

Analogy and Classification

CHAPTER

2

ANALOGY

Analogy refers to similar relationship between two or three numbers or letters or words or figures or things etc.

Relationships : The two numbers/letters/figures may be related in any of the various ways. Some of them are as follows:

- One number is twice or half the other one.
- One number is greater than or less than the other number by a number.
- They are consecutive odd, even or prime numbers.
- Letters at alternate positions in the English alphabet.
- Skipping of letters in the English alphabet.
- Movements or rotation of a figure or different elements of a figure in different directions.

Example : 1

12 is to 24 as 24 is to _____.

(A) 8

(B) 16

(C) 24

(D) 48

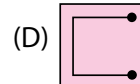
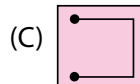
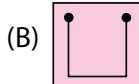
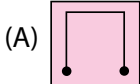
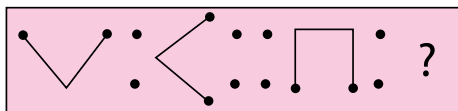
Explanation (D) : The second number on the left of 'as' is double the first number and so the second number on the right of 'as' should be double the first number.

∴ Required number = $2 \times 24 = 48$

Thus, the correct option is (D).

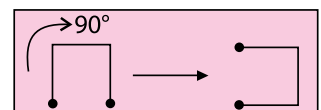
Example : 2

Which figure will replace the question mark in the second pair on the right of :: in the same way as the first pair on the left of :: ?



Explanation (C) : The first figure rotates 90° CW to obtain the second figure.

Hence, the correct option is (C).



CLASSIFICATION

In 'classification', we classify various items into a group on the basis of their common properties. These items may be numbers, letters, figures, things, places etc.

In such type of problems, some items are given. All these items except one are similar in some manner. A candidate is required to identify the odd one out. Let us illustrate problems with the help of examples.

Example : 3

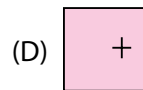
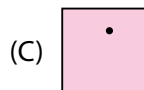
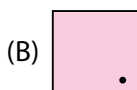
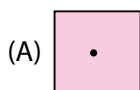
Choose the odd one out.

- (A) 10 (B) 40 (C) 64 (D) 81

Explanation (D) : Except 81, all other are even numbers. So, the correct option is (D).

Example : 4

Choose a figure which is different from the rest.



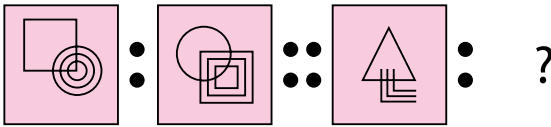
Explanation (D) : All other squares have a point except in option (D). So, the correct option is (D).

EXERCISE

- 7 is to 14 as 9 is to _____.
(A) 14 (B) 21 (C) 18 (D) 20
- 6 is related to 19 in the same way as 4 is related to _____.
(A) 2 (B) 6 (C) 13 (D) 16
- 1 is related to 4 in the same way as 25 is related to _____.
(A) 26 (B) 125 (C) 100 (D) 175
- 12 is related to 144 in the same way as 17 is related to _____.
(A) 289 (B) 120 (C) 60 (D) 24
- 34 is related to 12 in the same way as 59 is related to _____.
(A) 45 (B) 14 (C) 42 (D) 38
- 16 is related to 56 as 32 is related to _____.
(A) 96 (B) 112 (C) 120 (D) 128

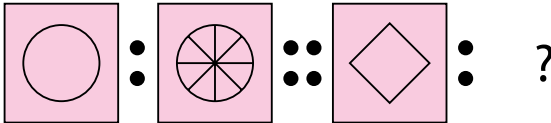
Direction (7-12) : In each of the following questions, pair of figures on the either side of :: has a certain relationship. Identify the relationship between given pair of figures and choose the missing figure.

7.



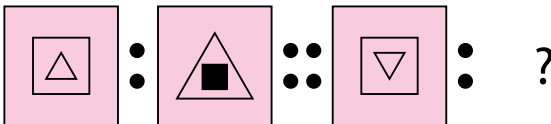
- (A) (B) (C) (D)

8.



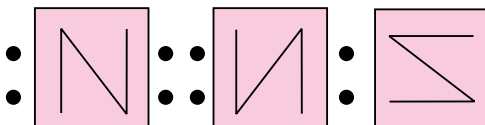
- (A) (B) (C) (D)

9.



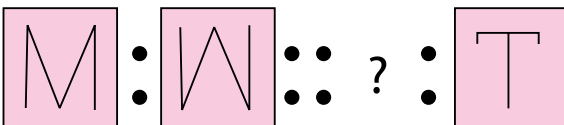
- (A) (B) (C) (D)

10. ?

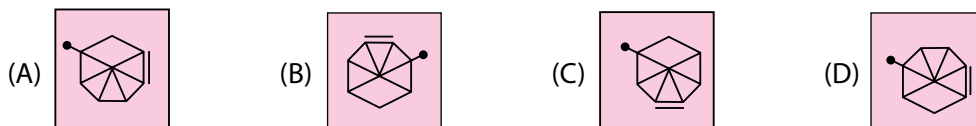
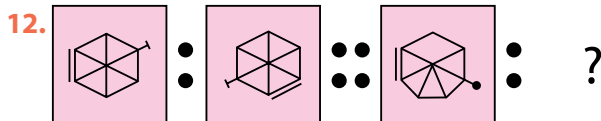


- (A) (B) (C) (D)

11.



- (A) (B) (C) (D)



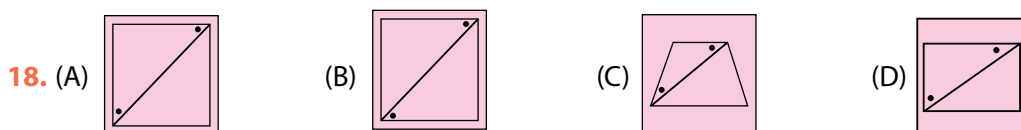
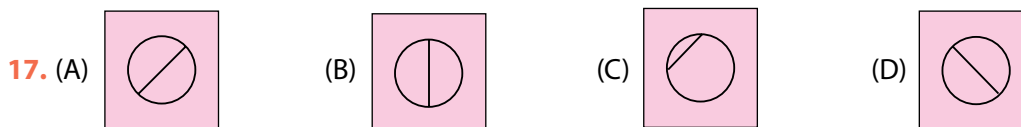
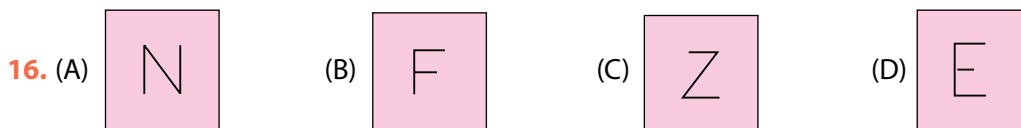
Direction (13-15) : In each of the following questions, choose the odd one out.

13. (A) 21 (B) 15 (C) 7 (D) 27

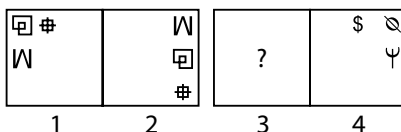
14. (A) 510 (B) 806 (C) 380 (D) 720

15. (A) 312 (B) 243 (C) 432 (D) 234

Direction (16-18) : In each of the following questions, choose the odd one out.



19. There is a certain relationship between figure 1 and 2. Establish the same relationship between figure 3 and 4 by choosing a suitable figure from the options which will replace the (?) in fig.(3).

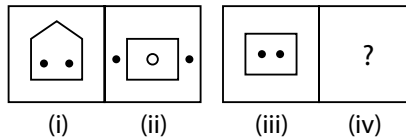


- 20.** There is a certain relationship on either side of ::. Identify the relationship on the left of :: and find the missing term.

MAD : JXA :: RUN : ?

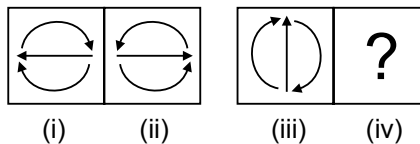
- (A) ORK (B) OSQ (C) PRJ (D) UXQ

- 21.** There is a certain relationship between figures (i) and (ii). Establish the same relationship between figures (iii) and (iv) by selecting a suitable figure from the options which will replace the (?) in fig. (iv).



- (A) (B) (C) (D)

- 22.** There is a certain relationship between figures (i) and (ii). Establish the same relationship between figures (iii) and (iv) by selecting a suitable figure from the options that will replace the (?) in fig. (iv).



- (A) (B) (C) (D)

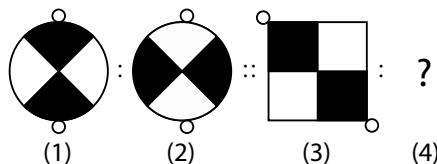
- 23.** Select the odd one out.

- (A) 5, 10, 20, 15 (B) 25, 50, 100, 75 (C) 10, 20, 60, 45 (D) 15, 30, 60, 45

- 24.** Select the odd one out.

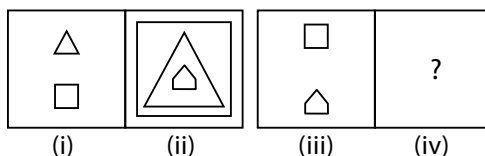
- (A) Lion (B) Cat (C) Rabbit (D) Fox

- 25.** There is a certain relationship between figures (1) and (2). Establish a similar relationship between figures (3) and (4) by selecting a suitable figure from the options which will replace the (?) in figure (4).

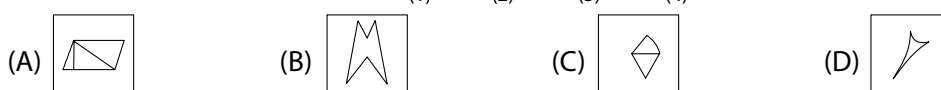
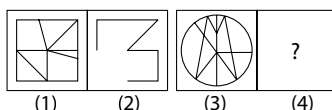


- (A) (B) (C) (D)

26. There is a certain relationship between figures (i) and (ii). Establish a similar relationship between figures (iii) and (iv) by selecting a suitable figure from the options which will replace the (?) in fig. (iv).



27. There is a certain relationship between figures (1) and (2). Establish the similar relationship between figures (3) and (4) by selecting a suitable figure from the given options that would replace the (?) in figure (4).

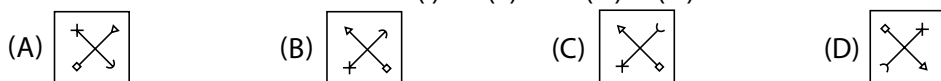
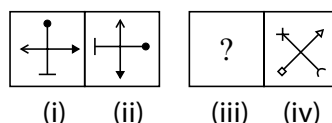


28. There is a certain relationship on the either side of ::. Identify the relationship on the left side and find the missing term.

AFHO : GBDM :: CHFM : ?

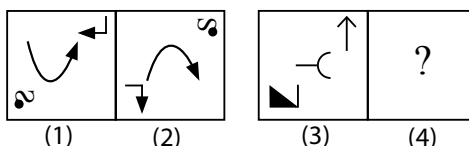
- (A) GBLD (B) GBJO (C) IBDL (D) IDBK

29. There is a certain relationship between figures (i) and (ii). Establish the similar relationship between figures (iii) and (iv) by selecting a suitable figure from the options which will replace the '?' in figure (iii).



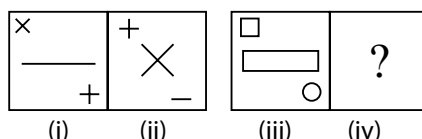
(SOF IMO 2018)

30. There is a certain relationship between figures (1) and (2). Establish a similar relationship between figures (3) and (4) by selecting a suitable figure from the given options which would replace the (?) in Fig. (4).

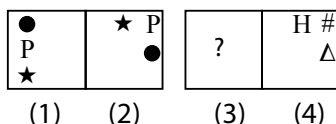



(SOF NCO 2019)

- 31.** There is a certain relationship between figures (i) and (ii). Establish a similar relationship between figures (iii) and (iv) by selecting a suitable figure from the given options which will replace the (?) in figure (iv).


(SOF NSO 2019)

- 32.** There is a certain relationship between figures (1) and (2). Establish the same relationship between figures (3) and (4) by selecting a suitable figure from the options which will replace the (?) in Fig.(3).


(SOF IMO 2019)

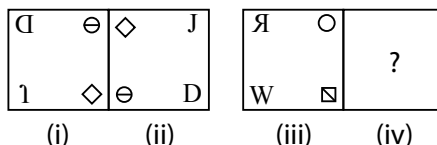
- 33.** Select the odd one out.

(A) MORS (B) EGJK (C) PQUW (D) ACFG **(SOF IMO 2019)**

- 34.** Choose the odd one out.

(A) 21 (B) 15 (C) 7 (D) 9 **(SOF IMO 2019)**

- 35.** There is a certain relationship between figures (i) and (ii). Establish the similar relationship between figures (iii) and (iv) by selecting a suitable figure from the given options which will replace the (?) in Fig. (iv).


(SOF IMO 2019)

Mirror and Water Images

CHAPTER

10

MIRROR IMAGE

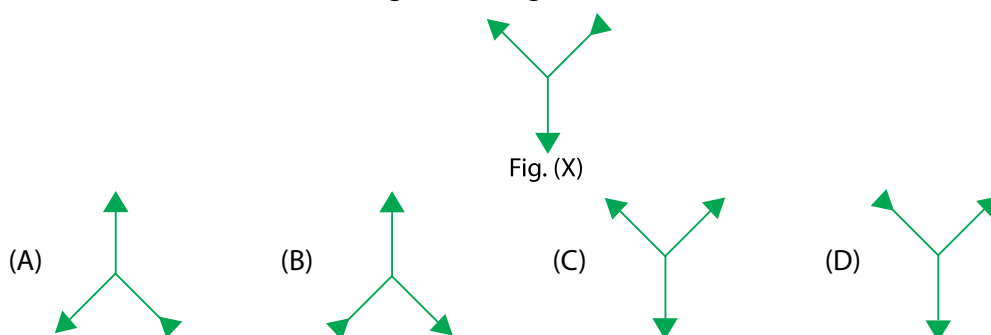
Suppose someone stands in front of a plane mirror. If he lifts his left hand, the image in the mirror shows his right hand and vice-versa.

The left half of a body becomes right half of its mirror image and right half becomes left half.

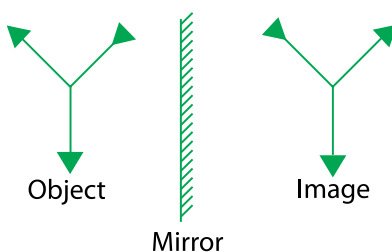
Note : If not mentioned, the mirror is assumed to be placed vertically right of the object.

Example : 1

Choose the correct mirror image of the figure (X).



Explanation (D) : The right side of the given figure will become the left side of the image.



WATER IMAGE

The water image of an object is the vertically inverted (upside or downside) image of the object. The position of the water layer is horizontally just below the object.

Example : 2

Which of the following has no change in its water image ?


- (A) 6E (B) 2D (C) 3J (D) 0I

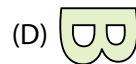
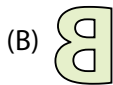
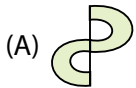
Explanation (D) :

0I
 ----- Water layer
 0I

Thus, 0I and its water image are identical.

EXERCISE

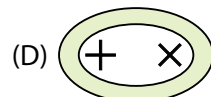
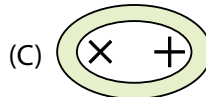
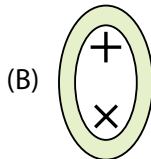
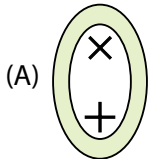
1. Identify the mirror image of .



