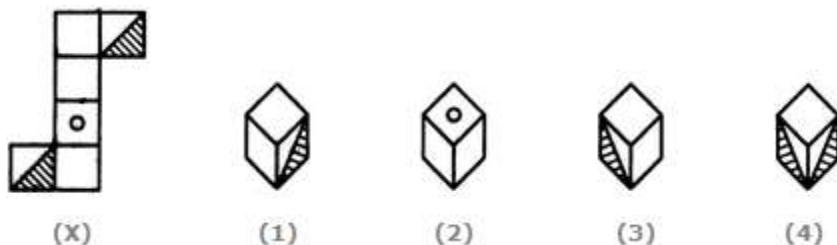
**Explanation:**

The given figure is similar to [Form V](#). Therefore, when this figure is folded to form a cube then the face bearing six dots will lie opposite the face bearing three dots.

---

4.

Choose the box that is similar to the box formed from the given sheet of paper (X).



A.1 and 3 only

B.1 and 4 only

C.2 and 4 only

D.3 and 4 only

**Answer:** Option A

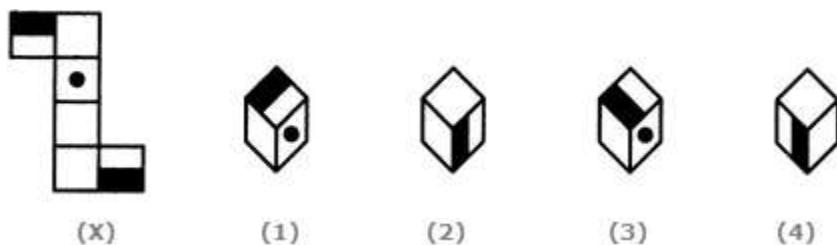
**Explanation:**

The fig. (X) is similar to [Form II](#). So, when the sheet shown in fig. (X) is folded to form a cube then the two half-shaded faces lie opposite to each other, the face bearing a circle lies opposite to one of the two blank faces and the two remaining blank faces lie opposite to each other. Therefore, the cubes shown in fig. (4) which has the two half-shaded faces adjacent to each other, cannot be formed by folding the sheet shown in fig. (X). Also, the cube shown in fig. (2) has the face bearing a circle adjacent to two blank faces. This is not possible since there is one blank face opposite to the circle and one blank face opposite to the third blank face. Hence, only the cubes in figures (1) and (3) can be formed.

---

5.

Choose the box that is similar to the box formed from the given sheet of paper (X).



A.1 and 2 only

B.2 and 3 only

C.2 and 4 only

D.1, 2, 3 and 4

**Answer:** Option D

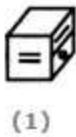
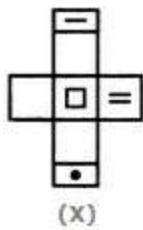
**Explanation:**

The fig. (X) is similar to **Form II**. So, when a cube is formed by folding the sheet shown in fig. (X), then the two half-shaded faces lie opposite to each other and one of the three blank faces appears opposite to the face bearing a dot. Clearly, each one of the four cubes shown in figures (1), (2), (3) and (4) can be formed by folding the sheet shown in fig. (X).

---

6.

Choose the box that is similar to the box formed from the given sheet of paper (X).



A.1 only

B.1 and 3 only

C.1, 3 and 4 only

D.1, 2, 3 and 4

**Answer:** Option C

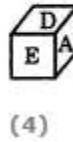
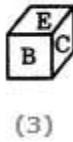
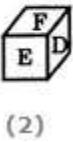
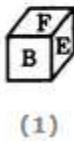
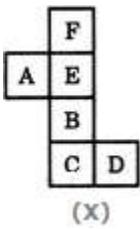
**Explanation:**

When the sheet in fig. (X) is folded, then one of the faces of the cube formed will be of the form and this face will lie opposite the face bearing a square. Also, one of the blank faces lies opposite another blank face and the third blank face lies opposite the face bearing an '=' sign. Clearly, all the three blank faces cannot appear adjacent to each other. So, the cube shown in fig. (2) which has all the three blank faces adjacent to each other cannot be formed. Hence, only the cubes shown in figures A, C and D can be formed.

---

7.

Choose the box that is similar to the box formed from the given sheet of paper (X).



- A. 1 only  
 B. 2 only  
 C. 1 and 3 only  
 D. 1, 2, 3 and 4 only

**Answer:** Option B

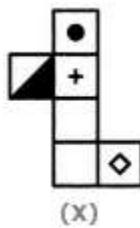
**Explanation:**

The fig. (X) is similar to the **Form III**. So, when the sheet in fig. (X) is folded to form a cube, then 'F' appears opposite 'B', 'E' appears opposite 'C' and 'A' appears opposite 'D'. Therefore, the cube in fig. (1) which shows 'F' adjacent to 'B', the cube in fig. (3) which shows 'E' adjacent to 'C' and the cube in fig. (4) which shows 'A' adjacent to 'D' cannot be formed. Hence, only the cube in fig.(2) can be formed.

---

8.

Choose the box that is similar to the box formed from the given sheet of paper (X).



- A. 1 only  
 B. 2 only  
 C. 3 only  
 D. 4 only

**Answer:** Option B

**Explanation:**

The fig. (X) is similar to the **Form III**. So, when the sheet in fig. (X) is folded to form a cube, then the half-shaded face appears opposite to the face bearing a rhombus, the face with a black circle appears opposite to one of the two blank faces and the face with a '+' sign appears opposite to the other blank face. Clearly, the cubes shown in figures (1) and (4) cannot be formed since they have the half-shaded face adjacent to the face

bearing the rhombus. Also, though the cube shown in fig. (3) has faces that can appear adjacent to each other but the cube formed by folding the sheet in fig. (X) cannot be rotated to form fig. (3). Hence, the cube in fig. (3) cannot be formed. Thus, only the cube shown in fig. (2) can be formed.

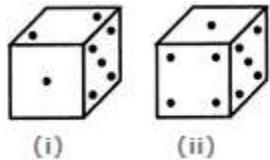
---

### **Number opened dice and Letter opened dice**

---

1.

Observe the dots on a dice (one to six dots) in the following figures. How many dots are contained on the face opposite to that containing four dots?



