

Online Contest for Grade 5 and 6

THE DEEPER YOU GO, THE MORE YOU GROW!

I Instructions

1. The time duration for the contest is 90 minutes from 10:00 am to 11:30 am (IST)
2. Answers have to be submitted on the Google form:
3. You cannot submit the Google form more than once.
4. No other form of submission will be accepted.
5. Beyond 11:30 am, the form will be deactivated.
There is no option to save your answers in a Google form
6. Hence it is suggested that you write your answers on a sheet of paper.
Submit it together in the Google form before 11:30 am.
7. Important note for students who will be using Mobile – To open the Google form (to submit your answers), kindly download the PDF Question Paper then copy the Google form link and open it on Google Chrome.
8. Wherever there is a field/box to write the answer, write ONLY the INTEGER part of the answer.
E.g. If the answer is 134 hours or 134 sq cm, write (fill) the answer as: 134 only.
Do not use any full stop or any other explanation along with the answer.
Any such content will fetch you a wrong answer because the checking is automated and not manual.
9. For multiple choice questions, use the appropriate option.
10. The participant is not allowed to use any device for calculations or any sort of help from anyone else.
Any such act will disqualify the application.
11. Preserve your rough calculations. You may be asked to submit it.
If you are unable to submit it, you may be disqualified.
12. There is no negative marking for incorrect answers.
13. Ensure that you have filled respective fields about your personal details correctly in the Google form.

Hope you have read the instructions thoroughly !

See Problems from next page! ↓

II PROBLEMS

1. A, B, C, D are different values from 1, 2, 3, 4 (not necessarily in this order) satisfying all the following conditions:

- $\frac{A}{D} + \frac{B}{C} = A\frac{B}{D}$
- $\frac{A}{D}$ is a proper fraction.
- $\frac{B}{C}$ is an improper fraction.
- $A\frac{B}{D}$ is a mixed fraction.

Then, the value of D is _____.

2. Look at the following table:

			8
1			

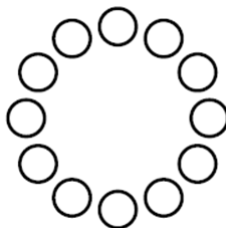
Two cells are filled with 1 and 8. The natural numbers from 2 to 7 must be filled in the remaining 6 cells satisfying each of the following conditions:

- In each row, the numbers in the right cells must be bigger than the numbers in the left cells.
- In each column, the number in the bottom cell must be smaller than the number in the upper cell.
- Number 5 must occupy in a cell in the top row.

In how many ways, can we fill the table? _____.

3. Twelve numbers, from 1 to 12, are arranged in a circle so that any neighbouring numbers always differ by either 1 or 2.

Example: 4 wherever placed can have two neighbours from 2, 3, 5 or 6 only and not any other numbers.

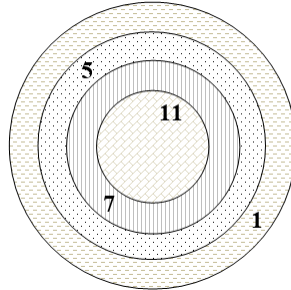


Which of the following pairs of numbers should be neighbours, to satisfy the given condition?

- A. 5 and 6 B. 8 and 6 C. 9 and 10 D. 7 and 8

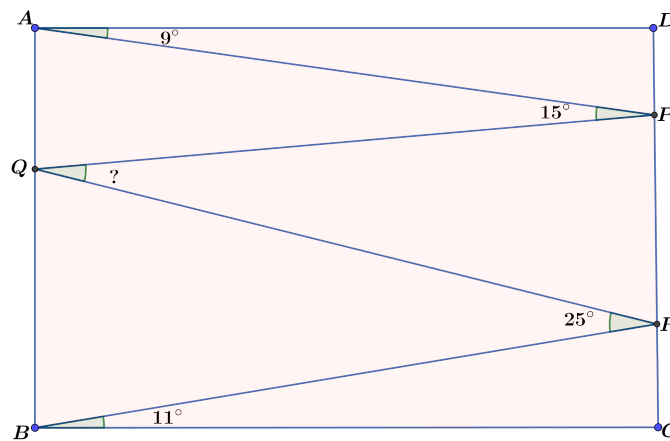
4. In a darting competition, Arrows hitting the innermost ring; next ring; next ring; outermost ring gets scores of 11, 7, 5 and 1 respectively, as indicated in the figure.

A player hits six arrows each landing on some ring of the target.



How many natural numbers from 34 to 68 are achievable scores? _____.

5. $ABCD$ is a rectangle where P, R are points on side CD and Q is a point on side AB .



If $\angle DAP = 9^\circ$; $\angle APQ = 15^\circ$; $\angle QRB = 25^\circ$ and $\angle RBC = 11^\circ$, then $\angle PQR =$ _____

- A. 10° B. 15° C. 20° D. 25°

6. Sahana has a pair of scissors and four cardboard letters, as shown.

M F C D



Which letter (cardboard), Sahana can cut into most number of pieces by a single straight cut?

