



Hunt for
Young Talents



SCIENCE APTITUDE TEST CLASS - 8 SOLUTIONS

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PART - I : MENTAL ABILITY

1.

Sol. (c) 48

Pattern: +5, +7, +9, +11, +13 $\rightarrow 35 + 13 = 48$.

2.

Sol. (b) PLATER

AT↓
 ↓ATE
 LATE↓
 ↓LATER
 PLATER

3.

Sol. (c) 125

Pattern: $1^3=1$, $2^3=8$, $3^3=27$, $4^3=64$, $5^3=125$.

4.

Sol. (a) 2, 3, 1, 4

Dictionary order: Magnet (2), Manager (3), Mango (1), Mansion (4).

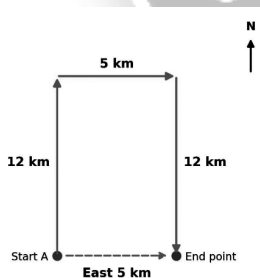
5.

Sol. (a) 1, 2, 3, 4

Logical sequence: Constitution $\rightarrow$ Election $\rightarrow$ Government $\rightarrow$ Oath Ceremony.

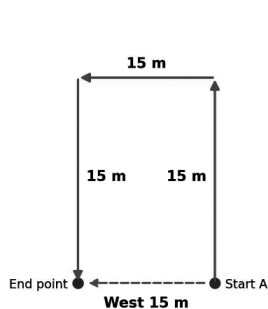
6.

Sol. (a) 5 m East



7.

Sol. (b) West



8.

Sol. (b) Nephew

Daughter of my mother = sister of the woman. Her son = woman's nephew.

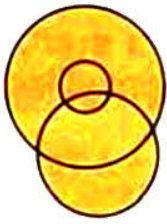
9.

Sol. (b) 36Pattern: $11^2=121$, $10^2=100$, $9^2=81$, $8^2=64$, $7^2=49$, $6^2=36$.

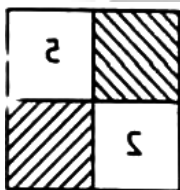
10.

Sol. (c) 159(Pattern: $__ \times 2 + 1$) $\Rightarrow 4 \times 2 + 1 = 9$, $9 \times 2 + 1 = 19$, $19 \times 2 + 1 = 39$, $39 \times 2 + 1 = 79$, $79 \times 2 + 1 = 159$.

11.

Sol. (b)

12.

Sol. (d)

13.

Sol. (b) 88

Verify with the first example (CAN = 36):

C = 3

A = 1

N = 14

Sum = $3 + 1 + 14 = 18$ Code = $18 \times 2 = 36$

Verify with the second example (BED = 22):

B = 2

E = 5

D = 4

Sum = $2 + 5 + 4 = 11$ Code = $11 \times 2 = 22$

Apply the pattern to CUT:

C = 3

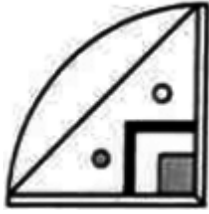
U = 21

T = 20

Sum = $3 + 21 + 20 = 44$ Code = $44 \times 2 = 88$

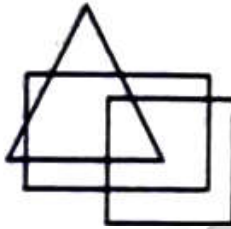
14.

Sol. (d)



15.

Sol. (b)



PART - II : MATHEMATICS

1.

Sol. (c) $4x + 7 = x + 2$

$$\Rightarrow 3x + 2 = 5x + 2 \rightarrow 2x = 0 \rightarrow x = 0 \text{ (integer)}$$

$$\Rightarrow 4x - 18 = 2 \rightarrow 4x = 20 \rightarrow x = 5 \text{ (integer)}$$

$$\Rightarrow 4x + 7 = x + 2 \rightarrow 3x = -5 \rightarrow x = -5/3 \text{ (neither integer nor fraction} \rightarrow \text{Actually } -5/3 \text{ is a fraction)}$$

$$\Rightarrow 5x - 8 = x + 4 \rightarrow 4x = 12 \rightarrow x = 3 \text{ (integer)}$$

So answer is (c) $4x + 7 = x + 2$ giving $x = -5/3$.

2.

