



PRIMARY 6 (GRADE 6) 2021 CONTEST PAPER

NAME: _____

Index Number: _____

SCHOOL: _____

INSTRUCTIONS:

1. Please **DO NOT OPEN** the contest booklet until the Proctor has given permission to start
2. TIME: **1 hour 30 minutes**.
3. There are 25 questions with 100 total points:
Section A: Questions 1 to 15 score 3 points each, no points are deducted for an unanswered or wrong answer.
Section B: Questions 16 to 25 score 5 points each, no points are deducted for an unanswered or wrong answer.
Section C: Questions 21 to 25 score 6 points each, no points are deducted for an unanswered or wrong answer.
4. Shade your answers neatly using a **2B lead pencil** in the Answer Entry Sheet.
5. PROCTORING: No one may help any student in any way during the contest.
6. No electronic devices capable of storing and displaying visual information are allowed during the course of the exam. Strictly **No Calculators** are allowed.
7. All students must write and shade their **Name, School and Index Number** in the Answer Entry Sheet and Contest booklet.
8. MINIMUM TIME: Students must stay in the exam hall for at least 1 hour.
9. A student must show detailed working and transfer answers to the Answer Entry Sheet.
10. **No exam papers and written notes can be taken out by any contestant.**



ROUGH WORKING

Section A: 15 Multiple Choice Questions

3 points each

Question 1

Sarah has a collection of stickers. Three-eighths of the stickers are flowers. Out of the flower stickers, two-fifths are red roses. Which of the following fractions represents the stickers in Sarah's collection that are not red roses?

- A.
- B.
- C.
- D.
- E.

Question 2

On a milk bottle, there is a label which states that reduced fat milk has less fat than regular milk. If the information is correct, what is the approximate percentage of milkfat in regular milk?

- A.
- B.
- C.
- D.
- E.

Question 3

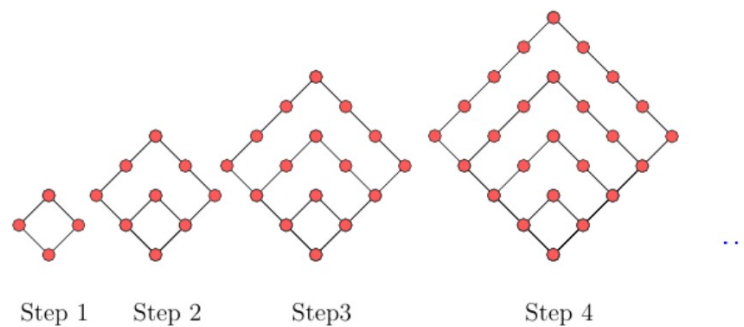
What is

rounded to the nearest ten thousandths?

- A.
- B.
- C.
- D.
- E.

Question 4

If the following dot pattern continues, how many dots are there at the 98 step?



- A. 9999
- B. 9801
- C. 10000
- D. 9898
- E. 9595

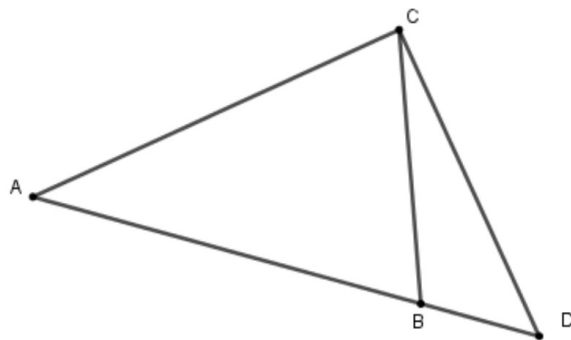
Question 5

Helen wants to design some flags for her new club house. She has a rectangular piece of red cloth that measures 8 cm by 15 cm. She starts by cutting out a triangular red flag of the largest possible area. Then, from the left-over cloth, she makes two more red flags of the same area. What is the area of a smaller flag in cm^2 ?

- A. 30
- B. 60
- C. 90
- D. 120
- E. 150

Question 6

Triangle ABC is isosceles with $AB = AC$, and $\angle A = 40^\circ$. Side BC is extended to point D . Points A and D are connected such that $AD = BD$. What is the measure of $\angle BDC$?



