

11 33cm

12 4047

13 128

14 10

15 90

Section 2 : Section B Integers - 10 Questions

16 117

17 35

18 6981

19 8

20 18

21 16

22 300

23 711

24 88

25 31

TEST

AMO Grade 5 Mock Test Paper 2

SOLUTIONS

SECTIONS

1. Section A MCQs - 15 Questions
2. Section B Integers - 10 Questions

Section 1 : Section A MCQs - 15 Questions

1

-

Work backwards to find the original number.

$$9 + 3 = 12, 12 - 6 = 6, 6 \times 3 = 18, 18 - 3 = 15, 15 \div 3 = 5$$

Six times the original number is $6 \times 5 = 30$.

2

The greatest 2-digit number is 99. Since $2021 \div 99 = 20.41$, the least number cannot be 20. Also, $99 \times 20 + 41 = 2021$. Thus, the least number is 21.

3

Option A: When the radius and the given distance are equal, then the regular octagon will have a smaller area as it will fit "inside" the circle fully, leaving gaps.

Option B: Octagon has 8 sides while trapezium has 4 sides. $8 - 4 = 4$, which is not prime.

Option C: The definition of a regular quadrilateral is a closed figure with 4 equal sides.

Option D: A decagon has 10 sides so $4 + 10 = 14$. When two heptagons are stuck to each other, there are $7 \times 2 - 2 = 12$ sides.

Option E: This is the formula for all triangles, not just right-angled triangles.

4

The first four counting numbers are: 1, 2, 3 and 4. Their sum = $1 + 2 + 3 + 4 = 10$.

The first five even numbers are: 2, 4, 6, 8 and 10

Their sum = $2 + 4 + 6 + 8 + 10 = 30$.

Average = $(10 + 30) \div 2 = 40 \div 2 = 20$

5

$$\frac{1}{5} \text{ of } 200 = 200 \div 5 = 40$$

$$\frac{3}{4} \text{ of } 200 = 200 \div 4 \times 3 = 150$$

Total number of red and yellow apples = $40 + 150 = 190$

Number of green apples = $200 - 190 = 10$

6

Let Cassie's score be 1 unit, then

$$\text{Brian} = 1 \text{ unit} + 5, \text{Amanda} = 2 \text{ units} + 10, \text{Dora} = 2 \text{ units} + 20$$

Since Dora's score was 6 times as much as Cassie's, then

$$2 \text{ units} + 20 = 6 \text{ units}$$

$$4 \text{ units} = 20 \text{ or } 1 \text{ unit} = 5$$

Therefore, Brian scored 10 points.

7

The largest 4-digit number A=5430

The smallest 4-digit number B=3045

$$A - B = 2385$$

8

The first shape has $4 \times 3 = 12$ cubes.

The second shape has $1 + 2 + 3 + 2 + 1 = 9$ cubes.

The total number of cubes is $12 + 9 = 21$.

Volume of each cube = $3 \times 3 \times 3 = 27 \text{ cm}^3$.

Total volume = $21 \times 27 = 567 \text{ cm}^3$

9

All the possible PIN codes are from 0000 to 9999. Thus, there are $10 \times 10 \times 10 \times 10 = 10,000$ possibilities.

Another way to solve this is to count the number of numbers from 0000 to 9999. The count is $(\text{last number} - \text{first number} + 1) = 9999 - 0 + 1 = 10,000$.

10

The largest 3-digit number is 999.

However, $999 \div 32 = 31 \text{ R}7$ is not divisible by 32.

Hence the largest 3-digit multiple of 32 is $32 \times 31 = 992$.

11

Perimeter = $3 \times 11 = 33 \text{ cm}$

12

The common difference between any two consecutive terms is 2.

The 1st term can be written as $2 \times 1 + 5$. Similarly, the second and third terms can be written as $2 \times 2 + 5$ and $2 \times 3 + 5$.

Thus, the 2021st term is $2 \times 2021 + 5 = 4047$.

13

The number 2 is the only even prime number. Count the number of factor 2s for each option. $128 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$ has the most number of factor 2s.

14

Size of the Square	Number of squares comprised of X
1×1	1
2×2	4
3×3	4
4×4	1
Total	10

15

Let $q = 2$ units then $p = 3$ units. Then $p - q = 1$ unit $= 18$.

$$p + q = 5 \text{ units} = 5 \times 18 = 90$$

Section 2 : Section B Integers - 10 Questions

16

There are $5 \times 5 \times 5 = 125$ small cubes in total.

