

## 2024 Grade Three Spirit of Math Contest Solutions

- 1) **B** Regroup the numbers to calculate.  
 $1 + 27 + 5 + 3 + 9 + 15 = 1 + 9 + 27 + 3 + 5 + 15$   
 $= 10 + 30 + 20$   
 $= 60$
- 2) **B** Each new term is created by adding three to the previous term.  
Therefore, the next term is  $16 + 3 = 19$ .
- 3) **A** The numbers from least to greatest are:  $-18, -11, 2, 15, 27$ .  
Therefore, 2 is in the middle.
- 4) **B** Cho gifted 4 bracelets to each of her friends.  
Therefore, she has  $52 \div 4 = 13$  friends.
- 5) **D** Padma scored 7 points and Parmjit scored  $7 + 2 = 9$  points.  
Together, they scored  $7 + 9 = 16$  points.
- 6) **C** The record that is not Firedive is Dark Summer, and the other one is Firedive.  
Therefore, Frank plays the Firedive record.
- 7) **B** An octagon has eight sides and one quarter of eight is two.
- 8) **D** For the number to be a palindrome, the third digit must be the same as the third-last digit and the second-last digit must be the same as the second digit.  
Therefore, the first question mark must be 7 and the second question mark must be 4.
- 9) **B** Jasmine, Justin and Jordan each invited one friend for a total of six people at the party. The number of parallel cuts is one less than the number of pieces needed.  
Therefore, they need to make  $6 - 1 = 5$  parallel cuts.
- 10) **A** Use a Venn diagram to solve this problem.  
There are  $17 + 21 = 38$  cupcakes with a cherry on top or icing, but there are only 30 cupcakes in the box. This means that  $38 - 30 = 8$  cupcakes were counted twice.  
Therefore, eight cupcakes have both a cherry on top and icing.
- Total: 30 cupcakes

Cherry on top: 17	Icing: 21
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9      8      13
- 11) **B** Simplify each side of the equal sign:  $3 \times 7 = 21$  and  $26 - 11 = 15$ .  
Since  $15 + 6 = 21$ , the missing number is 6.
- 12) **C** Check each option.  
A) The last two digits are 20. Since 20 is divisible by 4, 4 is a divisor.  
B) Since 220 ends in zero, five is a divisor.  
C) Since  $220 \div 7 = 31 \text{ R } 3$ , seven is not a divisor.  
D) Since  $220 \div 11 = 20$ , eleven is a divisor.

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- 13) **A** Make an organized chart. Since Amira is allergic to dairy, she must have ordered the only sandwich without cheese, which is steak without cheese. Since Mei does not like chicken, she must have ordered meatball with cheese. Therefore, Camille must have ordered the last remaining sandwich, chicken with cheese.

	Chicken with Cheese	Meatball with Cheese	Steak without Cheese
Amira	X	X	✓
Camille	✓	X	X
Mei	X	✓	X

- 14) **A** Locate all the months that have points below the line representing  $10^{\circ}\text{C}$ : January ( $6^{\circ}\text{C}$ ), February ( $7^{\circ}\text{C}$ ), and December ( $7^{\circ}\text{C}$ ).

Therefore, there are three months that are colder than  $10^{\circ}\text{C}$ .

- 15) **B** Athena did not read the pages before page 17, so she did not read pages 1 to 16 or the first 16 pages.

Therefore, she read  $63 - 16 = 47$  pages of her textbook.

- 16) **C** Victoria bought 7 cookies per store  $\times$  2 stores = 14 cookies, 3 doughnuts per store  $\times$  5 stores = 15 doughnuts, and 6 ice cream cones per store  $\times$  3 stores = 18 ice cream cones. Therefore, she bought  $14 + 15 + 18 = 47$  sweet treats in total.

- 17) **D** Since nine friends gave out eight presents each, a total of  $9 \times 8 = 72$  presents were exchanged.

- 18) **D** When Meghan was 12 years old, Mike was  $12 \div 3 = 4$  years old. This means that Meghan is  $12 - 4 = 8$  years older than Mike. Therefore, if Meghan is 45 years old today, Mike is  $45 - 8 = 37$  years old.

- 19) **C** Construct the following table based on the secret code. The top row represents the original letter and the bottom row represents the letter from the secret code.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E

According to the table, X in the secret code represents S, T represents O, H represents C, J represents E, and W represents R. Therefore, Santiago's favourite sport is soccer.

- 20) **D** There are  $6 + 2 + 3 = 11$  candies in total and  $11 - 3 = 8$  candies that are not blue. Therefore, the probability of picking a candy that is not blue is  $\frac{8}{11}$ .

- 21) **A** Between 10:35 a.m. and 12:05 p.m., there is one hour and 30 minutes or 90 minutes. Ishita's travel time both ways is  $2 \times 15$  minutes = 30 minutes. Therefore, she was at the art studio for  $90$  minutes  $-$  30 minutes = 60 minutes or one hour, which is also the length of her art class.



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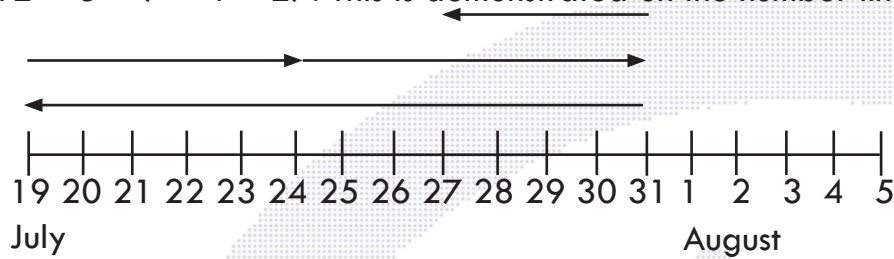
- 22) **B** Add Evan's monthly allowances until \$450 is reached:  $\$10 + \$20 + \$30 + \$40 + \$50 + \$60 + \$70 + \$80 + \$90 = \$450$ . This means it will take Evan nine months to save enough money, so he will be able to buy the bicycle on the ninth month or September.

- 23) **C** Prime factor the given expression:  $2^3 \times 3^3 \times 10 = 2^3 \times 3^3 \times 2 \times 5$   
 $= 2^4 \times 3^3 \times 5$

This is equivalent to option C.

- 24) **D** If all the questions were worth two points, then a perfect score would be  $20 \times 2 = 40$  points. However, Johann scored 55 points, so there were  $55 - 40 = 15$  extra points that must come from questions worth five points. Since each question worth five points contains an extra three points, there were  $15 \div 3 = 5$  questions worth five points.

- 25) **A** Begin with the date provided in the question, July 31<sup>st</sup>. Working backwards,  $31 - 12 + 5 + 7 - 4 = 27$ . This is demonstrated on the number line below.



Therefore, Renee's birthday is July 27<sup>th</sup>, which is also the day when her vacation is scheduled to begin.

- 26) **C** "ENJOY" has five unique letters, so there are  $5! = 5 \times 4 \times 3 \times 2 \times 1$   
 $= 120$

Therefore, there are 120 ways to arrange the letters in this word.

- 27) **D** A) "How many tests does Kate have to write?" is given in the question.  
B) "Is Kate scoring higher on the tests than her classmates?" is not relevant to the problem.  
C) "Is Kate's score increasing or decreasing with every test?" is not relevant to the problem.  
D) "What is Kate's total score so far?" helps determine how many more points Kate needs to achieve her goal, which helps solve the problem.

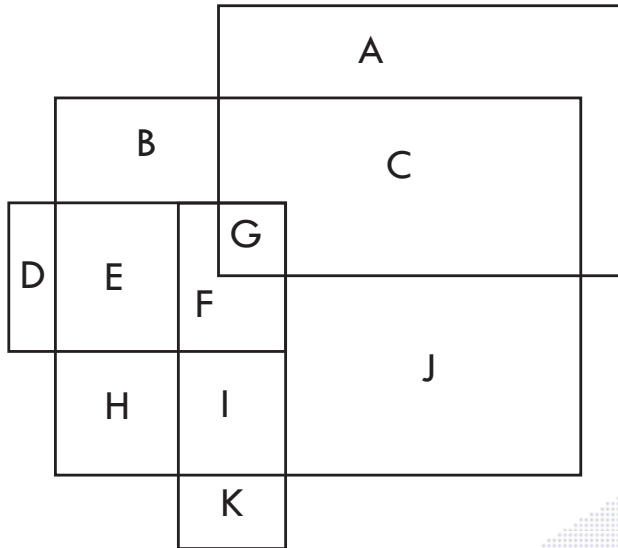
- 28) **C** Add the hamburgers and hot dogs together to find the cost of eight hamburgers and eight hot dogs.

$$\begin{array}{r} 3 \text{ hamburgers} + 5 \text{ hot dogs} = \$20 \\ + 5 \text{ hamburgers} + 3 \text{ hot dogs} = \$12 \\ \hline 8 \text{ hamburgers} + 8 \text{ hot dogs} = \$32 \end{array}$$

Therefore, two hamburgers and two hot dogs cost  $(\$32 \div 8) \times 2 = \$8$ .

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- 29) **C** If 5 dogs can eat 20 bones in 2 hours, then  $5 \times 2 = 10$  dogs can eat  $20 \times 2 = 40$  bones in 2 hours. Therefore, 10 dogs can eat  $40 \times 3 = 120$  bones in  $2 \times 3 = 6$  hours.
- 30) **D** Label each region of the diagram and make a chart to help you count.



# of Shapes	Letters	Total
1	B, D, E, G, H, I, J, K	8
2	CG, DE, EH, FG, HI, IK	6
3	ACG, EFG, FGI	3
4	DEFG, FGIK	2
5	EFGHI	1
8	BCEFGHIJ	1
<b>TOTAL</b>		<b>21</b>

