Unified International Mathematics Olympiad

UIMO SAMPLE QUESTIONS

CLASS - 07

MATHEMATICS - 1

01. $\frac{1}{2}$ **is subtracted from a number and the difference is multiplied by 4. If 25 is added to the product and the sum is divided by 3, the result is equal to 10. Find the number.**

(A) $\frac{3}{5}$ (B) $\frac{7}{4}$ (C) $\frac{6}{7}$ (D) $\frac{1}{6}$

02. **A student has to secure 35% marks to pass in a test. He got 80 marks and failed by 60 marks. Find the maximum marks of the test.**

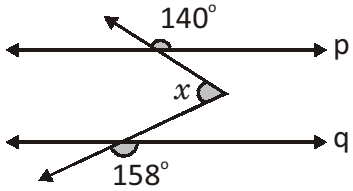
(A) 100 (B) 200 (C) 300 (D) 400

03. **What is the largest possible area of a rectangle with integer sides and perimeter 22 units ?**

(A) 28 sq. units (B) 30 sq. units

(C) 32 sq. units (D) 24 sq. units

04. **Assume p || q in the figure shown. Find the measure of angle 'x'.**



(A) 18° (B) 22° (C) 62° (D) 48°

05. **What value of 'x' makes the average of the first three numbers in the list given equal to the average of the last four ?**

15, 5, x, 7, 9, 17

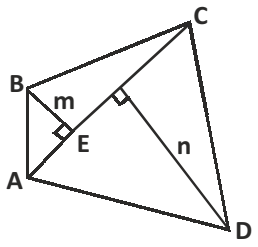
(A) 19 (B) 21 (C) 24 (D) 27

MATHEMATICS - 2

01. **Which 'm' are equal ?**

(A) 3m + 7 = –5 (B) 11m – 29 = 15 (C) 8 – 9m = 44 (D) 7m + 32 = 4

02. **ABCD is a rectangle and m and n are perpendiculars drawn on to AC from B and D. Find area of the quadrilateral ABCD.**



(A) $\left(\frac{1}{2}AC \times m\right) + (n + CF)$ (B) $\frac{1}{2}AC(m + n)$

(C) ar (ΔABC) + ar (ΔACD) (D) $\frac{1}{2}(m \times n)\,AC$

03. **Which of the following can be sets of angles of a triangle ?**

(A) 75°, 45°, 60° (B) 100°, 40°, 50° (C) 110°, 50°, 20° (D) 30°, 60°, 90°

04. **If $64^a = \frac{1}{256^b}$ then 3a + 4b + 1 = _____**

(A) $(64^a)°$ (B) $\left(\frac{1}{256^b}\right)^\circ$ (C) $64^a \times 256^b$ (D) $(64^a \times 256^b)°$

05. **Let $\left(\frac{x}{7} - \frac{y}{8}\right)$ and (8x – 7y) are the two terms then**

(A) $\left(\frac{x}{7} - \frac{y}{8}\right) + (8x - 7y) = \frac{57x}{7} - \frac{57y}{8}$ (B) $(8x - 7y) - \left(\frac{x}{7} - \frac{y}{8}\right) = \frac{55x}{7} - \frac{57y}{8}$

(C) $\frac{(8x - 7y)}{\left(\frac{x}{7} - \frac{y}{8}\right)} = 56$ (D) $\left(\frac{x}{7} - \frac{y}{8}\right)(8x - 7y) = \frac{8x^2}{7} - 2xy + \frac{7y^2}{8}$

REASONING

01. **What comes next in the given series ?**

LXB, FRC, DTE, ?