Only corner cubes have 3 faces painted. There are 8 small corner cubes.

The number of smaller cubes with at most 2 sides painted $= 125 - 8 = 117$

17

For the largest number to be as large as possible, the sum of all other 4 numbers must be as small as possible. The smallest possible sum of the 4 numbers is $1 + 2 + 3 + 4 = 10$. Therefore, the largest possible value of the fifth number is $45 - 10 = 35$.

18

Page 1 to 9: 9 digits

Page 10 to 99: $90 \times 2 = 180$ digits ($99 - 10 + 1 = 90$ 2-digit numbers)

Page 100 to 999: $900 \times 3 = 2700$ digits ($999 - 100 + 1 = 900$ 3-digit numbers)

Page 1000 to 2022: $1023 \times 4 = 4092$ digits

There are $9 + 180 + 2700 + 4092 = 6981$ digits.

19

Any number whose sum of digits is a multiple of 3 is divisible by 3.

Thus, $6 + 5 + 3 + 2 + A = 16 + A$ must be a multiple of 3.

$$16 + A = 18 \text{ or } 21 \text{ or } 24$$

Therefore, there are 3 possible values of A: 2, 5 or 8.

20

The third digit is half the first digit and one less than the second digit:

First Digit	Second Digit	Third Digit	Sum of the digits
2	2	1	5
4	3	2	9
6	4	3	13

As the sum of the first three digits is 13, the first three digits must be 6, 4 and 3.

Since the sum of the last three digits is 8 and the third digit is 3, the sum of the last two digits must be $8 - 3 = 5$.

6 must then be the largest digit of the number and so, the 4th digit is 5 (the second-largest digit of the number) and the last digit is 0.

The number required is 64350 and its sum of digits is $6 + 4 + 3 + 5 + 0 = 18$.

21

Area of each smaller rectangle = $60 \text{ cm}^2 \div 5 = 12 \text{ cm}^2$

The length of the smaller rectangle is 3 times its width.

Draw a table to show the possible length and width given the area of 12 cm^2 :

Length	Width	Length = 3 times of width?
12	1	No
6	2	Yes
4	3	No
1	12	No

Thus, each small rectangle has a width of 2 cm and a length of 6 cm.

The perimeter of each small rectangle is $(2 + 6) \times 2 = 16 \text{ cm}$.

22

When the train passes the man in 20 seconds, it travels the distance equivalent to its length.

Convert seconds to hours:

$$20 \text{ seconds} = \frac{1}{3} \text{ minute} = \frac{1}{3} \times \frac{1}{60} \text{ of an hour} = \frac{1}{180} \text{ hour}$$

$$\text{Distance} = \text{Length of the train} = \left(\frac{1}{180}\right) \times 54 = \frac{3}{10} \text{ km} = \left(\frac{3}{10}\right) \times 1000 = \mathbf{300 \text{ metres.}}$$

23

The pattern is as follows:

Group	Sum	Pattern
1	$1 + 4 + 6 = 11$	$11 + 0 \times 7 = 11$
2	$2 + 6 + 10 = 18$	$11 + 1 \times 7 = 18$
3	$3 + 8 + 14 = 25$	$11 + 2 \times 7 = 25$
...	...	...
101		$11 + 100 \times 7 = 711$

24

$$AABB = AA \times 100 + BB = A \times 11 \times 100 + B \times 11 = 11 \times (A \times 100 + B)$$

Hence $AABB$ is a multiple of 11. Since it is a perfect square, it must be divisible by $11 \times 11 = 121$ and $A \times 100 + B = A0B$ is a multiple of 11.

From the divisibility rule of 11, $A + B = 11$.

Out of all possible values of A and B , only $A = 7$ and $B = 4$ satisfy the conditions.

$$\sqrt{7744} = 88$$

25

Let $A = 35 \times C$ and $B = 35 \times D$. Then C and D do not have any common factors other than 1.

$$A + B = 35 \times (C + D) = 1085 \text{ or } C + D = 31$$

$$\frac{A + B}{35} = \frac{35 \times (C + D)}{35} = C + D = 31$$