The CENTRE for EDUCATION in MATHEMATICS and COMPUTING

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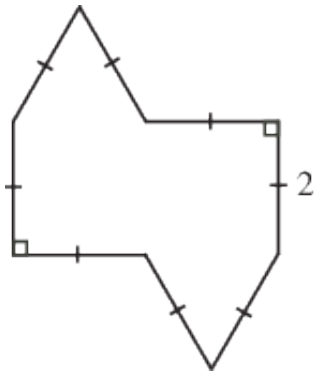
Gauss Contest Grade 7

1. What number should be subtracted from 21 to give 8?
   (A) 12 (B) 13 (C) 14 (D) 15 (E) 16

2. $0.8 - 0.07$ equals
   (A) 0.1 (B) 0.71 (C) 0.793 (D) 0.01 (E) 0.73

3. $\frac{1}{2} + \frac{1}{4} + \frac{1}{8}$ is equal to
   (A) 1 (B) $\frac{1}{64}$ (C) $\frac{3}{14}$ (D) $\frac{7}{8}$ (E) $\frac{3}{8}$

4. What is the perimeter of the figure shown?
   (A) 16 (B) 10 (C) 8
   (D) 14 (E) 18

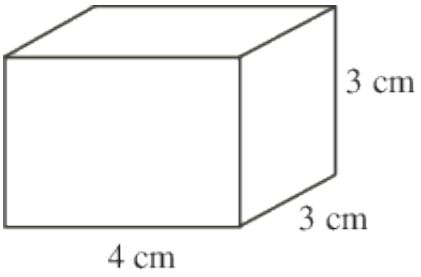


5. Which of the following is closest to 5 cm?
   (A) The length of a full size school bus
   (B) The height of a picnic table
   (C) The height of an elephant
   (D) The length of your foot
   (E) The length of your thumb

6. The measures of two angles of a triangle are $25°$ and $70°$. The measure of the third angle is
   (A) $85°$ (B) $105°$ (C) $65°$ (D) $95°$ (E) $75°$

7. The smallest number in the set $\left\{\frac{1}{2}, \frac{2}{3}, \frac{1}{4}, \frac{5}{6}, \frac{7}{12}\right\}$ is
   (A) $\frac{1}{2}$ (B) $\frac{2}{3}$ (C) $\frac{1}{4}$ (D) $\frac{5}{6}$ (E) $\frac{7}{12}$

8. How many 1 cm × 1 cm × 1 cm blocks are needed to build the solid rectangular prism shown?

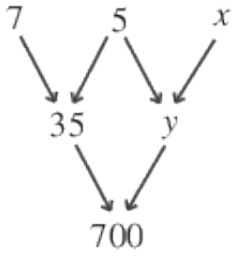


(A) **10** (B) **12** (C) **33**
(D) **66** (E) **36**

9. The word **BANK** is painted exactly as shown on the outside of a clear glass window. Looking out through the window from the inside of the building, the word appears as

(A) ꓭAИK (B) ꓘИAꓭ (C) ꓭAИK (D) ꓘИAꓭ (E) KNAB

10. Each number below the top row is the product of the number to the right and the number to the left in the row immediately above it. What is the value of x?



(A) **8** (B) **4** (C) **7**
(D) **5** (E) **6**

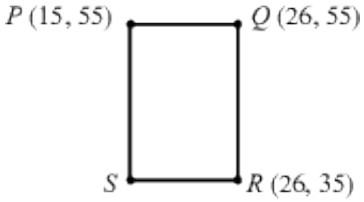
11. The cost, before taxes, of the latest CD released by The Magic Squares is $14.99. If the sales tax is 15%, how much does it cost to buy this CD, including tax?

(A) **$17.24** (B) **$15.14** (C) **$2.25** (D) **$16.49** (E) **$16.50**

12. The Grade 7 class at Gauss Public School has sold 120 tickets for a lottery. One winning ticket will be drawn. If the probability of one of Mary's tickets being drawn is $\frac{1}{15}$, how many tickets did she buy?