- A.2
- B.3
- C.6
- D.Cannot be determined

**Answer:** Option A

**Explanation:**

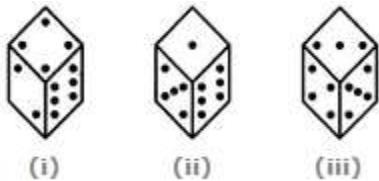
We shall assume the dice in fig. (ii) to be rotated so that the 5 dots appear at the same position as in fig. (i) i.e. on RHS face (i.e. on face II as per activity 1) and 1 dot appears at the same position as in fig; (i) i.e. on Front face (i.e. on face I). Then, from the, two figures, 2 dots appear on the top face (i.e. on face V) and 4 dots appear on the Bottom face (i.e. on face VI).

Since, these two faces are opposite to each other, therefore, two dots are contained on the face opposite to that containing four dots.

---

2.

Three different positions of a dice are shown below. How many dots lie opposite 2 dots?



A.1

B.3

C.5

D.6

**Answer:** Option C

**Explanation:**

From figures (ii) and (iii), we conclude that 1, 6, 3 and 4 dots lie adjacent to 5 dots.

Therefore, 2 dots must lie opposite 5 dots. Conversely, 5 dots must lie opposite 2 dots.

---

3.

The six faces of a dice have been marked with alphabets A, B, C, D, E and F respectively. This dice is rolled down three times. The three positions are shown as:



Find the alphabet opposite A.

A.C

B.D

C.E

D.F

**Answer:** Option C

**Explanation:**

From figures (ii) and (iii), we conclude that the alphabets C, D, B and F appear adjacent to the alphabet E. Therefore, the alphabet A appears opposite E. Conversely, E appears opposite A.

---

4.

Three positions of a dice are given. Based on them find out which number is found opposite the number 2 in the given cube.



(i)



(ii)



(iii)

A.6

B.5

C.3

D.1

**Answer:** Option A

**Explanation:**

From figures (i) and (ii), we conclude that the numbers 1, 4, 3 and 5 lie adjacent to the number 6. Clearly, the number 2 lies opposite 6 and conversely 6 lies opposite 2.

---

5.

A dice is thrown four times and its four different positions are shown below. Find the number on the face opposite the face showing 2.



(i)



(ii)



(iii)



(iv)

A.3

B.4

C.5

D.6

**Answer:** Option C

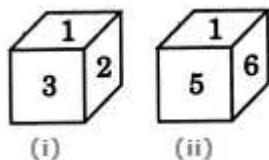
**Explanation:**

From figures (i), (ii) and (iv) We conclude that 6, 4, 3 and 1 lie adjacent to 2. Hence, 5 must lie opposite 2.

---

6.

Two positions of a dice are shown. When 4 is at the bottom, what number will be on the top?



- A.1
- B.2
- C.5
- D.6

**Answer:** Option A

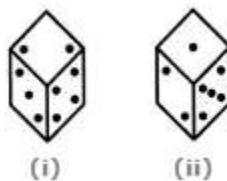
**Explanation:**

From figures (i) and (ii), we conclude that 2, 3, 5 and 6 are adjacent to 1. Therefore, 4 lies opposite 1. Hence, when 4 is at the bottom, then 1 must be on the top.

---

7.

A dice is rolled twice and the two positions are shown in the figure below. What is the number of dots at the bottom face when the dice is in position (i)?



- A.1
- B.5
- C.6
- D.Cannot be determined

**Answer:** Option C

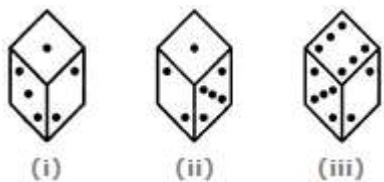
**Explanation:**

From figures (i) and (ii) we conclude that 3, 4, 1 and 5 dots appear adjacent to 2 dots. Therefore, 6 dots must appear opposite 2 dots. Since, there are 2 dots on the top face when the dice is in position (i), therefore, the number of dots at the bottom face must be 6.

---

8.

Below are depicted the three different positions of a dice. Find the number of dots on the face opposite to the face with one dot.



- A.2
- B.3
- C.4
- D.6

**Answer:** Option D

**Explanation:**

From figures (i), (ii) and (iii), we conclude that 1, 3, 5 and 6 dots appear adjacent to the face with 2 dots. Therefore, 4 dots will appear opposite to 2 dots. Now, from figures (i) and (ii), we conclude that 2, 3 and 5 dots appear adjacent to 1 dot. Therefore, either 4 or 6 dots will appear opposite to 1 dot. But since, 4 dots appear opposite to 2 dots it follows that 6 dots will appear opposite 1 dots.

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# Question Bank of L.R.P.S

## UNIT 5

Clocks : Finding Angle Between Minute And Hour Hands, Finding Time If Angle Is Given, Correct Time On Incorrect (Fast or Slow) Clocks.

Q 1. In a clock displayed at a wall, the time displayed is 9 o'clock in the morning. Through how many degrees will the hour hand rotate when the clock shows 3 o'clock in the afternoon?

- 1. 120 degree
- 2. 160 degree
- 3. 180 degree
- 4. 260 degree
- 5. 150 degree

Answer: (3) 180 degree

Solution: There is a difference of 6 hours between 9 o'clock in the morning and 3 o'clock in the afternoon Degrees with which the hour hand clock will rotate =  $(360/12) \times 6 = 180$  degree

Q 2. How many minutes are lost by a clock per day, if its hands coincide every 54 minutes?

- 1. 35 minutes
  - 2. 205 minutes
  - 3. 305 minutes
  - 4. 25 minutes
  - 5. Cannot be determined
- Answer: (3) 305 minutes

Solution: In 60 minutes, there a total of 55 minute spaces which are covered. 60 minute spaces are covered in  $(\times 60)$  minutes = 65 minutes 55 60 5 11 Loss in time in 54 minutes =  $(65) - 54 = 11$  minutes 5 11 5 11 Loss of minutes in 24 hours =  $11 \times 24 \times 60 = 305$  minutes 5 11 1 54 5 11

Q 3. At what time between 6 a.m. and 6:25 a.m. will the hands of a clock be at right angles?

