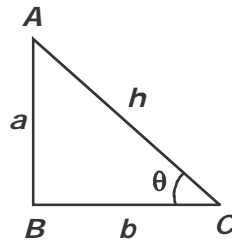
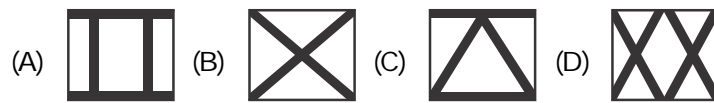


- 1 In $\triangle ABC$, if $\angle B = 90^\circ$ and the numbers denoting the length of 'h' and 'a' are consecutive integers, find $\sin\theta$ in terms of 'b'.

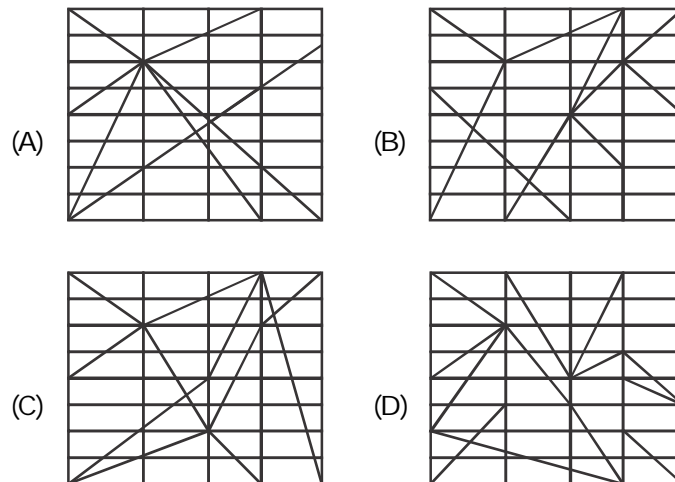
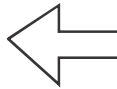


- (A) $\frac{b-1}{b+2}$ (B) $\frac{b-1}{b+1}$ (C) $\frac{b^2-1}{b^2+1}$ (D) $\frac{b-2}{b^2-1}$
- 2 Find the unit digit of $1 + 9 + 9^2 + \dots + 9^{2008}$.
- (A) 3 (B) 9 (C) 1 (D) 0
- 3 A man arranges to pay off a debt of ₹ 36000 by 40 annual instalments which are in A.P. When 30 of the instalments are paid he dies leaving one third of the debt unpaid. Find the value of 12th instalment.
- (A) 530 (B) 510 (C) 340 (D) 730
- 4 If α, β are the roots of $x^2 + px + 1 = 0$ and γ, δ are the roots of $x^2 + qx + 1 = 0$, find $(\alpha - \gamma)(\beta - \gamma)(\alpha + \delta)(\beta + \delta)$.
- (A) $2q^2$ (B) $2p^2$ (C) $p^2 - q^2$ (D) $q^2 - p^2$
- 5 If the sides of a triangle are doubled, what is the effect on its area?
- (A) remains same (B) is doubled
 (C) becomes 4 times (D) Can't say

6 → Which shape continues the picture sequence?



7 → In which of the following the given figure is hidden?



- 8 **If $A \times B$ means A is to the South of B ,
 $A + B$ means A is to the North of B ,
 $A \div B$ means A is to the East of B ,
 $A - B$ means A is to the West of B ,
then in $P \div Q + R - S$, S is in which direction with respect to Q ?**
- (A) South-west (B) South-east
(C) North-east (D) North-west

- 9 **How many pairs of letters are there in the word CREATIVE which have as many letters between them in the word as in the English alphabet?**
- (A) One (B) Two (C) Three (D) Four

- 10 **A and B are children of D . Which of the given statements I and II is necessary to answer the question below the box?**

- (i) C is the brother of A
and the son of E .
(ii) F is the mother of B .

Who is the father of A ?

- (A) Only (i) (B) Only (ii)
(C) Either (i) or (ii) (D) Both (i) and (ii)

- 11 **What is a wireless technology built in electronic gadgets used for exchanging data over short distances?**
- (A) Bluetooth (B) Wifi
(C) Modem (D) USB
- 12 **What do you mean by verification of login name and password?**
- (A) Access (B) Login
(C) Authentication (D) Logout
- 13 **Which of the following memory has the shortest access time?**
- (A) Read only memory (B) Virtual memory
(C) Random access memory (D) Cache memory
- 14 **What is the collection of user message on various subjects that are posted on worldwide network?**
- (A) Telnet (B) Usenet
(C) Arpanet (D) Internet
- 15 **What does JPEG stands for?**
- (A) Junction Point Exchange Group
(B) Joint Point Exchange Group
(C) Joint Photographic Experts Group
(D) Junction Photographic Experts Group

- 16 **Which of the following words is suitable for the given blank?**

Having _____, Vivek does not like birds.

- (A) ornithophobia (B) pediophobia
(C) claustrophobia (D) ranidaphobia

- 17 **Identify the right option to correct this incorrect one.**

He said that he was studying since morning.

- (A) he had studied (B) he was going to
(C) he had been studying (D) he studies

- 18 **What does 'ALLEGIANCE' mean?**

- (A) Devotion (B) Dedication
(C) Compassion (D) Loyalty

- 19 **Identify the MISSPELT word.**

- (A) Sarcophagus (B) Maintenance
(C) Lieutenant (D) Reincarnation

- 20 **Which option can replace the blank in the given sentence?**

We cannot use this machine as the secretary has set a _____ policy.

