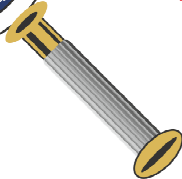


KH

Exam for
Young Scientists..!



J-2025



SCHOLARSHIP FOR HIGH ACHIEVERS
AND NEEDY STUDENTS

SCIENCE APTITUDE TEST

CLASS - 6

SOLUTIONS

TEST CODE - 12

WhatsApp Channel



Result will be Declared on 14th Oct. 2025

Video Solutions will be available on

www.khoj.iitashram.com

They will also be available on the **IIT ASHRAM WhatsApp Channel**.

Just scan the QR codes below & never miss an update!

IIT Ashram

JEE MAIN | JEE ADVANCED | GUJCET | FOUNDATION



Drs' Ashram

NEET | GUJCET | FOUNDATION

ALKAPURI (H.O.) : UG – 1 to 2, Concorde Complex, Above PNB, R.C. Dutt Rd., Alkapuri, Vadodara.

M : 9081062221, 9033063029.

MANJALPUR - IIT ASHRAM : SF-1 TO 12, Kabir Plaza, Beside Kabir Complex, Above IDBI Bank, Infront of Army Camp Manjalpur, Nr. Gupta Hospital, Bhavan's Makarpura Road, Manjalpur . **M : 9033063027 / 9033063028**

ANAND - IIT ASHRAM : 2nd Floor, HR Stone Building, Beside Croma Showroom, A.V. Road, Nr. Town Hall, Anand. **M: 9227777098, 8460009041.**

Bhayli - IIT ASHRAM : Akshar Pavilion, 3rd floor, Tower A, Nilamber Circle, Main rd, Bhayli, Vadodara, Gujarat 391410. **M : 6358891896, 9081062221**

PART - I : MENTAL ABILITY

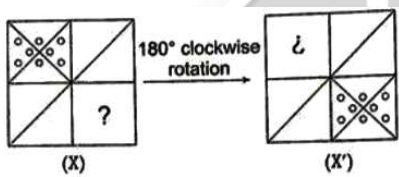
1.

Sol. (a) 1

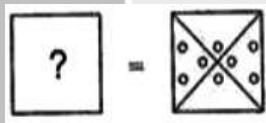
2.

Sol. (c) Here, the diagonally opposite parts have similar design.

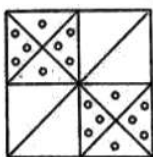
So, we can obtain the answer figure for the missing portion by rotating the question figure by 180°

Fig

Now, by comparing figures (O) and (X'), we get

Fig

So, it is clear that option (c) will replace (?) to make the question figure complete which look like as shown in the following figure.

Fig

3.

Sol. (b) 24

Out of all the numbers from the series, 24 is the only even number so option (b) will be the correct choice.

4.

Sol. (c) (Hint: Olive is a plant.)

5.

Sol. (d)

6.

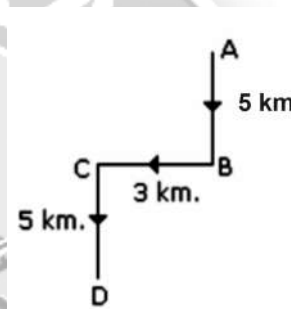
Sol. (c)

Total number of students = $6 + 1 + 33 = 40$

7.

Sol. (d) 4, 1, 5, 3, 2

8.

Sol. (d)

Hence required direction is South-West.

9.

Sol. (a) 1

10.

Sol. (c) 3

11.

Sol. (d) 4

12.

Sol. (c)

13.

Sol. (b) In the first pattern, 3 is added; in the second, 2 is subtracted.

14.

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

15.

Sol. (b) An ounce measures weight; the other choices measure length.

PART - II : MATHEMATICS

1.

Sol. (c) We know that the smallest three digit numbers are (0), 1 and 2. By arranging them in ascending order we get 012 which is a two digit number. Hence, 102 is the smallest three digit number.

2.