- A. 30°
- B. 40°
- C. 50°
- D. 60°
- E. 70°

Question 7

There are 4 lights in the classroom, each of which is controlled by its own switch. The life of one light has no impact on the life of another. The probability that a light still works after 1000 hours is 90% What is the probability that there is at least one working light in the classroom after 1000 hours?

- A. 90.50%
- B. 99.99%
- C. 98.88%
- D. 95.00%
- E. 89.10%

Question 8

If x is divisible by 9 and y is divisible by 8, how many factors greater than 1 does xy have at the minimum?

- A. 8
- B. 11
- C. 13
- D. 17
- E. 18

Question 9

Mrs. Jones has 25 students in her sixth-grade math class. Around the midterm, all students took a test. The class average was 89 points. Tony, a student in the class, looked at his score and said, "If I had scored 96 points on the test, the class average would have been 90 points." How many points did Tony score on the midterm test?

- A. 81
- B. 65
- C. 71
- D. 75
- E. 55

Question 10

In a survey of 140 households in a community, it was found that 90 households have Internet access, 70 households have a landline phone, and 60 households have cable TV. 50 households have both Internet and a landline phone. 20 households have both a landline phone and cable TV. 15 households have all three services, and 5 households do not have any. How many households have both Internet and cable TV services?

- A. 15
- B. 20
- C. 25
- D. 30
- E. 45

Question 11

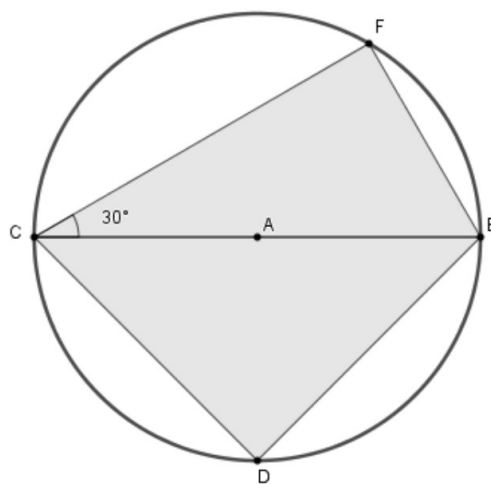
Given the inequality

which of the following describes its solutions?

- A.
- B.
- C.
- D.
- E.

Question 12

In the figure below, points C , D , E , and F are all on the circle. Point A is the center of the circle and is on CE . Given $AC = 5$ cm, $AD = 3$ cm, and $AE = 5$ cm. What is the perimeter of $CDEF$ in cm?



- A.
- B.
- C.
- D.
- E.

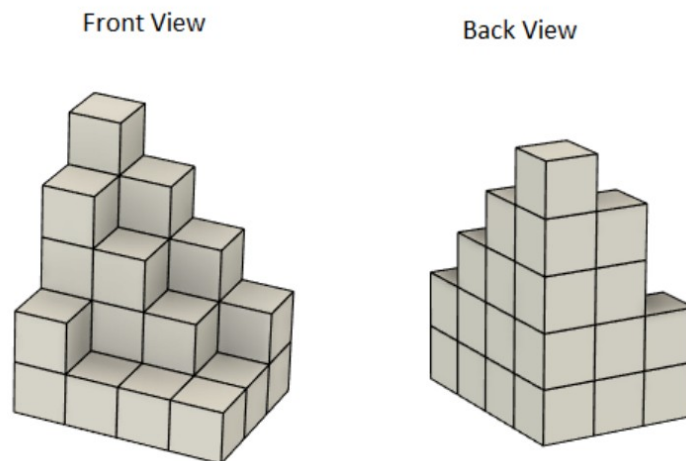
Question 13

and are all positive integers. If is even, is prime, is odd, and , what is ?

- A. 24
- B. 35
- C. 52
- D. 68
- E. 97

Question 14

In the following figure, the front and back views of a structure are shown. The structure is made of unit cubes. There are no missing cubes hidden at the bottom or in the middle. What is the surface area of the whole structure in unit squares?



- A. 48
- B. 74
- C. 68
- D. 60
- E. 64

Question 15

In Mrs. Smith's math class, the ratio between the number of boys and the number of girls is 4:6. If six more boys join her class, the ratio between boys and girls will be 1:1. How many students does Mrs. Smith have in her math class right now?

