

1. Solve:

$$3x + 1 = x + 9$$

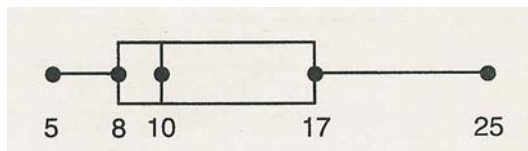
- a.  $-2\frac{2}{3}$       b.  $-4$       c.  $2\frac{2}{3}$       d.  $4$       e. NG

2. Evaluate the following expression for  $x = 2$ ,  $y = -3$ , and  $z = 4$ .

$$4xy - 2z + 3$$

- a. 29      b. 13      c.  $-13$       d.  $-29$       e. NG

3. What is the lower quartile of the following box-and-whisker plot?



- a. 5      b. 8      c. 10      d. 17      e. NG

4.



The two circles in the diagram have the same center, a radius of the larger circle is 5 and the radius of the smaller circle is 2. The area of the shaded region is:

- a.  $6\pi$       b.  $9\pi$       c.  $21\pi$       d.  $29\pi$       e. NG

5. The second hand of a clock makes ? revolutions every 24 hours.

- a. 60      b. 1440      c. 3600      d. 86400      e. NG

6. Evaluate  $\frac{ab}{a+b}$  for  $a = 6$  and  $b = 12$ .

- a.  $\frac{1}{4}$       b.  $\frac{4}{5}$       c. 12      d. 4      e. NG

7. All of the following statements are true EXCEPT:

a.  $78 \cdot (-7) = 70(-7) + 8(-7)$       b.  $12 \cdot (-3) + 6 = 12 \cdot 6 + (-3)$

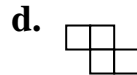
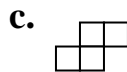
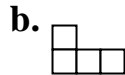
c.  $24 \cdot (-6) = 20(-6) + 4(-6)$       d.  $8 + (-6) \cdot 5 = 8 + 5 \cdot (-6)$

e.  $-15 + 34 = 34 + (-15)$

8. Of the following, which is *not* a polygon?

- a. triangle    b. rhombus    c. pentagon    d. circle    e. octagon

9. All the figures below consist of the same four squares of equal size. Which figure has the smallest perimeter?



e. NG

10. Simplify the expression and write the answer without negative exponents.

$$\frac{(3s^2t^3)(-5st^3)}{2s^2t}$$

- a.  $s^3t$     b.  $2s^3t^5$     c.  $-\frac{15st^5}{2}$     d.  $-15st^5$     e. NG

11. 1.4 minutes =

- a. 64 seconds    b. 74 seconds    c. 84 seconds    d. 96 seconds    e. NG

12. If 3 times a number is 48, then one-fourth of the same number is:

- a. 16      b. 4      c. 12      d. 30      e. NG

13. Solve:

$$-2x + 25 + 4x + 25 = -6$$

- a. 28      b. -28      c. 22      d. -22      e. NG

14. A triangle has sides of lengths 2, 2, and 3. This triangle is:

- a. scalene    b. isosceles    c. right    d. equilateral    e. NG

15. If  $\blacksquare \times \blacktriangle = 72$  and  $\blacksquare - \blacktriangle = 71$ , then  $\blacksquare + \blacktriangle =$

- a. 17      b. 27      c. 18      d. 73      e. NG

16. The sum of the digits of a four-digit number can *never* equal:

- a. 1      b. 10      c. 30      d. 40      e. NG

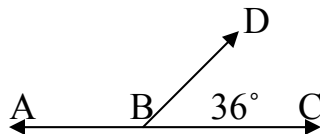
17. The scale of a map is:  $\frac{3}{4}$  of an inch = 10 miles. If the distance on the map between two towns is 12 inches, the actual distance between the towns is:

- a. 90 miles    b. 120 miles    c. 150 miles    d. 160 miles    e. NG

18. Sue had an average of exactly 84 after taking two tests. On the third test she scored 96. Find her average for all three tests.

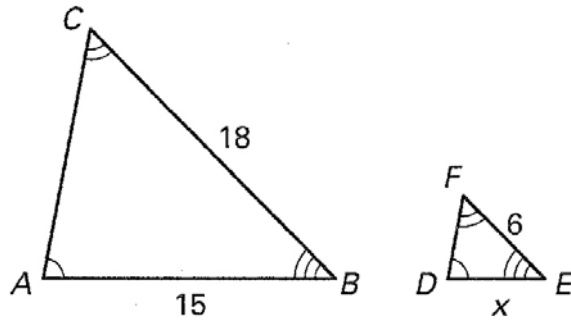
- a. 88    b. 90    c. 91    d. 92    e. NG

19. In the straight-line diagram, if  $m\angle CBD = 36^\circ$ , then  $m\angle ABD =$



- a.  $144^\circ$     b.  $324^\circ$     c.  $72^\circ$     d.  $54^\circ$     e. NG

20. The two triangles below are similar triangles. What is the length of  $\overline{DE}$ ?



- a. 3      b. 4      c. 15      d. 10      e. 5
21. A teacher allows her students to decide whether to use the mean, median, or mode to determine their test averages. One student determined that he will receive the highest average if he uses the mean. Which test scores are his?
- a. 72, 83, 95, 70, 85      b. 92, 83, 76, 76, 93      c. 81, 85, 73, 82, 76
- d. 81, 85, 70, 72, 85      e. NG
22. If 14 *whosits* equals 35 *whatsits*, then 50 *whatsits* equals:
- a. 125 *whosits*      b. 70 *whosits*      c. 20 *whosits*      d. 7 *whosits*      e. NG

23. A man has 99¢ in change. If he has the fewest possible coins, how many nickels does he have?
- a. 0      b. 1      c. 2      d. 3      e. NG
24. The sum of two whole numbers is 36. Their greatest possible product is:
- a. 35      b. 260      c. 320      d. 324      e. NG
25. A palindrome is any word or number which reads the same forwards or backwards. For example, the number “12321” and the word “level” are both palindromes. How many whole numbers between 100 and 1000 are palindromes?
- a. 9      b. 81      c. 90      d. 99      e. NG
26. A right triangle *cannot* have an angle of measure.
- a.  $1^\circ$       b.  $89^\circ$       c.  $90^\circ$       d.  $91^\circ$       e. NG

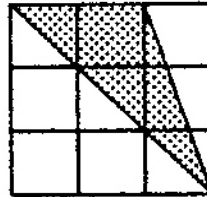
27. How many different three-digit numbers can be made using any three of the following five digits: 1, 2, 2, 3, and 3?

- a. 12      b. 16      c. 18      d. 20      e. NG

28. The lengths of the sides of an isosceles triangle are 6 cm and 12 cm. The perimeter of the triangle is:

- a. 18 cm      b. 30 cm      c. 36 cm      d. 72 cm      e. NG

29. In the pattern of unit squares shown in the diagram, the shaded area is:



- a. 2 sq. units      b. 3 sq. units      c. 5 sq. units      d. 6 sq. units      e. NG

30. Event *A* occurs every 4 days, event *B* occurs every 6 days, and event *C* occurs every 8 days. If all three events occur on July 1, the next day that they will all occur together is:

- a. July 9      b. July 19      c. July 24      d. July 25      e. NG