

(Section -I) SCIENCE

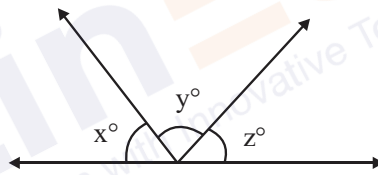
- The momentum of a body of mass 10 kg moving with a velocity of 5 m/s is
(A) 5 kg m/s (B) 50 kg m/s
(C) 500 kg m/s (D) 0.5 kg m/s
- Force that can produce an acceleration of 2 m/s^2 in a body of mass 25 kg is
(A) 50 N (B) 25 N
(C) 12.5 N (D) 100 N
- The rate of change of momentum of a body is a measure of acting on the body.
(A) pressure (B) force
(C) mass (D) inertia
- Two bodies of equal masses (m) moving with equal speed in opposite directions collide. The resultant velocity of the combination is
(A) v (B) $2v$
(C) $-v$ (D) zero
- A gun of mass 5 kg fires a 50 g bullet with a velocity of 200 m/s. The recoil velocity of the gun is.
(A) 2 m/s (B) 20 m/s
(C) 0.2 m/s (D) zero
- Number of atoms in 40 g of ${}^{40}_{20}\text{Ca}$ is
(A) N_A (B) $0.1 N_A$
(C) $12 N_A$ (D) $32 N_A$
(where N_A : Avogadro's number)
- Gram atoms and number of atoms respectively in 60 gram of carbon will be
(A) 5, 30.1×10^{23} (B) 5, 12.05×10^{23}
(C) 5, 6.02×10^{23} (D) 60, 12.04×10^{23}
- Mass of one atom of an element is 2.6578×10^{-23} g. Its mass in amu would be
(A) 14 amu (B) 16 amu
(C) 13 amu (D) 12 amu
- Molar mass of sulphuric acid is
(A) 98 g (B) 89 g

- (C) 86 g (D) 100 g
10. Which of the following is diatomic molecule?
(A) HCl (B) H₂O
(C) NH₃ (D) Xe
11. Normally, in the process of osmosis, the net flow of water molecules in or out of the cell depends upon differences in the
(A) concentration of water molecules inside and outside the cell
(B) Concentration of enzymes on either side of the cell membrane
(C) Rate of molecular motion on either side of the cell membrane
(D) Rate of movement of insoluble molecules inside the cell
12. The longest cell in the human body is
(A) Nerve cell (B) Muscle cell
(C) Liver cell (D) Kidney cell
13. The undefined nuclear region of prokaryotes is also known as
(A) Nucleus (B) Nucleolus
(C) Nucleic acid (D) Nucleoid
14. The outermost layer of our earth is called
(A) Mantle (B) Core
(C) Earth crust (D) Benthos
15. Major source of formation of soil is
(A) Rocks (B) Snow covered mountains
(C) River beds (D) Volcanoes
16. Four children were asked to arrange forces due to rolling, static and sliding frictions in an increasing order. Their arrangements are given below. Choose are correct arrangement.
(A) Rolling, Static, Sliding (B) Static, Rolling, sliding
(C) Rolling, sliding, Static (D) Sliding, Static, Rolling
17. The sole of the shoes becomes plain after wearing it for several months. The reason is
(A) Wearing out due to friction (B) Wearing out due to no friction
(C) Sole is of bad quality (D) None of the above
18. Soil erosion is caused due to
(A) Strong winds (B) Heavy rains
(C) Keeping the fields fallow for a long time (D) All of these

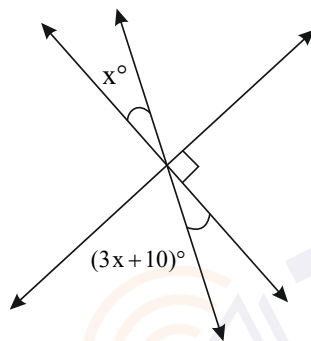
19. Soil erosion can be prevented by
(A) Terrace farming (B) Intensive cropping
(C) Deforestation (D) Both (A) and (B)
20. How many electrons weighs 1 kg ?
(A) 6.023×10^{23} (B) $\frac{1}{9.108} \times 10^{31}$
(C) $\left(\frac{6.023}{9.108}\right) \times 10^{54}$ (D) $\left(\frac{1}{9.108 \times 6.023}\right) \times 10^8$

(Section -II) MATHEMATICS

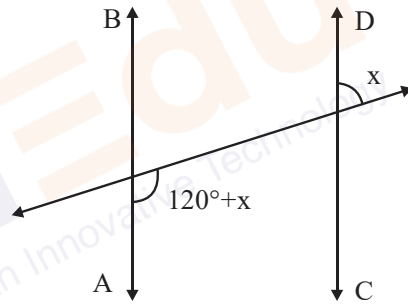
1. If $\frac{y}{x} = 5$ and $\frac{z}{x} = 4$, then the value of x is
(A) 8° (B) 18° (C) 12° (D) 15°