(A) GPD (B) AZZ (C) SIR (D) CFC

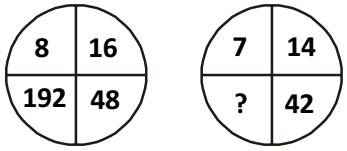
02. **In the English alphabet which letter is exactly midway between the 6th letter from the left and 7th letter from the right ?**

(A) K (B) L (C) M (D) J

03. **If South-East becomes North, North-East becomes West and so on, what will East become ?**

(A) North-East (B) South-East (C) North-West (D) South-West

04. **Find the missing number.**



(A) 126 (B) 84 (C) 168 (D) 252

05. **If P denotes ÷, Q denotes ×, R denotes + and S denotes –, find the value of 18 Q 12 P 4 R 5 S 6 when simplified.**

(A) 36 (B) 53 (C) 59 (D) 65

CRITICAL THINKING

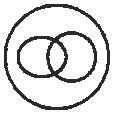
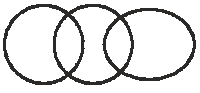
01. **Arrange the words given below in a meaningful sequence.**

1. Probation **2. Interview** **3. Selection**

4. Appointment **5. Advertisement**

(A) 5, 3, 2, 4, 1 (B) 5, 4, 2, 3, 1 (C) 5, 2, 3, 4, 1 (D) 5, 4, 2, 1, 3

02. **Which option best resembles the representation for Engineer, Doctor and People ?**

(A)  (B)  (C)  (D) 

03. **You are alone in the house and there is quite a danger of thieves around. Just then, you hear a knock at the door. You would:**

(A) open the door to see who is there.

(B) first peep out from the window to conform whether you know the person.

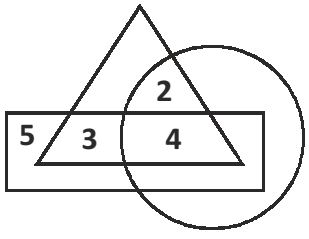
(C) not open the door.

(D) ask the servant to see who is there.

04. **Today is Friday. Which day of the week will it be 90 days later, including today ?**

(A) Thursday (B) Wednesday (C) Saturday (D) Sunday

05. **In the given figure if triangle represents healthy people, rectangle represents old persons and circle represents men. Then how many men are healthy but not old ?**



(A) 3 (B) 4 (C) 6 (D) 2

KEY & SOLUTION

MATHEMATICS - 1

01. **(B)** Let the number be x.

$$\frac{4\left(x-\frac{1}{2}\right)+25}{3}=10$$

$$4\left(x-\frac{1}{2}\right)+25=30$$

$$4\left(x-\frac{1}{2}\right)=30-25$$

$$x-\frac{1}{2}=\frac{5}{4}$$

$$x=\frac{5}{4}+\frac{1}{2}=\frac{5+2}{4}=\frac{7}{4}$$

02. **(D)** Let the maximum marks be x.

Given 35% of x = (80 + 60)

$$\frac{35}{100}\times(x)=140$$

$$x=140\times\frac{100}{35}=400$$

03. **(B)** Given 2(l + b) = 22 units

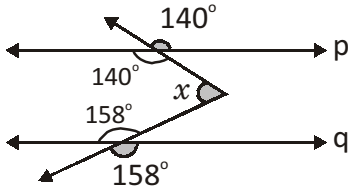
l + b = 11 units

Sum is 11 and area is maximum

if l = 6 units and b = 5 units

Area = 30 units^2

04. **(C)**



05. **(A)** $\frac{15+5+x}{3}=\frac{x+7+9+17}{4}$

4(20 + x) = 3(x + 33)

80 + 4x = 3x + 99

x = 99 – 80 = 19

MATHEMATICS - 2

01. **(A,C,D)** (A) $3m = -5-7$, $3m = -12$, $m = -\frac{12}{3} = -4$ (B) $11m = 15+29$, $11m = 44$, $m = \frac{44}{11} = 4$ (C) $-9m = 44-8$, $-9m = 36$, $m = \frac{36}{-9} = -4$ (D) $7m = 4-32$, $7m = -28$, $m = -\frac{28}{7} = -4$

