The CENTRE for EDUCATION
in MATHEMATICS and COMPUTING

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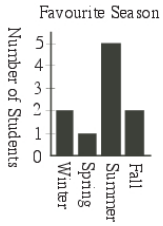
Gauss Contest Grade 7
Problems

1. The value of $5+4-3+2-1$ is
(A) 0 (B) -5 (C) 3 (D) -3 (E) 7

2. The value of $\sqrt{9+16}$ is
(A) 5.2 (B) 7 (C) 5.7 (D) 25 (E) 5

3. Students were surveyed about their favourite season. The results are shown in the bar graph. What percentage of the 10 students surveyed chose Spring?



(A) 50 (B) 10 (C) 25 (D) 250 (E) 5

4. Ground beef sells for \$5.00 per kg. How much does 12 kg of ground beef cost?
(A) \$5.00 (B) \$12.00 (C) \$60.00 (D) \$17.00 (E) \$2.40

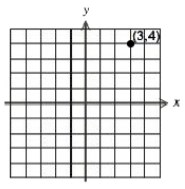
5. The smallest number in the list $\{1.0101, 1.0011, 1.0110, 1.1001, 1.1100\}$ is
(A) 1.0101 (B) 1.0011 (C) 1.0110 (D) 1.1001 (E) 1.1100

6. You are writing a multiple choice test and on one question you guess and pick an answer at random. If there are five possible choices (A,B,C,D,E), what is the probability that you guessed correctly?
(A) $\frac{1}{5}$ (B) $\frac{5}{5}$ (C) $\frac{4}{5}$ (D) $\frac{2}{5}$ (E) $\frac{3}{5}$

7. $\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}$ equals
(A) $3\frac{1}{3}$ (B) $7+\frac{1}{3}$ (C) $\frac{3}{7}$ (D) $7+3$ (E) $7\times\frac{1}{3}$

8. Keegan paddled the first 12 km of his 36 km kayak trip before lunch. What fraction of his overall trip remains to be completed after lunch?
(A) $\frac{1}{2}$ (B) $\frac{5}{6}$ (C) $\frac{3}{4}$ (D) $\frac{2}{3}$ (E) $\frac{3}{5}$

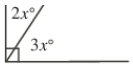
9. If the point $(3,4)$ is reflected in the x-axis, what are the coordinates of its image?



(A) $(-4,3)$ (B) $(-3,4)$ (C) $(4,3)$ (D) $(3,-4)$ (E) $(-3,-4)$

10. I bought a new plant for my garden. Anika said it was a red rose, Bill said it was a purple daisy, and Cathy said it was a red dahlia. Each person was correct in stating either the colour or the type of plant. What was the plant that I bought?
(A) purple dahlia (B) purple rose (C) red dahlia
(D) yellow rose (E) red daisy

11. In the diagram, the value of x is



(A) 15 (B) 20 (C) 22 (D) 18 (E) 36

12. A square has a perimeter of 28 cm. The area of the square, in cm^2, is
(A) 196 (B) 784 (C) 64 (D) 49 (E) 56

13. Five children had dinner. Chris ate more than Max. Brandon ate less than Kayla. Kayla ate less than Max but more than Tanya. Which child ate the second most?
(A) Brandon (B) Chris (C) Kayla (D) Max (E) Tanya

14. A *palindrome* is a positive integer that is the same when read forwards or backwards. For example, 545 and 1331 are both palindromes. The difference between the smallest three-digit palindrome and the largest three-digit palindrome is
(A) 909 (B) 898 (C) 888 (D) 979 (E) 878

15. A ski lift carries a skier at a rate of 12 km per hour. How many kilometres does the ski lift carry the skier in 10 minutes?
(A) 120 (B) 1.2 (C) 2 (D) 2.4 (E) 1.67

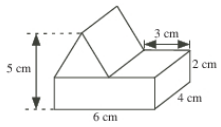
16. A 51 cm rod is built from 5 cm rods and 2 cm rods. All of the 5 cm rods must come first, and are followed by the 2 cm rods. For example, the rod could be made from seven 5 cm rods followed by eight 2 cm rods. How many ways are there to build the 51 cm rod?
(A) 5 (B) 6 (C) 7 (D) 8 (E) 9

17. In Braydon's cafeteria, the meats available are beef and chicken. The fruits available are apple, pear and banana. Braydon is randomly given a lunch with one meat and one fruit. What is the probability that the lunch will include a banana?
(A) $\frac{1}{3}$ (B) $\frac{2}{3}$ (C) $\frac{1}{2}$ (D) $\frac{1}{5}$ (E) $\frac{3}{5}$

18. Three pumpkins are weighed two at a time in all possible ways. The weights of the pairs of pumpkins are 12 kg, 13 kg and 15 kg. How much does the lightest pumpkin weigh?
(A) 4 kg (B) 5 kg (C) 6 kg (D) 7 kg (E) 8 kg

19. The sum of four numbers is T. Suppose that each of the four numbers is now increased by 1. These four new numbers are added together and then the sum is tripled. What is the value of this final result?
(A) $3T + 3$ (B) $3T + 4$ (C) $3T + 12$ (D) $T + 12$ (E) $12T$

20. A triangular prism is placed on a rectangular prism, as shown. The volume of the combined structure, in cm^3, is



(A) 76 (B) 78 (C) 72 (D) 84 (E) 66

21. Steve begins at 7 and counts forward by 3, obtaining the list 7, 10, 13, and so on. Dave begins at 2011 and counts backwards by 5, obtaining the list 2011, 2006, 2001, and so on. Which of the following numbers appear in each of their lists?
(A) 1009 (B) 1006 (C) 1003 (D) 1001 (E) 1011

22. A pool has a volume of 4000 L. Sheila starts filling the empty pool with water at a rate of 20 L/min. The pool springs a leak after 20 minutes and water leaks out at 2 L/min. Beginning from the time when Sheila starts filling the empty pool, how long does it take until the pool is completely full?
(A) 3 hours (B) 3 hours 40 minutes (C) 4 hours
(D) 4 hours 20 minutes (E) 3 hours 20 minutes

23. In the addition of the three-digit numbers shown, the letters A, B, C, D, and E each represent a single digit.

$$\begin{array}{ccc} A & B & E \\ A & C & E \end{array}$$

$$\begin{array}{cccc} & A & D & E \\ + & & & \\ \hline 2 & 0 & 1 & 1 \end{array}$$

The value of $A+B+C+D+E$ is

(A) 34 (B) 21 (C) 32 (D) 27 (E) 24

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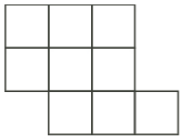
24. From the figure shown, three of the nine squares are to be selected. Each of the three selected squares must share a side with at least one of the other two selected squares. In how many ways can this be done?



(A) 19 (B) 22 (C) 15 (D) 16 (E) 20

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25. Ten circles are all the same size. Each pair of these circles overlap but no circle is exactly on top of another circle. What is the greatest possible total number of intersection points of these ten circles?

(A) 40 (B) 70 (C) 80 (D) 90 (E) 110