Sol. (d) It is given that $\frac{1}{5} - \frac{1}{6} = \frac{4}{x}$

LCM of 5 and 6 is 30

$$\frac{4}{x} = \frac{6}{30} - \frac{5}{30}$$

On further calculation $\frac{4}{x} = \frac{1}{30}$

So we get $x = 4(30) = 120$

3.

Sol. (b) Square numbers sequence is formed by adding consecutive odd numbers.

4.

Sol. (b) A beam of light from a lighthouse is an example of a ray.

5.

Sol. (c) A cell larger than all its adjacent cells in a table.

6.

Sol. (a) On a number line, -10 is farthest to the left.

7.

Sol. (b) If we are at floor +3 and press the "-" button 5 times, then we will be at $+3-5 = -2$.

8.

Sol. (b)

9.

Sol. (d) Distance is 1 km = 1000m

Perimeter of square park = 1000 m

Therefore side length = perimeter/ 4

$$= \frac{1000}{4} = 250 \text{ m}$$

So area of square park = side × side

$$= 250 \times 250 = 62500 \text{ m}^2.$$

10.

Sol. (a)

11.

Sol. (d)

12.

Sol. (a) Explanation: let's take an example.
 $\text{LCM}(3, 5) = 3 \times 5 = 15$.

13.

Sol. (b) let's assume the number is x .

Then half of the number = $\frac{x}{2}$

When added to 10 to it.

$$\frac{x}{2} + 10 = 15 \Rightarrow \frac{x+20}{2} = 15$$

14.

Sol. (b) Explanation: $(2y - x) + (3y - 5x) + (6x - 2y)$
 $= 2y - x + 3y - 5x + 6x - 2y$
 $= (2y - 2y + 3y) + (6x - x - 5x)$
 $= 3y + (6x - 6x) = 3y + 0 = 3y$

15.

Sol. (a) $2x - 5 = x - 4 \Rightarrow 2x - x = -4 + 5 \Rightarrow x = 1$

16.

Sol. (b) $3x + 8 = 3(-2) + 8 = -6 + 8 = 2$.

17.

Sol. (b) $66.16 > 61.6 > 60.61 > 6.61 > 6.16 > 1.61$

18.

Sol. (b) $1.01 + 0.9 = 1.91$

19.

Sol. (c) $0.75 = \frac{75}{100} = \frac{3}{4}$.

20.

Sol. (d) cost of 12 pencils = Rs. 39
 Therefore cost of 5 pencils

$$= 39 \times \frac{5}{12} = 16.25$$

21.

Sol. (b) HCF (91, 100) is 1.

Therefore $\frac{91}{100}$ is in simplest form.

22.

Sol. (c) $\frac{1}{4} = \frac{5}{20} \Rightarrow \frac{3}{5} = \frac{12}{20} \Rightarrow \frac{7}{10} = \frac{14}{20}$

$$\Rightarrow \frac{1}{2} = \frac{10}{20}$$

Therefore greatest is $\frac{14}{20} = \frac{7}{10}$.

23.

Sol. (a) $|-4 - 2| = |-6| = 6$.

24.

Sol. (c) Explanation: perimeter = $4 \times \text{side}$
 $= 4 \times 4.2 = 16.8$

25.

Sol. (a)

26.

Sol. (d) $1,99,999 + 1 = 2,00,000 = 2 \text{ Lakh}$

27.

Sol. (b) $\text{CDLXVIII} = 400 + 60 + 8 = 468$

28.

Sol. (b) Just for the example: $4 - 3 = 1$ but $3 - 4 = (-1)$
 If the order is change, Answer is also change. Therefore whole numbers does not following Commutative property under subtraction.

29.

Sol. (b) Divisibility rule of 9, if sum of all digits are divisible by 9 then the number too.

So $8 + 8 + 8 + 8 + 4 = 36 = 36 \div 9 = 4$.

So 88884 has 9 as a factor.

30.

Sol. (a)

In a day there is 24 hours

So, $\frac{8}{24} = \frac{1}{3}$

PART - III : PHYSICS & CHEMISTRY

1.