2. The value of x is



- (A) 12 (B) 15 (C) 20 (D) 30
3. If $AB \parallel CD$, then the value of x is



- (A) 20° (B) 30° (C) 45° (D) 60°

4. $\frac{2 \tan 30^\circ}{1 + \tan^2 30^\circ} =$

- (A) $\sin 60^\circ$ (B) $\cos 60^\circ$ (C) $\tan 60^\circ$ (D) $\sin 30^\circ$

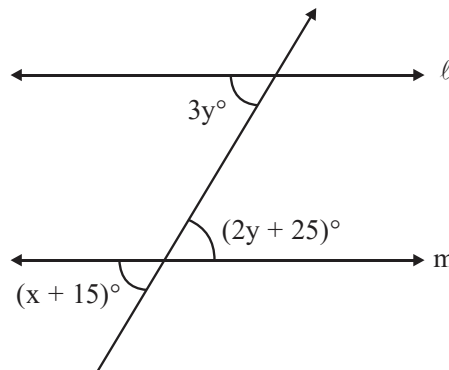
5. $\frac{2 \tan 30^\circ}{1 - \tan^2 30^\circ} =$

- (A) $\cos 60^\circ$ (B) $\sin 60^\circ$ (C) $\tan 60^\circ$ (D) $\sin 30^\circ$

6. If $\sin \theta = \sqrt{3} \cos \theta$, $0^\circ < \theta < 90^\circ$ then θ is equal to

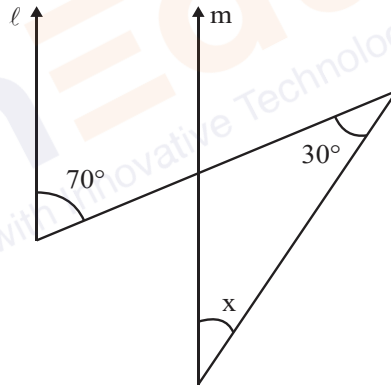
- (A) 30° (B) 45° (C) 60° (D) 90°

7. If $\ell \parallel m$, what is the value of x ?



- (A) 60° (B) 50° (C) 45° (D) 30°

8. If lines ℓ and m are parallel lines, then $x =$



- (A) 70° (B) 100° (C) 40° (D) 30°

9. If $\sqrt{3} \sin \theta - \cos \theta = 0$ and $0^\circ < \theta < 90^\circ$, find the value of θ

- (A) $\theta = 30^\circ$ (B) $\theta = 90^\circ$ (C) $\theta = 60^\circ$ (D) $\theta = 45^\circ$

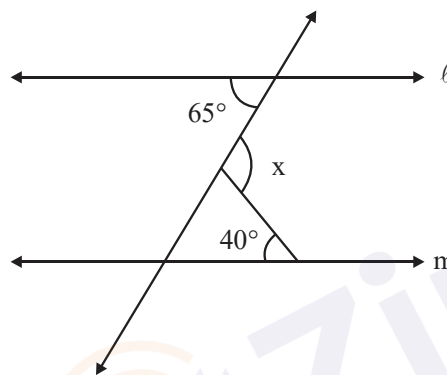
10. Find the value of θ if $2 \sin \theta = \sqrt{3}$

- (A) $\theta = 30^\circ$ (B) $\theta = 45^\circ$ (C) $\theta = 60^\circ$ (D) $\theta = 90^\circ$

11.
$$\frac{\tan^2 60^\circ + 4 \sin^2 45^\circ + 3 \sec^2 30^\circ + 5 \cos^2 90^\circ}{\operatorname{cosec} 30^\circ + \sec 60^\circ - \cot^2 30^\circ}$$

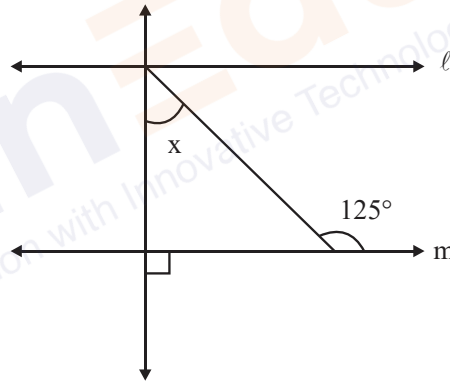
- (A) 10 (B) -10 (C) 9 (D) 8

12. If $\ell \parallel m$, then $x =$



- (A) 105° (B) 65° (C) 40° (D) 25°

13. If lines l and m are parallel, then the value of x is



- (A) 35° (B) 55° (C) 65° (D) 75°

14. $\frac{4}{\cot^2 30^\circ} + \frac{1}{\sin^2 60^\circ} - \cos^2 45^\circ$

- (A) $\frac{11}{6}$ (B) $\frac{13}{6}$ (C) 4 (D) $\frac{5}{6}$

(Section -III) MAT

1. Find the missing number in the following series

83, 82, 81,, 69, 60, 33

- (A) 73 (B) 80 (C) 75 (D) 77

2. Find the missing number in the following series

1, 2, 3, 5, 7,

- (A) 8 (B) 9 (C) 10 (D) 13

3. Find the missing number in the following series

4, 32, 128, (.....)