- 1. 44 minutes
  - 2. 43 minutes
  - 3. 42 minutes
  - 4. 45 minutes
  - 5. 42 minutes
- Answer: (2) 43 minutes

Solution: Between 6 a.m. and 6:25 a.m., the hands are at 20 minutes space apart So, to make a right angle between the hands of the clock, 20 more minutes shall be required, which is =  $20+20 = 40$  spaces 55 minute spaces are gained in 60 minutes

Thus, 40 minute spaces are gained in ( $\times 40$ ) = 43 minutes 55 60 7 11

Q 4. At what time between 7 o'clock and 8 o'clock will the hands of a wall clock point in opposite directions?

- 1. 54 minutes past 7 6 11
- 2. 53 minutes past 7 6 11
- 3. 52 minutes past 7 6 11
- 4. Cannot be Determined
- 5. None of the above

Answer: (1) 54 minutes past 7 6 11 Solution: At 7 o'clock the hands of the watch are 20 spaces apart For the hands of the clocks to be in opposite direction, the spaces between them must be 30 minutes 50 minute spaces will have to be gained by the minute hand 55 minute spaces are gained in 60 minutes Thus, 50 minute spaces are gained in ( $\times 50$ ) = 54 minutes 55 60 6 11 Thus, the required time is 54 minutes past 7 o'clock 6 11

Q 5. Between 4 o'clock and 5 o'clock in the morning, at what time will the hands of a wall clock be in the same straight line? But these lines are not together, i.e., not overlapping each other.

- 1. 6 minutes past 4 5 11
- 2. 5 minutes past 4 5 11
- 3. 5 minutes past 4 4 11
- 4. 4 minutes past 4 4 11
- 5. Nine of the above

Answer: (2) 5 minutes past 4 5 11 Solution: If the two hands of the clock are in a straight line but not together, then they are 30 spaces apart At 4 o'clock, they are 25 minute spaces apart Thus, the minutes hand will have to gain only 5 minute spaces We know, 55 minute spaces are gained in 60 minutes So, 5 minute spaces are gained in ( $\times 5$ ) = minutes = 5 minutes 55 60 11 60 5 11 So, the two hands will be in a straight line at 5 minutes past 4

Calendar: Odd day, Leap year, Ordinary Year, Counting of Odd days, Day of the week related to odd days.

1) If January 1, 1996, was Monday, what day of the week was January 1, 1997?

- A. Thursday
- B. Wednesday**
- C. Friday
- D. Sunday

2) The first republic day of India was celebrated on January 26, 1950. What day of the week was it?

A. Wednesday

B. Friday

**C. Thursday**

D. Tuesday

3) On February 5, 1998, it was Thursday. The day of the week on February 5, 1997, was

**A. Wednesday**

B. Monday

C. Friday

D. Sunday

4) Today is Wednesday, after 68 days, it will be

A. Friday

B. Sunday

**C. Monday**

D. Thursday

5) What was the day of the week on June 17, 1991?

a. Tuesday

b. Wednesday

c. Friday

**d. Monday**

## Ratio and Proportion

1) A: B: C is in the ratio of 3: 2: 5. How much money will C get out of Rs 1260?

- A. 252
- B. 125
- C. 503

**D. None of these**

2) If a: b is 3: 4 and b: c is 2: 5. Find a: b: c.

- A. 3: 2: 5
- B. 3: 6: 5
- C. 3: 4:10**
- D. 2: 3: 4

3) A: B is 1: 2; B: C is 3: 2 and C: D is 1:3. Find A: B: C: D.

- A. 3: 6: 4: 12**
- B. 2: 3: 5: 7
- C. 3: 5: 7: 6
- D. 2: 1: 6: 13

4) 5600 is to be divided into A, B, C, and D in such a way that the ratio of share of A: B is 1: 2, B: C is 3: 1, and C: D is 2: 3. Find the sum of (A and C) and (B and C).

- A. Rs 2400, Rs 3000
- B. Rs 2000, Rs 3000
- C. Rs 2400, Rs 3200
- D. Rs 2000, Rs 3200**

5) The ratio of the total amount distributed in all the males and females as salary is 6: 5. The ratio of the salary of each male and female is 2: 3. Find the ratio of the no. of males and females.

- A. 5:9
- B. 5:7
- C. 7:5
- D. 9:5**

### Alligation and mixture

1) A 60 liter mixture of milk and water contains 10% water. How much water must be added to make water 20% in the mixture?

- A. 8 liters
- B. 7.5 liters**
- C. 7 liters
- D. 6.5 liters

2) An alloy contains 14 parts of tin and 100 parts of copper. What is the percentage of tin in the alloy ?

- A. 12.3%**
- B. 13%
- C. 11.5%
- D. 11%

3) A 20 liter mixture contains 30% alcohol and 70% water. If 5 liters of water is added to the mixture, what will be the percentage of alcohol in the new mixture ?

- A. 22%
- B. 23%
- C. 24%**
- D. 25%

4) In what ratio water must be mixed with milk costing Rs. 48 per liter to get a mixture worth Rs. 32 per liter ?

A. 2:3

B. 3:2

C. 3:4

**D. 1:2**

5) A shopkeeper mixes 60 kg of sugar worth Rs. 30 per kg with 90 kg of sugar worth Rs. 40 per kg. At what rate he must sell the mixture to gain 20%?

A. Rs. 30 per kg

B. Rs. 34 per kg

**C. Rs. 43.2 per kg**

D. Rs. 38 per kg

## **5<sup>th</sup>Unit :**

### **Clock**

#### **Clock – Formulas**

##### **1. Minute Spaces:**

The face or dial of watch is a circle whose circumference is divided into 60 equal parts, called minute spaces.

##### **Hour Hand and Minute Hand:**

A clock has two hands, the smaller one is called the hour hand or short hand while the larger one is called minute hand or long hand.

2.

- i. In 60 minutes, the minute hand gains 55 minutes on the hour on the hour hand.
- ii. In every hour, both the hands coincide once.
- iii. The hands are in the same straight line when they are coincident or opposite to each other.
- iv. When the two hands are at right angles, they are 15 minute spaces apart.
- v. When the hands are in opposite directions, they are 30 minute spaces apart.
- vi. Angle traced by hour hand in 12 hrs =  $360^\circ$
- vii. Angle traced by minute hand in 60 min. =  $360^\circ$ .
- viii. If a watch or a clock indicates 8.15, when the correct time is 8, it is said to be 15 minutes too fast.  
On the other hand, if it indicates 7.45, when the correct time is 8, it is said to be 15 minutes too slow.