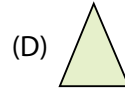
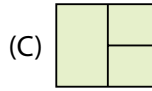
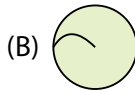
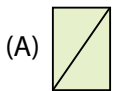
2. The mirror image of which letter is the same as the alphabet itself?

- (A) C (B) J (C) Q (D) U

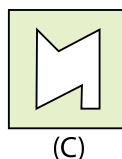
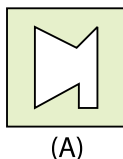
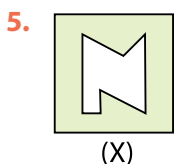
3. Identify the mirror image of the following figure.



4. Which of the following figures has the same mirror image as it is ?



Direction (5-11) : In each of the following questions, choose the correct mirror image of the given figure (X) from amongst the four options (A), (B), (C) and (D) given along with it, if mirror is placed vertically right to figure (X).



6.



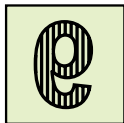
(X)



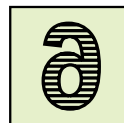
(A)



(B)



(C)

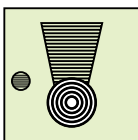


(D)

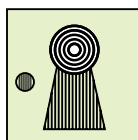
7.



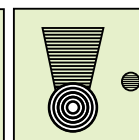
(X)



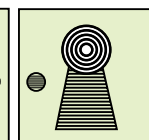
(A)



(B)

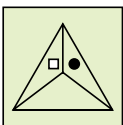


(C)

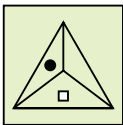


(D)

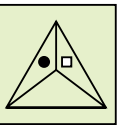
8.



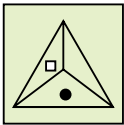
(X)



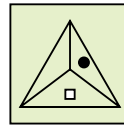
(A)



(B)

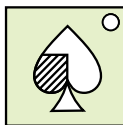


(C)

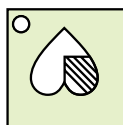


(D)

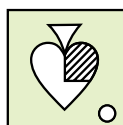
9.



(X)



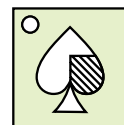
(A)



(B)

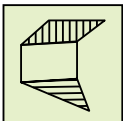


(C)

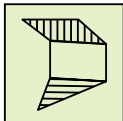


(D)

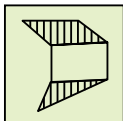
10.



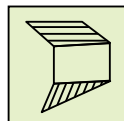
(X)



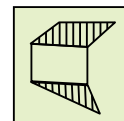
(A)



(B)

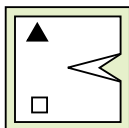


(C)

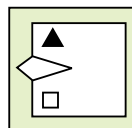


(D)

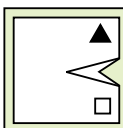
11.



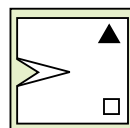
(X)



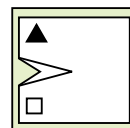
(A)



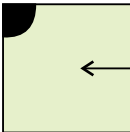
(B)



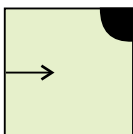
(C)



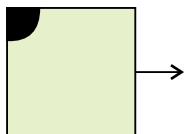
(D)

12. Identify the mirror image of the figure  , if mirror being placed to the left of the figure.

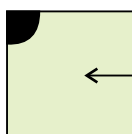
(A)



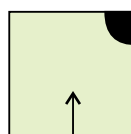
(B)




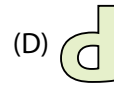
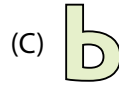
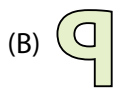
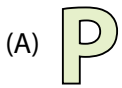
(C)



(D)



13. Identify the water image of .



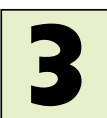
14. The water image of which letter of the English alphabet is the same as the letter itself?

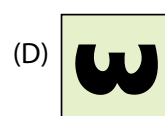
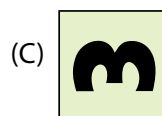
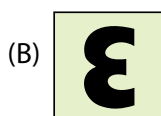
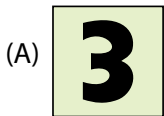
(A) 15th letter

(B) 14th letter

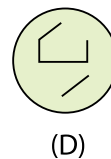
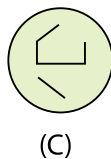
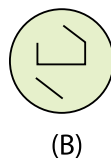
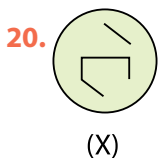
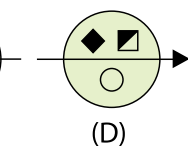
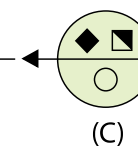
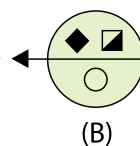
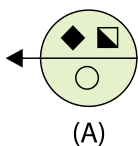
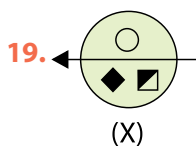
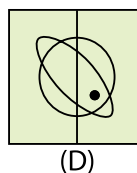
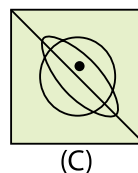
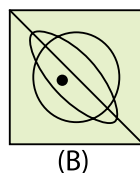
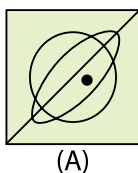
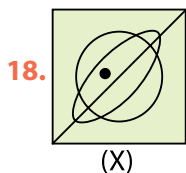
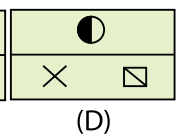
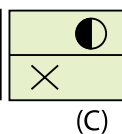
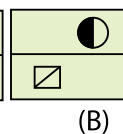
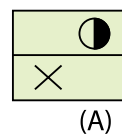
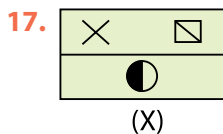
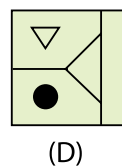
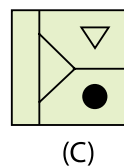
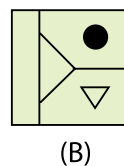
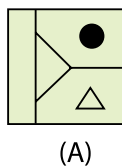
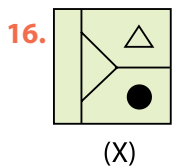
(C) 19th letter

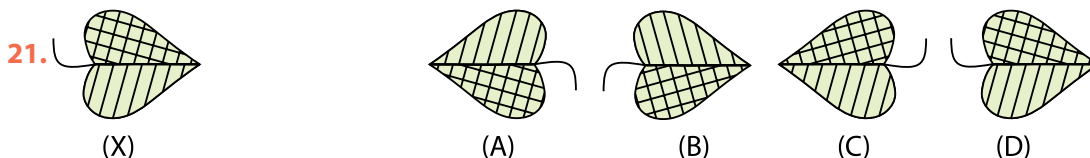
(D) 26th letter

15. Identify the water image of the figure .



Direction (16-21) : In each of the following questions, choose the correct water image of the figure (X).



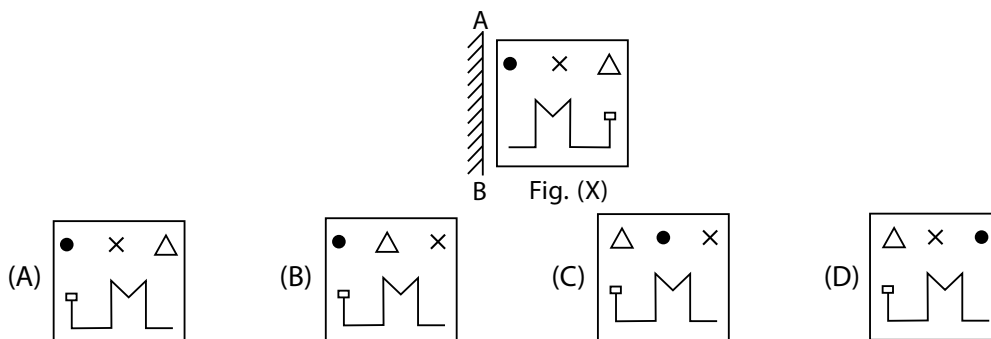


22. Select the correct water image of the given word.

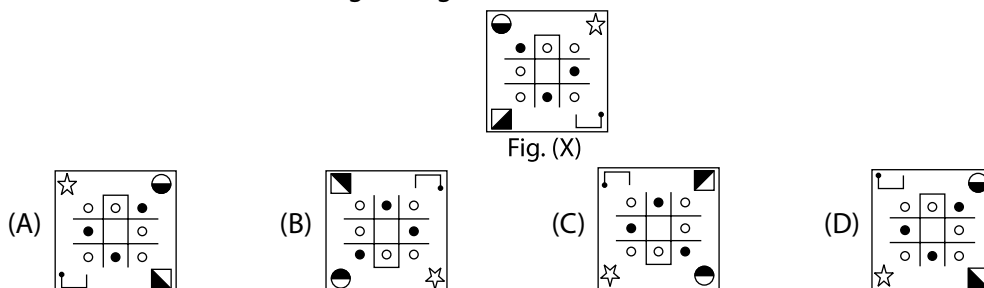
MATHS

(A) MATHS (B) WALH2 (C) 2HTAM (D) WVLH2

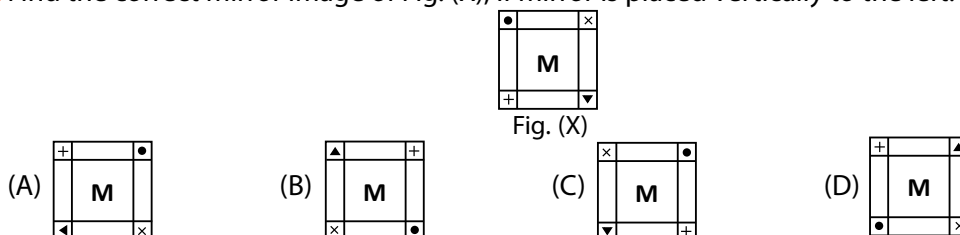
23. Select the correct mirror image of Fig. (X), if mirror is placed along AB.



24. Select the correct water image of Fig. (X).



25. Find the correct mirror image of Fig. (X), if mirror is placed vertically to the left.



26. Select the CORRECT water image of the given combination of letters.

COMBINATION

(A) COMBINATION (B) CMOBINATION
(C) COBINATION (D) COMBINATION

27. Select the correct water image of the given combination of letters.

SWIMMING

(A) **2WIMMIN2**

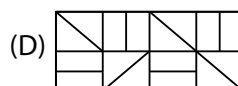
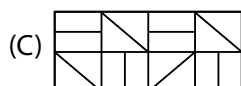
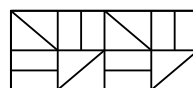
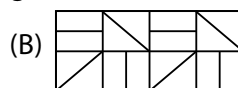
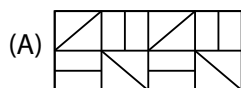
(B) **2MIWWING**

(C) **SMIWWING**

(D) **2MIWWIM2**

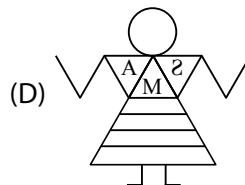
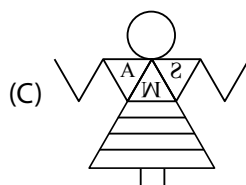
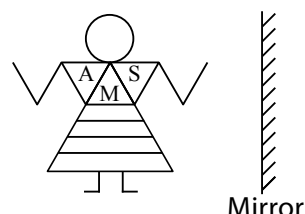
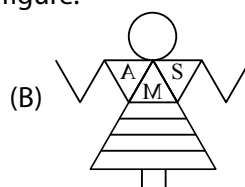
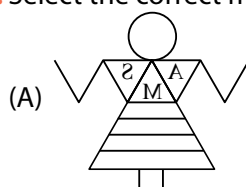
(SOF NCO 2018)

28. Select the correct water image of the given figure.



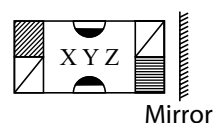
(SOF NSO 2018)

29. Select the correct mirror image of the given figure.



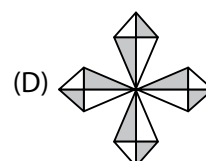
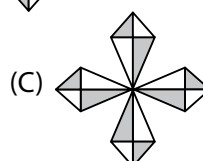
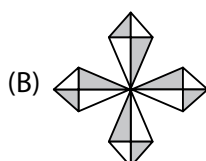
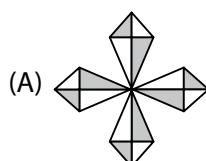
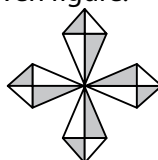
(SOF NSO 2018)

30. Select the correct mirror image of the given figure.



(SOF IMO 2018)

31. Select the correct water image of the given figure.



(SOF IMO 2018)

32. Select the correct water image of the given combination of letters.

INDIANAIRFORCE

- (A) INDIVIVIBEOBCE
(C) IDIVIVIBEOBEC

- (B) INDIVIVIBEOBCE
(D) IDIVIVIBEOBEC

(SOF NCO 2019)

33. Select the correct mirror image of the given combination, if the mirror is placed vertically to the left.

PoWeR   loGic

- (A) oIGol   ЯeWoP
(C) oIGol   ЯeWoP

- (B) oIGol   ЯeWoP
(D) oIGol   ReWoP

(SOF NSO 2019)

34. Select the correct water image of the given combination of letters and numbers.

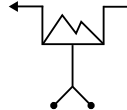
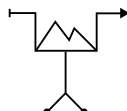
S W I M 1 9 2 5

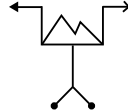
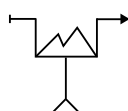
- (A) 2 M I I W d 5 2
(C) 2 M I W I 2 d 2

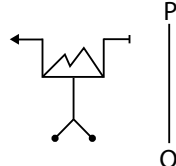
- (B) 2 M I W I d 5 2
(D) 2 I M W I d 2 5

(SOF IMO 2019)

35. Select the correct mirror image of the given figure, if the mirror is placed along PQ.

- (A) 
(C) 

- (B) 
(D) 


(SOF IMO 2019)

Coding-Decoding

CHAPTER

3

WHAT IS CODING?

Coding is a method of expressing something in a secret way.

WHAT IS DECODING?

Decoding is a process to understand a code language.

TYPES OF CODING

- 1. Letter Coding :** In this type of coding, letters are used in forward or backward or both the directions for making some code language.
- 2. Direct Letter Coding :** Sometimes letters of a word are directly replaced by other letters. For example :

Word	Code
ZOOLOGY	PMMTMHD

Here, Z, O, L, G and Y are replaced by P, M, T, H and D. Similarly, GOOGLY can be coded as HMMHTD.

- 3. Number/Symbol Coding :** Sometimes numerals or symbols are assigned to words.
- 4. Substitution Coding :** Sometimes some particular words are assigned to certain names.

Example

If in a certain code language, POPULAR is coded as QPQVMBS, then which word would be coded as GBNPVT?

- (A) FARMER (B) FAMOUS (C) FRAMES (D) FARMES

Explanation (B) : POPULAR is coded in the following way :

Word →	P	O	P	U	L	A	R
	+1	+1	+1	+1	+1	+1	+1
Code →	Q	P	Q	V	M	B	S

Similarly, we can obtain the word for which GBNPVT is code. Consider as follows :

Code →	G	B	N	P	V	T
	-1	-1	-1	-1	-1	-1
Word →	F	A	M	O	U	S

Thus, the required word is FAMOUS. So, the correct option is (B).

