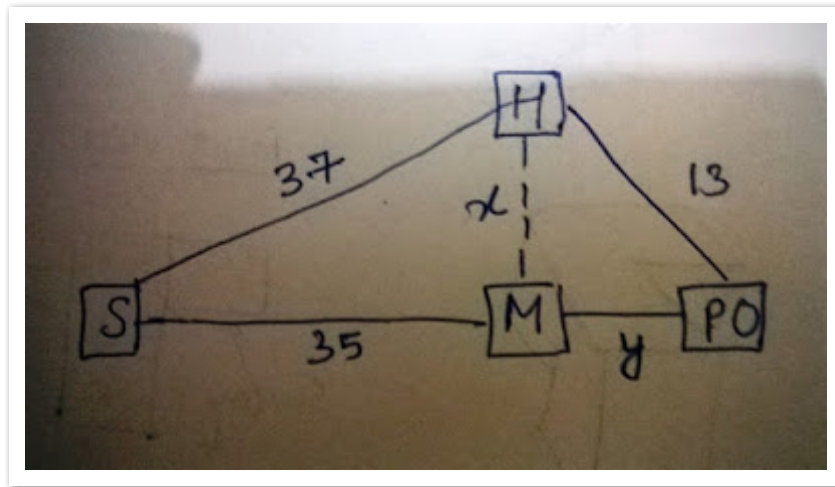


**Solutions :****1)**

The situation is given in the below picture. H stands for home, M for market, s for school, PO for post office.



It's given in the question that when Alakananda travels exactly north from Market, she reaches Home, and it's also given that walking from school exactly in east 37km, will end up at Market. and from market, if she move towards east, she will reach to Post office. So, School, Market and Post office should lie on the same straight line.

According to the triangle formed by SHM, applying Pythagoras theorem

$$x = \sqrt{37^2 - 35^2}$$

You don't even need calculator to solve this, just apply  $(a^2 - b^2)$  formula, which is equal to  $(a+b)(a-b)$

so,

$$\begin{aligned} x &= \sqrt{(37+35)(37-35)} \\ &= \sqrt{72 \cdot 2} = \sqrt{144} = 12 \end{aligned}$$

Now, according to the triangle formed by H-M-PO, applying Pythagoras theorem

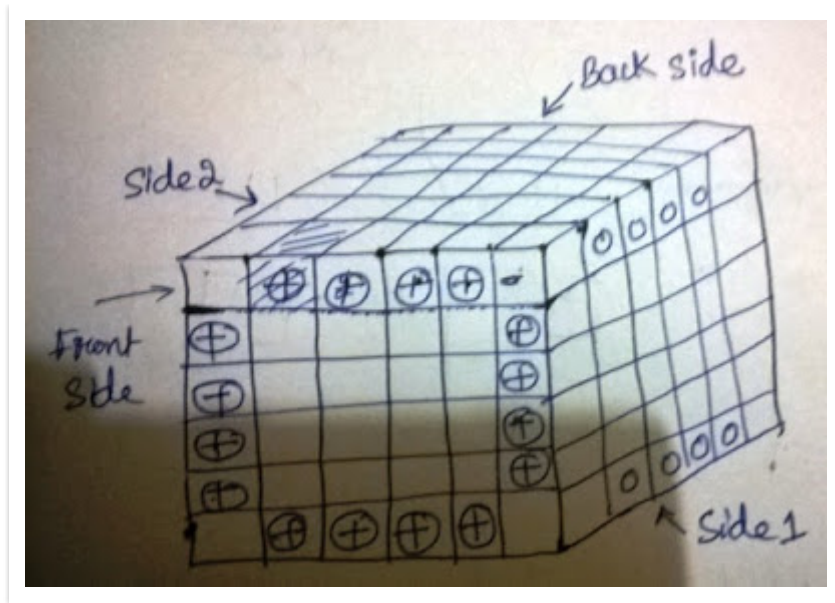
$$y = \sqrt{13^2 - x^2}$$

$$y = \sqrt{13^2 - 12^2} = 5$$

So, distance from school to Post office =  $35+y = 40$

**2)**

The below shown picture illustrates the situation for 6X6X6 cube. Cubes which are in edges (other than the corners) will have red color on their two faces.



