

# AOS

## ASIAN OLYMPIAD SOCIETY

# AMO

## ASIAN MATHEMATICS OLYMPIAD 2020-2021

CLASS

**10**

### INSTRUCTIONS AND INFORMATION FOR THE CANDIDATE

#### GENERAL

1. Do not open the booklet until told to do so by your teacher.
2. No calculators maths stencils, mobile phones or other calculating devices are permitted. Scribbling paper, graph paper, ruler and compasses are permitted, but are not essential.
3. Read the instructions on the answer sheet carefully. Ensure your name, school name and class are entered. It is your responsibility to correctly code your answer sheet.

#### THE ANSWER SHEET

1. Use an HB pencil or a Blue/Black ball point pen only to record your choice of answer in the Answer sheet.
2. Your answer sheet will be scanned. The optical scanner will attempt to read all markings even if they are in the wrong places, so please be careful not to write anything extra on the answer sheet.
3. If you want to change an answer or remove any marks, use a plastic eraser and be sure to remove all marks and smudges.
4. Fill your enrollment number clearly, improper enrollment number may lead to unavailability of result.
5. Please fill your Mobile Number clearly on the Answer Sheet, we will share your marks / result and other information related to AOS exams on your mobile number.
6. All questions are compulsory and there is no negative marking.
7. Return the ANSWER SHEET to the invigilator at the end of the exam.

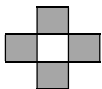
#### INTEGRITY OF THE COMPETITION

The AOS reserves the right to re-examine students before deciding whether to grant official status to their score.

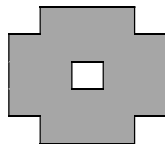
ENROLLMENT NUMBER : \_\_\_\_\_ CLASS : \_\_\_\_\_

STUDENT NAME : \_\_\_\_\_ Contact No : \_\_\_\_\_

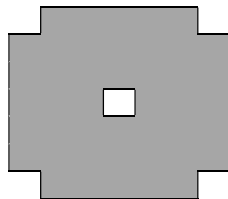
1. In a quadrilateral ABCD, AB = 133 cm, BC = 187 cm, CD = 84 cm, DA = 156 cm and BD = 205 cm. find the area of the quadrilateral.  
 a)  $16344 \text{ cm}^2$       b)  $18228 \text{ cm}^2$       c)  $21496 \text{ cm}^2$       d)  $24576 \text{ cm}^2$
2. Two parallel sides of a trapezium are 60 cm and 77 cm and other sides are 25 cm and 26 cm. find the area of the trapezium.  
 a)  $1644 \text{ cm}^2$       b)  $1464 \text{ cm}^2$       c)  $1504 \text{ cm}^2$       d)  $1600 \text{ cm}^2$
3. What is the ratio of the measure of an angle of a regular octagon to the measure of its exterior angle?  
 a) 3 : 1      b) 4 : 1      c) 1 : 2      d) 2 : 3
4. The number of zeros in the product of the first 100 natural numbers is :  
 a) 12      b) 15      c) 18      d) 24
5. A four digit number has the following properties.
  - i. It is a perfect square
  - ii. Its first two digits are equal to each other.
  - iii. Its last two digits are equal to each other.
 Then the four digit number is ...  
 a) 5566      b) 7744      c) 2288      d) 3399
6. A man can row half a km against the stream in  $7\frac{1}{2}$  minutes, and then return in 5 minutes. The speed of the man in still water is :  
 a) 2 km/h      b) 3 km/h      c) 4 km/h      d) 5 km/h
7. A circular field has a circumference of 360 km. three cyclists start together and can cycle 60km, 72km and 90km a day around the field. After how many days will they meet again at the starting point?  
 a) 40 days      b) 72 days      c) 15 days      d) 60 days
8. These shapes form a pattern. How many squares will be shaded in the 10<sup>th</sup> shape in this pattern?



4 shaded



20 shaded



44 shaded

a) 212

b) 356

c) 395

d) 436

9. The ratio of an interior angle of a regular pentagon to an exterior angle of a regular decagon is :
- a) 4:1                      b) 3 : 1                      c) 2 : 1                      d) 7 : 3
10. If the roots of the quadratic equation  $x^2 + px + q = 0$  are  $\tan 30^\circ$  and  $\tan 15^\circ$ , respectively. What is the value of  $2 + p - q$ ?
- a) 0                      b) 3                      c) 4                      d) 2
11. What is the common factor of  $(15^7 + 13^7)$  and  $(15^5 + 13^5)$
- a)  $15^5 + 13^5$                       b) 2                      c)  $15^2 + 13^2$                       d) 28
12. If  $m$  and  $n$  are two co-prime positive integers. Then LCM of  $m$  and  $n$  is :
- a) 1                      b)  $n$                       c)  $mn$                       d)  $m$
13. A solid sphere is cut into identical pieces by two mutually perpendicular planes passing through its centre. The increase in its total surface area with respect to the total surface area of the original sphere is :
- a) 50%                      b) 100%                      c) 150%                      d) 200%
14. If the sum of the ages of a father and his son is 65 and twice the difference of their ages is 50, what is the age of the father?
- a) 45 years                      b) 40 years                      c) 50 years                      d) 55 years
15. If  $f(x) = 16x^2 + 51x + 37$ , which of the following is one of the factors of  $f(x)$ ?
- a)  $x - 1$                       b)  $x + 1$                       c)  $x + 2$                       d)  $x - 2$

Answer key

1 - b	2 - a	3 - a	4 - d	5 - b	6 - d	7 - d	8 - d	9 - c	10 - b	11 - d	12 - c	13 - a	14 - b	15 - b
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