EXERCISE

- If the code of CORNER is GSVRIV, then what will be the code of CENTRAL?
(A) DROUSBM (B) GIRXVEP (C) GJRYVEP (D) GIRXVPE
- In a certain code, 'BOY' is written as '\$ * •' and 'HOUR' is written as '@ * £ +'. How is 'RUBY' written in that code?
(A) + £ \$ • (B) + \$ £ • (C) • \$ £ + (D) • £ \$ +
- In a certain code, 'BRAIN' is written as '* % ÷ # ×' and 'TIER' is written as '\$ # + %'. How is 'RENT' written in that code?
(A) % × # \$ (B) % # × \$ (C) % + × \$ (D) + × % \$
- If 'light' is called 'morning', 'morning' is called 'dark', 'dark' is called 'night', 'night' is called 'sunshine' and 'sunshine' is called 'dusk', then when do we sleep?
(A) night (B) sunshine (C) dusk (D) dark
- In a certain code, 'DESK' is written as '# \$ 5 2' and 'RIDE' is written as '% 7 # \$'. How is 'RISK' written in that code?
(A) % 7 2 5 (B) % 7 5 2 (C) % 7 # 2 (D) % 7 \$ #
- If 'sky' is called 'star', 'star' is called 'cloud', 'cloud' is called 'earth', 'earth' is called 'tree' and 'tree' is called 'book', then where do we live on?
(A) book (B) sky (C) star (D) tree
- If 'room' is called 'bed', 'bed' is called 'window', 'window' is called 'flower' and 'flower' is called 'cooler', then a man sleep on _____.
(A) window (B) bed (C) flower (D) cooler
- If O = 16, FOR = 42, then FRONT is equal to _____.
(A) 61 (B) 65 (C) 73 (D) 78
- If 'sand' is called 'air', 'air' is called 'plateau', 'plateau' is called 'well', 'well' is called 'island' and 'island' is called 'sky', then from where will a person draw water?
(A) well (B) island (C) sky (D) air

10. If 'man' is called 'girl', 'girl' is called 'woman', 'woman' is called 'boy', 'boy' is called 'waiter' and 'waiter' is called 'agent', then who will serve in a restaurant?
(A) waiter (B) girl (C) man (D) agent
11. If 'dust' is called 'air', 'air' is called 'fire', 'fire' is called 'water', 'water' is called 'colour', 'colour' is called 'rain' and 'rain' is called 'summer', then where do fish live?
(A) fire (B) water (C) colour (D) dust
12. If the code for 'FINDS' is 'CFKAP', then ELQBI is the code for _____.
(A) HOTEL (B) MOTEL (C) PMLSK (D) GANGES
13. If the code for RIGHT is SGJDY, then UPDZJ is the code for _____.
(A) PAPER (B) START (C) TRADE (D) MAKER
14. By following a certain logic MTUXTRVN is written as NUVXTQUM. How is ASUMNJKL written in that logic?
(A) BTVMNIJK (B) BTVMNKLM (C) BTVNMIJK (D) ZRTMNIJK
15. In a certain code, VALUE is written as XCNWG, how will MONTH be written in the same code?
(A) OPGVJ (B) NPQVJ (C) OQPVJ (D) OPQVJ
16. In a certain code language, 'BRIGHT' is written as 'ASHHGU', then how will 'RETURN' be written in that language?
(A) SFUVSO (B) SDUTSM (C) QFSVQO (D) SDUVQO
17. In a certain code language, 'SOMEDAY' is written as 'RNLDCZX'. How will 'HEALTHY' be written in that code language?
(A) GDZKSGX (B) GDZKSIZ (C) GDZMUGX (D) GFZMSGZ
18. In a certain code language, TRAINING is written as RTYKLKLI. How will INACTIVE be written in the same code language?
(A) GPYERKTG (B) GOCAVGTG (C) GOYAVGXG (D) GPCEVGXC
19. In a certain code language, 'NATURAL' is written as 'UBOUMBS'. How will 'PROBLEM' be written in that code language?
(A) QSPBMFN (B) QSPBNFM (C) PSQBNFM (D) PSQBMFN
20. If 'Clock' is called 'Television', 'Television' is called 'Radio', 'Radio' is called 'Oven', 'Oven' is called 'Grinder' and 'Grinder' is called 'Iron', then in which will a woman bake the cake?
(A) Radio (B) Oven (C) Grinder (D) Iron
21. If in a certain code language, 'PHONE' is written as 'OGNMD', then _____ will be written as 'MZSHNMZK' in the same language.
(A) SURPRISE (B) NATIONAL (C) BUSINESS (D) FEBRUARY

(SOF NCO 2018)

22. In a certain code language, if 'nice big home' is coded as 'emoh gib ecin' and 'nice small family' is coded as 'ylimaf llams ecin', then in the same code language, 'all the best' is coded as _____.
(A) tseb eht lla (B) tesb the lla (C) tseb eht all (D) tseb the lal

(SOF NSO 2018)

23. Some letters are coded as follows :

Y	C	L	S	I	O	U	M	D	T	P	H	E
×	÷	*	£	–	\$	≠	+	α	β	γ	#	•

The word which is coded as \$ * × + γ ≠ £ is _____.

- (A) OLYMPIAD (B) OLYNTHUS (C) OLYMPICS (D) OLYMPUS
(SOF NSO 2018)

24. If 'Racket' is called 'Football', 'Football' is called 'Cricket bat', 'Cricket bat' is called 'Basket ball' and 'Basket ball' is called 'Dice', then by which a cricketer play with?

- (A) Cricket bat (B) Dice (C) Basket ball (D) Racket
(SOF IMO 2018)

25. In a certain code language, 'SACRED' is written as 'TBDQDC'. How will 'SAFETY' be written in the same language?

- (A) TBESDX (B) TBDDSX (C) TBGDSX (D) RBDXYA
(SOF IMO 2018)

26. In a certain code language, if 'MUMBAI' is written as 'NWPFFO', then in the same language, 'CARPET' will be written as _____.

- (A) DCTTJY (B) DCUTJY (C) DDUTJZ (D) DCUTJZ
(SOF NCO 2019)

27. If in a certain code language, 'BRIGHT' is written as 'ZTGIFV', then how will 'AROUND' be written in that code language?

- (A) YSNVLF (B) ZTMUMF (C) YTMWLF (D) XUMWMF
(SOF NSO 2019)

28. In a certain code language, GYPSUM is written as GMPSUY. How will GARDEN be written in that language?

- (A) ADENGR (B) ADEGRN (C) ADEGNR (D) GEDANR
(SOF NSO 2019)

29. If in a certain code language, 'NATION' is written as 'OZUHPM', then how will 'REASON' be written in the same language?

- (A) SBD RNP (B) SDBRNM (C) QFZTNO (D) SDBRPM
(SOF IMO 2019)

30. In a certain code language, if COCHIN is written as DPDIJO, then how will LOCATE be written in the same language?

- (A) KNBZSD (B) FUBDPM (C) MODBUF (D) MPDBUF
(SOF IMO 2019)



Mathematical Operations

CHAPTER

8

There are four fundamental operations. These are addition (+), subtraction (−), multiplication (×) and division (÷).

Whenever two or more of these operations occur simultaneously, we overcome on such complex situation by applying the '**BODMAS**' rule.

This chapter is on the basis of the '**BODMAS**' rule. Let us explain this rule briefly.

B → Bracket, O → Of, D → Division, M → Multiplication, A → Addition, S → Subtraction

We solve an expression first for 'bracket' (if available), then for 'of' (if available). This process goes upto subtraction.

Example

If 'L' stands for '+', 'M' stands for '−', 'N' stands for '×' and 'P' stands for '÷', then

$$14 \text{ N } 10 \text{ L } 42 \text{ P } 2 \text{ M } 8 = ?$$

- (A) 141 (B) 153 (C) 166 (D) 183

Explanation (B) : Given expression = $14 \times 10 + 42 \div 2 - 8 = 153$

Hence, the answer is (B).

EXERCISE

1. If P denotes 'multiplied by', Q denotes 'subtraction', M denotes 'added to' and L denotes 'divided by', then $28 \text{ L } 7 \text{ P } 8 \text{ Q } 6 \text{ M } 4 = ?$
(A) $3/2$ (B) 30 (C) 32 (D) 34
2. If A stands for '+', B stands for '−', C stands for '×' and D stands for '÷', then $4 \text{ C } 10 \text{ A } 42 \text{ D } 2 \text{ B } 8 = ?$
(A) 53 (B) 21 (C) 48 (D) 25
3. If 'H' stands for '÷', 'K' stands for '×' and 'P' stands for '+', then $18 \text{ H } 9 \text{ P } 2 \text{ K } 8 = ?$
(A) 18 (B) 16 (C) 28 (D) 30
4. If 'Q' stands for 'added to', 'J' stands for 'multiplied by', 'T' stands for 'subtraction' and 'P' stands for 'divided by' then $30 \text{ P } 2 \text{ Q } 3 \text{ J } 6 \text{ T } 5 = ?$
(A) 18 (B) 28 (C) 31 (D) 103

5. In a certain code, m stands for ' \div ', n stands for ' $-$ ', p stands for ' \times ' and b stands for ' $+$ ', then the value of $16\ p\ 4\ b\ 28\ m\ 7\ n\ 8$ is
 (A) 68 (B) 60 (C) 62 (D) 56
6. If P denotes ' \div ', Q denotes ' \times ', R denotes ' $+$ ' and S denotes ' $-$ ', then what is the value of $18\ Q\ 12\ P\ 4\ R\ 5\ S\ 6$?
 (A) 59 (B) 53 (C) 63 (D) 65
7. If ' $-$ ' denotes ' \times ', ' \times ' denotes ' $+$ ', ' $+$ ' denotes ' $-$ ', then the value of $3 + 4 \times 5 - 6 + 7$ is
 (A) 24 (B) 22 (C) 20 (D) 18
8. If ' $+$ ' denotes ' $-$ ', ' $-$ ' denotes ' $+$ ', ' \div ' denotes ' \times ' and ' \times ' denotes ' \div ', then what is the value of $3 \div 4 \times 2 - 1 + 5$?
 (A) 4 (B) 5 (C) 6 (D) 2
9. If ' $+$ ' denotes 'multiplication', ' \times ' denotes 'subtraction', ' \div ' denotes 'addition', and ' $-$ ' denotes 'division', then $175 - 25 \div 5 + 20 \times 3 + 10 = ?$
 (A) 160 (B) 70 (C) 77 (D) 240
10. If ' $+$ ' denotes ' \times ', ' \times ' denotes ' $+$ ', ' $-$ ' denotes ' \div ' and ' \div ' denotes ' $-$ ' then $5 + 3 \times 2 \div 10 - 5 = ?$
 (A) 5 (B) 10 (C) 15 (D) 20
11. If ' $+$ ' denotes ' \times ', ' $-$ ' denotes ' \div ', ' \times ' denotes ' $-$ ' and ' \div ' denotes ' $+$ ', then find the value of $2 + 15 \div 15 - 3 \times 8$.
 (A) 43 (B) 27 (C) 35 (D) 28
12. If ' p ' denotes ' \div ', ' q ' denotes ' $+$ ', ' r ' denotes ' $-$ ' and ' t ' denotes ' \times ', then $11\ q\ 15\ r\ 8\ p\ 4\ t\ 5 = ?$
 (A) 36 (B) 20 (C) 26 (D) 16
13. If ' $+$ ' denotes \times , ' $-$ ' denotes \div , ' \times ' denotes $-$ and ' \div ' denotes $+$, then $16 \div 64 - 8 \times 4 + 2 = ?$
 (A) 12 (B) 16 (C) 18 (D) 24
14. If L stands for division, T stands for addition, M stands for subtraction and R stands for multiplication, then what will be the value of the expression $12\ M\ 6\ R\ 28\ L\ 7\ T\ 15$?
 (A) 1 (B) 3 (C) 15 (D) 40
15. If A stands for ' $+$ ', B stands for ' $-$ ', C stands for ' \times ' and D stands for ' \div ', then $5\ C\ 5\ D\ 5\ A\ 5\ B\ 5 = ?$
 (A) 0 (B) 5 (C) 10 (D) 15
16. If ' $+$ ' is called 'subtraction', ' $-$ ' is called 'multiplication', ' \div ' is called 'addition' and ' \times ' is called 'division', then $9 \times 3 \div 4 - 1 + 2 = ?$
 (A) 5 (B) $3/2$ (C) -1 (D) 4

17. If 'a' denotes '+', 'b' denotes '÷', 'c' denotes '-' and 'd' denotes '×', then find the value of $28b7d8c6a4$.
 (A) $\frac{-3}{2}$ (B) 32 (C) 30 (D) 34
18. If 'P' denotes '×', 'R' denotes '÷', 'M' denotes '-' and 'S' denotes '+', then the value of $24R8S7M2P5$ is
 (A) $4\frac{4}{5}$ (B) 28 (C) 40 (D) 0
19. If '+' stands for '×', '×' stands for '-', '-' stands for '÷' and '÷' stands for '+' then $(16 \div 64 - 8 \times 4 + 2) - (2 + 15 \div 15 - 3 \times 8) =$
 (A) $\frac{16}{27}$ (B) $\frac{15}{28}$ (C) $\frac{18}{35}$ (D) $\frac{16}{29}$ **(SOF NCO 2018)**
20. If + is called ×, ÷ is called + and - is called ÷, then which of the following is divisible by the result of the given expression?
 $175 - 25 \div 5 + 30$
 (A) 157 (B) 308 (C) 450 (D) 385 **(SOF NSO 2018)**
21. If '+' stands for subtraction, '-' stands for multiplication, '÷' stands for addition and '×' stands for division, then the value of $5 + 16 \times 4 \div 20 - 40$ is
 (A) 799 (B) 805 (C) 801 (D) 800 **(SOF IMO 2018)**
22. If '-' denotes '÷', '÷' denotes '×', '+' denotes '-' and '×' denotes '+', then find the value of $116 + 9 \div 52 - 4 \times 5$.
 (A) 16 (B) 8 (C) 9 (D) 4 **(SOF IMO 2018)**
23. If '@' stands for 'multiplication', '©' stands for 'division', '\$' stands for 'addition' and '£' stands for subtraction, then find the value of $30 \text{ © } 6 \text{ @ } 5 \text{ \$ } 4 \text{ £ } 2$.
 (A) 21 (B) 29 (C) 27 (D) 28 **(SOF NCO 2019)**
24. If 'P' is called '÷', 'Q' is called '×', 'R' is called '+' and 'S' is called '-', then find the value of $2Q40P10R6S8$.
 (A) 10 (B) 6 (C) 4 (D) 5 **(SOF NCO 2019)**
25. If '+' stands for multiplication, '×' stands for division, '-' stands for addition and '÷' stands for subtraction, then find the value of $10 - 18 \times 9 \div 4 + 3$.
 (A) 0 (B) 5 (C) 8 (D) 6 **(SOF IMO 2019)**

Paper Folding and Paper Cutting

CHAPTER

13

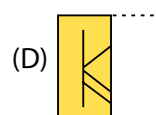
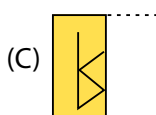
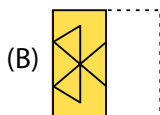
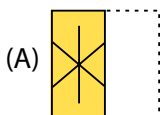
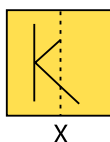
FOLDING A TRANSPARENT SHEET

In such type of problems a transparent sheet carrying a design on it is given. There is a dotted line on this sheet. This sheet has to be folded along the dotted line.