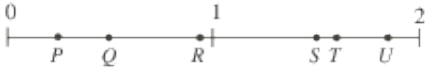
(A) **5** (B) **6** (C) **7** (D) **8** (E) **9**

13. Points $P(15, 55)$, $Q(26, 55)$ and $R(26, 35)$ are three vertices of rectangle $PQRS$. The area of this rectangle is



(A) 360 (B) 800 (C) 220
(D) 580 (E) 330

14. Which of the letters positioned on the number line best represents the value of $S \div T$?



(A) P (B) Q (C) R
(D) T (E) U

15. Sophia did push-ups every day for 7 days. Each day after the first day, she did 5 more push-ups than the day before. In total she did 175 push-ups. How many push-ups did Sophia do on the last day?

(A) **55** (B) **35** (C) **50** (D) **45** (E) **40**

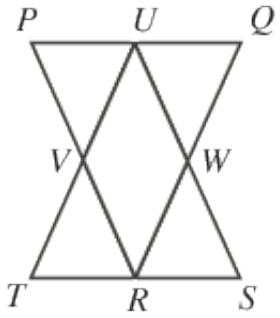
16. A 51 cm rod is built from 5 cm rods and 2 cm rods. All of the 5 cm rods must come first, and are followed by the 2 cm rods. For example, the rod could be made from seven 5 cm rods followed by eight 2 cm rods. How many ways are there to build the 51 cm rod?
(A) 5 (B) 6 (C) 7 (D) 8 (E) 9

17. The mean (average) of the four integers $78, 83, 82,$ and x is 80. Which one of the following statements is true?
(A) x is 2 greater than the mean
(B) x is 1 less than the mean
(C) x is 2 less than the mean
(D) x is 3 less than the mean
(E) x is equal to the mean

18. If x, y and z are positive integers with $xy = 18$, $xz = 3$ and $yz = 6$, what is the value of $x + y + z$?
(A) 6 (B) 10 (C) 25 (D) 11 (E) 8

19. The whole numbers from 1 to 1000 are written. How many of these numbers have at least two 7's appearing side-by-side?
(A) 10 (B) 11 (C) 21 (D) 30 (E) 19

20. Each of $\triangle PQR$ and $\triangle STU$ has an area of 1. In $\triangle PQR$, U, W and V are the midpoints of the sides. In $\triangle STU$, R, V and W are the midpoints of the sides. What is the area of parallelogram $UVRW$?
(A) 1 (B) $\frac{1}{2}$ (C) $\frac{1}{3}$
(D) $\frac{1}{4}$ (E) $\frac{2}{3}$



21. A bicycle travels at a constant speed of 15 km/h. A bus starts 195 km behind the bicycle and catches up to the bicycle in 3 hours. What is the average speed of the bus in km/h?
(A) 65 (B) 80 (C) 70 (D) 60 (E) 50

22. In the diagram, a 4×4 grid is to be filled so that each of the digits 1, 2, 3, and 4 appears in each row and each column. The 4×4 grid is divided into four smaller 2×2 squares. Each of these 2×2 squares is also to contain each of the digits 1, 2, 3 and 4. What digit replaces P?
(A) 1 (B) 2 (C) 3
(D) 4 (E) The digit cannot be determined

1		3	
	2		
	P		
			4

23. The digits from 1 to 9 are written in order so that the digit n is written n times. This forms the block of digits $1223334444\cdots999999999$. The block is written 100 times. What is the 1953^{rd} digit written?
(A) 4 (B) 5 (C) 6 (D) 7 (E) 8

24. Four vertices of a quadrilateral are located at $(7,6)$, $(-5,1)$, $(-2,-3)$, and $(10,2)$. The area of the quadrilateral in square units is
(A) 60 (B) 63 (C) 67 (D) 70 (E) 72

25. How many different combinations of pennies, nickels, dimes and quarters use 48 coins to total \$1.00?
(A) 3 (B) 4 (C) 5 (D) 6 (E) 8