Singapore & Asian Schools Math Olympiad

Primary 6 (Grade 6) – GEP Practice

2019

Contest Problems with Full Solutions

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LIVEWORKSHEETS

Section A **(Correct answer – 2 points| No answer – 0 points| Incorrect answer – minus 1 point)**

Question 1

Find the sum of all digits of the following product

$$693 \times 333$$

A. 230769
B. 229669
C. 27
D. 34
E. None of the above

Question 2

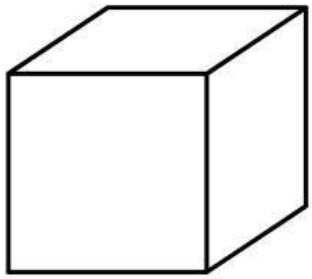
In a school, 52 students were given vouchers for a bookstore or cafeteria. Twenty of them received bookstore vouchers and 39 students received cafeteria vouchers. How many students received both vouchers?

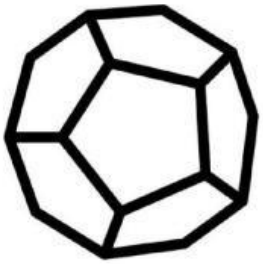
A. 8
B. 9
C. 10
D. 11
E. None of the above

LIVEWORKSHEETS

Question 3

A cube is a solid consisting of identical squares. A cube has 6 faces. A "dodecahedron" is a solid consisting of identical pentagons (5-sided shapes), as illustrated below. If a dodecahedron has 12 faces, how many edges does it have?





A. 5
B. 20
C. 12
D. 30
E. None of the above

Question 4

William has 3 books: Charlotte's Web, Little Prince and Hobbit. How many ways can he arrange these books in a row such that Hobbit and Charlotte's Web are next to each other?

A. 6
B. 2
C. 4
D. 12
E. None of the above

LIVEWORKSHEETS

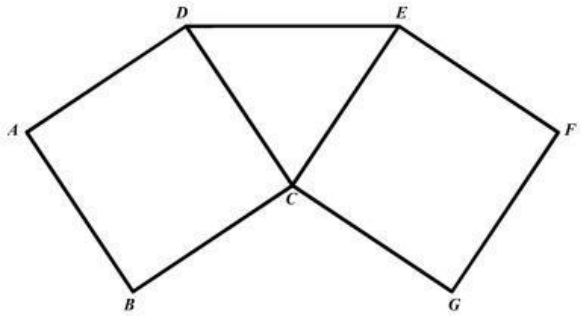
Question 5

Clayton gave 77 baseball cards to his friend and 112 baseball cards to his brother. In the end, Clayton is left with 441 baseball cards. What percentage of his original number of cards did Clayton give away?

A. 70%
B. 60%
C. 40%
D. 30%
E. None of the above

Question 6

In the diagram, $ABCD$ and $CEFG$ are squares, and CED is an equilateral triangle. Find the measurement (in degrees) of the angle $\angle EAC$.



A. 45°
B. 36°
C. 32°
D. 30°
E. None of the above

Question 7

Annabelle, Betty, Cynthia and Dora are playing a new video game. After the first round of the game:

- Cynthia's number of gold coins is equal to the average number of gold coins Annabelle and Betty have.
- Annabelle's number of gold coins is half of Betty's.
- Betty and Dora got the same number of gold coins.
- Dora got 10 more gold coins that Cynthia.

What is their total number of gold coins after the first round?

A. 140
B. 130
C. 70
D. Insufficient data
E. None of the above

LIVEWORKSHEETS

Question 8

Each of the 3-digit numbers ABC, BCA and CAB is even and divisible by 9. If A, B and C are different digits, find the value of $A + B + C$.

A. 18
B. 9
C. 20
D. 12
E. None of the above

Question 9

Consider all the whole numbers from 1 to 50. Which of the following is NOT true about them?

A. The number of even numbers is the same as the number of odd numbers.
B. Writing all the digits, the digit "0" is the least occurring digit.
C. There are more 2-digit numbers than 1-digit numbers.
D. The number of multiples of 5 is the same as the number of multiples of 7.
E. The average of the 50 numbers is not a whole number.

Question 10

A pipe can fill up an empty tank with water in 4 hours. However, due to the leakage in the tank, the pipe fills the empty tank in 12 hours. If the tank is full of water and the pipe is removed, how long will the leakage take to empty the full tank?

A. 6 hours
B. 8 hours
C. 9 hours
D. 16 hours
E. None of the above

LIVEWORKSHEETS

Question 11

Seventy days after the day before yesterday is Friday. Which day of the week is tomorrow?

A. Friday
B. Saturday
C. Sunday
D. Thursday
E. None of the above

Question 12

At 12 p.m., the hour and minute hand point in the same direction. What is the exact time between 6 p.m. and 7 p.m. when the hour and minute hand point in the same direction?

A. 6.30 p.m.
B. $6{:}32\frac{8}{11}$ p.m.
C. $6{:}33\frac{3}{11}$ p.m.
D. $6{:}32\frac{7}{11}$ p.m.
E. None of the above

LIVEWORKSHEETS

Question 13

Four athletes run in a marathon, and made the following statements:

Tom: I'm the fastest.

Jack: I'm the slowest.

Lionel: I'm neither the slowest nor the fastest.

Robert: I'm not the fastest.

If exactly 3 of them are telling the truth, who is the slowest?

A. Tom
B. Jack
C. Lionel
D. Robert
E. Insufficient data

Question 14

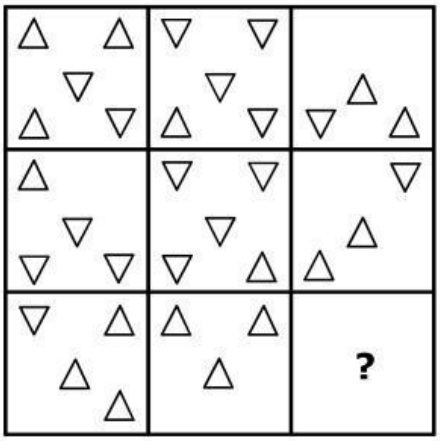
The product of all whole numbers from 2 to M is a multiple of 1365. What is the least possible value of M?

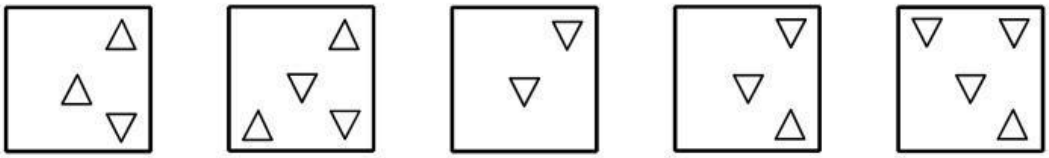
A. 13
B. 15
C. 65
D. 1365
E. None of the above

LIVEWORKSHEETS

Question 15

Find the missing figure in the diagram below.





A B C D E

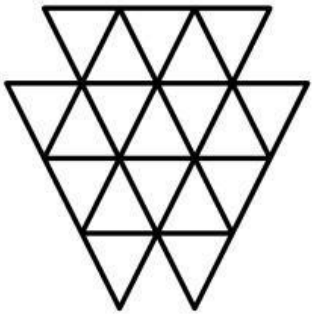
LIVEWORKSHEETS

Section B (Correct answer – 4 points| Incorrect or No answer – 0 points)

When an answer is a 1-digit number, shade "0" for the tens, hundreds and thousands place.
Example: if the answer is 7, then shade 0007
When an answer is a 2-digit number, shade "0" for the hundreds and thousands place.
Example: if the answer is 23, then shade 0023
When an answer is a 3-digit number, shade "0" for the thousands place.
Example: if the answer is 785, then shade 0785
When an answer is a 4-digit number, shade as it is.
Example: if the answer is 4196, then shade 4196

Question 16

How many triangles are there in the diagram?



Question 17

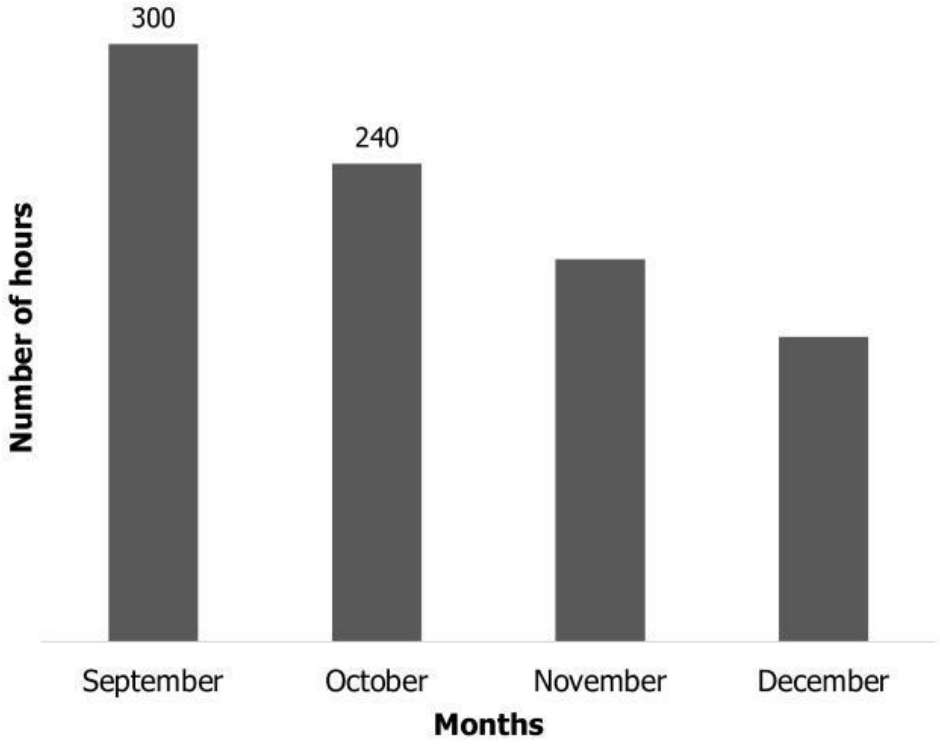
Find the numerator of the following sum in its simplest form.

$$\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\cdots+\frac{1}{128}$$

LIVEWORKSHEETS

Question 18

The following bar chart shows Nicki's usage time of her phone in four months. The percentage decrease in the amount of usage time remains the same every following month. Find Nicki's total number of usage time, in hours, during these four months. Round off your answer to the nearest whole number.



Question 19

What is the missing number in the sequence below?

131, 228, 331, 430, 531, 630, 731, ?, 930

LIVEWORKSHEETS

Question 20

Andrew, Barry, Cassie and Drake bought some candies from a grocery shop. The number of candies Andrew bought is equal to $\frac{1}{3}$ of the total number of candies of Barry, Cassie and Drake. Barry's number of candies is equal to 25% of the total number of candies of Andrew, Cassie and Drake. The ratio of Cassie's candies to the total number of candies of the other three is 2:5. Drake bought 3 candies less than Cassie. How many candies did four of them buy altogether?

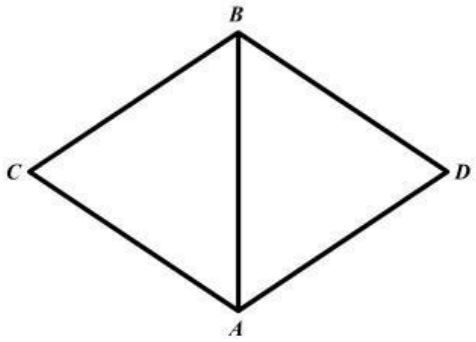
Question 21

Tom selected 30 different whole numbers such that the product of any 11 numbers is always even. The sum of the 30 numbers is an odd number. Find the least possible sum of these numbers.

LIVEWORKSHEETS

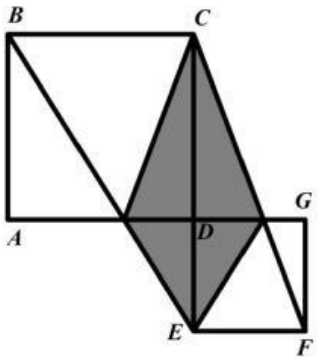
Question 22

The diagram below shows triangular tracks ABC and ABD from the above. Triangles ABC and ABD are equilateral, and the perimeter of the triangular track ABC is 168 metres. Matt runs around the track in the direction $A \longrightarrow B \longrightarrow C \longrightarrow A$ at 3 m/s (metres per second). Jack runs around the track in the direction $A \longrightarrow B \longrightarrow D \longrightarrow A$ at 7 m/s. If Matt and Jack start running from point A at the same time, how many seconds later will they meet each other for the first time at point A?



Question 23

In the diagram, $ABCD$ and $DEFG$ are squares with $AB = 9$ cm and $DE = 5$ cm. If $\angle CDG = 90°$, find the area (in cm^2) of the shaded quadrilateral.



LIVEWORKSHEETS

Question 24

In the following cryptarithm, all the different letters stand for different digits. What is the value of the sum O + D + A + G?

$$\begin{array}{cccccc} & G & O & O & D \\ + & & D & O & G \\ \hline & D & G & D & A \\ \hline \end{array}$$

Question 25

January 23, 2019 can be written as 8-digit date format 23/01/2019. September 2, 2019 can be written as 8-digit date format 02/09/2019. How many digit "1" are there in all 8-digit dates of the year 2019?

(For example, the date 25/01/2019 consists two "1" digits)

END OF PAPER

LIVEWORKSHEETS

Solutions to SASMO 2019 Primary 6 (Grade 6)

Question 1

$$693 \times 333 = (3 \times 231) \times 333 = 231 \times 3 \times 333 = 231 \times 999 = 231 \times (1000 - 1)$$
$$= 231 \times 1000 - 231 \times 1 = 231000 - 231 = 230769.$$

The sum of the digits is $2 + 3 + 0 + 7 + 6 + 9 = \mathbf{27}$.

Answer: **(C)**

Question 2

20 + 39 = 59 vouchers were given

59 – 52 = 7 students received both vouchers

Answer: **(E)**

Question 3

Each face has 5 edges. Then

12 faces x 5 edges = 60 edges

However, every edge has been counted twice as there are 2 faces sharing the same edge.

Thus, a dodecahedron has 60 ÷ 2 = **30 edges**.

Answer: **(D)**

Question 4

1) Hobbit – Charlotte's Web – Little Prince

2) Charlotte's Web – Hobbit – Little Prince

3) Little Prince – Hobbit – Charlotte's Web

4) Little Prince – Charlotte's Web – Hobbit

There are **4 ways** of arrangement as shown above.

Answer: **(C)**

LIVEWORKSHEETS