- (A) pinch of salt (B) dog in the manger
(C) drug on the market (D) life in the fast lane



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Solutions for Sample Questions

class : 10

Mental Ability

1. (C) $h^2 = a^2 + b^2$, since, a and h are consecutive integers, $h = a + 1$

$$\Rightarrow (a + 1)^2 = a^2 + b^2$$

$$\Rightarrow b^2 = 2a + 1$$

$$\Rightarrow a = \frac{b^2 - 1}{2}$$

$$\Rightarrow h = \frac{b^2 + 1}{2}$$

$$\text{So, } \sin\theta = \frac{a}{h} = \frac{b^2 - 1}{b^2 + 1}$$

2. (C) The unit digit of each term successively 1, 9, 1, 9, 1, 9,

The unit digit of sum of first two terms is 0.

The unit digit of sum of first three terms is 1.

The unit digit of sum of first four terms is 0.

Hence, the digit in units place is 0 or 1 depending on number of terms i.e., even or odd respectively. So, the unit digit of the sum of 2009 terms is **1**.

3. (D) $36000 = \frac{40}{2} \{2a_1 + (40 - 1)d\}$

$$\Rightarrow 1800 = 2a_1 + 39d \quad \dots (i)$$

$$\text{and } \frac{2}{3} \times 36000 = \frac{30}{2} \{2a_1 + (30 - 1)d\}$$

$$\Rightarrow 1600 = 2a_1 + 29d \quad \dots (ii)$$

From (i) and (ii), $a_1 = 510$ $d = 20$.

Value of 12th instalment = a_{12}

$$= 510 + (12 - 1) \times 20 = \mathbf{730}$$

4. (D) α and β are the roots of $x^2 + px + 1 = 0$

$$\Rightarrow \alpha + \beta = -p, \alpha\beta = 1$$

γ and δ are the roots of $x^2 + qx + 1 = 0$

$$\Rightarrow \gamma\delta = 1$$

$$\gamma^2 + q\gamma + 1 = 0 \Rightarrow \gamma^2 + 1 = -q\gamma$$

$$\delta^2 + q\delta + 1 = 0 \Rightarrow \delta^2 + 1 = -q\delta$$

$$(\alpha - \gamma)(\beta - \gamma)(\alpha + \delta)(\beta + \delta)$$

$$= [\alpha\beta - \gamma(\alpha + \beta) + \gamma^2] [\alpha\beta + \delta(\alpha + \beta) + \delta^2]$$

$$= (1 + p\gamma + \gamma^2)(1 - p\delta + \delta^2)$$

$$= (p\gamma - q\gamma)(-p\delta - q\delta)$$

$$= -\gamma\delta(p - q)(p + q)$$

$$= -(p^2 - q^2) = \mathbf{q^2 - p^2}$$

5. (C) Let the original sides be a, b, c, then

$$s = \frac{1}{2}(a + b + c)$$

and area of the triangle

$$= \sqrt{s(s - a)(s - b)(s - c)}$$

For the new triangle, the sides are 2a, 2b, 2c

$$\text{Then, } S = \frac{1}{2}(2a + 2b + 2c)$$

$$= a + b + c = 2s$$

\therefore Area of new triangle

$$= \sqrt{S(S - 2a)(S - 2b)(S - 2c)}$$

$$= \sqrt{2s(2s - 2a)(2s - 2b)(2s - 2c)}$$

$$= \sqrt{16s(s - a)(s - b)(s - c)}$$

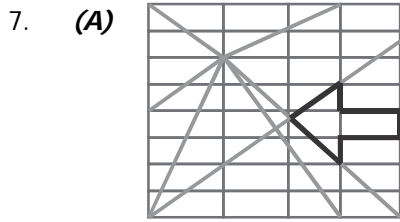
$$= 4\sqrt{s(s - a)(s - b)(s - c)}$$

$$= 4 \times (\text{area of original triangle})$$

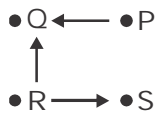
\therefore Area becomes **4 times** of original area.

Reasoning

6. (C) Draw a vertical line at the centre in each figure. Turn the book 90° clockwise, the figures are water images of the letters I, J, K, L and M. Hence the next one is **N**.



8. (B) According to $P \div Q + R - S$



∴ S is in the **South-east** of Q.

9. (C) C R E A T I V E
3 18 5 1 20 9 22 5
-

Hence, **3 pairs** are possible.

10. (B) A and B are children of D.
From 1: C is the brother B and son of E.
Since, the sex of D and E are not known.
Hence, 1 is not sufficient to answer the question.

From 2: F is the mother of B. Hence, F is also the mother of A. Hence, D is the father of A. Thus, 2 is sufficient to answer the question.

Computers

11. (A) **Bluetooth** is a wireless technology built in electronic gadgets used for exchanging data over short distances.
12. (C) Verification of login name and password is known as **authentication**.
13. (D) **Cache memory** has the shortest access time.
14. (B) The collection of user messages on various subjects that are posted on world wide network is called **usenet**.
15. (C) JPEG stands for "**Joint Photographic Experts Group**".

English

16. (A) Having **ornithophobia**, vivek does not like birds.
17. (C) He said that **he had been studying** since morning.
18. (D) Allegiance means **Loyalty**.
19. (A) The correct spelling of Sarcofhagus is **Sarcophagus**.
20. (B) Dog in the manger