Consider the front face, if we were to cut the cube into small cubes of 1X1X1 shapes, then we need to make cuts as indicated by the straight lines (other than the edges) shown in the above explanatory image. For the given cube of size 6\*6\*6, we need to make 5\*5\*5. If we do so, then the individual cubes that are marked with symbols (as shown in the above examples for front side and side1) will have two surfaces with red.

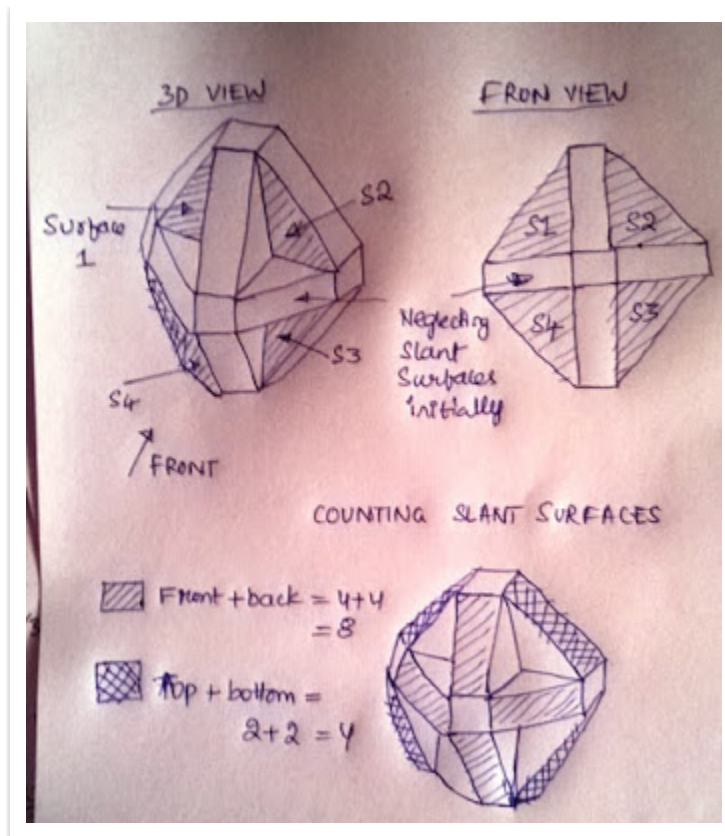
So, counting the total number of cubes on corners/edges (which is  $8+8+6+6 = 28$  for a single side - for the present case of  $8*8*8$  cube) and subtracting 8 (removing 8 corners which has red color on three surfaces) will give the answer

i.e

$$(28+28+12+12)-8 = 72 \text{ cubes}$$

3)

The given solid is symmetry but it has slant shapes, so should be careful while counting.



Try this way -

Avoid counting the slant surfaces (rectangles in the given picture) and count the rest shapes as I have given (front-right-back-R-Top-bottom). After this, count the slant surfaces separately.

From front (excluding slanting rectangles) -  
1 small square + four triangles = 5 surfaces

The picture is symmetry, so from all sides, the same count will come, i.e.  
1 small square + four triangles = 5 surfaces

So, since we have to count from six sides, so total surfaces (excluding slant rectangles) =  $5 \times 6 = 30$

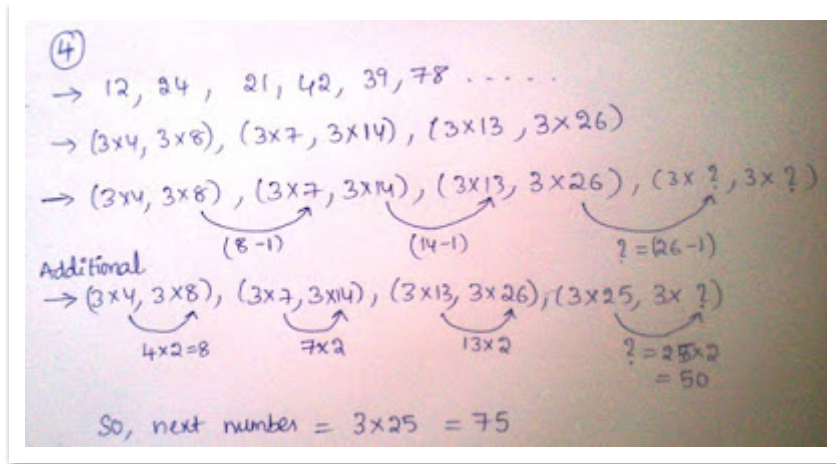
Now, separately count the slant rectangles - which will be 12 (be careful while counting this). So, total =  $30 + 12 = 42$

You may check the above image to get a clear understanding of the explanation.

4)

Answer : **75**

Below explanation will help you solve this questions



5)

This question is also based on observation. Since the geometry is symmetry, we can take a quarter of the symmetrical shape, and count the number of cubes, and multiply that by 4. Be careful while counting the central cubes. Better if you count them separately!  
 Counting this way, Answer =  $11 \times 4 + 15 = 59$

6)

M (all) ----> F (all) ----> D  
 M (all) -----> D

So, all Mammals are dolphins  
 Also, since all mammals are fish, obviously part of the fish are mammals, so Option A is also correct, B is wrong, straight forward. C is also logically correct.

7)

Answer : **a,c**  
 Check the shades of Red color - [wiki page](#)  
 Learn about shades of other colors - [wiki page](#)

8)

Answer : **a**  
 That's why it has no/least bonnet at the front!

9)

Answers : **a,c,d**  
 I guess it's M, e, s  
 But in answer key it's mentioned as a,c

10)

All the films are Steven Spielberg hit movies

11)

Answers : **a,b,d**

check the complete collection of [Pablo Picasso works](#)

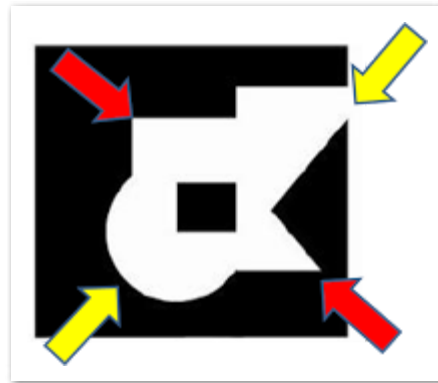
A very good facts blog about [famous persons around the world](#)

Also for reference - [100 greatest paintings of all time](#)

**12)**

This question is also based on your observation, anyway here's a simple procedure or way of observing the image.

In the given picture, assume two arrows diagonally (indicated in red). Now; note the shapes at the corners - for example one is semi rectangle. and the shape in opposite side is say triangle. Now only consider the yellow arrows, which are exactly opposite. Note the shapes - semi circle and gun shape, now observe all the options which have this pattern.



Also, don't forget the shape of the center black rectangle as per the rotated orientation of the options.

Answers : **d**

**13)**

Answers : **a,b**

Get the complete list with more details about Font - [wiki page](#)

**14)**

Answers : **a,b,d**

Check here - [Photography guide for Part-A](#)

**15)**

Answers : **a,b,c**

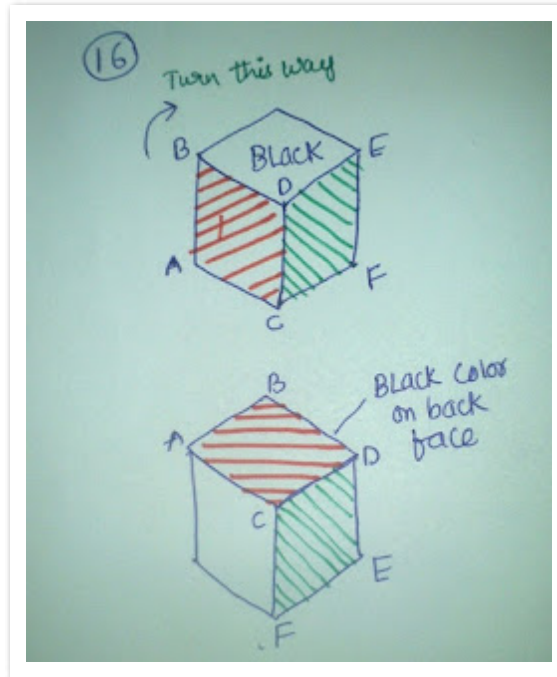
[Source with explanation](#)

**16)**

Answer : **b**

As shown in the figure, consider the first image with black face on the top and red face on the front. Now, we want the color of the surface on the opposite side of the black surface. So, tilt/turn the cube in such a way that black surface is moved to the back position as shown in the next

image of the below picture. I mean turn the cube clockwise. Now, red face is on the top, while green surface is still on the right side of the cube view. Now check the options with this configuration, only last picture in the question matches. So, it's yellow color !



