



46. The ratio of the radii of two circles is 4:9. What is the ratio of their circumferences?

F. 2:3
 G. 4:9
 H. 16:81
 J. $4:8\pi$
 K. $9:18\pi$

DO YOUR FIGURING HERE.

47. A circle in the standard (x,y) coordinate plane is tangent to the x -axis at 5 and tangent to the y -axis at 5. Which of the following is an equation of the circle?

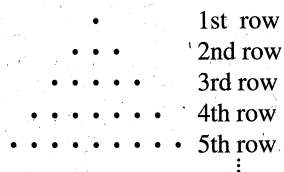
A. $x^2 + y^2 = 5$
 B. $x^2 + y^2 = 25$
 C. $(x - 5)^2 + (y - 5)^2 = 5$
 D. $(x - 5)^2 + (y - 5)^2 = 25$
 E. $(x + 5)^2 + (y + 5)^2 = 25$

48. In the complex numbers, where $i^2 = -1$,

$$\frac{1}{1+i} \cdot \frac{1-i}{1-i} = ?$$

F. $i - 1$
 G. $1 + i$
 H. $1 - i$
 J. $\frac{1-i}{2}$
 K. $\frac{1+i}{2}$

49. Which of the following statements describes the total number of dots in the first n rows of the triangular arrangement illustrated below?



- A. This total is always equal to 25 regardless of the number of rows.
 B. This total is equal to twice the number of rows.
 C. This total is equal to 5 times the number of rows.
 D. This total is equal to the square of the number of rows.
 E. There is no consistent relationship between this total and the number of rows.

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50. After polling a class of 20 music students by a show of hands, you find that 8 students play the guitar and 9 students play the piano. Given that information, what is the minimum number of students in this music class who play both the guitar and the piano?

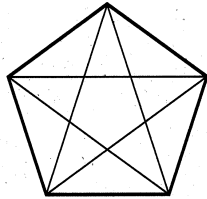
F. 0
G. 1
H. 8
J. 9
K. 17

DO YOUR FIGURING HERE.

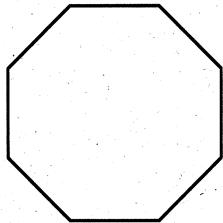
51. Which of the following is the set of all real numbers x such that $x + 3 > x + 5$?

A. The empty set
B. The set containing all real numbers
C. The set containing all negative real numbers
D. The set containing all nonnegative real numbers
E. The set containing only zero

52. Pentagons have 5 diagonals, as illustrated below.



How many diagonals does the octagon below have?



F. 8
G. 16
H. 20
J. 30
K. 40

53. Douglas wants to draw a circle graph showing the favorite colors of his friends. When he polled his friends asking each their favorite color, 25% of his friends said red; 30% of his friends said blue; 20% of his friends said green; 10% of his friends said purple; and the remaining friends said colors other than red, blue, green, and purple. The colors other than red, blue, green, and purple will be grouped together in an Other sector. What will be the degree measure of the Other sector?

A. 108°
B. 54°
C. 27°
D. 15°
E. 10°

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