The CENTRE for EDUCATION in MATHEMATICS and COMPUTING

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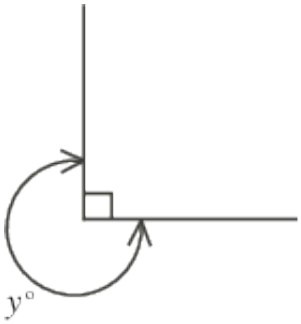
Gauss Contest Grade 8

1. The value of $444 - 44 - 4$ is
(A) 396 (B) 402 (C) 392 (D) 400 (E) 408

2. What time is it 45 minutes after 10:20?
(A) 11 : 00 (B) 9 : 35 (C) 11 : 15 (D) 10 : 55 (E) 11 : 05

3. In the diagram, the value of y is
(A) 60 (B) 100 (C) 120
(D) 180 (E) 270

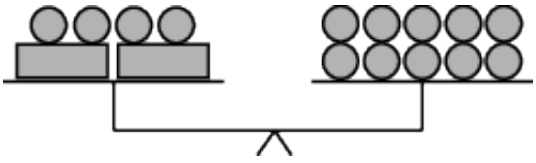


4. A cube having the digits 1, 2, 3, 4, 5, 6 on its six faces is tossed. What is the probability that the number on the top face is 5 or 6?
(A) $\frac{5}{6}$ (B) $\frac{1}{5}$ (C) $\frac{1}{3}$ (D) $\frac{11}{36}$ (E) $\frac{2}{5}$

5. How many integers between 10 and 20 are prime numbers?
(A) 0 (B) 1 (C) 2 (D) 3 (E) 4

6. A water fountain flows at a steady rate of 500 mL every 6 seconds. At this rate, how long will it take to fill a 250 mL bottle?
(A) 2 s (B) 9 s (C) 3 s (D) 6 s (E) 1 s

7. The equal-arm scale shown is balanced.



One  has the same mass as
(A) 
(B) 
(C) 
(D) 
(E) 

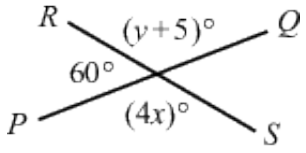
8. The circumference of a circle is 100. The diameter of this circle is equal to
(A) $100 \times \pi$ (B) $\frac{2\pi}{100}$ (C) $\frac{100}{\pi}$ (D) $2\pi \times 100$ (E) $\frac{\pi}{100}$

9. Chris was given $\frac{1}{3}$ of the 84 cookies in the cookie jar. He ate $\frac{3}{4}$ of the cookies that he was given. How many cookies did Chris eat?
(A) **36** (B) **48** (C) **35** (D) **28** (E) **21**

10. Vita picks a number from 1 to 10. Balil adds 5 to this number and calls his result b. Cali subtracts 5 from Vita's number and calls her result c. The value of $b - c$ is
(A) **25** (B) **−10** (C) **0** (D) **5** (E) **10**

11. Which of the following expressions is equal to 5?
(A) $(2 \times 3)^2$ (B) $3 + 2^2$ (C) $2^3 - 1$
(D) $3^2 - 2^2$ (E) $(3 + 2)^2$

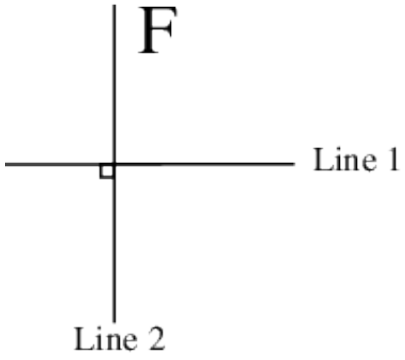
12. Line segments PQ and RS intersect as shown. What is the value of $x + y$?
(A) 145 (B) 70 (C) 130
(D) 85 (E) 240



13. The Summer Olympics are held once every 4 years. During an 18 year period, what is the largest number of Summer Olympics that could be held?
(A) **3** (B) **4** (C) **5** (D) **6** (E) **7**