- A. F B. C C. D D. M

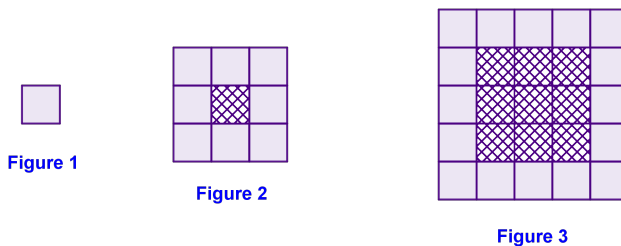
7. The value of $\frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{6} + \frac{1}{8} + \frac{1}{9} + \frac{1}{12} + \frac{1}{18} + \frac{1}{24} + \frac{1}{36} + \frac{1}{72}$ is

- A. $\frac{65}{24}$ B. $\frac{201}{72}$ C. $\frac{95}{36}$ D. $\frac{125}{48}$

8. The unit square in figure 1 is surrounded by 8 units squares to form figure 2.

These 9 units squares are then surrounded again to form figure 3.

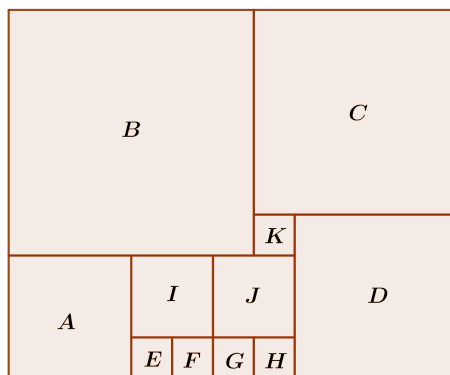
The pattern of square(s) surrounded by unit squares along the boundaries (walls) and corners, continues.



How many unit squares should be surrounded in figure 9 to get figure 10? _____.

9. In the given figure, a rectangle is divided into 11 squares: $A, B, C, D, E, F, G, H, I, J, K$.

The perimeter of square A is 60 *units*. The perimeter of each of the squares K, H is 20 *units*.



What is the area of the bigger rectangle? _____ *sq. units*. Note: Figure is not drawn to scale.

10. A, B, C, D and E play a game in which each is either a police or a thief.

A police's statement is always true while a thief's statement is always false.

- A says that B is a thief.
- C says that D is a police.
- E says that A is not a police.
- B says that C is not a thief.
- D says that E and A are different (one is police, other is thief).

How many of them play police? _____.

11. Consider a machine which takes integer as a input and gives some output. Outputs for some inputs is given as follows,

$$0 \rightarrow 6$$

$$1 \rightarrow 2$$

$$2 \rightarrow 0$$

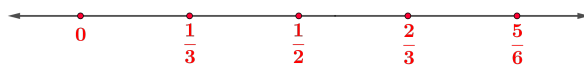
$$3 \rightarrow 0$$

$$4 \rightarrow 2$$

$$5 \rightarrow 6$$

What is the output if the input is 7?

12. *Sunil* drew a number line plotted with 5 points, as shown. He marked the points as indicated below,



His teacher verified and said: “You plotted the points and spacing correctly.

But you marked the numbers wrong. Do the correction.”

What is the minimum number of numbers that can be changed by *Sunil* to get it corrected? _____.

13. Vijay attended a maths test that contains two sections A and B.

- Vijay attempted three-fourth of the questions in section A.
- Vijay attempted one-third of the questions in section B.
- Vijay attempted half the total number of questions from both the sections.

Then, $\frac{\text{Total number of questions in Section A}}{\text{Total number of questions in Section B}} =$

- A. $\frac{2}{3}$ B. $\frac{3}{4}$ C. $\frac{4}{9}$ D. $\frac{5}{8}$

14. 20A4 is a 4-digit number (digits in order) and a multiple of 24.

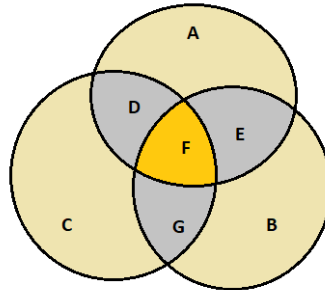
The sum of the digits of the number is _____.

15. Let a and b be two positive integers such that $a = 0.7 \times b$

If the HCF of a, b is 9, then the value of $a + b$ is _____.

16. How many right angles will the hour hand and minute hand make between 12:00 pm to 8:00 pm in a conventional analog clock?

17. In given diagram, section A, B, C contains multiples of 4,5,3 from 300 to 600 respectively. The intersections D, E, F, G common multiples. E.g. D contains numbers which are divisible by 4 and 3 but not 5. How many elements are there in G?



18. When three positive integers $a < b < c$ are multiplied together, their product is 105. How many such triples (a, b, c) exist? _____.
19. Hari noticed that the daily newspaper that he bought had 24 pages. The pages 6 and 19 were on the same double sheet. Daily newspapers usually have double sheets and the central one may be a single sheet. The pages 6 and 19 were on the same double sheet. The other two pages on the double sheet were
- A. 7 and 18 B. 5 and 18 C. 7 and 20 D. 5 and 20
20. A cup of boiling water (212°F) is placed to cool in a room whose temperature remains constant at 84°F . Suppose the difference between the water temperature and the room temperature is halved every 4 minutes. What is the water temperature, in degrees Fahrenheit, after 16 minutes?
- A. 100 B. 116 C. 92 D. none of these