If you were asked to find different color - other than yellow, do the above procedure and orient the cube such that it matches color arrangements as in any one of the option given to you.

17)

Answer : a

Split the combinatorial words into two parts as shown below

wigges + slorm -----> flat + pen

widdle + brap -----> round + nib

slorm + wiggel -----> pen + ink

from this we can conclude that

wigges ---> flat

slorm -----> pen

brap -----> nib

wiggel -----> ink

now we want to find 'nibstore' = nib + store = brap + .....(something)

option a) brap+dansa

option d) brap + wiggel ( which is brap+ink ..... incorrect)

so option a should be the answer.

18)

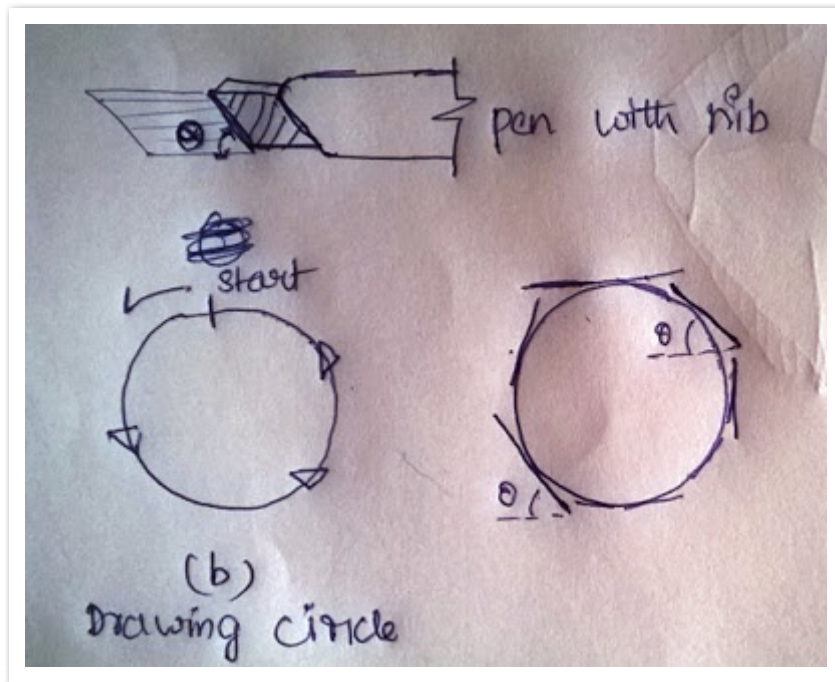
Answer : c

This problem can be solved using your imagination/observation. Anyway as usual let me give one possible method

### Method

Figure shows one possible shape of the nib which can draw as shown in the question. Remember Indians have the habit of drawing from left to right. And the given straight line is

projected towards left. So, the nib should also project towards left as I showed in the picture.



Now, if you are to draw a circle, you will obviously start from the top and move in anti clockwise direction as shown in the image (b). Now, if you use the given nib, and start drawing a circle, then you have to expect a sharp line (instead of broad width line) at the place where the nib moves parallel in the direction of the nib angle. To make it simple, if you assume tangent lines, drawn over the circle (b) as shown in (c) then the location on the circle at which the tangent angle is same as the nib angle is where the line will not be thick, got it ?

So, using this logic, option C is the answer.

19)

Answer : d

Here's - [a good guide for art movements](#)

Go through [this wiki page](#) in free time

20)

Answer : c

Here's [online-color-selection-tool](#) that will help you

learn different color combinations. There's also a detailed discussion regarding CMYK and RGB color modes in that link. You may find that useful.

21)

Answer : c

Here goes the explanations

Kharavela, was the third and greatest emperor of the Mahameghavahana dynasty of Kalinga (present-day Odisha). The main source of information about Kharavela is his famous seventeen line **rock-cut** Hatigumpha inscription in a cave in the Udayagiri hills near Bhubaneswar, Odisha (source : wikipedia)

Learn about - [Indian epigraphy history](#)

Learn about - [Famous inscription in India](#)

**22)**

Answer : **b**

It's straight and I guess I don't have to explain this. If you still have doubts, then you may drop a comment, I will give proper explanations like I did for other questions.