Sol. (b) $\frac{13}{19}$

$$\frac{5x}{3} - 4 = \frac{2x}{5}$$

Multiply by 15: $25x - 60 = 6x$

$$\Rightarrow 19x = 60 \Rightarrow x = \frac{60}{19}$$

$$\Rightarrow |2x - 7| = \left| 2\left(\frac{60}{19}\right) - 7 \right| = \left| \frac{120}{19} - \frac{133}{19} \right| = \left| \frac{-13}{19} \right| = \frac{13}{19}$$

3.

Sol. (b) 24 cm

$$\text{Scale: } 1 \text{ cm} : 5 \text{ m} \rightarrow \text{Side in picture} = \frac{30}{5} = 6 \text{ cm}$$

$$\text{Perimeter} = 4 \times 6 = 24 \text{ cm.}$$

4.

Sol. (a) $196p^2q^4$

$$(4p) \times (-7q^3) \times (-7pq) = 4 \times (-7) \times (-7) \times p \times p \times q^3 \times q = 196p^2q^4.$$

5.

Sol. (a) 44

$$(7^{-1} - 8^{-1})^{-1} = \left(\frac{1}{7} - \frac{1}{8} \right)^{-1} = \left(\frac{1}{56} \right)^{-1} = 56 \Rightarrow (3^{-1} - 4^{-1})^{-1} = \left(\frac{1}{3} - \frac{1}{4} \right)^{-1} = \left(\frac{1}{12} \right)^{-1} = 12 \Rightarrow 56 - 12 = 44.$$

6.

Sol. (a) $\frac{4}{25}$

$$\left(\frac{-2}{5} \right)^7 \div \left(\frac{-2}{5} \right)^5 = \left(\frac{-2}{5} \right)^{7-5} = \left(\frac{-2}{5} \right)^2 = \frac{4}{25}.$$

7.

Sol. (c) $\frac{32}{75}$

Let other number = x.

$$\Rightarrow \frac{-15}{14} \times x = \frac{-16}{35} \Rightarrow x = \frac{-16}{35} \div \frac{-15}{14} = \frac{16}{35} \times \frac{14}{15} = \frac{224}{525} = \frac{32}{75}$$

8.

Sol. (b) is a negative rational number

Reciprocal of a negative rational number is also negative (e.g., reciprocal of $-2/3$ is $-3/2$).

9.

Sol. (a) $\frac{4}{3}$

$$\left(\frac{7}{12}\right)^{-4} \times \left(\frac{7}{12}\right)^{3x} = \left(\frac{7}{12}\right)^0 \Rightarrow -4 + 3x = 0 \Rightarrow 3x = 4 \Rightarrow x = \frac{4}{3}$$

10.

Sol. (c) n^2

Sum of first n odd numbers = n^2 .

11.

Sol. (d) 0

Divisibility by 9: sum of digits must be multiple of 9.

$$x + 4 + y + 5 + z = x + y + z + 9. \Rightarrow \text{Least value: } x+y+z+9 \Rightarrow x+y+z = 9 \text{ or } 0$$

But least value of should be 0.

12.

Sol. (c) $-6a + 17b$

Add like terms:

$$\Rightarrow x: (6a - 7a - 5a) = -6a \Rightarrow y: (4b + 2b + 11b) = 17b \Rightarrow z: (-c - 3c + 2c + 2c) = 0$$

$$\Rightarrow \text{Constants: } 3 + 4 - 1 - 6 = 0 \Rightarrow \text{Result} = -6a + 17b.$$

13.

Sol. (b) $m^2 + 1, m^2 - 1$

For $2m$ as one member, other two are $m^2 - 1$ and $m^2 + 1$.

14.

Sol. (b) 144

$$\text{LCM of } 2, 3, 8 = 24. \text{ Smallest perfect square divisible by } 24 = 24 \times 6 = 144 = (12^2).$$

15.

Sol. (c) 200

Let total marks be 'x'

$$40\% \text{ of } x = 30 + 50$$

$$\Rightarrow \frac{40}{100} \times (x) = 80 \Rightarrow x = 80 \times \frac{100}{40} = 200$$

16.

Sol. (a) 2

To make perfect square divide 128 by 2.

$$\Rightarrow 64 = 8^2.$$

17.

Sol: (a) 20

$$\text{Volume of cuboid} = 5 \times 2 \times 5 = 50 \text{ cm}^3$$

$$\Rightarrow \text{side of cube} = \text{LCM}(5, 2, 5) = 10 \text{ cm}$$

$$\Rightarrow \text{volume of cube} = 1000 \text{ cm}^3$$

$$\Rightarrow \text{Number of Cuboid} = \frac{1000}{50} = 20$$

18.

Sol. (a) $9.82 \times 10^{-4} \text{ m}$

$$0.982 \text{ mm} = 0.982 \times 10^{-3} \text{ m} = 9.82 \times 10^{-4} \text{ m}.$$

19.

Sol. (b) 1

Divisible by 9

$$\Rightarrow \text{Sum} = 1 + A + 2 + B + 5 = A + B + 8$$

$$\Rightarrow A + B + 8 = 9 \Rightarrow A + B = 1$$

20.

Sol. (c) 625

$$4x^2 + 20x + 25 = (2x + 5)^2$$

$$\Rightarrow \text{At } x = 10: (20 + 5)^2 = 25^2 = 625$$

21.

Sol. (d) $\frac{13}{9}$

$$\left(\frac{-3}{8}\right) \times \left(\frac{-24}{13}\right) = \frac{72}{104} = \frac{9}{13}. \text{ Multiplicative inverse} = \frac{13}{9}$$

22.

Sol. (b) $-19/4$

$$8x - 13 = 25 + 16x \rightarrow 8x - 16x = 25 + 13 \rightarrow -8x = 38 \rightarrow x = \frac{-38}{8} = \frac{-19}{4}$$

23.

Sol. (a) 30°

$$\text{Exterior angle} = \frac{360^\circ}{n} = \frac{360^\circ}{12} = 30^\circ$$

24.

Sol. (a) pie chart

A pie chart shows parts of a whole.

25.

Sol. (d) $\frac{6}{11}$

Total balls = 5+6 = 11

$$\Rightarrow \text{Yellow} = 6 \quad \Rightarrow \text{Probability} = \frac{\text{No. of fav outcomes}}{\text{Total outcomes}} \quad \Rightarrow \text{Probability} = \frac{6}{11}$$

26.

Sol. (c) 998

$$\text{Mean} = \frac{994+996+998+1000+1002}{5} = \frac{4990}{5} = 998.$$

27.

Sol. (b) 70The sum of supplementary angles = 180° .

$$\Rightarrow \text{Ratio } 7:11 \rightarrow 7x + 11x = 180^\circ. \quad \Rightarrow \quad x = 10. \text{ Smaller} = 7 \times 10 = 70^\circ.$$

28.

Sol. (d) Neither I nor II

I: False – positive rational needs like signs.

II: False – negative rational needs unlike signs.

29.

Sol. (b) 3 cm²

$$\text{Area of parallelogram} = \text{base} \times \text{height} = 3 \times 1 = 3 \text{ cm}^2.$$

30.

Sol. (c) PolyhedronsPrisms and pyramids are 3D solids with flat polygonal faces $\rightarrow$ Polyhedrons.

PART - III : PHYSICS & CHEMISTRY

1.

Sol. (b) 60 km

Speed = 120 km/h. Time = 30 minutes = 0.5 hours.

$\Rightarrow$ Distance = Speed $\times$ Time = $120 \times 0.5 = 60$ km.

2.

Sol. (c) Copper is a much better conductor of heat than stainless steel.

While metals are generally good conductors of heat, copper conducts heat significantly better and faster than stainless steel, allowing for even heat distribution while cooking.

3.

Sol. (d) 35°C to 42°C

A clinical thermometer is specifically designed to measure human body temperature, which normally hovers around 37°C. Therefore, its scale is restricted to the relevant physiological range of 35°C to 42°C.

4.

Sol. (d) The ball exerted a force on the wall, and the wall exerted a force on the ball.

When the ball hits the wall, it exerts a force on the wall, and the wall exerts a force back on the ball. This force changes the ball's direction, making it bounce back.

5.

Sol. (a) 50 Pa

Pressure is defined as Force per unit Area. Pressure = Force/Area

Pressure = $100 \text{ N} / 2 \text{ m}^2 = 50 \text{ N/m}^2$, which is equal to 50 Pa.

6.

Sol. (c) The formation of a rainbow

A rainbow is formed due to the dispersion of sunlight by tiny water droplets present in the atmosphere, which act like small prisms splitting white light into its constituent colors.

7.

