

Brain Jolt

Science, Math and Logic Quiz

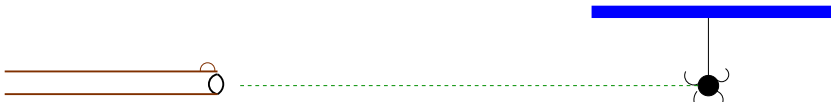
May 9, 2014

Rules

- There will be 2 rounds \Rightarrow 1) Physics, 2) Maths+Logic
- In both rounds there will be 9 questions : One for each team.
- Each questions carries 10 marks.
- No negative marking.
- 2 minutes time for each question.
- No bonus points.
- There will be bonus questions in each round \Rightarrow +20 if you get it right or -10 if you get it wrong.

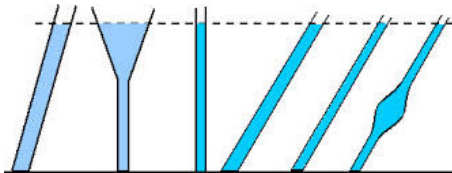
- A man is standing on top of a moving train. He takes a ball out from his pocket and throws it in the air. Where will the ball fall ?
 - 1 Behind him
 - 2 On his hand
 - 3 In front of him

- A gun is pointed straight at a spider dangling from a branch. The moment the bullet leaves the gun the spider also begins to fall from the branch. Which of the following will happen ?



- 1 Bullet will pass above the spider
- 2 Bullet will hit the spider
- 3 Bullet will pass below the spider

- What does the path of the bullet look like to the spider ?
 - 1 It dips down
 - 2 Straight line
 - 3 It curves up

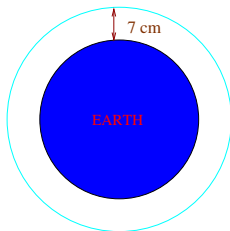


- The water pressure at the bottom of which of these containers will be highest and why ?

- Why do the different phases of moon occur ?

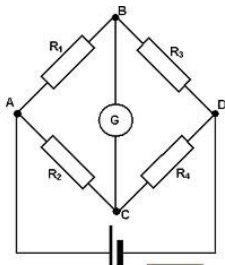


- Imagine you have tied a wire around the earth. Radius of the earth is almost 6400 km. So the length of the wire will be $(2\pi \times 6400)$ km. Now I want to increase the length of the wire so that there is a 7 cm space between the earth and the wire everywhere. How much longer a wire will you need for this ?



- A train is waiting at a station, facing a tunnel. Mr. X is about to board the train but he is afraid of the dark. Where should he sit in the train if he wants to spend minimum time in the tunnel ?
 - 1 Front
 - 2 Back
 - 3 Middle
 - 4 None of the above

- What is the current flowing through the Galvanometer (G) ?



$$R_1 = 10\Omega$$

$$R_2 = 10\Omega$$

$$R_3 = 5\Omega$$

$$R_4 = 5\Omega$$

- A hole is dug all the way through the earth and a ball is dropped through the hole. What will happen to the ball ?
 - 1 Passes through
 - 2 Stops at the centre
 - 3 Oscillates about the centre

Bonus Question !!

- Train A is moving from left to right at a speed of 10km/hour and train B is moving on the same track at a speed of 20km/hour in the opposite direction. When they were 30 km apart, a bird starts to fly from A. It goes to B and comes back to A and keeps moving to and fro. Speed of the bird is 2km/hour . How much distance will the bird cover before the trains collide ?

- Find the next number in the sequence :

77, 49, 36, 18, (?)

- There are 3 boxes labeled 'apples', 'oranges' & 'apples and oranges'. All of them are wrongly labelled. You have to relabel them correctly by picking 1 fruit from one of the baskets. How will you do this ?

- Find the next number in the sequence :

1, 5, 10, 17, (?)

- A boy and a girl are talking.
“I am a boy” — said the child with black hair.
“I am a girl” — said the child with brown hair.
At least one of them is lying. Who is the boy and who is the girl ?

- Find the missing number in the sequence :

37, 10, 82

29, 11, 47

96, 15, 87

42, (?), 15

- At the pet show all except 2 of the pets were dogs, all except 2 were cats and all except 2 were fish.
How many of dogs, cats and fish were present ?

- If

$$5 + 3 + 2 = 151022$$

$$9 + 2 + 4 = 183652$$

$$8 + 6 + 3 = 482466$$

$$5 + 4 + 5 = 202541$$

Then $7 + 2 + 5 = ?$

- 3 friends A,B and C are discussing their mutual friend D.
A says "He has at least 4 cars"
B says "He has less than 4 cars"
C says "He has at least 1 car"
Only one of them is right. Who is it ?

- Find the next number in the sequence :

1, 3, 4, 7, 11, 18, (?)

- You are standing by a river. With you are a chicken, a bag of grain and a wolf. You want to take all of them to the other side but you have only a small boat, you can take only 1 at a time. But you can't leave the chicken with the grain or the wolf with the chicken. How will you get them across ?

- Find the next number in the sequence :

2, 6, 12, 20, (?)

- There are 3 light bulbs inside a room and 3 switches outside. Before going in you can turn the switches on and off as many time as you wish. Once inside you can no longer access the switches. Now you have to guess which switch is for which bulb.

- Find the next number in the sequence :

0, 7, 26, 63, (?)

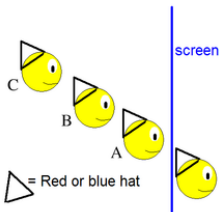
• Only one of these 3 answers is correct. Which? :

- ① Answer 1
- ② Answer 1 or 2
- ③ Answer 2 or 3

- Find the next number in the sequence :

58, 26, 16, 14, (?)

- Four prisoners are arrested for a crime, but the jail is full and the jailer has nowhere to put them. He eventually comes up with the solution of giving them a puzzle so if they succeed they can go free but if they fail they are executed. The jailer puts three of the men sitting in a line. The fourth man is put behind a screen. He gives all four men party hats. The jailer explains that there are two red and two blue hats; that each prisoner is wearing one of the hats; and that each of the prisoners is only to see the hats in front of them but not on themselves or behind. The fourth man behind the screen can't see or be seen by any other prisoner. No communication between the prisoners is allowed. If any prisoner can figure out and say to the jailer what color hat he has on his head all four prisoners go free. If any prisoner suggests an incorrect answer, all four prisoners are executed. The puzzle is to find how the prisoners can escape, regardless of how the jailer distributes the hats.



- Find the missing row :

1

1 1

2 1

1 2 1 1

1 1 1 2 2 1

3 1 2 2 1 1

? ?

- You are at an unmarked intersection. One way is the city of lies and the other way is the city of truth.
All citizens of the city of lies always lie.
All citizens of the city of truth always tell the truth.
A citizen of one of these cities (you don't know which) is at the intersection.
What question could you ask them to find the way to the city of truth ?