The Turtle Mathematics Contest 2021

Contest C

 

First Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade: \_\_\_\_\_\_

Last Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ School: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**(Circle the answer. Only one answer is correct.)**

 Part A (3 points each)

.

1. Susan lives on a street where houses are numbered from 1 to 24. How many houses have a 2

as part of their number?

 (A) 7 (B) 8 (C) 10 (D) 11 (E) 12

2.

 Combining with gives

1. (B) (C)

(D) (E)

1. Alex has a secret code that assigns a different number to each letter of the alphabet. If he

 as encoded the name of an animal with the numbers: 3 11 13 9 21 5,

 what animal could it be?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. turtle
 | 1. beetle
 | 1. kitten
 | 1. piglet
 | 1. baboon
 |

1. Alysia is rotating a shape 4 times. The first 3 rotations are shown.

 If she keeps rotating the same way, what does the next rotation look like?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1.
 | 1.
 | 1.
 | 1.
 | 1.
 |

1. Fiona has 4 pieces of this shape: . If she can use some or all of them, which shape can she ***not*** make if pieces can’t overlap?
2. (B) (C)

 (D) (E)

1. Four bags contain either 1 or 2 or 3 or 4 candies, with no repetitions. Connor, Daniel and Evan divide

 up the bags so that Connor gets 4 candies and Daniel gets 5. How many candies remain for Evan?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. None
 | 1. 1
 | 1. 2
 | 1. 3
 | 1. 4
 |  |

 7. If the pattern continues, what number goes in **X**?

 17 16 15 14 13

 18 5 4 3 12

 19 6 1 2 11

 20 7 8 9 10

 etc. **X**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. 18
 | 1. 23
 | 1. 33
 | 1. 37
 | 1. 45
 |

Part B (4 points each)

1. At a school banquet hall, the guest tables seat 8 people each. At each of the tables there are

2 parents. The rest of all the seats are occupied by students. If there are 14 parents at the event,

 how many students are there?

1. 6 (B) 22 (C) 28 (D) 42 (E) 56
2. You have a chocolate bar that is divided into squares as shown.

 What is the fewest number of steps required to break it into 1 × 1 pieces? You can break the

 entire section of an existing piece of chocolate horizontally or vertically. You cannot break two

 or more pieces at once (so no cutting through stacks).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. 12
 | 1. 14
 | 1. 16
 | 1. 18
 | 1. 20
 |

A

B

D

C

 10.

When Train 1 travels from A to B and then to C, it travels 15 km.

When Train 2 travels from C to B and then to D, it travels 21 km.

When Train 3 travels from D to B and then to A, it travels 12 km.

If Train 1 goes from B to A, Train 2 goes from B to C and Train 3 goes from B to D, how

many km do the 3 trains travel in total?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. 48
 | 1. 21
 | 1. 24
 | 1. 15
 | 1. 12
 |

1. Grannie's watch is consistently faster than normal, and Grandpa's watch is consistently slower

than normal. When one hour has passed, 65 minutes have passed according to Grannie's watch

and 55 minutes have passed according to Grandpa's watch. At 12:00 noon, they both set their

watches to the correct time. Later that afternoon when Grandpa’s watch says 4:35, what time

will Grannie’s watch say?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. 4:25
 | 1. 4:35
 | 1. 5:00
 | 1. 5:25
 | 1. 5:35
 |

1. The streets in Jason’s town form blocks that are perfectly square. He lives at the corner of two streets.

He starts walking for 3 blocks. He stops and turns to his right and walks 1 block. He stops and turns to

his left and walks 2 blocks. Then he stops again and turns to his left and walks 3 blocks, then turns left

again and walks for 1 block. Which one of the following ways is the fastest back to his home?