A candidate requires to identify a figure from the given options, that looks similar to the folded sheet.

Example : 1

A square transparent sheet X, with a design and a dotted line on it is given. Choose the correct figure from the options which represents the sheet X after folding along the dotted line.



Explanation (C) : Clearly, the right half of the sheet X is put on the left half. The combination of the design in left half and mirror image of the design in the right half will appear on the folded sheet. So, the sheet will then appear as shown in figure (C). Hence, figure (C) is the correct option.

CUTTING/PUNCHING A FOLDED PAPER

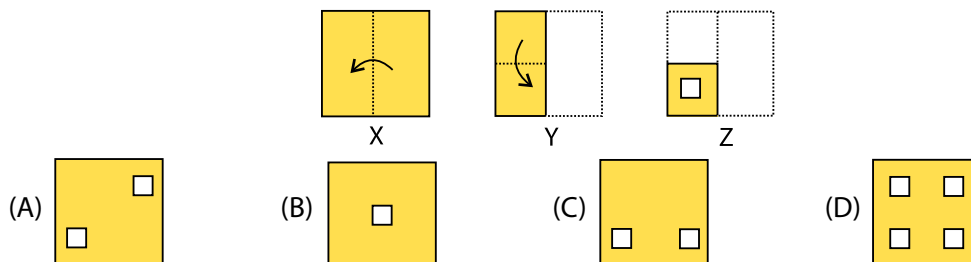
In such type of problems a paper is folded twice or more than twice. Then one or more pieces of it are cut. After this the paper is unfolded. In this situation the paper has as many cuts or holes on it as folded. So it contains a pattern.

A candidate requires to identify a figure from the given four options, that shows the similar paper sheet as the pattern made.

Usually, the paper sheet is folded along the dotted lines marked on it. And arrows show the directions of the folds.

Example : 2

Figures X and Y respectively shows the two consecutive folds of a sheet of paper. Figure Z shows the cut on the folded paper. Choose one figure from the four options that is the unfolded form of the sheet Z.



Explanation (D) : In figure (X) and (Y) sheet is folded along the dotted line or in the shown direction. In figure (Z) it has been punched as shown.

Clearly, the punched square will be created in each quarter of the paper.

Thus, when the paper is unfolded, four square punches will appear symmetrically over it and the paper will then appear as shown in figure (D).

Hence, the correct option is (D).

EXERCISE

Direction (1-13) : In each of the following questions, a transparent sheet (X) with a design and a dotted line on it is given. Choose the correct figure from the four options that is the folded form of the sheet (X).

- (X)

(A)

(B)

(C)

(D)
- (X)

(A)

(B)

(C)

(D)
- (X)

(A)

(B)

(C)

(D)
- (X)

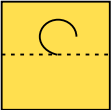
(A)

(B)

(C)

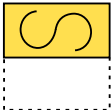
(D)

5.

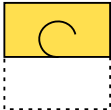


(X)

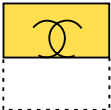
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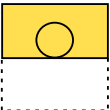
(B)



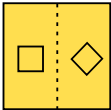
(C)



(D)

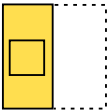


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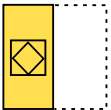


(X)

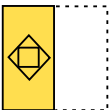
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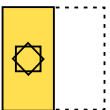
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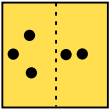
(C)



(D)

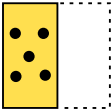


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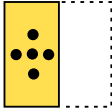


(X)

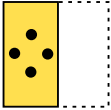
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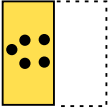
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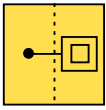
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(D)

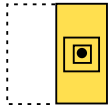


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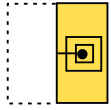


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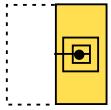
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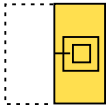
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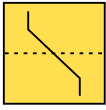
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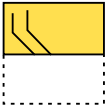


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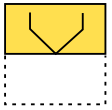


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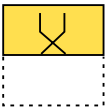
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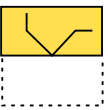
(B)



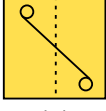
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(D)

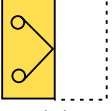


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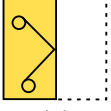


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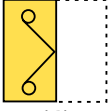
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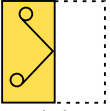
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(C)



(D)

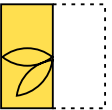


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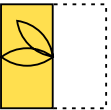


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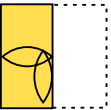
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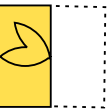
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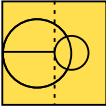
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(D)

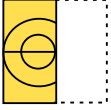


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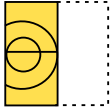


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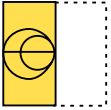
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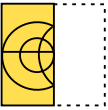
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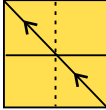
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(D)

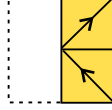


13.




(X)

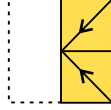
(A)



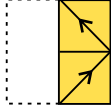
(B)


















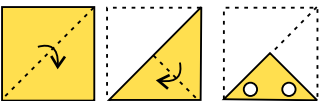
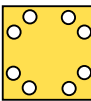
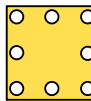
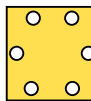
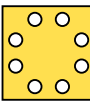
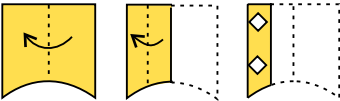





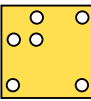
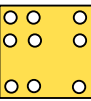
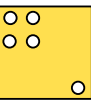
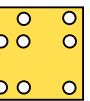
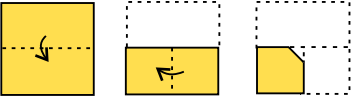

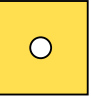
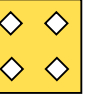
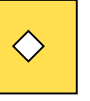
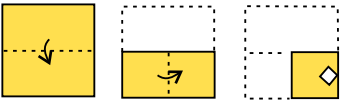
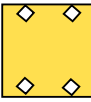
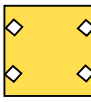

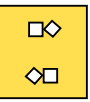
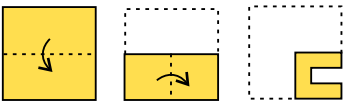
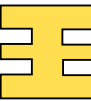
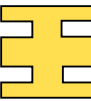

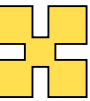
(C)

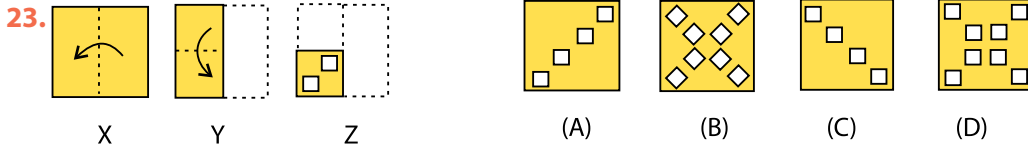


(D)

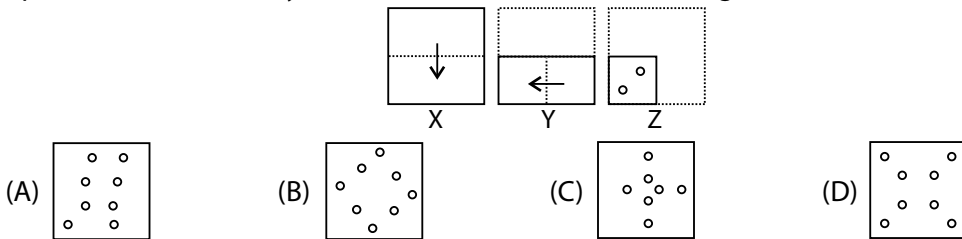


Direction (14-23) : There are three forms X, Y and Z of a sheet of paper. Figures X and Y respectively show the two consecutive folds of the sheet. And the figure Z shows punch on the folded sheet. Choose one figure from the four options (A), (B), (C) and (D), that is similar to the unfolded form of the sheet Z.

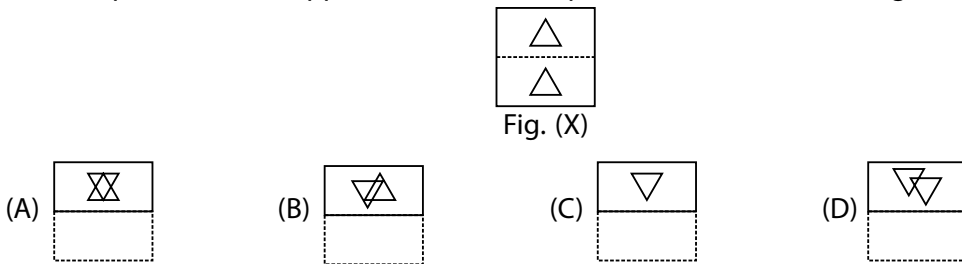
- 14.**  X Y Z
- (A)  (B)  (C)  (D) 
- 15.**  X Y Z
- (A)  (B)  (C)  (D) 
- 16.**  X Y Z
- (A)  (B)  (C)  (D) 
- 17.**  X Y Z
- (A)  (B)  (C)  (D) 
- 18.**  X Y Z
- (A)  (B)  (C)  (D) 
- 19.**  X Y Z
- (A)  (B)  (C)  (D) 
- 20.**  X Y Z
- (A)  (B)  (C)  (D) 
- 21.**  X Y Z
- (A)  (B)  (C)  (D) 
- 22.**  X Y Z
- (A)  (B)  (C)  (D) 



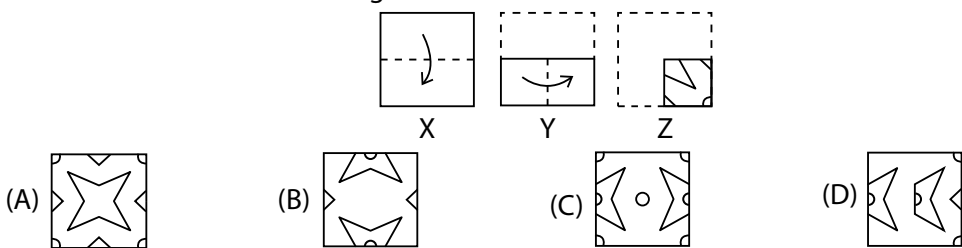
24. This question consist of a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Fig. (Z) shows the manner in which the folded paper has been cut. Find the option that most closely resembles the unfolded form of Fig. (Z).



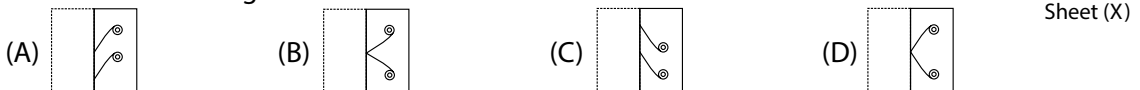
25. A square transparent sheet (X) with a pattern is given. Find the figure from the options as to how the pattern would appear when the transparent sheet is folded along the dotted line.



26. A set of three figures X, Y and Z showing a sequence of folding of a piece of paper is given. Fig. Z shows the manner in which the folded paper has been cut. Select the option which shows the unfolded form of Fig. Z.

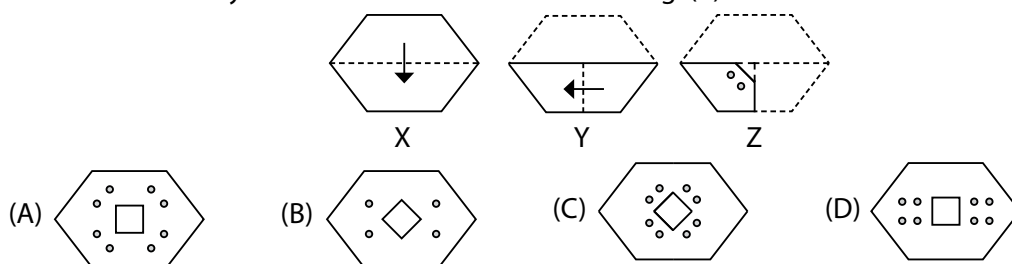


27. A square transparent Sheet (X), with a pattern and a dotted line on it is given. Find the figure from the options as to how the pattern would appear when the transparent sheet is folded along the dotted line.

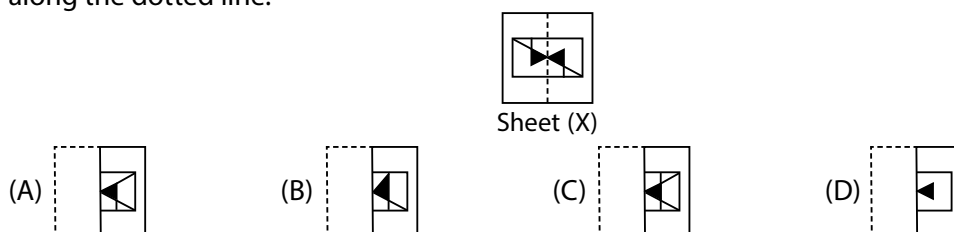


28. A set of three figures X, Y and Z shows a sequence of folding of a piece of paper. Fig. (Z) shows the manner in which the folded paper has been cut. Select a figure from the options which

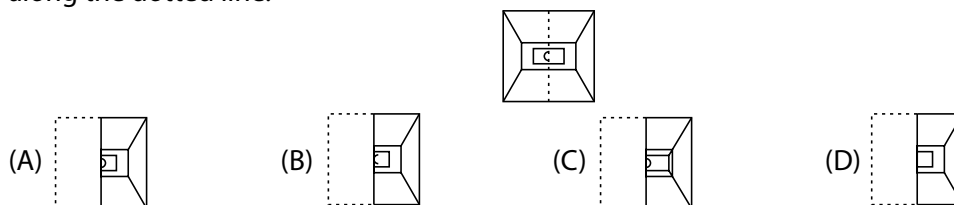
would most closely resembles the unfolded form of Fig. (Z).



- 29.** A square transparent Sheet (X), with a pattern and a dotted line on it is given. Find the figure from the options as to how the pattern would appear when the transparent sheet is folded along the dotted line.

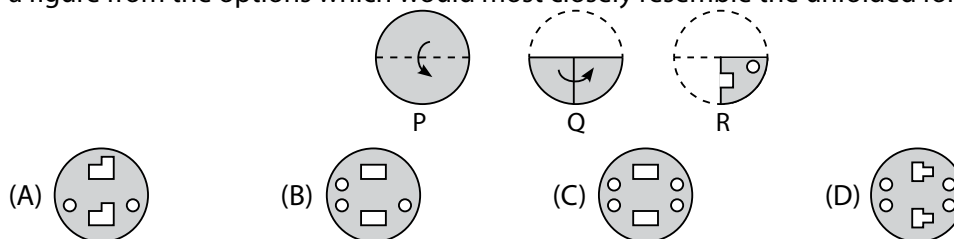


- 30.** A square transparent sheet, with a pattern and a dotted line on it is shown here. Select a figure from the options as to how the pattern would appear when the transparent sheet is folded along the dotted line.