#### **Questions**

1. An accurate clock shows 8 o'clock in the morning. Through how many degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?

$144^\circ$

$150^\circ$

$168^\circ$

**$180^\circ$**

**Answer:** Option D

**Explanation:**

$$\text{Angle traced by the hour hand in 6 hours} = \left( \frac{360}{12} \times 6 \right)^\circ = 180^\circ.$$


---

2.

The reflex angle between the hands of a clock at 10.25 is:

$180^\circ$

$$\begin{array}{r} 192 \\ 1 \\ 2 \\ \hline 195^\circ \end{array}$$

$$\begin{array}{r} 197 \\ 1 \\ 2 \\ \hline \end{array}$$

**Answer:** Option D

**Explanation:**

$$\begin{aligned} \text{Angle traced by hour hand in } \frac{125}{12} \text{ hrs} &= \left( \frac{360}{12} \times \frac{125}{12} \right)^\circ = 312\frac{1}{2}^\circ. \\ \text{Angle traced by minute hand in 25 min} &= \left( \frac{360}{60} \times 25 \right)^\circ = 150^\circ. \\ \therefore \text{Reflex angle} &= 360^\circ - \left( 312\frac{1}{2}^\circ - 150^\circ \right) = 360^\circ - 162\frac{1}{2}^\circ = 197\frac{1}{2}^\circ. \end{aligned}$$


---

3.

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

$145^\circ$

$150^\circ$

**$155^\circ$**

$160^\circ$

**Answer:** Option C

**Explanation:**

Angle traced by hour hand in 12 hrs =  $360^\circ$ .

Angle traced by hour hand in 5 hrs 10 min. i.e.,	$\frac{31}{6}$	hrs =	$\left( \frac{360}{12} \times \frac{31}{6} \right)^\circ = 155^\circ$
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4.

A watch which gains 5 seconds in 3 minutes was set right at 7 a.m. In the afternoon of the same day, when the watch indicated quarter past 4 o'clock, the true time is:

59	7	min. past 3
12		

**4 p.m.**

58	7	min. past 3
11		
2	3	min. past 4
11		

**Answer:** Option B

**Explanation:**

Time from 7 a.m. to 4.15 p.m. = 9 hrs 15 min. =	$\frac{37}{4}$	hrs.
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3 min. 5 sec. of this clock = 3 min. of the correct clock.

$\Rightarrow \frac{37}{720}$	hrs of this clock =	$\frac{1}{20}$	hrs of the correct clock.
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$\Rightarrow \frac{37}{4}$	hrs of this clock =	$\left( \frac{1}{20} \times \frac{720}{37} \times \frac{37}{4} \right)$	hrs of the correct clock.
----------------------------	---------------------	---	---------------------------

= 9 hrs of the correct clock.

$\therefore$  The correct time is 9 hrs after 7 a.m. i.e., 4 p.m.

5.

How much does a watch lose per day, if its hands coincide every 64 minutes?

32	8	min.
	11	
36	5	min.
	11	

90 min.

96 min.

**Answer:** Option A

**Explanation:**

55 min. spaces are covered in 60 min.

$$\begin{aligned}
 & \text{60 min. spaces are covered in } \left( \frac{60}{55} \times 60 \right) \text{ min.} = 65 \frac{5}{11} \text{ min.} \\
 & \text{Loss in 64 min.} = \left( 65 \frac{5}{11} - 64 \right) = \frac{16}{11} \text{ min.} \\
 & \text{Loss in 24 hrs} = \left( \frac{16}{11} \times \frac{1}{64} \times 24 \times 60 \right) \text{ min.} = 32 \frac{8}{11} \text{ min.}
 \end{aligned}$$


---

6. At what time between 7 and 8 o'clock will the hands of a clock be in the same straight line but, not together?

5 min. past 7

2	min. past 7
5	min. past 7
11	min. past 7

**Answer:** Option D

**Explanation:**

When the hands of the clock are in the same straight line but not together, they are 30 minute spaces apart.

At 7 o'clock, they are 25 min. spaces apart.

∴ Minute hand will have to gain only 5 min. spaces.

55 min. spaces are gained in 60 min.

$$5 \text{ min. spaces are gained in } \left( \frac{60}{55} \times 5 \right) \text{ min} = 5 \frac{5}{11} \text{ min.}$$

$$\therefore \text{Required time} = 5 \frac{5}{11} \text{ min. past 7.}$$

---

7. At what time between 5.30 and 6 will the hands of a clock be at right angles?

43	5	min. past 5
43	7	min. past 5
43	11	

40 min. past 5

45 min. past 5

**Answer:** Option B

**Explanation:**

At 5 o'clock, the hands are 25 min. spaces apart.

To be at right angles and that too between 5.30 and 6, the minute hand has to gain  $(25 + 15) = 40$  min. spaces.

55 min. spaces are gained in 60 min.

$$40 \text{ min. spaces are gained in } \left( \frac{60}{55} \times 40 \right) \text{ min} = 43 \frac{7}{11} \text{ min.}$$

$$\therefore \text{Required time} = 43 \frac{7}{11} \text{ min. past 5.}$$

---

## Calendar

## Calendar – Formulas

### 1.Odd Days:

We are supposed to find the day of the week on a given date.

For this, we use the concept of 'odd days'.

In a given period, the number of days more than the complete weeks are called odd days.

### 2.Leap Year:

(i). Every year divisible by 4 is a leap year, if it is not a century.

(ii). Every 4<sup>th</sup> century is a leap year and no other century is a leap year.

Note: A leap year has 366 days.

Examples:

i. Each of the years 1948, 2004, 1676 etc. is a leap year.

ii. Each of the years 400, 800, 1200, 1600, 2000 etc. is a leap year.

iii. None of the years 2001, 2002, 2003, 2005, 1800, 2100 is a leap year.

### 3.Ordinary Year:

The year which is not a leap year is called an ordinary years. An ordinary year has 365 days.