**23)**

Answer : **b**

check - [materials and manufacturing process](#)

**24)**

Answer : **a**

Check here - [List of Indian Folk dances \(state-wise\)](#)

A complete list of - [Indian Folk dance \(wiki page\)](#)

**25)**

Answer : **c**

Go through this link to learn about [famous books and others](#)

**26)**

Answer : **b**

Check - [Logos collection of Indian organizations](#)

**27)**

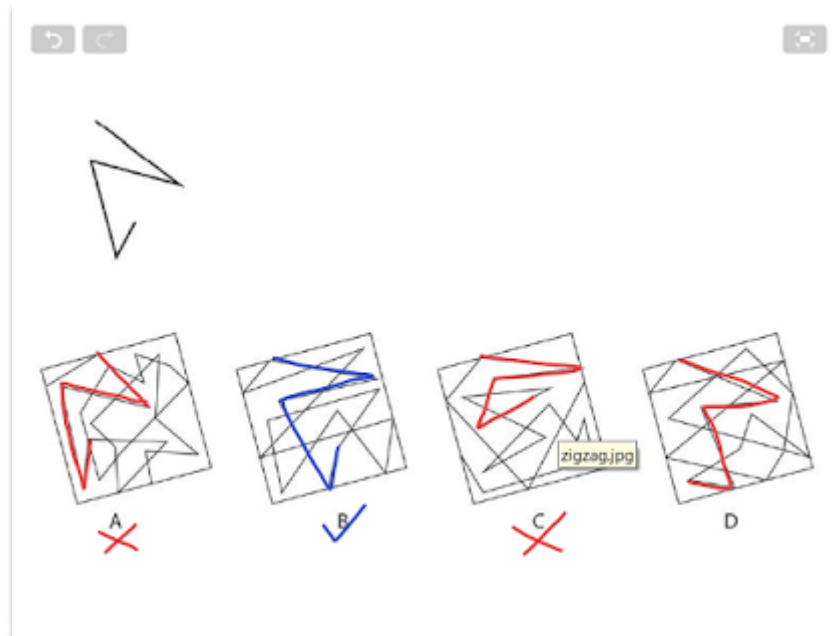
Answer : **a**

**28)**

Answer : **b**

I prepared the below picture by marking possible similar lines in the given options using distinguishable colors. As you can visualize, option b is the correct one, while in other options, pattern varies in one way or other.





29)

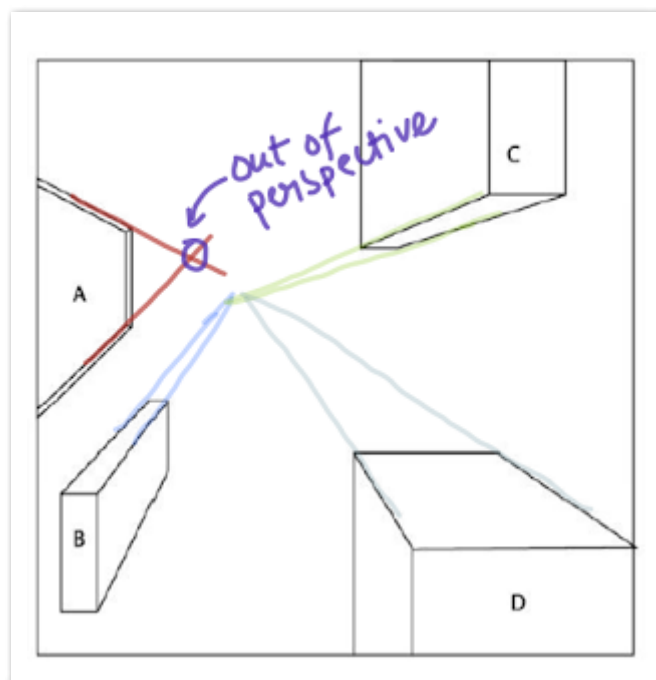
Answer : d

check - [Working on reflections and geometrical solids](#)

30)

Answer : a

The below picture helps in better understanding, although I used lines (with diff. colors) to extend and show where they meet. Clearly, red extended lines are out of perspective while others are able to meet at a vanishing point. Although I used coloured lines for your explanation, but you need to imagine and visualize this while in exam.