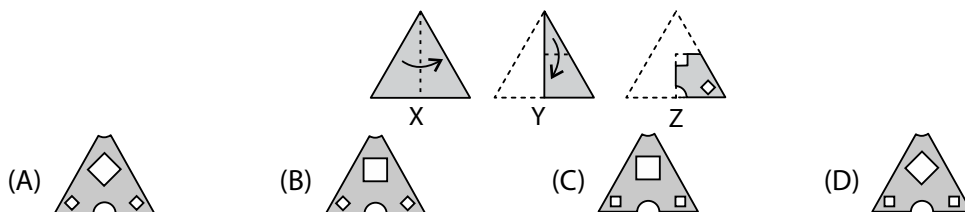
(SOF IMO 2018)

- 31.** The given question consists of a set of three figures P, Q and R showing a sequence of folding of a piece of paper. Fig. (R) shows the manner in which the folded paper has been cut. Select a figure from the options which would most closely resemble the unfolded form of fig. (R).



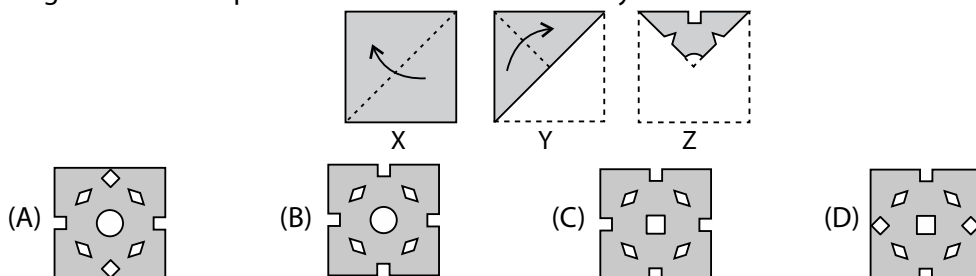
(SOF IMO 2018)

- 32.** The given question consists of a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Fig. (Z) shows the manner in which the folded paper has been cut. Select a figure from the options which would most closely resemble the unfolded form of Fig. (Z).



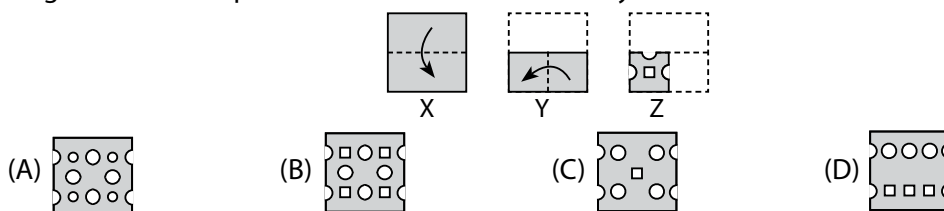
(SOF NCO 2019)

- 33.** The given question consists of a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Fig. (Z) shows the manner in which the folded paper has been cut. Select a figure from the options which would most closely resemble the unfolded form of Fig. (Z).



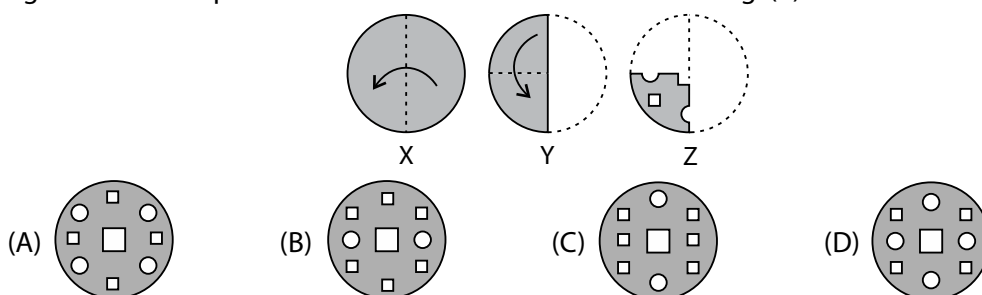
(SOF NCO 2019)

- 34.** The given question consists of a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Fig. (Z) shows the manner in which the folded paper has been cut. Select a figure from the options which would most closely resemble the unfolded form of Fig. (Z).



(SOF NSO 2019)

- 35.** The given question consists of a set of three figures X, Y and Z which shows the folding of a piece of paper. Fig. (Z) shows the manner in which the folded paper has been cut. Select a figure from the options which shows the unfolded form of Fig. (Z).

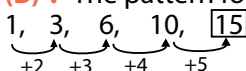


(SOF IMO 2019)

HINTS & EXPLANATIONS

① Series Completion and Inserting.....

1. (B) : The pattern followed is,



2. (B) : Each next term = $3 \times$ its preceding term.
 3. (A) : Each term in the pattern is $+8, +8, +16, +16, +24, +24$
 4. (D) : Each term except first two terms is equal to sum of preceding two terms.
 5. (C) : The pattern is $+4, +8, +12, +16, +20$
 \therefore Missing number = $45 + 20 = 65$
 6. (A) : The pattern is $+3, +4, +5, +6, \dots$
 So, the missing term = $9 + 5 = 14$
 7. (C) : The pattern is $+5, +10, +15, +20, \dots$
 So, the missing term = $56 + 25 = 81$
 8. (D) : The pattern is $+8, +10, +12, +14, \dots$
 So, the missing term = $70 + 18 = 88$
 9. (A) : The symbol gets vertically inverted and laterally inverted alternately. It also moves in anti-clockwise direction through distances equal to 1 sides and $1\frac{1}{2}$ sides alternately.
 10. (C)
 11. (A) : One line is added in each step in a set order.
 12. (A) : A new element is added at each step.
 13. (B) : All the small squares are removed from the right most column and lower most row alternately.
 14. (A) : A square is added inside with alternate shades.
 15. (C) : In each next step one dot and one bar is added. The dots are stuck to the last bar is commencing with bottom and top alternately.
 16. (B) : The inner figure comes outside and a new figure is formed inside.

17. (C) : In each row, last term = sum of first two terms

$$\therefore \text{Missing term} = 3 + \frac{3}{4} = \frac{15}{4}$$

18. (A) : Lower number = (Product of upper numbers) $\times 2$

$$\therefore \text{Required number} = (1 \times 5) \times 2 = 10$$

19. (D) : The rule followed is,

$$7 \times 6 + 3 = 45, 5 \times 4 + 6 = 26, 7 \times 3 + 8 = 29$$

20. (C) : The rule followed is,

$$\frac{5 \times 6 \times 4}{10} = 12; \frac{6 \times 7 \times 5}{10} = 21,$$

$$\text{So, missing number} = \frac{4 \times 8 \times 10}{10} = 32$$

21. (B) : Multiply the end numbers of each box and then add the results to get number in the centre.

$$\text{So, the missing number} = 5 \times 8 + 6 \times 7 = 82$$

22. (D)

23. (D) : The number inside the circle is equal to the difference between the sum of the numbers at left and right & sum of the numbers at the top and bottom.

24. (B) : Clearly, sum of numbers in each row is 17. So, missing number = $17 - (4 + 7) = 6$

25. (B) :

$$\text{Lower number} = \frac{\text{Product of upper numbers}}{6}$$

26. (C) : The rule followed is,

$$(18 + 19) - 2 = 35, (22 + 24) - 2 = 44$$

$$(26 + 27) - 2 = 51$$

27. (B)

28. (A) : In every next figure, figure rotates 90° clockwise. Also, one element is deleting in every next figure.

29. (A) : The rule followed is:

$$3 \times 6 \times 5 \times 1 = 90; 3 \times 5 \times 6 \times 4 = 360$$

$$\text{So, } 2 \times 2 \times 4 \times 4 = 64$$

30. (C) : In every next figure, the figure rotates $90^\circ, 45^\circ, 135^\circ, 45^\circ, 180^\circ$ clockwise.

31. (C) : In each column,

$$B \xrightarrow{+2} D \xrightarrow{+3} G, \quad G \xrightarrow{+3} J \xrightarrow{+4} N$$

So, $N \xrightarrow{+4} R \xrightarrow{+5} W$

32. (D)

33. (A) : The rule followed is:

$$(1 \times 2) + 1 = 3; (9 \times 12) + 9 = 117$$

$$\text{So, } (7 \times 14) + 7 = 105$$

34. (B) : $\begin{array}{ccccccc} 3 & & 7 & & 15 & & 31 & & (63) & & 127 \\ & & +4 & & +8 & & +16 & & +32 & & +64 \end{array}$

35. (B)

36. (A) : The rule followed is:

$$\frac{6 \times 8 \times 5}{10} = 24; \quad \frac{5 \times 7 \times 4}{10} = 14$$

$$\text{So, } \frac{3 \times 13 \times 10}{10} = 39$$

37. (A) : The rule followed is:

$$(5 \times 5 \times 5) - (3 \times 3 \times 3 + 2 \times 2 \times 2)$$

$$= 125 - 27 - 8 = 90$$

$$(10 \times 10 \times 10) - (9 \times 9 \times 9 + 6 \times 6 \times 6)$$

$$= 1000 - 729 - 216 = 55$$

$$\text{So, } (21 \times 21 \times 21) - (12 \times 12 \times 12 + 13 \times 13 \times 13)$$

$$= 9261 - 1728 - 2197 = 5336$$

38. (A)

39. (C) : The rule followed is:

$$(4 \times 3) - 5 = 7; (8 \times 7) - 3 = 53$$

$$\text{So, } (5 \times 4) - 5 = 15$$

40. (A)

41. (C) : In each figure, all the four numbers outside the box are divisible by the inside number.

42. (B) : The rule followed is:

$$(16 + 4) - (12 + 8) = 20 - 20 = 0; 0 \times 0 = 0$$

$$\text{and } (24 + 6) - (18 + 9) = 30 - 27 = 3; 3 \times 3 = 9$$

$$\text{Similarly, } (32 + 8) - (24 + 18) = 40 - 42 = -2; -2 \times -2 = \boxed{4}$$

43. (B) : In every next figure, the figure rotates 90° anti-clockwise.

44. (B)

45. (D) : The rule followed is:

$$7 \xrightarrow{+4} 11 \xrightarrow{+8} 19 \xrightarrow{+16} 35 \xrightarrow{+32} 67 \xrightarrow{+64} 131$$

46. (A) : The rule followed is:

$$B \xrightarrow{+2} D \xrightarrow{+4} H, \quad G \xrightarrow{+3} J \xrightarrow{+6} P$$

$$N \xrightarrow{+4} R \xrightarrow{+8} Z$$

$$\begin{array}{ccccccc} \text{A} & \xrightarrow{+1} & \text{B} & \xrightarrow{+2} & \text{D} & \xrightarrow{+3} & \text{G} & \xrightarrow{+4} & \boxed{\text{K}} \\ \text{R} & \xrightarrow{+1} & \text{S} & \xrightarrow{+2} & \text{U} & \xrightarrow{+3} & \text{X} & \xrightarrow{+4} & \boxed{\text{B}} \\ \text{C} & \xrightarrow{+1} & \text{D} & \xrightarrow{+2} & \text{F} & \xrightarrow{+3} & \text{I} & \xrightarrow{+4} & \boxed{\text{M}} \end{array}$$

48. (C) : The rule followed is:

$$(5 \times 5 + 2 \times 2) - (3 \times 3) = 25 + 4 - 9 = 20;$$

$$(6 \times 6 + 9 \times 9) - (10 \times 10) = 36 + 81 - 100 = 17$$

$$\text{So, } (12 \times 12 + 13 \times 13) - (8 \times 8)$$

$$= 144 + 169 - 64 = 249$$

49. (D)

50. (B) : In every next figure, both shaded parts moves clockwise to the next part. Also, the part containing curved lines moves one part, two parts, three parts and so on anti-clockwise.

② Analogy and Classification

1. (C) : The second number is double the first number on the left of 'as'.

$$\text{So, required term} = 2 \times 9 = 18$$

2. (C) : The relationship is x is related to $3x + 1$.

3. (C) : The relationship is x is related to $4 \times x$

4. (A) : The relationship is x is related to $x \times x$.

5. (A) : The second number is the product of the digits of the first number.

$$\text{6. (B) : } \frac{16}{2} \times 7 = 56, \text{ so, } \frac{32}{2} \times 7 = 112$$

7. (A) : Two types of figures interchange their places.

8. (A) : The whole figure is divided into 8 equal parts.

9. (C) : The outer and inner figures interchange their places and size & inner figure becomes shaded.

10. (B) : First figure rotate anti-clockwise through 90° to obtain second figure.

11. (A) : Figure : Water image

12. (C) : The pin and bar will move anti-clockwise 3 steps and 2 steps respectively.

13. (C) : All other numbers are divisible by 3, except 7.

14. (B) : All other numbers are divisible by 10, except 806.

15. (B) : 243 is the only odd number.

16. (D)

17. (C) : All other circles are divided into two equal halves.

18. (B) : All other figures have two dots on the same side of the diagonal.

19. (C)

20. (A) : In the left pair,

$M \xrightarrow{-3} J$; $A \xrightarrow{-3} X$; $D \xrightarrow{-3} A$

So, $R \xrightarrow{-3} O$; $U \xrightarrow{-3} R$; $N \xrightarrow{-3} K$

21. (D)

22. (D) : Figure (ii) is the mirror image of figure (i).

23. (C)

24. (C)

25. (D) : From figure (1) to (2), shaded and unshaded part interchange their positions.

26. (B)

27. (B) : Figure (2) is exactly embedded in figure (1).

28. (D)

29. (C) : From (ii) to (i), the figure rotates 90° anti-clockwise.

30. (D)

31. (A)

32. (A)

33. (C) : (A) $M \xrightarrow{+2} O \xrightarrow{+3} R \xrightarrow{+1} S$

(B) $E \xrightarrow{+2} G \xrightarrow{+3} J \xrightarrow{+1} K$

(C) $P \xrightarrow{+1} Q \xrightarrow{+4} U \xrightarrow{+2} W$

(D) $A \xrightarrow{+2} C \xrightarrow{+3} F \xrightarrow{+1} G$

34. (C) : Number in only option (C) is the prime number.

35. (D)

3 Coding-Decoding

1. (B) : Each letter moves 4 steps ahead to get its code.

2. (A) : Observe respective places of letters and codes.

i.e.

Letter	B	O	Y	H	U	R
Code	\$	*	•	@	£	+

So, code for RUBY is + £ \$ •

3. (C) :

Letter	B	R	A	I	N	T	E
Code	*	%	÷	#	×	\$	+

So, code for RENT is % + × \$

4. (B) : We sleep at night and night is called sunshine. So, we sleep at sunshine.

5. (B) :

Letter	D	E	S	K	R	I
Code	#	\$	5	2	%	7

Code for RISK is % 7 5 2

6. (D) : We live on earth and earth is called tree. So, we live on tree.

7. (A) : A man sleeps on a bed and bed is called window. So, a man will sleep on the window.

8. (D) : We have : $A = 2, B = 3, \dots, Z = 27$. Then,
 $FOR = F + O + R = 7 + 16 + 19 = 42$
 $FRONT = F + R + O + N + T = 7 + 19 + 16 + 15 + 21 = 78$

9. (B) : A person draw water from a well but a well is called island. So, the person will draw water from an island.

10. (D) : A waiter serves in a restaurant but waiter is called agent. So, an agent will serve in the restaurant.

11. (C) : Fish live in water but water is called colour. So, fish live in colour.

12. (A) : To get the word, move each letter of ELQBI 3 steps ahead.