02. **(B,C,D)** Area of quadrilateral ABCD = Area of ΔABC + Area of ΔACD

$= \frac{1}{2} AC (BE + CF) = \frac{1}{2} AC (m + n)$

03. **(A,C,D)** (A) $75° + 45° + 60° = 180° \Rightarrow$ 75°, 45°, 60° are the angles of a triangle

(B) $100° + 40° + 50° = 190° \neq 180° \Rightarrow$ 100°, 40°, 50° are not the angles of a triangle

(C) $110° + 50° + 20° = 180° \Rightarrow$ 110°, 50°, 20° are the angles of a triangle

(D) $30° + 60° + 90° = 180° \Rightarrow$ 30°, 60°, 90° are the angles of a triangle

04. **(A,B,D)** $64^a = \frac{1}{256^b} \Rightarrow \left(4^3\right)^a = \frac{1}{\left(4^4\right)^b}$

$\Rightarrow 4^{3a} = \frac{1}{4^{4b}}$

$\Rightarrow 4^{3a} = -4^{-4b}$

$\therefore 3a = -4b$

$3a + 4b = 0$

$\therefore 3a + 4b + 1 = 0 + 1 = 1$

(A) $(64^a)° = 1$ (B) $\left(\frac{1}{256^b}\right)^\circ = 1$ (C) $(64^a \times 256^b)° = 1$

05. **(A,C,D)** (A) $\left(\frac{x}{7}-\frac{y}{8}\right)+(8x-7y) = \frac{x}{7}+8x-\frac{y}{8}-7y = \frac{x+56x}{7}-\left(\frac{y+56y}{8}\right) = \frac{57x}{7}-\frac{57y}{8}$

(B) $8x-7y-\frac{x}{7}+\frac{y}{8} = 8x-\frac{x}{7}+\left(\frac{y}{8}-7y\right) = \frac{55x}{7}-\frac{55y}{8}$

(C) $\frac{(8x-7y)}{\frac{(8x-7y)}{56}} = (8x-7y)\frac{(56)}{(8x-7y)} = 56$

(D) $\frac{x}{7}\times 8-\frac{7xy}{7}-\frac{8xy}{8}+\frac{7y^2}{8} = \frac{8x^2}{7}-2xy+\frac{7y^2}{8}$

REASONING

01. **(B)** L X B = 12 24 2 $24 \div 12 = 2$

F R C = 6 18 3 $18 \div 6 = 3$

D T E = 4 20 5 $20 \div 4 = 5$

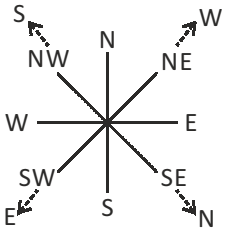
A Z Z = 1 25 25 $25 \div 1 = 25$

02. **(C)** 6^{th} letter from left is F and 7^{th} letter from right is T

F G H I J K L (M) N O P Q R S T

Middle letter

03. **(D)** Southwest becomes East



04. **(C)** $8 \times 1 = 8$ Similarly

$8 \times 2 = 16$ $7 \times 1 = 7$

$8 \times 6 = 48$ $7 \times 2 = 14$

$8 \times 24 = 192$ $7 \times 6 = 42$

$7 \times 24 = 168$

05. **(B)** $18 \times 12 \div 4 + 5 - 6$

$= 18 \times 3 + 5 - 6 = 53$

CRITICAL THINKING

01. **(C)** Advertisement → Interview → Selection → Appointment → Probation.

02. **(B)** Both engineer and doctor are people. But, both of them are different from each other.

03. **(B)** First peep out from the window to conform whether you know the person.

04. **(B)** Sun Mon Tue Wed Thu Fri Sat

Today

R3 R4 R5 R6 R0 R1 R2

$90 \div 7 = 12$ R 6

It will be a Wednesday 90 days later.

05. **(D)** There are 2 men healthy but not old.