31)

Answer: **a**

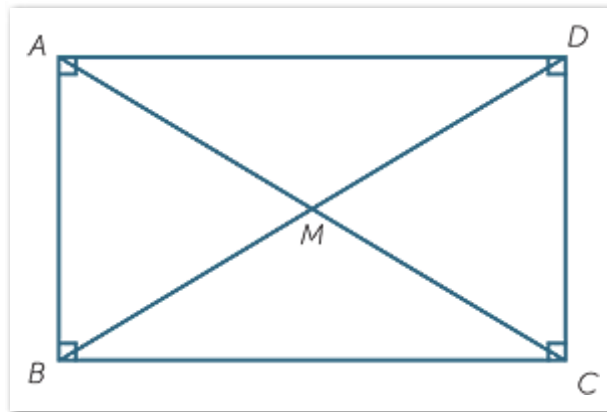
I initially got confused a bit with this question. They mentioned that the arm has to be turned toward us. If we assume that that arm is of some one else in the screen and has to be turned toward us (which means outside of the screen and towards us), then option A is not the answer. But according to the answer key and Option A being the answer, we can say that the image shown has to be assumed as our own arm, and moving toward us means moving away from the screen. In this case option A is the answer.

The reason is when the arm moves away from us, then hands with fingers will look smaller in size compared to the arm/upper limb since they are near to the scene of capture. Things that are near to the camera should appear bigger in size compared to farther objects. Also notice the fold shown near elbow.

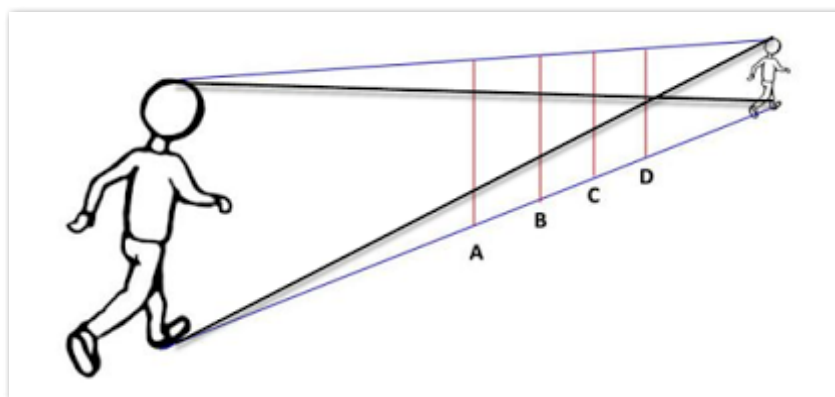
**32)**

Answer: **d**

No matter what distance the person moves, his height will be same, to find the mid point, use the concept of maths! That is the point of diagonal is always at the mid, like for the example of a diagonal shown below



So, if you draw two diagonal lines, then the contact point is obviously the mid path! as shown in the figure



**33)**

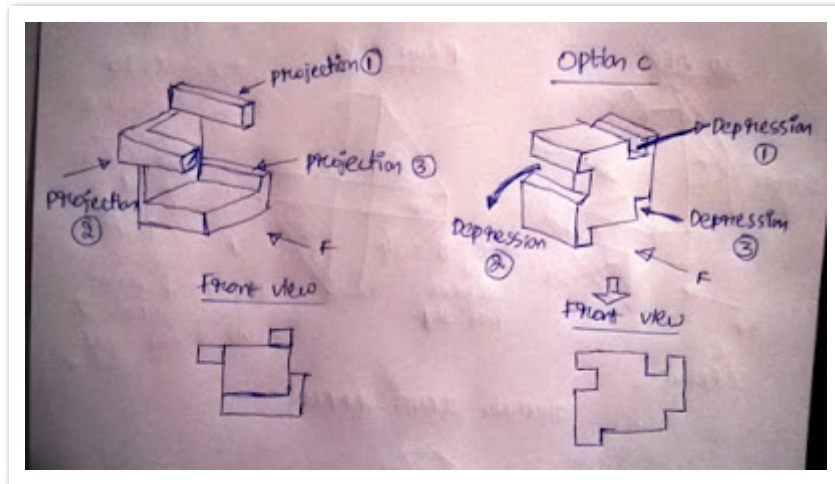
If you observe the middle shape (stick human figure), then he is not at the maximum height nor is falling down (In terms of physics - he is in the travel of ascent). In other words, he is moving away from earth (against the gravity) and so the air will try to push him down. It also tries to push his cape to the down. So, it's almost vertically downward - Option A matches.

