AIMS Maths Competition 2021 Senior Round 1

1 If $3 + 5x = 28$, the value of $x$ is
**(A)** 20 **(B)** 3.5 **(C)** 5 **(D)** 6.2 **(E)** 125

2 A moto travels at 12 km per hour. How many kilometres does the moto dirve in 10 minutes?
**(A)** 120 **(B)** 1.2 **(C)** 2 **(D)** 2.4 **(E)** 1.67

3 If Mukesh got 80% on a test which has a total of 50 marks, how many marks did he get?
**(A)** 40 **(B)** 62.5 **(C)** 10 **(D)** 45 **(E)** 35

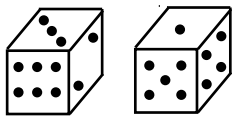
4 The least integer that is greater than $(2 + \sqrt{3})^2$ is?
**(A)** 13 **(B)** 14 **(C)** 15 **(D)** 16 **(E)** 17

5 If $100^{25} + 25$ is expressed as an integer, the sum of it's digits is:
**(A)** 6 **(B)** 52 **(C)** 26 **(D)** 8 **(E)** 219

6 A rectangle has a perimeter of 48 cm. It's length is 17 cm. What is the width?
**(A)** 30 **(B)** 7 **(C)** 15 **(D)** 20 **(E)** 17

7 If $3^{36} = 9^{n}$ what is the value of $n$
**(A)** 6 **(B)** 18 **(C)** 4 **(D)** 8 **(E)** 12

8 The numbers on opposite sides of a die total 7. For example, 5 and 2 are on opposite sides, 6 and 1 are on opposite sides. What is the sum of the numbers on the unseen faces of the two dice shown?



**(A)** 14 **(B)** 20 **(C)** 21
**(D)** 24 **(E)** 30

9 How many distinct real solutions does the equation $((x^2 - 2)^2 - 5)^2 = 1$ has?
**(A)** 4 **(B)** 5 **(C)** 6 **(D)** 7 **(E)** 8

10 Let $a \star b = \frac{a \cdot b}{a+b} = m$ remainder $n$, for example $5 \star 3 = \frac{5 \cdot 3}{5+3} = 1$ remainder 7, Find $x$, if $6 \star x = 3$ remainder 3
**(A)** 7 **(B)** 9 **(C)** 11 **(D)** 10 **(E)** 13

11 John has two 20 Rwf coins and three 50 Rwf coins in his pockets.He takes two coins out of his pocket, at random one after the other without replacement.What is the probability that the total value of the coins taken out is 70 Rwf?
**(A)** $\frac{6}{25}$ **(B)** $\frac{3}{10}$ **(C)** $\frac{12}{25}$ **(D)** $\frac{3}{5}$ **(E)** $\frac{3}{5}$

12 How many integer solutions $(x, y, z)$ are there to the equation $xyz = 2008$
**(A)** 30 **(B)** 60 **(C)** 90 **(D)** 120 **(E)** 150

13 A circle with radius $x$ cm is inscribed inside a right-angled triangle. The right angled triangle has a hypotenuse of 9 cm and its area is 36 $cm^2$. Find the value of $x$.
**(A)** 2.2 **(B)** 2.6 **(C)** 3 **(D)** 3.4 **(E)** 3.8

14 If $100^{25} - 25$ is expressed as an integer, the sum of it's digits is:
**(A)** 444 **(B)** 432 **(C)** 453 **(D)** 435 **(E)** 219

15 If the 4 digit number $8mn9$ is a perfect square then $m + n =$
**(A)** 1 **(B)** 5 **(C)** 9 **(D)** 10 **(E)** 11