13. (C) : Letters of UPDZJ will move in the sequence -1, +2, -3, +4, -5

14. (A) :

A	S	U	M	N	J	K	L
+1↓	+1↓	+1↓	↓	↓	-1↓	-1↓	-1↓
B	T	V	M	N	I	J	K

15. (C) : We have, $\begin{array}{cccccc} & V & A & L & U & E \\ & +2\downarrow & +2\downarrow & +2\downarrow & +2\downarrow & +2\downarrow \\ & X & C & N & W & G \end{array}$

So, $\begin{array}{cccccc} M & O & N & T & H & \\ +2\downarrow & +2\downarrow & +2\downarrow & +2\downarrow & +2\downarrow & \\ O & Q & P & V & J & \end{array}$

16. (C) : We have, $\begin{array}{cccccc} & B & R & I & G & H & T \\ & -1\downarrow & +1\downarrow & -1\downarrow & +1\downarrow & -1\downarrow & +1\downarrow \\ & A & S & H & H & G & U \end{array}$

So, $\begin{array}{cccccc} R & E & T & U & R & N \\ -1\downarrow & +1\downarrow & -1\downarrow & +1\downarrow & -1\downarrow & +1\downarrow \\ Q & F & S & V & Q & O \end{array}$

17. (A) : We have, $\begin{array}{cccccc} S & O & M & E & D & A & Y \\ -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow \\ R & N & L & D & C & Z & X \end{array}$

So, $\begin{array}{cccccc} H & E & A & L & T & H & Y \\ -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow \\ G & D & Z & K & S & G & X \end{array}$

18. (A) : We have, $\begin{array}{cccccc} T & R & A & I & N & I & N & G \\ -2\downarrow & +2\downarrow & -2\downarrow & +2\downarrow & -2\downarrow & +2\downarrow & -2\downarrow & +2\downarrow \\ R & T & Y & K & L & K & L & I \end{array}$

So, $\begin{array}{cccccc} I & N & A & C & T & I & V & E \\ -2\downarrow & +2\downarrow & -2\downarrow & +2\downarrow & -2\downarrow & +2\downarrow & -2\downarrow & +2\downarrow \\ G & P & Y & E & R & K & T & G \end{array}$

19. (C)**20. (C) :** A woman will bake the cake in Oven but Oven is called Grinder.

21. (B) : We have, $\begin{array}{cccccc} P & H & O & N & E \\ -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow \\ O & G & N & M & D \end{array}$

So, $\begin{array}{cccccc} N & A & T & I & O & N & A & L \\ -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow \\ M & Z & S & H & N & M & Z & K \end{array}$

22. (A)**23. (D)****24. (C) :** A Cricketer play with Cricket bat but Cricket bat is called Basket ball.

25. (C) : We have, $\begin{array}{cccccc} S & A & C & R & E & D \\ +1\downarrow & +1\downarrow & +1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow \\ T & B & D & Q & D & C \end{array}$

So, $\begin{array}{cccccc} S & A & F & E & T & Y \\ +1\downarrow & +1\downarrow & +1\downarrow & -1\downarrow & -1\downarrow & -1\downarrow \\ T & B & G & D & S & X \end{array}$

26. (D) : We have, $\begin{array}{cccccc} M & U & M & B & A & I \\ +1\downarrow & +2\downarrow & +3\downarrow & +4\downarrow & +5\downarrow & +6\downarrow \\ N & W & P & F & F & O \end{array}$

So, $\begin{array}{cccccc} C & A & R & P & E & T \\ +1\downarrow & +2\downarrow & +3\downarrow & +4\downarrow & +5\downarrow & +6\downarrow \\ D & C & U & T & J & Z \end{array}$

27. (C) : We have, $\begin{array}{cccccc} B & R & I & G & H & T \\ -2\downarrow & +2\downarrow & -2\downarrow & +2\downarrow & -2\downarrow & +2\downarrow \\ Z & T & G & I & F & V \end{array}$

So, $\begin{array}{cccccc} A & R & O & U & N & D \\ -2\downarrow & +2\downarrow & -2\downarrow & +2\downarrow & -2\downarrow & +2\downarrow \\ Y & T & M & W & L & F \end{array}$

28. (C) : All the letters of the word are arranged in alphabetical order.

29. (D) : We have, $\begin{array}{cccccc} N & A & T & I & O & N \\ +1\downarrow & -1\downarrow & +1\downarrow & -1\downarrow & +1\downarrow & -1\downarrow \\ O & Z & U & H & P & M \end{array}$

So, $\begin{array}{cccccc} R & E & A & S & O & N \\ +1\downarrow & -1\downarrow & +1\downarrow & -1\downarrow & +1\downarrow & -1\downarrow \\ S & D & B & R & P & M \end{array}$

30. (D) : We have, $\begin{array}{cccccc} C & O & C & H & I & N \\ +1\downarrow & +1\downarrow & +1\downarrow & +1\downarrow & +1\downarrow & +1\downarrow \\ D & P & D & I & J & O \end{array}$

So, $\begin{array}{cccccc} L & O & C & A & T & E \\ +1\downarrow & +1\downarrow & +1\downarrow & +1\downarrow & +1\downarrow & +1\downarrow \\ M & P & D & B & U & F \end{array}$

4 Blood Relations

1. (A) : Only child of my grandmother is my father. And my father's daughter is my sister.
2. (A) : The girl in the photograph is the daughter of Sachin's cousin. So, the girl is Sachin's niece.
3. (D) : The man's aunt is Geeta's aunt. So, Geeta is man's sister or cousin.
4. (B) : Poonam is the wife of Jai who is the father of Priya. So, Priya is the daughter of Poonam.
5. (B) : The woman in the picture is the only child of her parents, so she is the wife of Varun.
6. (D) : The gentleman's brother is Abhishek's father. So, the gentleman is the uncle of Abhishek.
7. (B) : Simmi is the daughter of Pinki's husband. So, Pinki is the mother of Simmi.
8. (D)
9. (B) : Only daughter of Garima's father is Garima herself. So, Garima is the mother of the person.

(10-13) :

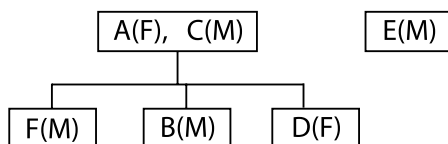


Figure : Generation Diagram

10. (D) : A is the mother and hence female. B is the son and hence male. C is the husband and hence male. D is the daughter and hence female. E is the brother and hence male. F is the brother and hence male. So, there are four males.
11. (C) : Married couple A and C, has son B, son F and daughter D i.e. three children.
12. (B) : E is the brother of C who is the father of D. So, E is the uncle of D.
13. (C) : The females are only the mother A and the daughter D.

14. (D) : The only son of Sonu's mother is Sonu himself. So, Sonu is the father of the boy in the photograph.

15. (A) : B is the brother of G's father. So, B is the uncle of G.

16. (A) : Yashika's grandfather's only son is Yashika's father. So, the photograph is of Yashika's brother.

17. (A) : Only daughter of Koyal's mother is Koyal herself so, Koyal is the mother of Harsh.

18. (B) : The photograph is of the daughter of P's maternal grandfather. So, P is the son of the person in the photograph.

19. (D)

20. (C) : Abhinav's father's sister is his paternal aunt. So, the mother of Abhinav's paternal aunt is his paternal grandmother.

21. (A)

22. (C) : Husband of Amit's wife is Amit himself. So, woman is the sister of Amit.

23. (D) : Father of Kabir's brother is Kabir's father. Son of only daughter of Kabir's father is Kabir's nephew. Hence, Kabir is the maternal uncle of the man in the photograph.

24. (A) : Kashi's son's wife's daughter is Kashi's grand daughter. Mother of his grand daughter is Kashi's daughter-in-law.

25. (A)

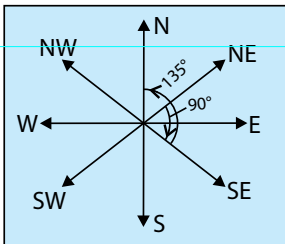
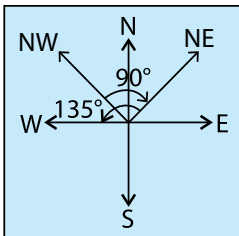
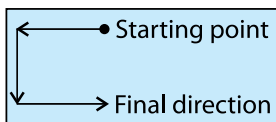
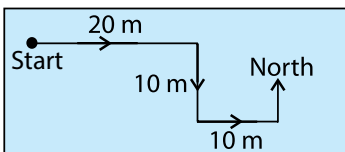
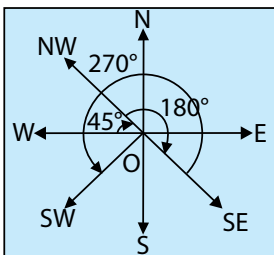
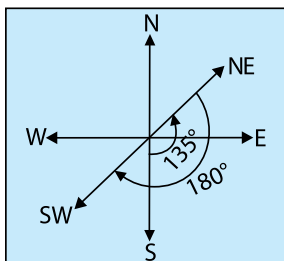
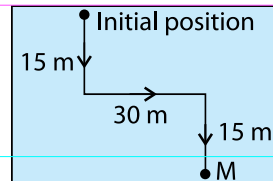
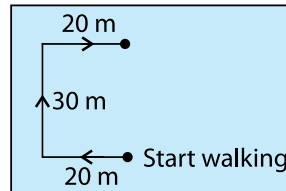
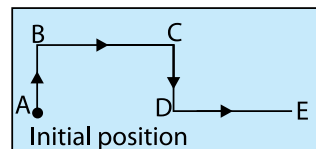
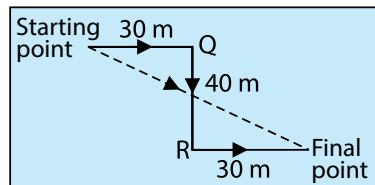
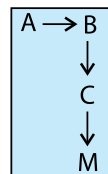
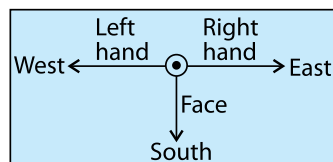
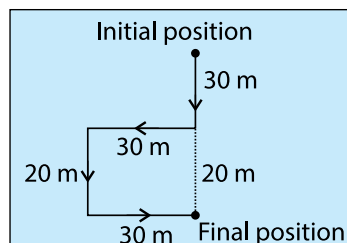
26. (A) : Kunal's son's wife's son is his grandson. So, father of Kashi's grandson is Kashi's son. Hence, the man is the son of Kunal's wife.

27. (A)

28. (C)

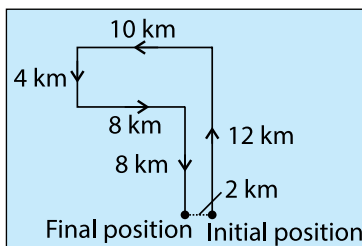
29. (A) : Karan is the brother of Vijay. Sneha who is the sister of Atul, is the daughter of Vijay. So, Karan is the uncle of Atul.

30. (D) : Only daughter of Kartik's son is his grand daughter. So, mother of his grand daughter is Kartik's daughter-in-law. So, Kartik is the father-in-law of the woman.

5 Direction Sense Test**1. (B)****2. (C) :****3. (B) :****4. (C) :** Neeta is facing East.**5. (C) :****6. (D) :****7. (D) :****8. (B) :****9. (C) :****10. (B) :** Each direction moves 135° in clockwise direction. So, East will become North-West.**11. (C)****12. (C) :****13. (C) :****14. (B) :****15. (D) :****16. (A) :**

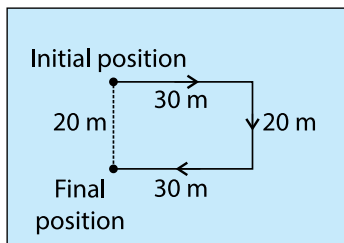
So, distance between initial position and final position = $30\text{ m} + 20\text{ m} = 50\text{ m}$.

17. (A) :

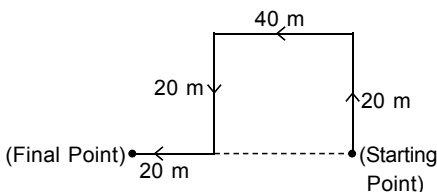


So, Mohit is 2 km, West from his starting point.

18. (D) :

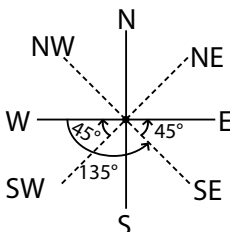


19. (D) :



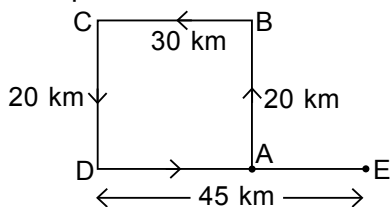
Distance between starting point and final point = $(40 + 20)\text{ m} = 60\text{ m}$.

20. (B) :



Now, she is facing towards East.

21. (C) : Let A be the starting point and E be the final point.

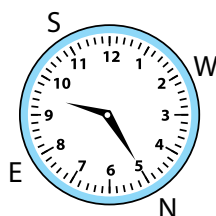


\therefore Required distance = $AE = DE - AD = (45 - 30)\text{ km} = 15\text{ km}$

22. (B)

23. (B)

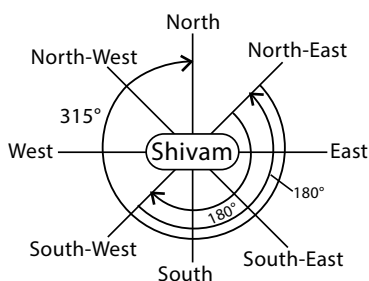
24. (B) :



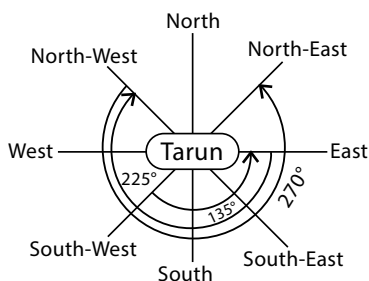
So, hour hand will be in South-East direction.