### 4.Counting of Odd Days:

1. 1 ordinary year = 365 days = (52 weeks + 1 day.)

∴ 1 ordinary year has 1 odd day.

2. 1 leap year = 366 days = (52 weeks + 2 days)

∴ 1 leap year has 2 odd days.

3. 100 years = 76 ordinary years + 24 leap years

=  $(76 \times 1 + 24 \times 2)$  odd days = 124 odd days.

= (17 weeks + days) ≈ 5 odd days.

∴ Number of odd days in 100 years = 5.

Number of odd days in 200 years =  $(5 \times 2)$  ≈ 3 odd days.

Number of odd days in 300 years =  $(5 \times 3)$  ≈ 1 odd day.

Number of odd days in 400 years =  $(5 \times 4 + 1)$  ≈ 0 odd day.

Similarly, each one of 800 years, 1200 years, 1600 years, 2000 years etc. has 0 odd days.

### 5. Day of the Week Related to Odd Days:

No. of days:	0	1	2	3	4	5	6
Day:	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.

#### Questions

1. It was Sunday on Jan 1, 2006. What was the day of the week Jan 1, 2010?

- A. Sunday
- B. Saturday
- C. Friday
- D. Wednesday

**Answer:** OptionC

**Explanation:**

On 31<sup>st</sup> December, 2005 it was Saturday.

Number of odd days from the year 2006 to the year 2009 =  $(1 + 1 + 2 + 1) = 5$  days.

∴ On 31<sup>st</sup> December 2009, it was Thursday.

Thus, on 1<sup>st</sup> Jan, 2010 it is Friday.

---

2. What was the day of the week on 28<sup>th</sup> May, 2006?

- A. Thursday
- B. Friday
- C. Saturday
- D. Sunday

**Answer:** OptionD

**Explanation:**

28 May, 2006 = (2005 years + Period from 1.1.2006 to 28.5.2006)

Odd days in 1600 years = 0

Odd days in 400 years = 0

5 years = (4 ordinary years + 1 leap year) =  $(4 \times 1 + 1 \times 2) \equiv 6$  odd days

Jan. Feb. March April May  $(31 + 28 + 31 + 30 + 28) = 148$  days

$\therefore 148 \text{ days} = (21 \text{ weeks} + 1 \text{ day}) \equiv 1 \text{ odd day.}$

Total number of odd days  $= (0 + 0 + 6 + 1) = 7 \equiv 0 \text{ odd day.}$

Given day is Sunday.

---

3. What was the day of the week on 17<sup>th</sup> June, 1998?

- A. Monday
- B. Tuesday
- C. Wednesday
- D. Thursday

**Answer:** OptionC

**Explanation:**

17<sup>th</sup> June, 1998  $= (1997 \text{ years} + \text{Period from } 1.1.1998 \text{ to } 17.6.1998)$

Odd days in 1600 years  $= 0$

Odd days in 300 years  $= (5 \times 3) \equiv 1$

97 years has 24 leap years + 73 ordinary years.

Number of odd days in 97 years  $(24 \times 2 + 73) = 121 = 2 \text{ odd days.}$

Jan. Feb. March April May June  $(31 + 28 + 31 + 30 + 31 + 17) = 168 \text{ days}$

$\therefore 168 \text{ days} = 24 \text{ weeks} = 0 \text{ odd day.}$

Total number of odd days  $= (0 + 1 + 2 + 0) = 3.$

Given day is Wednesday.

---

4. What will be the day of the week 15<sup>th</sup> August, 2010?

- A. Sunday
- B. Monday
- C. Tuesday
- D. Friday

**Answer:** OptionA

**Explanation:**

15<sup>th</sup> August, 2010  $= (2009 \text{ years} + \text{Period } 1.1.2010 \text{ to } 15.8.2010)$

Odd days in 1600 years = 0

Odd days in 400 years = 0

9 years = (2 leap years + 7 ordinary years) =  $(2 \times 2 + 7 \times 1) = 11$  odd days  $\equiv 4$  odd days.

Jan. Feb. March April May June July Aug.  $(31 + 28 + 31 + 30 + 31 + 30 + 31 + 15) = 227$  days

$\therefore 227$  days = (32 weeks + 3 days)  $\equiv 3$  odd days.

Total number of odd days =  $(0 + 0 + 4 + 3) = 7 \equiv 0$  odd days.

Given day is Sunday.

---

5. Today is Monday. After 61 days, it will be:

- A. Wednesday
- B. Saturday
- C. Tuesday
- D. Thursday

**Answer:** OptionB

**Explanation:**

Each day of the week is repeated after 7 days.

So, after 63 days, it will be Monday.

$\therefore$  After 61 days, it will be Saturday.

---

6. If 6<sup>th</sup> March, 2005 is Monday, what was the day of the week on 6<sup>th</sup> March, 2004?

- A. Sunday
- B. Saturday
- C. Tuesday
- D. Wednesday

**Answer:** OptionA

**Explanation:**

The year 2004 is a leap year. So, it has 2 odd days.

But, Feb 2004 not included because we are calculating from March 2004 to March 2005. So it has 1 odd day only.

- ∴ The day on 6<sup>th</sup> March, 2005 will be 1 day beyond the day on 6<sup>th</sup> March, 2004.  
Given that, 6<sup>th</sup> March, 2005 is Monday.  
∴ 6<sup>th</sup> March, 2004 is Sunday (1 day before to 6<sup>th</sup> March, 2005).
- 

7. On what dates of April, 2001 did Wednesday fall?

- A. 1<sup>st</sup>, 8<sup>th</sup>, 15<sup>th</sup>, 22<sup>nd</sup>, 29<sup>th</sup>
- B. 2<sup>nd</sup>, 9<sup>th</sup>, 16<sup>th</sup>, 23<sup>rd</sup>, 30<sup>th</sup>
- C. 3<sup>rd</sup>, 10<sup>th</sup>, 17<sup>th</sup>, 24<sup>th</sup>
- D. 4<sup>th</sup>, 11<sup>th</sup>, 18<sup>th</sup>, 25<sup>th</sup>

**Answer:** Option D

**Explanation:**

We shall find the day on 1<sup>st</sup> April, 2001.