If he were to jump from top, or he is falling down, then the air will again try to oppose him in opposite direction to his travel, In other words towards up. So, the direction of the cape should also be vertical (In actual, the direction would most probably be in the curve (parabola) of the travel/path.

Answer : a

34)

Figure clearly explains the situation. Like in the above questions, use the principle of numbering system. Now, identify the projections and mark them as I did in the picture - Projecion 1, proj 2, proj 3



Now, check the options that have depressions at the same location as projections are in the given question. Option C matches as shown in the picture.

35)

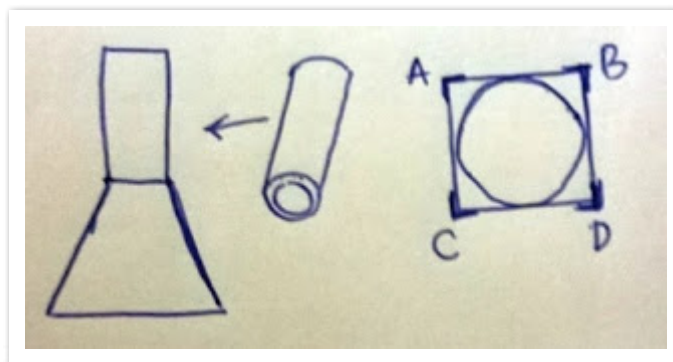
Answer : b

You can learn more about Geometry transformations in [Part A Resources page](#)

36)

Answer : a

The below picture helps you with explanation.



As can be seen, if the top portion is circular (just like a pipe), then the front view will be as shown in the left most image above. Both the cone circular section and the pipe circular section matches horizontally and so appears like a line in front view. But if instead the pipe is rectangular in shape, then as shown in the third (right most) image above, the extra projections

(denoted by A,B,C,D) are over-fit at the intersection and their radius is greater compared to the radius of a circle inscribed inside the square/rectangle. So, it projects and hence extends downwards in the top view with sharp edges as shown in option A. Hope you got it!

(Check the above links for similar geometry study)

**37)**

Answer : c

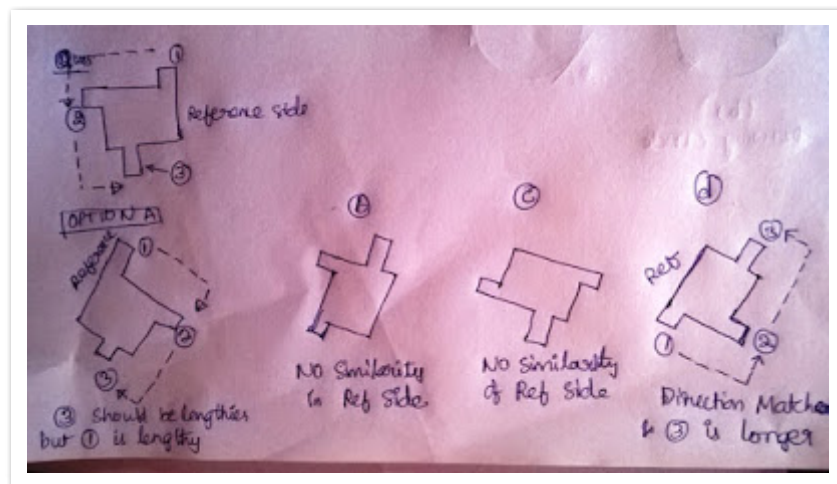
(By observation)

**38)**

It can be solved by visual observation without any hand work. If you are not able to do so, then follow the following method

**Method :**

Give numbering to the three rectangular projections of the given image. Three projections are there, so three numbers, follow either clockwise or anticlockwise numbering system.



