



INTERNATIONAL BACCALAUREATE DIPLOMA PROGRAMME

TEST FOR ENROLLMENT TO IBDP

MATH PRE-KNOWLEDGE TEST

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EDUCATION SYSTEM

1. Simplify:

$$3x^2 (-2x^3)^2$$

- A) $-12x^8$ B) $6x^6$ C) $12x^8$ D) $-6x^8$

2. Solution the following equation:

$$\log_2 x + \log_2 (x - 3) = 2, \text{ is:}$$

- A) 4 B) -1 C) $\{4, -1\}$ D) $\{-4, 1\}$

3. In a triangle with $\angle A=30^\circ$, $\angle B=60^\circ$ and $BC=\sqrt{2}$, the length of AC is:

- A) $\sqrt{2}$ B) $\sqrt{6}$ C) $\sqrt{3}$ D) 1

4. The number of solutions of trigonometric equation:

$$2 \sin^2 \theta = \sin \theta + 1, \text{ satisfying the condition: } -\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2} \text{ is:}$$

- A) 0 B) 1 C) 2 D) 3

5. Simplify:

$$\frac{2\sqrt{2}}{\sqrt{3}} - \frac{\sqrt{6}}{2}$$

- A) $\frac{\sqrt{6}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{6}}{6}$ D) $\frac{\sqrt{2}}{6}$

6. Solution of the equation:

$$\frac{6}{5-x} = \frac{4}{x} \text{ is:}$$

- A) 4 B) 2 C) 5 D) 20

7. The sum of two numbers is 31. Twice the smaller number is 11 more than larger number. These two numbers are:

- A) 15 and 16 B) 14 and 17 C) 11 and 20 D) 10 and 21

8. The inverse function of

$$f(x) = \frac{x}{3} - 2 \text{ is:}$$

- A) $y = 2(x - 3)$ B) $y = 3(x - 2)$ C) $y = 2(x + 3)$ D) $y = 3(x + 2)$

9. A price of a T-shirt after discount of 20% is \$52. What was the price before discount?

- A) \$60 B) \$64 C) \$65 D) \$70

10. If $\sin x = \frac{5}{13}$, $\frac{\pi}{2} \leq x \leq \pi$, then $\tan x$ is equal to:

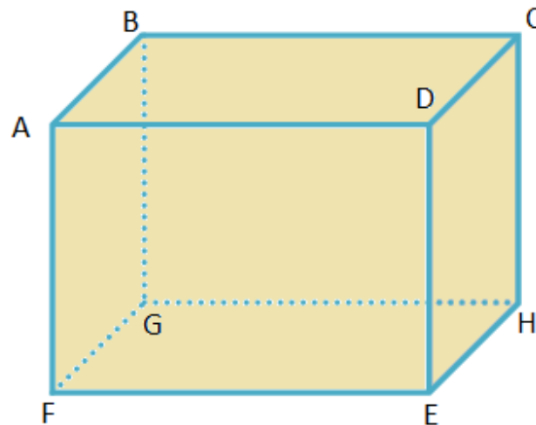
- A) $-\frac{5}{12}$ B) $\frac{5}{13}$ C) $\frac{5}{12}$ D) $-\frac{5}{13}$

11. The complex number $z = x + yi$ ($i^2 = -1$) that satisfies the following equation:

$$z(1+i) = 3 - 2i \text{ is:}$$

- A) $\frac{1}{2} + \frac{5}{2}i$ B) $\frac{1}{2} - \frac{5}{2}i$ C) $\frac{3}{2} + \frac{5}{2}i$ D) $1 + i$

12. Let $AB = 6$ cm, $BE = 8$ cm and $DE = 10$ cm.



The volume and surface area of the following cuboid are:

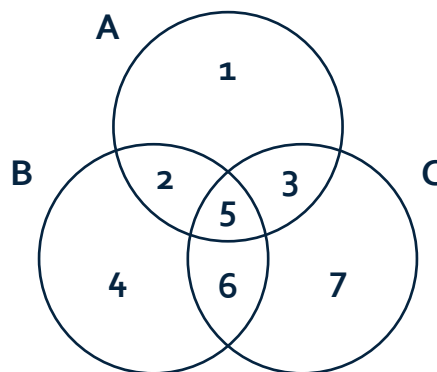
- A) $V=280 \text{ cm}^3$, $S=376 \text{ cm}^2$ B) $V=480 \text{ cm}^3$, $S=244 \text{ cm}^2$ C) $V=240 \text{ cm}^3$, $S=144 \text{ cm}^2$ D) $V=480 \text{ cm}^3$, $S=376 \text{ cm}^2$

13. Solutions of the following exponential equation:

$$4 \times 3^{x+1} - 3^{x+1} = 9 \text{ are:}$$

- A) $\{-1,1\}$ B) $\{0,1\}$ C) $\{1,2\}$ D) $\{0,2\}$

14. The set $(A \cup B)' \cap C$ on Venn diagram (where A' denotes complement of the set A)



is equal to:

- A) $\{5,6\}$ B) $\{2,3,5,6\}$ C) $\{7\}$ D) $\{1,2,3\}$