Sol. (b) A metal coin would allow the bulb to light up because it is a good conductor of electricity, enabling the flow of current between point A and point B and completing the circuit.

2.

Sol. (a) Light travels in a straight line, which is a fundamental principle in optics. However, light does not require a medium to travel; it can propagate through a vacuum, unlike sound waves which need a medium. Therefore, Statement-1 is correct, and Statement-2 is incorrect.

3.

Sol. (d) Permanent magnets can lose their magnetic properties due to factors like heat or impact, so Statement-1 is incorrect. Statement-2 is correct because storing magnets with like poles together can cause demagnetization. Statement-3 is incorrect because heating a magnet typically decreases its magnetic properties, not increases them.

4.

Sol. (c) To find the speed of the car, use the basic formula:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Speed} = \frac{85}{25} = 3.4 \text{ m/s}$$

5.

Sol. (c) Force is a vector quantity, which means it has both magnitude (amount of force) and direction (the direction in which the force is applied). Therefore, force has both magnitude and direction.

6.

Sol. (b) The phases of the moon are observed because the sunlight reflected by different parts of the moon reaches the Earth as it orbits around our planet, causing varying amounts of the illuminated surface to be visible from Earth.

7.

Sol. (b) The length of a shadow depends on the angle of the light source relative to the object. When the light source is low in the sky (like during sunrise or sunset), the angle between the light and the object is small, and the rays are almost parallel to the object — this creates the longest shadows.

If the light is directly overhead (perpendicular to the object), the shadow is shortest.

If the light is parallel to the object, it casts a very long.

So, the shadow is longest when the source of light and the object are parallel.

8.

Sol. (b) 55° , 55°

9.

Sol. (c) Tungsten is used as a filament in electric bulbs because it has a high melting point, which allows it to withstand the extremely high temperatures produced when electric current passes through it, without melting or deforming. It starts emitting light when its gets heated to very high temperatures.

10.

Sol. (a) Distance is always positive because it represents the total length of the path traveled, and lengths are non-negative values.

11.

Sol. (c) Acetone – Liquid has fixed volume but takes container's shape.

12.

Sol. (d) Solids like silver have strongest particle force.

13.

Sol. (b) Potassium's symbol is K.

14.

Sol. (a) Rubber doesn't pass electricity, so electricians use it.

15

Sol. (d) Petrol doesn't mix with water, others do.

16.

Sol. (c) Water evaporates from pot, makes it cool.

17.

Sol. (c) Germination of seed – Seed growing is a slow change.

18.

Sol. (d) Garbage pits, septic tanks, farm chemicals all pollute groundwater.

19.

Sol. (c) Fish and plants breathe oxygen mixed in water.

20

Sol. (a) Different size solids separated by sieve.

PART - IV : BIOLOGY

1.

Sol. (c) A is false, but R is true

The rib cage protects the heart and lungs, not the brain.

The skull protects the brain.

So, Assertion is false, but Reason is true.

2.

Sol. (c) Tribals or forest dwellers

Tribals or forest dwellers live in forests and rely on them for food, shelter, and livelihood.

3.

Sol. (b) Liver and blood

The malaria parasite (Plasmodium) first attacks the liver, then infects red blood cells.

4.

Sol. (b) Tasting and swallowing

The tongue has taste buds and also helps in pushing food to the throat for swallowing.

5.

Sol. (c) Small intestine

The small intestine is the main site for digestion and absorption of nutrients.

6.

Sol. (c) Plastic bag

Plastic bags do not decompose naturally and are harmful to the environment.

7.

Sol. (d) Rock

Abiotic components are non-living things like rocks, water, and sunlight.

8.

Sol. (b) Octopus

An octopus has no bones (it's an invertebrate) but moves using its muscular arms.

9.

Sol. (a) 11 and 12

The 11th and 12th pairs of ribs are called floating ribs because they are not attached to the sternum.

10.

Sol. (a) Saumya: Global warming increases the concentration of carbon dioxide in the atmosphere

Global warming is caused by the increase in greenhouse gases, especially carbon dioxide (CO₂). Saumya is correct.