1. Left for 1 block and then Right for 3 blocks
2. Left for 3 blocks and then Right of 4 blocks
3. Left of 1 block and then Left for 2 blocks
4. Left for 2 blocks and then Right for 4 blocks
5. Right for 1 block and then Left for 2 blocks
6. Mr. Green has 2 sons, Marcus who was born in June and Anthony who was born in August in a

different year. Every year, Mr. Green plants trees on his sons' birthdays. The number of trees he plants

on each birthday is twice the number of the son's age. If Marcus turned 3 years old in June of 2020

and by the end of 2020, the total number of trees Mr. Green has planted from that year plus all

previous years is 32, how old was Anthony on his birthday in 2020?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. 4
 | 1. 5
 | 1. 6
 | 1. 7
 | 1. 8
 |

1. The octagon below has equal sides and angles. It is folded so that point A coincides with point C

and point B coincides with point D.

 A B

 C D

The resulting shape will be a

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. rectangle
 | 1. triangle
 | 1. hexagon
 | 1. trapezoid
 | 1. parallelogram
 |

Part C (5 points each)

15. PQRS is a 3 m by 4 m rectangular pool table. A ball is rolled from the corner P at 45°.

 It bounces off side SR at 45°. The ball continues to bounce off sides of the table at

 45° until it reaches another corner. Which corner does it reach?

 P Q

45°

 S R

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| (A) P | (B) Q | (C) R | (D) S |  |

 (E) It keeps bouncing around and never reaches a corner.

16. When the shape below is cut and folded, it forms a box.

 7 cm

 5 cm

 16 cm

 What is the volume of the box in cm3?

(A) 20 (B) 28 (C) 30 (D) 280 (E) 560

17. The 3 dark dotted lines represent mirrors. The object on the left is reflected in each mirror.

?

 mirror mirrors

 What symbol will be where the **?** is shown after the last reflection?

1. (B) (C) (D) (E) one of the others

1. If Ꜫ represents an even number and Ꝋ represents an odd number, then which of the

 expressions below would be an odd number?

1. 3Ꜫ + 4Ꝋ (B) Ꝋ × Ꝋ + Ꝋ (C) 3Ꝋ × Ꝋ + 2Ꜫ (D) 5Ꜫ + Ꝋ × Ꝋ + Ꝋ (E) Ꝋ × Ꜫ + 5Ꜫ
2. Given the sequence: 1, 1, 4, 2, 9, 3, 16, 4, 25, 5, 36, 6, 49, 7, …

 What is the next number?

1. 8 (B) 56 (C) 60 (D) 64 (E) 81

20. The numbers 1, 2, 3, 4, 6, 8, and 12 are placed in circles so that the product of the numbers

 in 3 circles connected by straight lines is always the same.

 The smallest such produt is:

1. 12 (B) 24 (C) 48 (D) 96 (E) 120
2. Each Sunday night, Maria’s parents give her an allowance of $10 which she puts in her piggy bank.

 In addition to the $10, they give her the amount of money she has in the piggy bank at that time. If

 she starts out with $0.00 in the piggy bank and spends $8 the first week and $7 the second week, how

 much money will she have in the piggy bank after her 3rd allowance?

1. $14 (B) $17 (C) $24 (D) $27 (E) None of these

 **The Turtle Math Contest**

 

 **Response Form**

 **Contest C**

**Student’s Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **First Name Last Name**

**School: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Circle the correct answer. Only one answer is correct.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  **1** | A B C D E |  **8** | A B C D E |  **15** | A B C D E |
|  **2** | A B C D E |  **9** | A B C D E |  **16** | A B C D E |
|  **3** | A B C D E |  **10** | A B C D E |  **17** | A B C D E |
|  **4** | A B C D E |  **11** | A B C D E |  **18** | A B C D E |
|  **5** | A B C D E |  **12** | A B C D E |  **19** | A B C D E |
|  **6** | A B C D E |  **13** | A B C D E |  **20** | A B C D E |
|  **7** | A B C D E |  **14** | A B C D E |  **21** |  A B C D E |

For Marker’s Use:

|  |  |  |  |
| --- | --- | --- | --- |
|   |  Part A (3 points)  |  Part B (4 points)  |  Part C (5 points)  |
| Number Correct |  |  |  |
| Points |  |  |  |

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| Points |  |  |  |