1<sup>st</sup> April, 2001 = (2000 years + Period from 1.1.2001 to 1.4.2001)

Odd days in 1600 years = 0

Odd days in 400 years = 0

Jan. Feb. March April

(31 + 28 + 31 + 1) = 91 days ≡ 0 odd days.

Total number of odd days = (0 + 0 + 0) = 0

On 1<sup>st</sup> April, 2001 it was Sunday.

In April, 2001 Wednesday falls on 4<sup>th</sup>, 11<sup>th</sup>, 18<sup>th</sup> and 25<sup>th</sup>.

---

## Ratio and Proportion – Formulas

- Ratio and Proportion – Formulas

1. Ratio:

The ratio of two quantities  $a$  and  $b$  in the same units, is the fraction  $\frac{a}{b}$  and we write it as  $a : b$ .

In the ratio  $a : b$ , we call  $a$  as the first term or antecedent and  $b$ , the second term or consequent.

Eg. The ratio 5 : 9 represents 5 with antecedent = 5, consequent = 9.

Rule: The multiplication or division of each term of a ratio by the same non-zero number does not affect the ratio.

Eg.  $4 : 5 = 8 : 10 = 12 : 15$ . Also,  $4 : 6 = 2 : 3$ .

## 2. Proportion:

The equality of two ratios is called proportion.

If  $a : b = c : d$ , we write  $a : b :: c : d$  and we say that  $a, b, c, d$  are in proportion.  
Here  $a$  and  $d$  are called extremes, while  $b$  and  $c$  are called mean terms.

Product of means = Product of extremes.

Thus,  $a : b :: c : d \Leftrightarrow (b \times c) = (a \times d)$ .

## 3. Fourth Proportional:

If  $a : b = c : d$ , then  $d$  is called the fourth proportional to  $a, b, c$ .

Third Proportional:

$a : b = c : d$ , then  $c$  is called the third proportion to  $a$  and  $b$ .

Mean Proportional:

Mean proportional between  $a$  and  $b$  is  $ab$ .

## 4. Comparison of Ratios:

$$\text{We say that } (a : b) > (c : d) \Leftrightarrow \frac{a}{b} > \frac{c}{d}$$

## 5. Compounded Ratio:

6. The compounded ratio of the ratios:  $(a : b), (c : d), (e : f)$  is  $(ace : bdf)$ .

## 7. Duplicate Ratios:

Duplicate ratio of  $(a : b)$  is  $(a^2 : b^2)$ .

Sub-duplicate ratio of  $(a : b)$  is  $(a : b)$ .

Triplicate ratio of  $(a : b)$  is  $(a^3 : b^3)$ .

Sub-triplicate ratio of  $(a : b)$  is  $(a^{1/3} : b^{1/3})$ .

$$\text{If } \frac{a}{b} = \frac{c}{d}, \text{ then } \frac{a+b}{a-b} = \frac{c+d}{c-d}. \quad [\text{componendo and dividendo}]$$

## 8. Variations:

We say that  $x$  is directly proportional to  $y$ , if  $x = ky$  for some constant  $k$  and we write,  $x \propto y$ .

We say that  $x$  is inversely proportional to  $y$ , if  $xy = k$  for some constant  $k$  and

$$\text{we write, } x \propto \frac{1}{y}.$$

## Questions

- A and B together have Rs. 1210. If  $\frac{4}{15}$  of A's amount is equal to  $\frac{2}{5}$  of B's amount, how much amount does B have?
  - Rs. 460
  - Rs. 484

- C. Rs. 550  
D. Rs. 664

**Answer:** OptionB

**Explanation:**

$$\begin{array}{|c|c|} \hline 4 & A \\ \hline 15 & = \frac{2}{5} B \\ \hline \end{array}$$

$$\Rightarrow A = \left( \frac{2}{5} \times \frac{15}{4} \right) B$$

$$\Rightarrow A = \frac{3}{2} B$$

$$\Rightarrow \frac{A}{B} = \frac{3}{2}$$

$$\Rightarrow A : B = 3 : 2.$$

$$\therefore B's\ share = \text{Rs. } \left( 1210 \times \frac{2}{5} \right) = \text{Rs. } 484.$$


---

2. Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is:

- A. 2 : 5  
B. 3 : 5  
C. 4 : 5  
D. 6 : 7

**Answer:** OptionC

**Explanation:**

Let the third number be  $x$ .

$$\begin{array}{l} \text{Then, first number} = 120\% \text{ of } x = \frac{120x}{100} = \frac{6x}{5} \\ \text{Second number} = 150\% \text{ of } x = \frac{150x}{100} = \frac{3x}{2} \\ \therefore \text{Ratio of first two numbers} = \left( \frac{6x}{5} : \frac{3x}{2} \right) = 12x : 15x = 4 : 5. \end{array}$$


---

3. A sum of money is to be distributed among A, B, C, D in the proportion of 5 : 2 : 4 : 3. If C gets Rs. 1000 more than D, what is B's share?

- A. Rs. 500

- B. Rs. 1500
- C. Rs. 2000
- D. None of these

**Answer:** OptionC

**Explanation:**

Let the shares of A, B, C and D be Rs.  $5x$ , Rs.  $2x$ , Rs.  $4x$  and Rs.  $3x$  respectively.

Then,  $4x - 3x = 1000$

$$\Rightarrow x = 1000.$$

$$\therefore \text{B's share} = \text{Rs. } 2x = \text{Rs. } (2 \times 1000) = \text{Rs. } 2000.$$


---

4. Seats for Mathematics, Physics and Biology in a school are in the ratio  $5 : 7 : 8$ . There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats?
- A.  $2 : 3 : 4$
  - B.  $6 : 7 : 8$
  - C.  $6 : 8 : 9$
  - D. None of these

**Answer:** OptionA

**Explanation:**

Originally, let the number of seats for Mathematics, Physics and Biology be  $5x$ ,  $7x$  and  $8x$  respectively.

Number of increased seats are (140% of  $5x$ ), (150% of  $7x$ ) and (175% of  $8x$ ).

$$\Rightarrow \left[ \frac{140}{100} \times 5x \right], \left[ \frac{150}{100} \times 7x \right] \text{ and } \left[ \frac{175}{100} \times 8x \right]$$

$$\Rightarrow 7x, \frac{21x}{2} \text{ and } 14x.$$

$$\therefore \text{The required ratio} = 7x : \frac{21x}{2} : 14x$$

$$\Rightarrow 14x : 21x : 28x$$

$$\Rightarrow 2 : 3 : 4.$$


---

5. In a mixture 60 litres, the ratio of milk and water 2 : 1. If this ratio is to be 1 : 2, then the quantity of water to be further added is:
- A. 20 litres
  - B. 30 litres
  - C. 40 litres
  - D. 60 litres

**Answer:** OptionD

**Explanation:**

$$\text{Quantity of milk} = \left( 60 \times \frac{2}{3} \right) \text{ litres} = 40 \text{ litres.}$$

Quantity of water in it =  $(60 - 40)$  litres = 20 litres.

New ratio = 1 : 2

Let quantity of water to be added further be  $x$  litres.

$$\text{Then, milk : water} = \left( \frac{40}{20+x} \right).$$

$$\text{Now, } \left( \frac{40}{20+x} \right) = \frac{1}{2}$$

$$\Rightarrow 20 + x = 80$$

$$\Rightarrow x = 60.$$

∴ Quantity of water to be added = 60 litres.

6. The ratio of the number of boys and girls in a college is 7 : 8. If the percentage increase in the number of boys and girls be 20% and 10% respectively, what will be the new ratio?

- A. 8 : 9
- B. 17 : 18
- C. 21 : 22
- D. Cannot be determined

**Answer:** OptionC

**Explanation:**

Originally, let the number of boys and girls in the college be  $7x$  and  $8x$  respectively.

Their increased number is (120% of  $7x$ ) and (110% of  $8x$ ).

$$\Rightarrow \left( \frac{120}{100} \times 7x \right) \text{ and } \left( \frac{110}{100} \times 8x \right)$$

$$\Rightarrow \frac{42x}{5} \text{ and } \frac{44x}{5}$$

$$\therefore \text{The required ratio} = \left( \frac{42x}{5} : \frac{44x}{5} \right) = 21 : 22.$$

7. Salaries of Ravi and Sumit are in the ratio 2 : 3. If the salary of each is increased by Rs. 4000, the new ratio becomes 40 : 57. What is Sumit's salary?
- Rs. 17,000
  - Rs. 20,000
  - Rs. 25,500
  - Rs. 38,000

**Answer:** Option D

**Explanation:**

Let the original salaries of Ravi and Sumit be Rs.  $2x$  and Rs.  $3x$  respectively.

$$\text{Then, } \frac{2x + 4000}{3x + 4000} = \frac{40}{57}$$

$$\Rightarrow 57(2x + 4000) = 40(3x + 4000)$$

$$\Rightarrow 6x = 68,000$$

$$\Rightarrow 3x = 34,000$$

Sumit's present salary =  $(3x + 4000) = \text{Rs.}(34000 + 4000) = \text{Rs. } 38,000$ .

## Alligation or Mixture

### Alligation or Mixture – Formulas

#### 1. Alligation:

It is the rule that enables us to find the ratio in which two or more ingredients at the given price must be mixed to produce a mixture of desired price.

#### 2. Mean Price:

The cost of a unit quantity of the mixture is called the mean price.

#### 3. Rule of Alligation:

If two ingredients are mixed, then

$$\left[ \frac{\text{Quantity of cheaper}}{\text{Quantity of dearer}} \right] = \left[ \frac{\text{C.P. of dearer} - \text{Mean Price}}{\text{Mean price} - \text{C.P. of cheaper}} \right]$$

We present as under:

C.P. of a unit quantity  
of cheaper C.P. of a unit quantity  
of dearer

(c)	Mean Price	(d)
(d - m)	(m)	(m - c)

$\therefore$  (Cheaper quantity) : (Dearer quantity) =  $(d - m) : (m - c)$ .

4. Suppose a container contains  $x$  of liquid from which  $y$  units are taken out and replaced by water.

After  $n$  operations, the quantity of pure liquid =  $x \left(1 - \frac{y}{x}\right)^n$  units.

### Questions

1. A vessel is filled with liquid, 3 parts of which are water and 5 parts syrup. How much of the mixture must be drawn off and replaced with water so that the mixture may be half water and half syrup?
- A.  $1/3$   
 B.  $1/4$   
 C.  $1/5$   
 D.  $1/7$

**Answer:** Option C

**Explanation:**

Suppose the vessel initially contains 8 litres of liquid.

Let  $x$  litres of this liquid be replaced with water.

Quantity of water in new mixture =	$3 - \frac{3x}{8} + x$	litres
Quantity of syrup in new mixture =	$5 - \frac{5x}{8}$	litres
$\therefore$	$\left(3 - \frac{3x}{8} + x\right)$	$= \left(5 - \frac{5x}{8}\right)$

$$\Rightarrow 5x + 24 = 40 - 5x$$

$$\Rightarrow 10x = 16$$

$$\Rightarrow x = \frac{8}{5}$$

So, part of the mixture replaced =  $\left( \frac{8}{5} \times \frac{1}{8} \right) = \frac{1}{5}$

---

2. Tea worth Rs. 126 per kg and Rs. 135 per kg are mixed with a third variety in the ratio 1 : 1 : 2. If the mixture is worth Rs. 153 per kg, the price of the third variety per kg will be:
- Rs. 169.50
  - Rs. 170
  - Rs. 175.50
  - Rs. 180

**Answer:** Option C

**Explanation:**

Since first and second varieties are mixed in equal proportions.

So, their average price = Rs.  $\left( \frac{126 + 135}{2} \right) = \text{Rs. } 130.50$

So, the mixture is formed by mixing two varieties, one at Rs. 130.50 per kg and the other at say, Rs.  $x$  per kg in the ratio 2 : 2, *i.e.*, 1 : 1. We have to find  $x$ .

By the rule of alligation, we have:

Cost of 1 kg of 1 <sup>st</sup> kind	Cost of 1 kg tea of 2 <sup>nd</sup> kind	
Rs. 130.50	Mean Price	Rs. $x$
( $x$ - 130.50)	Rs. 153	22.50
$\therefore \frac{x - 130.50}{22.50} = 1$		

$$\Rightarrow x - 130.50 = 22.50$$

$$\Rightarrow x = 153.00$$

3. A can contains a mixture of two liquids A and B in the ratio 7 : 5. When 9 litres of mixture are drawn off and the can is filled with B, the ratio of A and B becomes 7 : 9. How many litres of liquid A was contained by the can initially?
- 10
  - 20
  - 21
  - 25

**Answer:** Option C

**Explanation:**

Suppose the can initially contains  $7x$  and  $5x$  of mixtures A and B respectively.

Quantity of A in mixture left =	$\left( 7x - \frac{7}{12} \times 9 \right)$	litres =	$\left( 7x - \frac{21}{4} \right)$	litres.
Quantity of B in mixture left =	$\left( 5x - \frac{5}{12} \times 9 \right)$	litres =	$\left( 5x - \frac{15}{4} \right)$	litres.
$\therefore$	$\begin{array}{ c c c c } \hline & \left( 7x - \frac{21}{4} \right) & & 7 \\ \hline & \boxed{\left( 5x - \frac{15}{4} \right)} & & 9 \\ \hline & + 9 & & \\ \hline \end{array}$	=	$\begin{array}{ c c c c } \hline & & 7 & \\ \hline & & 9 & \\ \hline \end{array}$	
$\Rightarrow$	$\begin{array}{ c c } \hline 28x - 21 & 7 \\ \hline 20x + 21 & 9 \\ \hline \end{array}$	=		

$$\Rightarrow 252x - 189 = 140x + 147$$

$$\Rightarrow 112x = 336$$

$$\Rightarrow x = 3.$$

So, the can contained 21 litres of A.

4. A milk vendor has 2 cans of milk. The first contains 25% water and the rest milk. The second contains 50% water. How much milk should he mix from each of the containers so as to get 12 litres of milk such that the ratio of water to milk is 3 : 5?
- A. 4 litres, 8 litres
  - B. 6 litres, 6 litres
  - C. 5 litres, 7 litres
  - D. 7 litres, 5 litres

**Answer:** Option B

**Explanation:**

Let the cost of 1 litre milk be Re. 1

Milk in 1 litre mix. in 1 <sup>st</sup> can =	$\frac{3}{4}$	litre, C.P. of 1 litre mix. in 1 <sup>st</sup> can Re. $\frac{3}{4}$
Milk in 1 litre mix. in 2 <sup>nd</sup> can =	$\frac{1}{2}$	litre, C.P. of 1 litre mix. in 2 <sup>nd</sup> can Re. $\frac{1}{2}$
Milk in 1 litre of final mix. =	$\frac{5}{8}$	litre, Mean price = Re. $\frac{5}{8}$

By the rule of alligation, we have:

C.P. of 1 litre mixture in 1 <sup>st</sup> can	C.P. of 1 litre mixture in 2 <sup>nd</sup> can
3 4 1 8	1 2 1 8
Mean Price	
5	
8	
$\therefore \text{Ratio of two mixtures} = \frac{1}{8} : \frac{1}{8} = 1 : 1.$	
$\text{So, quantity of mixture taken from each can} = \left( \frac{1}{2} \times 12 \right) = 6 \text{ litres.}$	

5. In what ratio must a grocer mix two varieties of pulses costing Rs. 15 and Rs. 20 per kg respectively so as to get a mixture worth Rs. 16.50 kg?
- A. 3 : 7  
B. 5 : 7  
C. 7 : 3  
D. 7 : 5

**Answer:** Option C

**Explanation:**

By the rule of alligation:

Cost of 1 kg pulses of 1 <sup>st</sup> kind	Cost of 1 kg pulses of 2 <sup>nd</sup> kind
Rs. 15	Mean Price
3.50	Rs. 20
	Rs. 16.50
	1.50

$$\therefore \text{Required rate} = 3.50 : 1.50 = 7 : 3.$$

6. A dishonest milkman professes to sell his milk at cost price but he mixes it with water and thereby gains 25%. The percentage of water in the mixture is:
- A. 4%  
B.  $6\frac{1}{4}\%$   
C. 20%  
D. 25%

**Answer:** Option C

### Explanation:

Let C.P. of 1 litre milk be Re. 1

Then, S.P. of 1 litre of mixture = Re. 1, Gain = 25%.

$$\text{C.P. of 1 litre mixture} = \text{Re. } \left( \frac{100}{125} \times 1 \right) = \frac{4}{5}$$

By the rule of alligation, we have:

C.P. of 1 litre of milk	C.P. of 1 litre of water
Re. 1	Mean Price
$\frac{4}{5}$	$\frac{4}{5}$
Re. $\frac{1}{5}$	0
	$\frac{1}{5}$
	1
	5

$\therefore$  Ratio of milk to water =  $\frac{4}{5} : \frac{1}{5} = 4 : 1$ .

Hence, percentage of water in the mixture = $\left( \frac{1}{5} \times 100 \right) \% = 20\%$ .
---

7. How many kilogram of sugar costing Rs. 9 per kg must be mixed with 27 kg of sugar costing Rs. 7 per kg so that there may be a gain of 10% by selling the mixture at Rs. 9.24 per kg?

- A. 36 kg
- B. 42 kg
- C. 54 kg
- D. 63 kg

**Answer:** Option D

**Explanation:**

S.P. of 1 kg of mixture = Rs. 9.24, Gain 10%.

$$\therefore \text{C.P. of 1 kg of mixture} = \text{Rs. } \left( \frac{100}{110} \times 9.24 \right) = \text{Rs. } 8.40$$

By the rule of alligation, we have:

C.P. of 1 kg sugar of 1 <sup>st</sup> kind	Cost of 1 kg sugar of 2 <sup>nd</sup> kind	
Rs. 9	Mean Price	Rs. 7
1.40	Rs. 8.40	0.60

$\therefore$  Ratio of quantities of 1<sup>st</sup> and 2<sup>nd</sup> kind = 14 : 6 = 7 : 3.

Let  $x$  kg of sugar of 1<sup>st</sup> be mixed with 27 kg of 2<sup>nd</sup> kind.

Then, 7 : 3 =  $x$  : 27

$$\Rightarrow x = \left( \frac{7 \times 27}{3} \right) = 63 \text{ kg.}$$