14. A whole number has exactly 6 positive factors. One of its factors is 16. Which of the following could this number be?
(A) **16** (B) **32** (C) **6** (D) **49** (E) **48**

15. The letter F is reflected in Line 1. The image is then reflected in Line 2. The shape that results is
(A) F (B) Ⅎ (C) ⅁
(D) ⅃ (E) ⅂

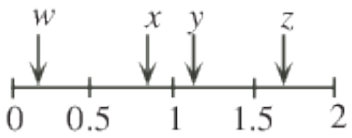


16. A parking lot has 25% more cars than trucks. The ratio of cars to trucks is
(A) **4 : 3** (B) **4 : 1** (C) **9 : 5** (D) **5 : 4** (E) **3 : 1**

17. On a science test, Janine got 80% of the 10 multiple choice questions correct and 70% of the 30 short answer questions correct. What percentage of the 40 questions on the test did she answer correctly?
(A) **74%** (B) **72.5%** (C) **76%** (D) **73%** (E) **73.5%**

18. A rectangle whose side lengths are whole numbers has area 48 cm^2. The perimeter of this rectangle is **32** cm. Measured in cm, the positive difference between the length and the width of the rectangle is
(A) **47** (B) **2** (C) **22** (D) **8** (E) **13**

19. In the diagram, w, x, y, and z represent numbers in the intervals indicated. Which fraction represents the largest value?

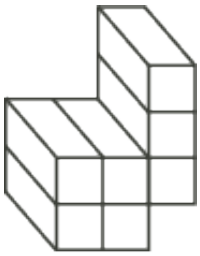


(A) $\frac{x}{w}$ (B) $\frac{y}{x}$ (C) $\frac{y}{w}$
(D) $\frac{z}{x}$ (E) $\frac{z}{w}$

20. A piece of string fits exactly once around the perimeter of a square whose area is 144. Rounded to the nearest whole number, the area of the largest circle that can be formed from the piece of string is

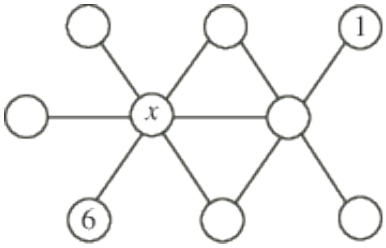
(A) **144** (B) **733** (C) **113** (D) **452** (E) **183**

21. In the diagram, the object is made up of seven $1 \times 1 \times 2$ solids. What is the total surface area of the object?



(A) **42** (B) **40** (C) **38**
(D) **48** (E) **70**

22. In the diagram, each of the integers 1 through 9 is to be placed in one circle so that the integers in every straight row of three joined circles add to 18. The 6 and 1 have been filled in. The value of the number represented by x is

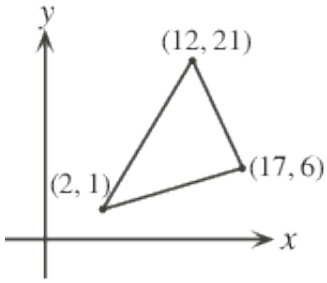


(A) **4** (B) **5** (C) **7**
(D) **8** (E) **3**

23. The sum of the first 100 positive integers is 5050. That is, $1 + 2 + \cdots + 99 + 100 = 5050$. What is the sum of the first 100 positive *odd* integers?

(A) **5050** (B) **10 000** (C) **10 050** (D) **10 100** (E) **10 150**

24. A lattice point is a point (x, y), with x and y both integers. For example, $(2, 3)$ is a lattice point but $(4, \frac{1}{3})$ is not. In the diagram, how many lattice points lie on the perimeter of the triangle?



(A) **16** (B) **18** (C) **20**
(D) **23** (E) **30**

25. A purse contains a collection of quarters, dimes, nickels, and pennies. The average value of the coins in the purse is 17 cents. If a penny is removed from the purse, the average value of the coins becomes 18 cents. How many nickels are in the purse?

(A) **2** (B) **5** (C) **0** (D) **1** (E) **8**