- A. 24
- B. 25
- C. 28
- D. 30
- E. 32

Section B: 5 Open-Ended Questions

5 points each

Question 16

Sam has a rectangular piece of paper that measures 24 inches by 60 inches. For a project, he needs to cut it into the least number of squares, without wasting anything. How many squares does he have after cutting the paper?

Your Answer:

Question 17

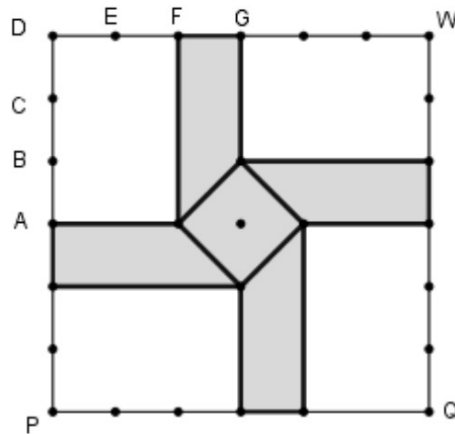
If $\overline{UN}$, where digits U , N , and P are different positive integers from 1 to 9. In other words, $\overline{UN}$ and $\overline{NU}$ are two-digit numbers, and $\overline{PUP}$ is a three-digit number. What is the value of $\overline{PUP}$?

$$\begin{array}{r} \overline{UN} \\ + \overline{NU} \\ \hline \overline{PUP} \end{array}$$

Your Answer:

Question 18

In the following figure, is a square, along which the distance between any two adjacent points is 1 cm away from each other. For example, 1 cm. All the horizontal and vertical segments are parallel to the respective sides of the square. A shaded region is defined within the square. Let represent the area of the shaded region, and represent the area of the rest of the square. What is



Your Answer:

Question 19

The data set has an unknown number . The range of the data set is . What is the product of the least possible value and the greatest possible value of ?

Your Answer:

Question 20

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Twelve blenders working at a constant rate can make 36 smoothies in 6 minutes. How many minutes would it take for 3 blenders to make 90 smoothies?

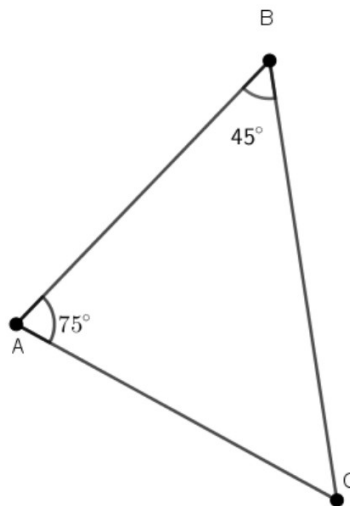
Your Answer:

Section C: 5 Open-Ended Questions

6 points each

Question 21

In triangle shown below, $AB = 10$, $BC = 12$, and $AC = 14$ inches. What is the area of $\triangle ABC$ in square inches? Please round off your answer to the nearest whole number. if it is needed.



Your Answer:

Question 22

Two friends, Adam and Bob, are playing a game by tossing three fair coins. If the three coins land with at least two heads up, Adam wins. If the three coins lands with exactly two tails up, Bob wins. Otherwise, there is not a winner. Let P represent the probability that neither Adam nor Bob wins the game. What is $P(1000)$?

Your Answer:

Question 23

Mr. Hagler and Mrs. Kelly both teach mathematics. Mr. Hagler has 20 students in his algebra class. Mrs. Kelly has 30 students in her algebra class. All the students in both classes took a test recently. Mr. Hagler's class scored an average of 70 points. Mrs. Kelly's class scored an average of 80 points. What is the average of the test scores for all the students in both classes?

Your Answer:

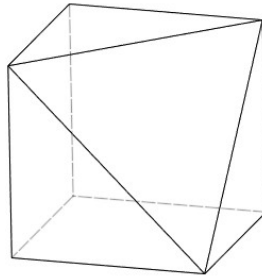
Question 24

In the Cartesian System, $P(1, 2)$ and $Q(3, 4)$. A point R is to be chosen on the x -axis so that $PR + RQ$ has the shortest possible value. When R has the least distance, what is PR ?

Your Answer:

Question 25

In the following figure, a cube has its top front corner removed using a plane containing three of its vertices. The cube has an edge length of 10 centimeters. What is the volume of the left over in cubic centimeters? Please round off your answer to a whole number. 1.414 if it is needed.



Your Answer:
