SINGAPORE
MATH KANGAROO CONTEST

Singapore Math Kangaroo Contest 2019

Primary 5 / Grade 5 Contest Paper

Name:_____

School:_____

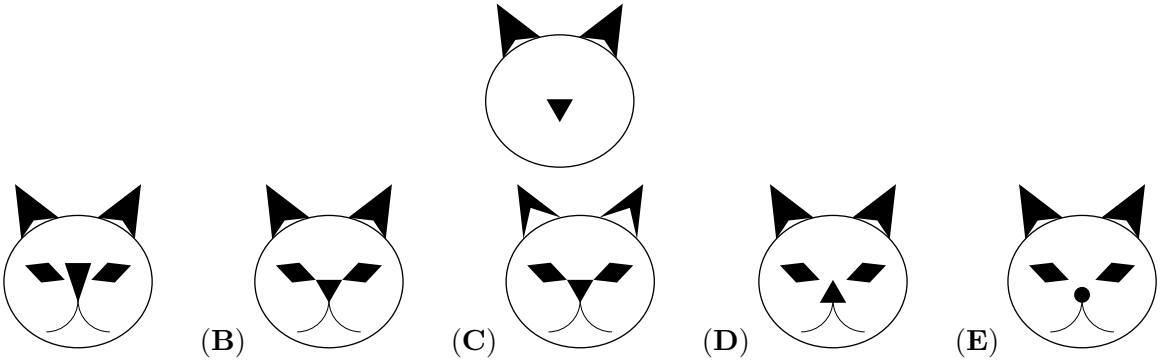
INSTRUCTIONS:

1. Please **DO NOT OPEN** the contest booklet until the Proctor has given permission to start.
2. **Duration**: **1 hour and 30 minutes**
3. There are 30 questions in this paper. Each question scores 3 points in Section A, 4 points in Section B and 5 points in Section C. No points are deducted for Unanswered question.
   1 point is deducted for Wrong answer.
4. Shade your answers neatly in the answer entry sheet.
5. PROCTORING: No help should be given to any student in any way during the contest.
6. **No calculators** are allowed.
7. All students must fill and shade in your **Name, Index number, Level and School** in the Answer sheet provided.
8. Students are not allowed to leave the venue within the first hour of the contest and 15 minutes before the end of the contest.
9. Students must show detailed working and transfer their answers to the answer entry sheet.
10. No spare papers can be used in writing this contest. Enough space is provided for your working of each question.
11. Students are not allowed take any answer script, reference materials and contest paper out of the venue.

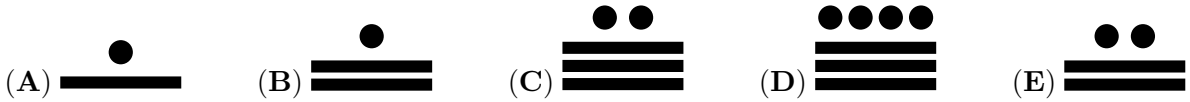
Rough Working

Section A (Correct – 3 points | Unanswered – 0 points | Wrong – deduct 1 point)

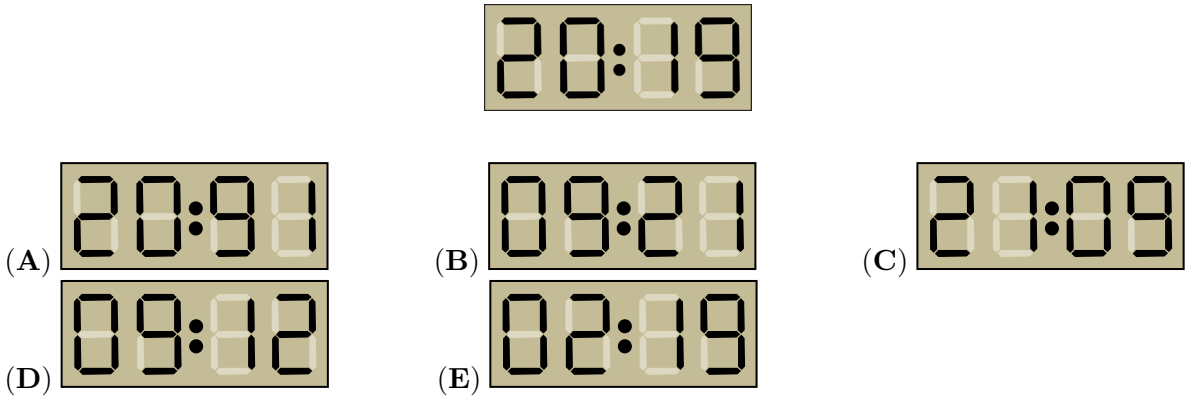
Question 1
Carrie has started to draw a cat as shown below. Which of the choices below can be her final drawing?



Question 2
The Mayan people wrote numbers with dots and bars. A dot is written for 1 and a bar for 5. How did they write 17?



Question 3
A digital clock shows the time 20:19. What will the clock show the next time it uses the same digits?



Question 4
There are 14 girls and 12 boys in a kindergarten. If half of the children go for a walk, at least how many of them are girls?

(**A**) 5 (**B**) 4 (**C**) 3 (**D**) 2 (**E**) 1

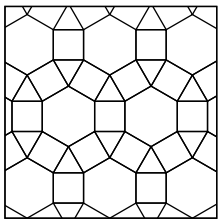
Question 5

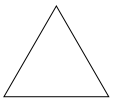
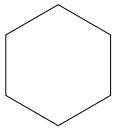
The sum of the dots on opposite faces of a regular dice is equal to 7. Which of the following shows the regular dice?

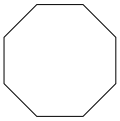
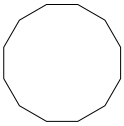
(**A**) (**B**) (**C**) (**D**) (**E**)

Question 6

Which of the following shapes is not in the design shown below?

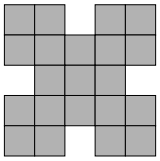


(**A**)  triangle (**B**) square (**C**)  regular hexagon

(**D**)  regular octagon (**E**)  regular dodecagon

Question 7

How many 2×2 squares are there in the figure below?



(**A**) 5 (**B**) 6 (**C**) 7 (**D**) 8 (**E**) 9

Question 8

The 6 smallest odd whole numbers are written on the faces of a dice. Toni throws it three times and adds the results. Which of the following numbers cannot be the sum?

(**A**) 21 (**B**) 3 (**C**) 20 (**D**) 19 (**E**) 29

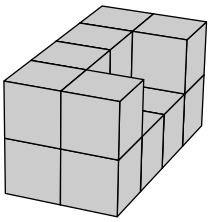
Question 9

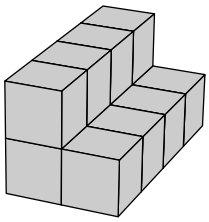
The sum of the ages of a group of kangaroos is 36 years. In two years time, the sum of their ages will be 60 years. How many kangaroos are in the group?

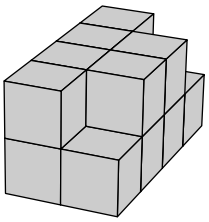
(**A**) 10 (**B**) 12 (**C**) 15 (**D**) 20 (**E**) 24

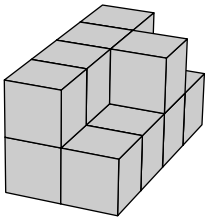
Question 10

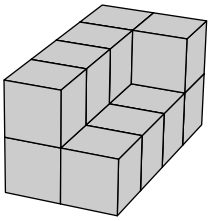
Michael paints the following figures which are made up of identical cubes. Their bases are made of 8 cubes. Which figure would require the most amount of paint?

(**A**) 

(**B**) 

(**C**) 

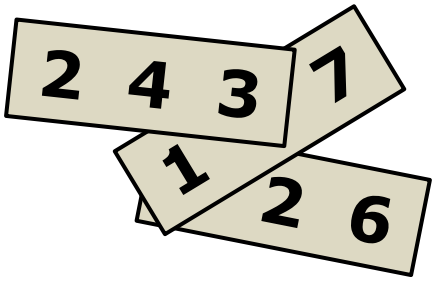
(**D**) 

(**E**) 

Section B (Correct – 4 points | Unanswered – 0 points | Wrong – deduct 1 point)

Question 11

A three-digit number is written on each of three pieces of paper shown below. The sum of the three 3-digit numbers is 826. What is the sum of the two covered digits?



(**A**) 7 (**B**) 8 (**C**) 9 (**D**) 10 (**E**) 11

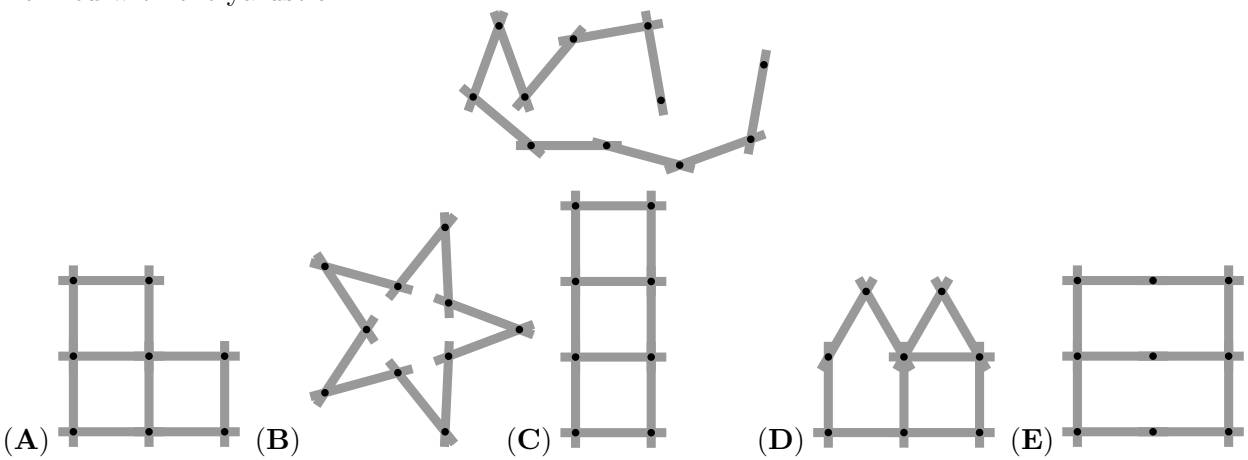
Question 12

Riri the frog usually eats 5 spiders a day. When Riri is very hungry, she eats 10 spiders a day. She ate 60 spiders in 9 days. How many days was she very hungry during these 9 days?

(**A**) 1 (**B**) 2 (**C**) 3 (**D**) 6 (**E**) 9

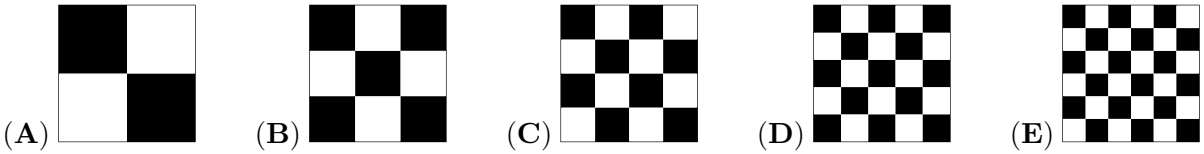
Question 13

Pia plays with a yardstick consisting of 10 sticks shown below. Which of the following figures cannot be formed with the yardstick?



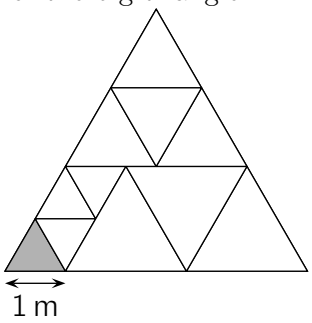
Question 14

Which of the following figures has the largest fraction of its area shaded?



Question 15

A big triangle is divided into equilateral triangles as shown in the figure below. The side of the shaded triangle is 1 m. What is the perimeter of the big triangle?



(**A**) 15 m (**B**) 17 m (**C**) 18 m (**D**) 20 m (**E**) 21 m

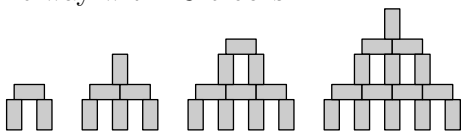
Question 16

In the garden of a witch, there are 30 animals: dogs, cats and mice. The witch turns 6 dogs into 6 cats. Then she turns 5 cats into 5 mice. Now her garden has the same number of dogs, cats and mice. How many cats were there in the beginning?

(**A**) 4 (**B**) 5 (**C**) 9 (**D**) 10 (**E**) 11

Question 17

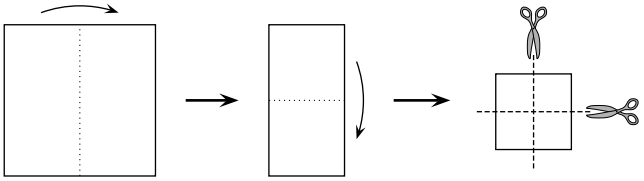
With blocks of dimension 1cm × 1cm × 2cm, you can build towers as shown in the picture. How high is a tower that is built in the same way with 28 blocks?



(**A**) 9cm (**B**) 11cm (**C**) 12cm (**D**) 14cm (**E**) 17cm

Question 18

Bridget folded a square sheet of paper twice, and then cut it twice as shown in the figure. How many pieces of paper did she get?



(**A**) 6 (**B**) 8 (**C**) 9 (**D**) 12 (**E**) 16

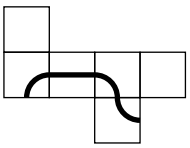
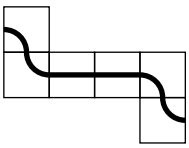
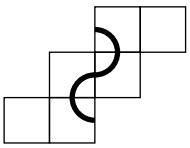
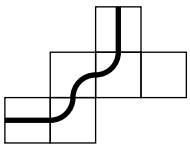
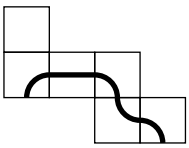
Question 19

Alex, Bob and Carl go for a walk every day. If Alex doesn't wear a hat, then Bob wears a hat. If Bob doesn't wear a hat, then Carl wears a hat. If Bob is not wearing a hat today, who is wearing a hat?

(**A**) Both Alex and Carl
(**B**) Only Alex
(**C**) Only Carl
(**D**) Neither Alex nor Carl
(**E**) It is not possible to determine.

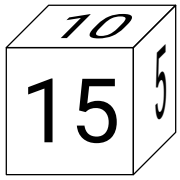
Question 20

An ant would like to walk along a marked line on the surface of a cube until it returns to its starting point. Which of the following nets can form a cube so that such a journey is possible?

(**A**)  (**B**)  (**C**)  (**D**)  (**E**) 

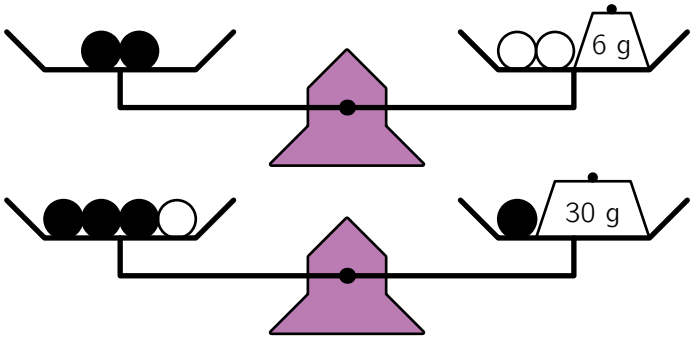
Section C (Correct – 5 points | Unanswered – 0 points | Wrong – deduct 1 point)

Question 21
A non-zero whole number is written on each face of the cube shown below. The products of the two numbers on opposite faces are the same. What is the smallest possible sum of the six numbers on the cube?



(**A**) 36 (**B**) 37 (**C**) 41 (**D**) 44 (**E**) 60

Question 22
Six identical black beads and three identical white beads are arranged on weighing scales as shown in the picture. What is the total weight of these nine beads?

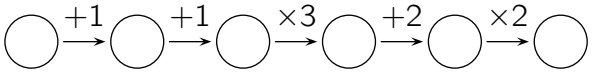


(**A**) 100 g (**B**) 99 g (**C**) 96 g (**D**) 94 g (**E**) 90 g

Question 23
Robert made 5 statements from (A) to (E). If four statements are true, which statement is false?

(**A**) My son Basil has 3 sisters.
(**B**) My daughter Ann has 2 brothers.
(**C**) My daughter Ann has 2 sisters.
(**D**) My son Basil has 2 brothers.
(**E**) I have 5 children.

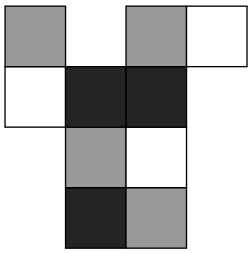
Question 24
Benjamin writes a whole number in the first circle and then fills the other five circles by following the operations. How many of the six numbers in the circles are divisible by 3?



(**A**) 1 (**B**) 2 (**C**) 3 (**D**) 4 (**E**) 6

Question 25

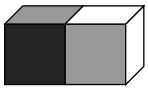
The cardboard is folded into a $2 \times 1 \times 1$ box.

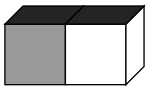


Which picture does NOT show the box?

(**A**)

(**B**)

(**C**) 

(**D**) 

(**E**)

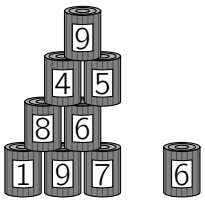
Question 26

Emily took selfies with her 8 cousins. Each of the 8 cousins is in two or three pictures. In each picture, there are exactly 5 of her cousins. How many selfies did Emily take?

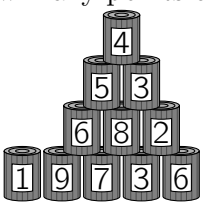
(**A**) 3 (**B**) 4 (**C**) 5 (**D**) 6 (**E**) 7

Question 27

Jette and Willi are throwing balls at two identical pyramids of 15 cans. Jette knocks down 6 cans with a total of 25 points. Willi knocks down 4 cans. How many points did Willi score?



after Jette's throw



after Willi's throw

(**A**) 22 (**B**) 23 (**C**) 25 (**D**) 26 (**E**) 28

Question 28

A chess tournament consists of three-player teams. Each player in a team plays exactly once against every player from all the other teams. If no more than 250 games can be played in total, what is the greatest possible number of teams can be in the tournament?

(**A**) 11 (**B**) 10 (**C**) 9 (**D**) 8 (**E**) 7

Question 29

Linas builds a $4 \times 4 \times 4$ cube using 32 white and 32 black $1 \times 1 \times 1$ cubes. He arranges the cubes so that the surface of the large cube is white as possible. What fraction of the surface of the cube is white?

(**A**) $\frac{1}{4}$ (**B**) $\frac{1}{2}$ (**C**) $\frac{2}{3}$ (**D**) $\frac{3}{4}$ (**E**) $\frac{3}{8}$

Question 30

Zev has two machines: the first machine exchanges 1 white token into 4 red tokens, while the other machine exchanges 1 red token into 3 white ones. Zev has 4 white tokens. After exactly 11 exchanges, he has 31 tokens. How many of these 31 tokens are red?

(**A**) 21 (**B**) 17 (**C**) 14 (**D**) 27 (**E**) 11

Rough Working