- (A) 128 (B) 144 (C) 192 (D) 256

4. Find the missing number in the following series

24, 60, 120, 210, (.....)

- (A) 300 (B) 336 (C) 420 (D) 525

5. Find the missing number in the following series

5, 2, 6, 2, 7, 2, (.....)



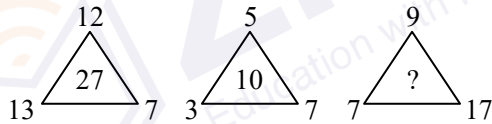
- (A) 8 (B) 9 (C) 10 (D) 11

6. Find the missing number in the following series

4, 5, 9, 18, 34, (.....)

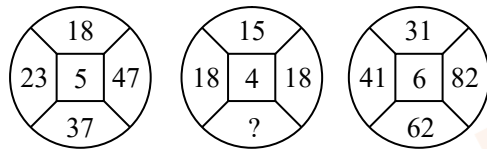
- (A) 43 (B) 49 (C) 50 (D) 59

7. Find the missing number



- (A) 25 (B) 20 (C) 27 (D) 28

8. Find the missing number



- (A) 13 (B) 15 (C) 17 (D) 14

9. Find the missing number

2	72	18
9	9	162
?	32	128

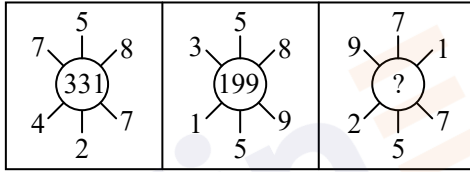
- (A) 4 (B) 50 (C) 02 (D) 15

10. Find the missing number

15	6	5
13	3	9
8	2	?
20	7	13

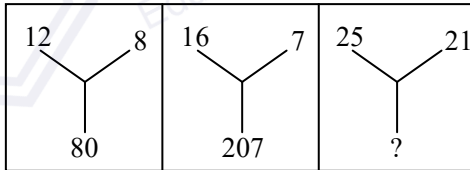
- (A) 1 (B) 4 (C) 6 (D) 7

11. Find the missing number



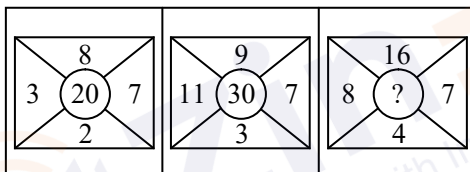
- (A) 280 (B) 441 (C) 653 (D) 714

12. Find the missing number



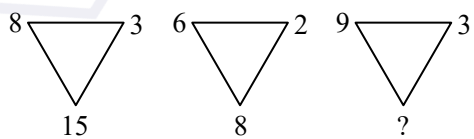
- (A) 425 (B) 241 (C) 210 (D) 184

13. Find the missing number



- (A) 40 (B) 25 (C) 29 (D) 35

14. Find the missing number



- (A) 18 (B) 15 (C) 16 (D) 12

15. One term in the number series is wrong. Find out the wrong term.

1, 3, 7, 15, 27, 63, 127

- (A) 7 (B) 15 (C) 27 (D) 63

16. One term in the number series is wrong. Find out the wrong term.

8, 13, 21, 32, 47, 63, 83

- (A) 13 (B) 32 (C) 47 (D) 63

**ANSWER KEY
SCIENCE**

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|---------|---------|---------|---------|---------|---------|
| 1. (B) | 2. (A) | 3. (B) | 4. (D) | 5. (A) | 6. (A) |
| 7. (A) | 8. (B) | 9. (A) | 10. (A) | 11. (A) | 12. (A) |
| 13. (D) | 14. (C) | 15. (A) | 16. (C) | 17. (A) | 18. (D) |
| 19. (D) | 20. (D) | | | | |

MATHEMATICS

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|---------|---------|---------|---------|---------|--------|
| 1. (B) | 2. (C) | 3. (B) | | | |
| 4. (A) | 5. (C) | 6. (C) | 7. (A) | 8. (C) | 9. (A) |
| 10. (A) | 11. (C) | 12. (A) | 13. (A) | 14. (B) | |

MAT

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|---------|---------|---------|---------|---------|---------|
| 1. (D) | 2. (C) | 3. (D) | 4. (B) | 5. (A) | 6. (D) |
| 7. (D) | 8. (A) | 9. (C) | 10. (A) | 11. (D) | 12. (D) |
| 13. (D) | 14. (A) | 15. (C) | 16. (C) | | |