Start from a reference side, say right side of the given question. Remember this reference. Now, take all the options (one by one) and try to follow the same numbering system in the same direction as done to the question. Identify where the reference side is and start from there. Visually check the distance between the number sequence in the assumed direction. If it's in correct order, then list those options.

Now check the size of the projections at each numbered mark. If it matches at all numbers, then that would be the answer. Only last option is matching

Answer: d

**39)**

Answer: b

In thermal engineering terms, that's a combination of conduction and convection heat transfer process. Heat from outside as well as from inside will be taken by the wet sand (between the two pots) and since sand has greater pores and is not compact, there will be minute spaces through which air can easily flow. This air will come in contact with the wet sand and will take away the heat by evaporating. Thus the water inside will not be affected by heat outside, which is one best way of natural cooling that is practiced in India too !

**40)**

Answer: **b**

**41)**

Answer: **c**

'Design of everyday things' is a popular book in the world of design and is written by **Donald Norman**. You can get the downloadable form of this book in this blogs resource page.

**42)**

Answer: **d**

(By observation)

You have to proceed in reverse direction, like they have mentioned fold 1 and fold 2 right, now considering the image 1 (folded sheet with cut), remove the fold as in fold 2 position, then unwrap the sheet as in fold 1 position.

**43)**

Answer: **c**

Brahmagupta was an Indian mathematician and astronomer. Brahmagupta was the first to give rules to compute with zero.

**44)**

Answer: **a**

**45)**

Answer: **a**

Check - [Logos collection of Indian organizations](#)

**46)**

Answer: **c**

Learn more about - [Pica in wiki page](#)

**47)**

Answer: **c**

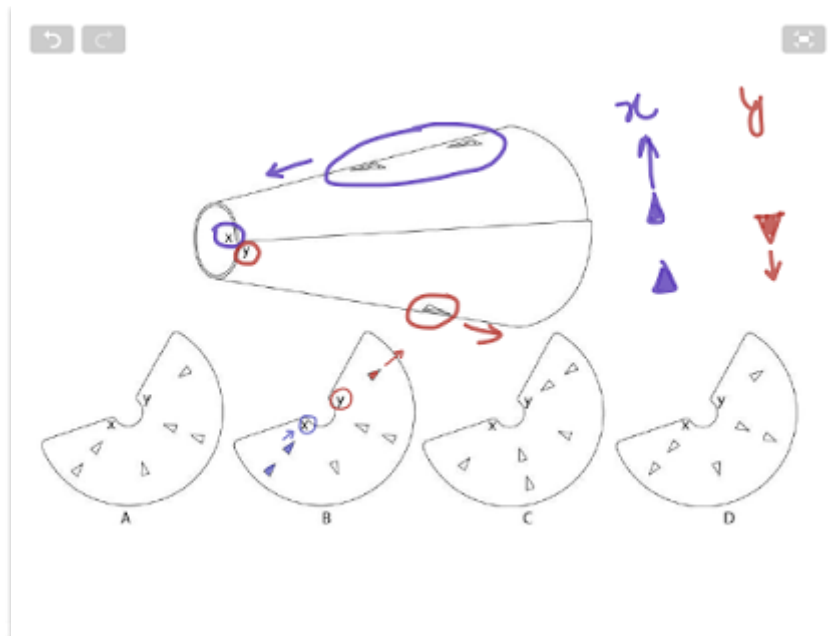
Remaining font styles have narrower body. Cambria comes under serif category while the rest are sans-serif (source : wiki)

**48)**

Answer : **b**

As indicated by arrows in the below picture, consider the X tag, marked by the blue lines. On the x side, two arrows are punched and the direction of the arrows (two numbers) point towards x mark. Note this arrangement. Now as pointed by the red mark, on y side, only one arrow is punched such that it is pointing away from the Y mark. got it ? I have also sketched this separately as shown in the picture.

Check the option which exhibits this behaviour/pattern. Option b is the only one matching. We then don't have to bother about any other punches as given additionally in the options



**49)**

Answer : **b** (as in CEED official Key)

Frankly speaking I'm not actually good at Fonts. Please check yourself.

**50)**

Already there are 29 states (including UP - as a single state) and when UP gets divided into 4 states, we need to add three (since already one state is considered earlier). So, now total =  $29+3 = 32$  states