25. (C)

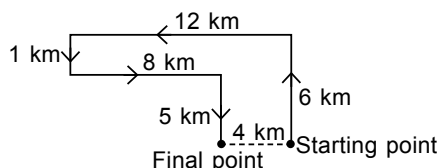
26. (A) :



27. (A) :



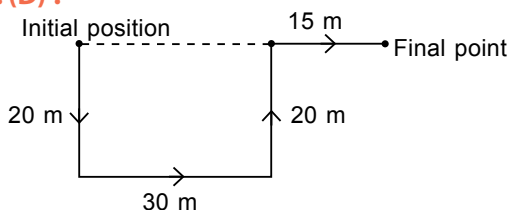
28. (C) :



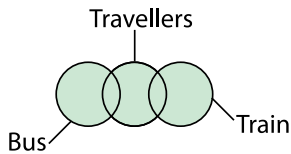
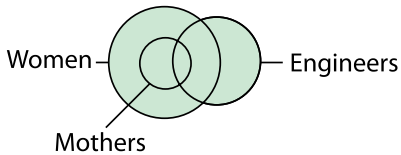
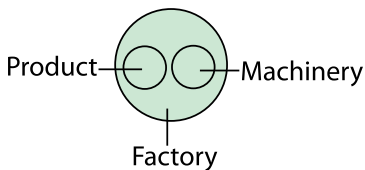
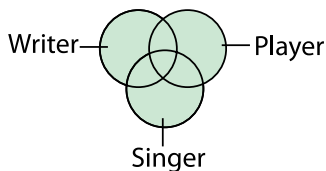
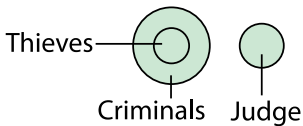
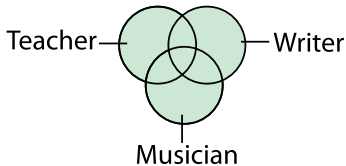
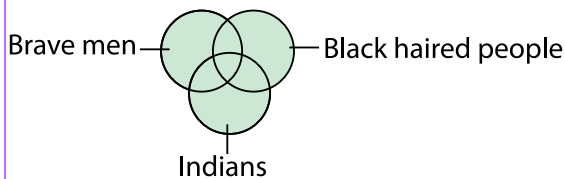
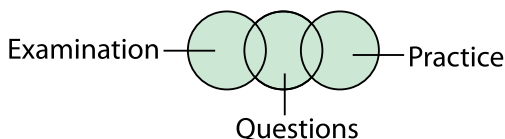
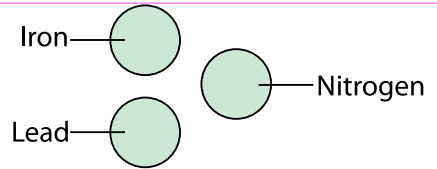
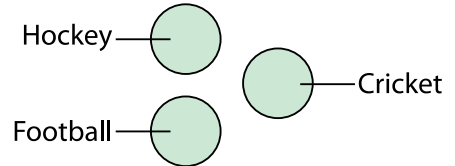
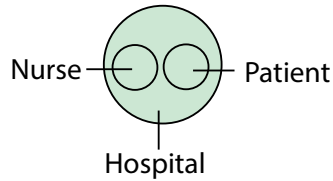
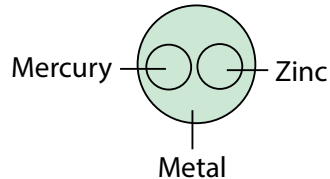
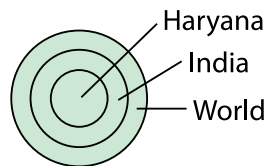
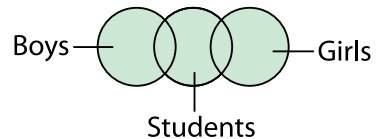
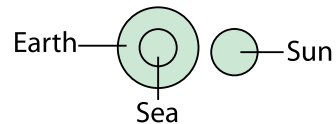
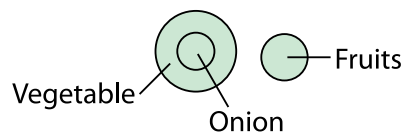
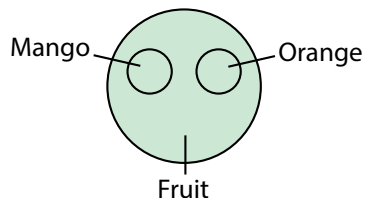
She is 4 km towards West from her starting point.

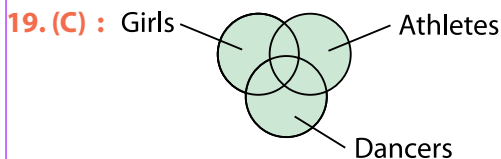
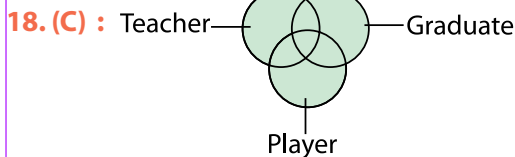
29. (C)

30. (D) :

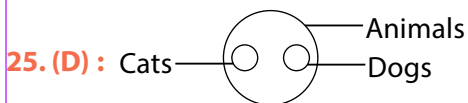
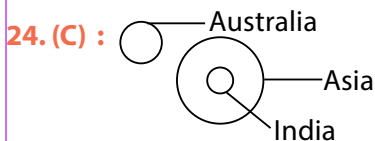
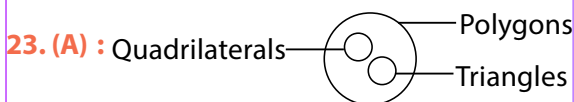
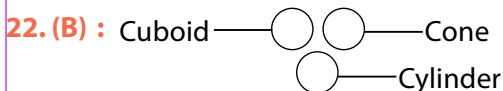
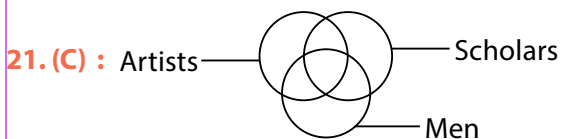


Distance = $30\text{ m} + 15\text{ m} = 45\text{ m}$

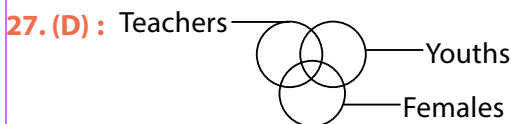
6 Logical Venn Diagrams**1. (A) :****2. (D) :****3. (B) :****4. (B) :****5. (B) :****6. (A) :****7. (A) :****8. (C) :****9. (B) :****10. (B) :****11. (C) :****12. (B) :****13. (D) :****14. (C) :****15. (A) :****16. (A) :****17. (D) :**



20. (A)

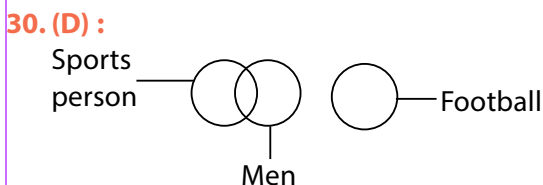


26. (C)



28. (A)

29. (C)



7 Alpha-Numeric Sequence Puzzle,...

1. (D) :

A B D C D C C D C L C D D C
D C C D

Number of such C's is five.

2. (B) :

J Q 7 9 T 7 9 5 4 3 W 1 0 5 4 7 5

3. (B) :

M 2 B 6 5 P 5 1 9 4 H 3 S 2 7

4. (A) :

P P P P Q P Q P Q P Q Q P P P Q Q
P P P

5. (B) :

M, 19, W, 3, 25, A, 35, 20, 22, 21, 45, H, 47, 48, 9

6. (B) :

3 4 A 9 6 1 B C 2 4 5 H 4 3 D 9 2 P

7. (C) :

B C C D E E C E A C E A C E
A B C A B C A C A C A C B C

8. (A) :

a a c d j d j d m m m m d s m m s m m s m s

9. (D) :

6 4 3 2 4 8 3 1 5 4 2 3 2 4 6 4 8 1 3 2 4 2 6 4 5

10. (D) : Number of plants = $6 + 6 - 1 = 11$

11. (C) : Required rank = $(46 - 12 + 1)^{\text{th}} = 35^{\text{th}}$

12. (B) : Dates between 13^{th} and 16^{th} are 14^{th} and 15^{th} . Dates after 14^{th} and before 17^{th} are 15^{th} and 16^{th} . Therefore, the common date is 15^{th} April.

13. (C) : Key, Lock, Door, Room, Switch on

14. (D) : Letters, Word, Phrase, Sentence, Paragraph

15. (D) : Crime, Police, Judge, Judgement, Punishment

16. (C) : Clay, Bricks, Wall, Room, House

17. (B)

18. (A)

19. (A) : Rearrangement is
A D E G I K N N R T U

20. (C) : 20th element from the right end is N and 9th to the right of N is U.

21. (D) : The correct order from left to right is; Mohit, Sameer, Samrath, Tushar, Aman (Left)

So, Sameer is 4th from the right end.

22. (B)

23. (B) : The correct order from elder to younger is:

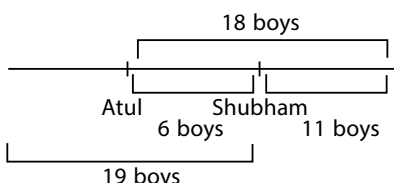
Jyotsana, Amit = Sumit, Richa, Saurabh

So, Jyotsana is eldest among them.

24. (A) :

6 9 (3 9 3) 6 6 (3 9 5) 9 3 9 6 8 9 (3 9 7) 3 9 6 (3 9 5)

25. (B) :



So, number of boys in the line = 19 + Shubham + 11 = 31

26. (D) :

	Intelligent	Hard-working	Ambitious	Honest
Kavya	✓	✓		✓
Sonam	✓			✓
Rachit	✓		✓	
Chetna		✓	✓	
Ajay		✓	✓	✓

27. (C) : The second, fifth, eighth and tenth letters of the word RESIDENTIAL are E, D, T and A respectively. So, the word formed is DATE.

28. (A) : After reversing the digits, the numbers are 452 934 176 498 859

Now, ascending order of above numbers is 176 452 498 859 934

So, middle digit of the middle number (498) is 9.

29. (C)

30. (A) :

6 4 (3 2) 4 8 3 1 (5 4) 2 (3 2) 4 6 4 8 1 (3 2) 4 2 6 4 5

31. (A) : The order of sitting from left to right is P Q R S T U

(Left)

Hence, R is second to the left of T.

32. (C) 33. (B) 34. (A) 35. (D)

36. (D) :

8 (5 8 6) (7 6 8) 9 3 2 7 5 (3 4 2) 2 (3 4 4) 1 1 9 8
1 6 3 2

37. (B)

38. (C) : After interchanging the letters, we have

E T H C O N O L Y G
(Right)

So, N is fifth from the right end.

39. (B) : After reversing the digits, we have

122 523 134 947 519

Now, descending order of above numbers is 947 523 519 134 122

So, the middle digit of second number (523) is 2.

40. (B) : 8 4 3 2 4 6 (3 1) 5 4 2 3 2 4 6 4 8 (1 3) 2
4 2 6 4 8

41. (D) : After subtracting 2 from each of the numbers, we have

484 439 632 930 871

Second digit of second highest number (871) is 7 and second digit of highest number (930) is 3.

So, required sum = 7 + 3 = 10

42. (C) : After arranging the letters of the given word, we have

E X P L O S I O N
E I L N O O P S X

43. (C) : After 1 is subtracted from the tens digit and adding 1 to the unit digit, we have

372 367 378 359 319

So, the largest number is 378 which comes from 387.

44. (C) : After adding 1 to the each of the given numbers, we have

113 203 326 414 622

Middle digit of the greatest number (622) is 2 and middle digit of the smallest number (113) is 1.

So, required sum = $2 + 1 = 3$

45. (B)

8 Mathematical Operations

1. (B) : Given expression
 $= 28 \div 7 \times 8 - 6 + 4 = 30$
2. (A) : Given expression
 $= 4 \times 10 + 42 \div 2 - 8 = 53$
3. (A) : Given expression
 $= 18 \div 9 + 2 \times 8 = 18$
4. (B) : Given expression
 $= 30 \div 2 + 3 \times 6 - 5 = 28$
5. (B) : Given expression
 $= 16 \times 4 + 28 \div 7 - 8 = 60$
6. (B) : 18 Q 12 P 4 R 5 S 6
 $= 18 \times 12 \div 4 + 5 - 6 = 53$
7. (B) : $3 + 4 \times 5 - 6 + 7$ becomes
 $3 - 4 + 5 \times 6 - 7 = 22$
8. (D) : Given expression
 $= 3 \times 4 \div 2 + 1 - 5 = 2$
9. (C) : Given expression
 $= 175 \div 25 + 5 \times 20 - 3 \times 10 = 77$
10. (C) : Given expression
 $= 5 \times 3 + 2 - 10 \div 5 = 15$
11. (B) : Given expression
 $= 2 \times 15 + 15 \div 3 - 8 = 27$
12. (D) : Given expression
 $= 11 + 15 - 8 \div 4 \times 5 = 16$
13. (B) : Given expression
 $= 16 + 64 \div 8 - 4 \times 2 = 16$
14. (B) : 12 M 6 R 28 L 7 T 15
 $= 12 - 6 \times 28 \div 7 + 15 = 3$
15. (B) : After replacing the letters, the given expression becomes
 $5 \times 5 \div 5 + 5 - 5 = 5$
16. (A) : Given expression
 $= 9 \div 3 + 4 \times 1 - 2 = 5$

17. (C) : Given expression
 $= 28 \div 7 \times 8 - 6 + 4 = 30$

18. (D) : Given expression
 $= 24 \div 8 + 7 - 2 \times 5 = 0$

19. (A) : After replacing the letters, the given expression becomes

$$(16 + 64 \div 8 - 4 \times 2) \div (2 \times 15 + 15 \div 3 - 8) \\ = (16 + 8 - 8) \div (30 + 5 - 8) \\ = 16 \div 27 = \frac{16}{27}$$

20. (A) : Given expression becomes
 $175 \div 25 + 5 \times 30$
 $= 7 + 150 = 157$ which is divisible by 157.

21. (C) : Given expression becomes
 $5 - 16 \div 4 + 20 \times 40$
 $= 5 - 4 + 800 = 801$

22. (D) : Given expression becomes
 $116 - 9 \times 52 \div 4 + 5 = 4$

23. (C) : Given expression becomes
 $30 \div 6 \times 5 + 4 - 2 = 27$

24. (B) : Given expression becomes
 $2 \times 40 \div 10 + 6 - 8$
 $= 2 \times 4 - 2 = 8 - 2 = 6$

25. (A) : Given expression becomes
 $10 + 18 \div 9 - 4 \times 3$
 $= 10 + 2 - 12 = 0$

9 Analytical Reasoning

1. (B) : Number of horizontal lines = Number of vertical lines = 7
2. (A) : Hold any one vertex and move through all the lines with counting the line segments.
3. (C)
4. (A) : Add the numbers of horizontal, vertical and slanting lines.
5. (D) 6. (B)
7. (C) : There are 4 horizontal lines and 8 slanting lines.

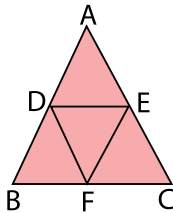
8. (B) : There are 3 horizontal, 3 vertical and 10 slanting lines.

9. (C) 10. (D) 11. (B)

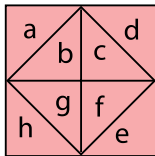
12. (C) : There are 4 horizontal, 5 vertical and 8 slanting lines.

13. (A) : Mark the centre of each circle and count them.

14. (B) : Triangles formed are ADE, DBF, DFE, CFE and ABC.

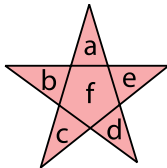


15. (C) : 8 triangles are a, b, c, d, e, f, g and h. Four other triangles are (b, c), (c, f), (g, f), and (b, g).

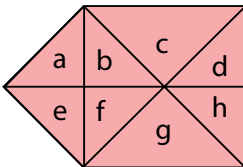


16. (D)

17. (D) : Triangles are a, b, c, d, e, (a, c, f), (a, d, f), (b, d, f) (b, e, f) and (c, e, f).

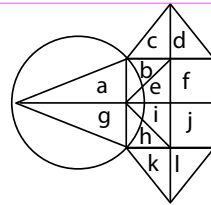


18. (C) : Triangles are a, b, c, d, e, f, g, h, ab, ef, ae, bf, dh, bfg, cdh, dhg, cbf.



19. (C) 20. (B)

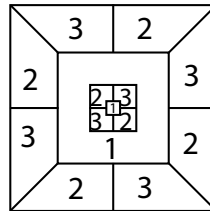
21. (C) : Triangles are a, g, c, d, b, e, h, i, k, l, cd, kl, ag, ei.



22. (B)

23. (C)

24. (A) :

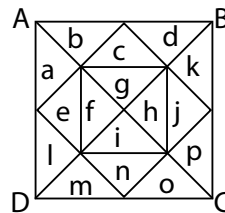


Hence, minimum number of different colours required = 3.