Sol. (d) To automatically switch off the circuit when current exceeds a safe limit.

An MCB is a protective switch that automatically trips (turns off) and breaks the circuit if the current flow exceeds the designated safety limit, preventing electrical fires.

8.

Sol. (a) Lies approximately on the imaginary axis of rotation of the Earth.

The Pole Star is located directly above the Earth's geographic North Pole, perfectly aligning with the planet's axis of rotation. Because of this alignment, the star's relative position does not change as the Earth spins.

9.

Sol. (b) Inside a car or bus with the doors and windows completely closed.

A car with a metal body acts as a Faraday cage. If struck by lightning, the electric charge travels safely around the outer metallic shell and into the ground, protecting the occupants inside. This phenomenon is known as electrostatic shielding.

10.

Sol. (c) Exactly 50 N

Since the box is in a state of rest, the applied force and the resisting frictional force are perfectly balanced. The static friction self-adjusts to precisely counteract the applied force, meaning it is exactly 50 N.

11.

Sol. (c) Baking soda is a basic substance. Bases turn red litmus paper blue. The other options are acidic and would turn blue litmus red.

12.

Sol. (b) The reaction between carbon dioxide and lime water (calcium hydroxide) yields calcium carbonate, which is insoluble in water and forms a white precipitate, causing the milky appearance.

13.

Sol. (a) Quicklime (calcium oxide) is basic in nature. It will undergo a neutralization reaction with the excess acid in the soil, improving conditions for plant growth.

14.

Sol. (b) Distilled water is a compound (H_2O) and therefore a pure substance. Air, milk, and soil are all mixtures of various elements and compounds.

15.

Sol. (c) Ammonium chloride undergoes sublimation (changes directly from solid to gas on heating), while common salt (sodium chloride) does not. Heating the mixture allows the ammonium chloride to vaporize and be collected separately.

16.

Sol. (b) During a phase change (like melting at $0^\circ C$), the temperature remains constant. Since average kinetic energy is directly proportional to temperature, it remains constant. The heat energy added (latent heat) increases the potential energy by overcoming intermolecular forces.

17.

Sol. (a) Brass is an alloy (a solid homogeneous mixture of copper and zinc). Water is a compound made of hydrogen and oxygen chemically combined in a fixed ratio.

18.

Sol. (b) A hypothesis is a testable prediction or proposed explanation for a phenomenon, often formatted as an "if... then..." statement, which perfectly describes the student's statement.

19.

Sol. (b) Simple distillation is used to separate miscible liquids with different boiling points. The liquid with the lowest boiling point (Liquid A at $50^\circ C$) will vaporize first and be condensed and collected first.

20.

Sol. (c) A sharp melting/boiling point indicates a pure substance (element or compound). Since it can be chemically decomposed into simpler substances (two gases) via electricity, it cannot be an element. Thus, it is a chemical compound.

PART - IV : BIOLOGY

1.

Sol. (c) Reproduction through spore formation

2.

Sol. (a) Saliva

Saliva contains the enzyme salivary amylase which breaks down starch into simpler sugars like maltose.

3.

Sol. (b) Liver

The liver is the largest internal organ and gland, and it is reddish-brown in color.

4.

Sol. (d) Mustard

Mustard produces bisexual flowers (contain both stamens and carpels). Corn, papaya, and cucumber produce unisexual flowers.

5.

Sol. (b) Glucose is broken down in the presence of oxygen to release CO₂, water, & energy

Glucose is broken down in the presence of oxygen to release CO₂, water, & energy Solution: This is aerobic respiration:

Glucose + Oxygen → Carbon dioxide + Water + Energy

6.

Sol. (c) Increase in oxygen level in the atmosphere

Deforestation reduces oxygen production and increases CO₂, so oxygen levels decrease, not increase.

7.

Sol. (b) Number of times a person breathes in a minute

Breathing rate is measured as the number of breaths per minute (normal: 12-20 breaths/min).

8.

Sol. (a) Photosynthesis produces glucose and oxygen as end products.

Solution: Photosynthesis equation:



9.

Sol. (d) Secretes bile

Villi are finger-like projections in the small intestine for absorption. Bile is secreted by the liver, not by villi.

10.

Sol. (c) Arteries carry blood away from the heart under high pressure

Arteries carry oxygenated blood (except pulmonary artery) away from the heart under high pressure. Veins carry blood to the heart.