25. (A)

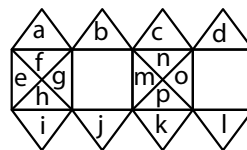
26. (D) : Total number of cubes = $4 + 3 + 4 = 11$

27. (D) : Triangles are, a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, ab, dk, lm, op, fg, ih, gh, fi, aefl, bcdg, hjkp, mino, ABC, ADC, BCD, ABD



28. (A)

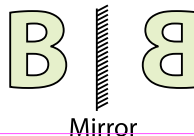
29. (D) : Triangles are, a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, ef, gh, fg, eh, mn, op, no, mp




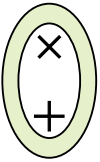


30. (B)


10 Mirror and Water Images




1. (B) :









2. (D) : U  U
Mirror

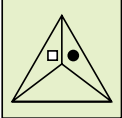


3. (A) :   
Mirror


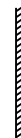

4. (D) :   
Mirror




5. (C) :   
Mirror

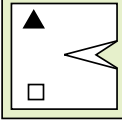
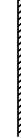
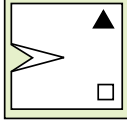
6. (B) :   
Mirror

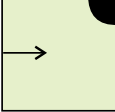

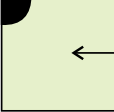
7. (D) :   
Mirror


8. (B) :   
Mirror

9. (D) :   
Mirror




10. (A) :   
Mirror

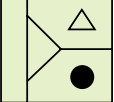

11. (C) :   
Mirror

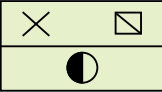

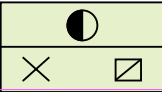
12. (A) :   
Mirror

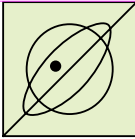
13. (C) :  Water layer

14. (A)

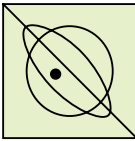
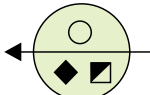
15. (A) :   Water layer


16. (B) :   Water layer

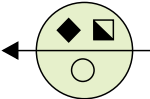
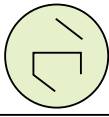
17. (C) :   Water layer


18. (B) :

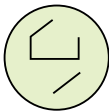
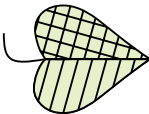
Water layer

**19. (A) :**

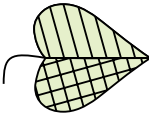
Water layer

**20. (D) :**

Water layer

**21. (B) :**

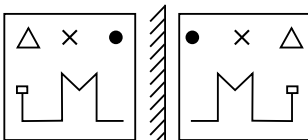
Water layer

**22. (D) :**

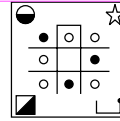
MATHS

SHAM

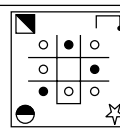
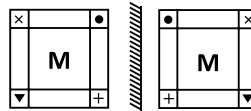
Water layer

23. (D) :

Mirror

24. (B) :

Water layer

**25. (C) :**

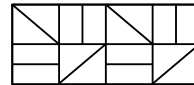
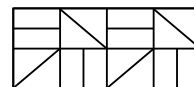
Mirror

26. (A) :

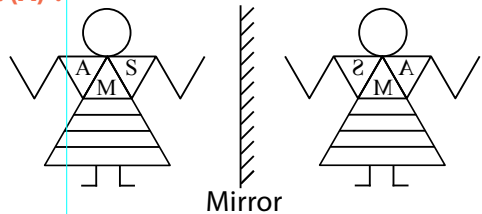
COMBINATION

COMBINATION

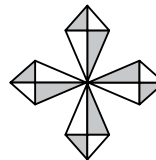
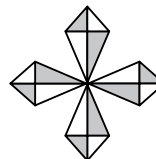
Water layer

27. (B)**28. (B) :**

Water layer

29. (A) :

Mirror

30. (B)**31. (A) :**

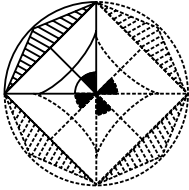
Water layer

32. (A) :

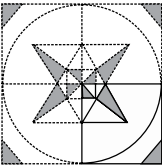
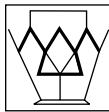
INDIAN AIR FORCE

INDIAN AIR FORCE

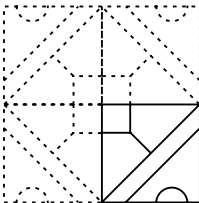
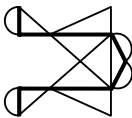
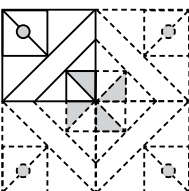
Water layer

28. (A) :

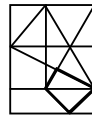
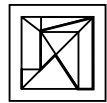
29. (A) : 1, 5, 6; contains similar figures one inside another.
 2, 3, 4; each divided into six equal parts.
 7, 8, 9; contains two different figures one inside another.

30. (C) :**31. (B)****32. (D) :****33. (C) :**

34. (D) : 1, 6, 9 are triangles.
 3, 4, 7 are four-sided figures and a circle is placed inside the each figure.
 2, 5, 8 are five-sided figures.

35. (A) :**36. (A) :****37. (B) :****38. (D)****39. (C) :****40. (B) :****41. (A)****42. (D) :**

43. (B) : 1, 3, 8; contains two different figures one inside another.
 2, 4, 6; contains two same figures intersecting each other.
 5, 7, 9; each figure divided into four equal parts.

44. (A)**45. (D) :****46. (A) :**

47. (B) : 1, 7, 8; contains two different figures one inside another.
 2, 5, 6; each figure divided into four equal parts.
 3, 4, 9; contains two similar figures one inside another.

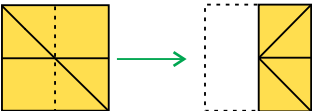
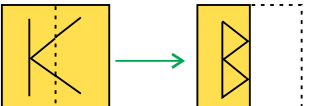
48. (B) :**49. (A)****50. (C) :**

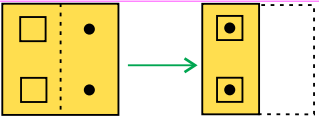
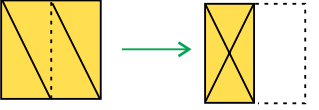
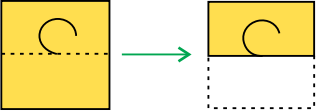
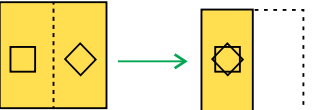
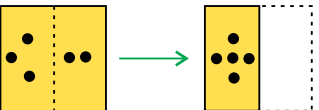

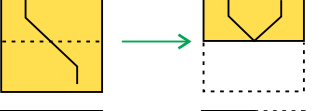



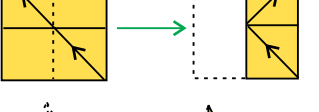

12 Figure Matrix

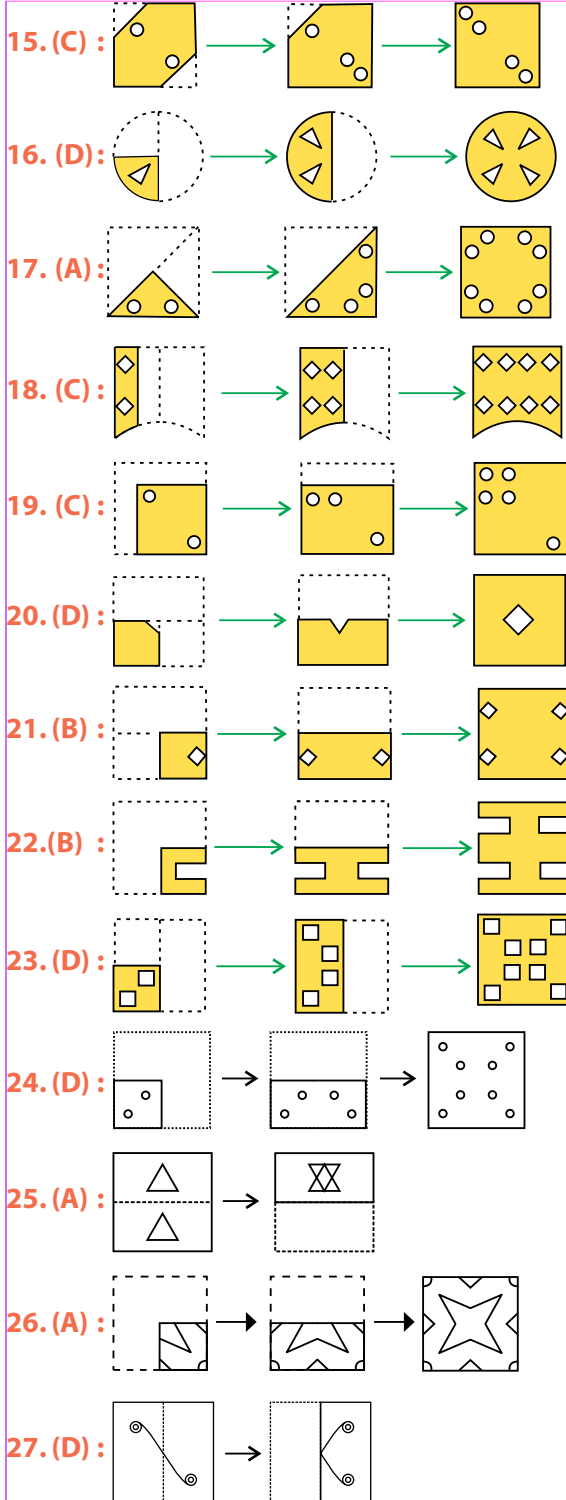
- (B) :** From left to right, the second figure is the mirror image of the first one.
- (C) :** From right to left, the same element becomes double in counting.
- (A) :** One inner figure is removed.
- (D) :** Mirror images and interchange of colours.
- (C) :** Vertically dots, lines, black colour and white colour are replaced by white colour, dots, lines and black colour respectively.
- (B) :** Consider row-wise.

7. (B) : From left to right, the upper element gets inverse.
8. (A) : From right to left, interchange the places of upper elements and inner part of lower element and upper right element is unshaded.
9. (C)
10. (A) : White part, shaded lines and black dot each moves one step clockwise.
11. (A) : In each row, first two figures combine to make the third figure.
12. (B)
13. (B) : Horizontally, rotate the figure 90° clockwise.
14. (D) : Horizontally, third figure is the uncommon parts of 1st and 2nd figure.
15. (A) : In each row, third figure is obtained by combining the first two figures.
16. (C) : In each row, third figure is obtained by combining the first two figures.
17. (C) : In each row, third figure is obtained by combining the first two figures.
18. (B) : In each row, every next figure is obtained by rotating the previous figure by 90° clockwise.
19. (A)
20. (C) : In each row, every next figure is obtained by rotating the previous figure by 135° anti-clockwise.

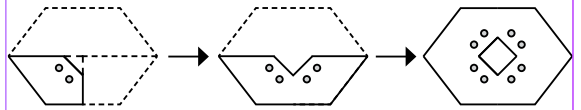
13 Paper Folding and Paper Cutting

1. (A) : 
2. (C) : 

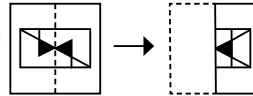
3. (C) : 
4. (D) : 
5. (B) : 
6. (D) : 
7. (B) : 
8. (B) : 
9. (B) : 
10. (C) : 
11. (B) : 
12. (D) : 
13. (A) : 
14. (C) : 



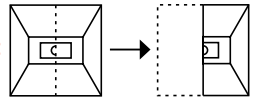
28. (C) :



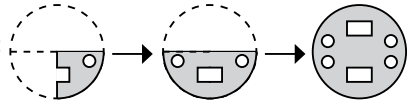
29. (C) :



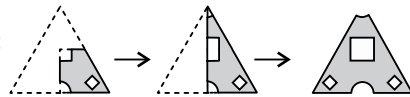
30. (A) :



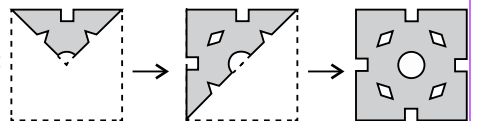
31. (C) :



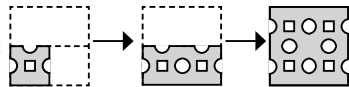
32. (B) :



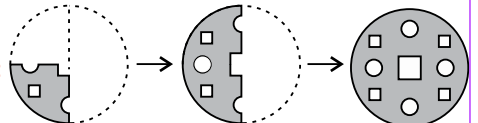
33. (B) :









34. (B) :








35. (D) :







14 Cubes and Dice

- (A) : Adjacent faces of 3 are 1, 2, 5 and 6. Therefore, faces 3 and 4 are opposite.
- (C) : Rotate the 2nd dice such that it shows 3 only. Then compare the faces of the two dice.
- (B) : Common adjacent faces of 4 and 6 are 1 and 5.
- (A) : Adjacent faces of 1 are 2, 3, 5 and 6.
- (B)
- (C) : Opposite faces are , , ,  and , .

7. (D) : Opposite pairs are ( , ),

( , ) and ( , )

8. (C) : Opposite pairs are ( , ),

( , ) and ( , )

9. (C) : Bottom layer has 5 cubes and top layer has 1 cube.

10. (B) : Bottom layer has 3 cubes and top layer has 1 cube.

11. (C) : Each layer contains 9 cubes.

12. (A) : The bottom layer contains 9 cubes, middle layer 5 cubes and top layer 1 cube.

13. (D) : The bottom layer contains 9 cubes and middle & top layer contains 1 cube each.

14. (A) : Number of cubes unpainted = 0.






15. (A) : Number of cubes have only one face painted = 0

16. (A) : Number of cubes have only two faces painted = 0

17. (B)

18. (D)

19. (C) : Opposite pairs of faces are ( ,

), ( , ) and ( , ).

20. (C) : Numbers on the opposite faces are (1, 3), (2, 4), (5, 6).

21. (D) : Numbers on the opposite faces are (6, 3), (1, 5), (2, 4).

22. (B)

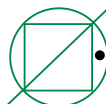
23. (B) : Number of cubes = $6 + 2 + 6 = 14$

24. (A) : Number of cubes = $8 \times 3 = 24$

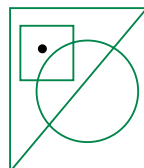
25. (D) : Numbers on the opposite faces are (6, 5), (2, 4), (1, 3).

15 Dot Situation

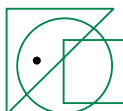
1. (B) :



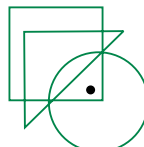
2. (A) :



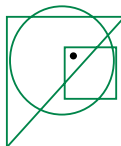
3. (C) :



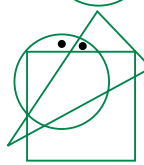
4. (D) :



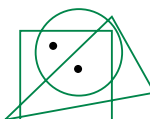
5. (B) :



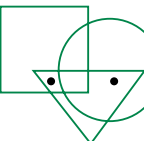
6. (C) :



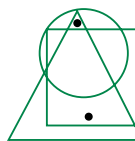
7. (D) :



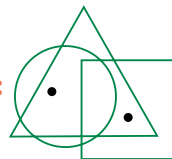
8. (C) :



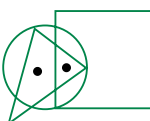
9. (A) :



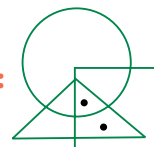
10. (A) :



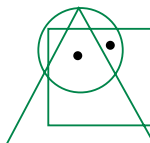
11. (B) :



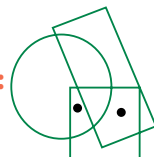
12. (D) :



13. (A) :



14. (D) :

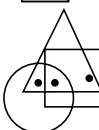


15. (C)



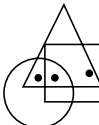
16. (D)

17. (D) :



18. (B)

19. (C) :



20. (A) :

