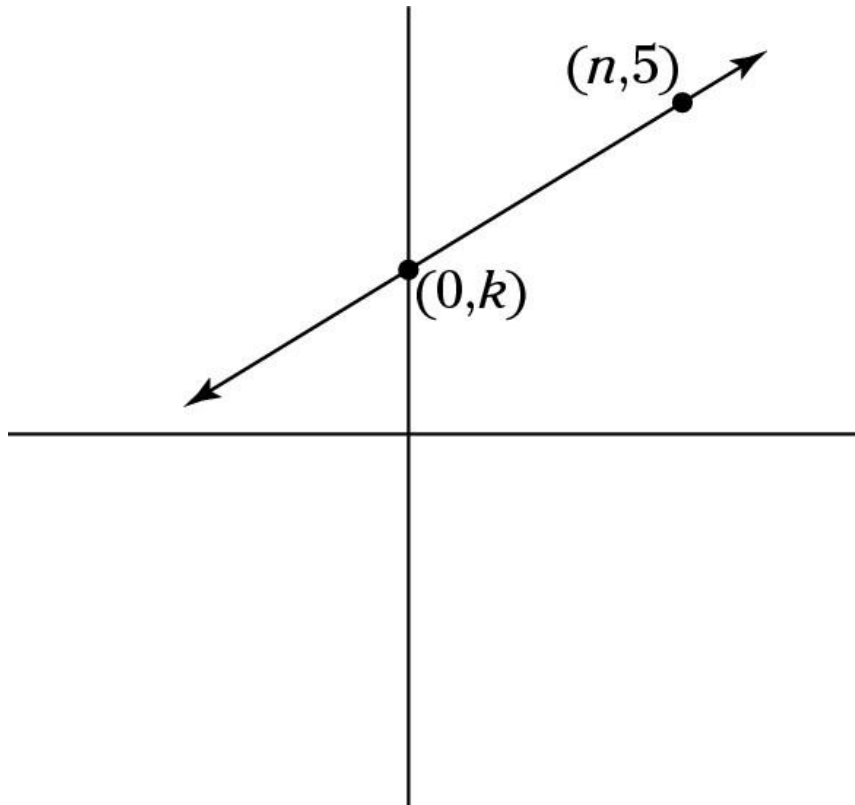


ACT MATH Practice Paper 10

SET 1

1. If the equation for the line shown in the following graph is $y = \frac{1}{3}x + 3$, what is the value of kn ?



- A. 9
- B. 12
- C. 15
- D. 18
- E. 24

2. Alfred and Rani both picked different two-digit numbers. If you multiply Alfred's number by 5 and double Rani's number, the sum is 300. If you double Alfred's number and multiply Rani's number by 3, the sum of the two numbers is 252. What is the sum of their two numbers?

- F. 96
- G. 112
- H. 128
- J. 144

K. 150

3. What is the equation for a line that intersects the origin and is perpendicular to $2x - 4y = 13$?

A. $y = -2$

B. $y = 2x$

C. $y = -2x$

D. $y = \frac{1}{2}x$

E. $y = \frac{1}{2}x - \frac{13}{4}$

4. This semester, Gerry scored an average of 93 on his five history exams. He got the same score on his first two exams, and then he got a 94, an 85, and a 90 on the remaining exams. What score did he receive on his first two exams?

F. 95

G. 96

H. 97

J. 98

K. 99

5. What is the value of x if $\frac{2x + 3y - 19}{y + 5} = 3$?

A. 17

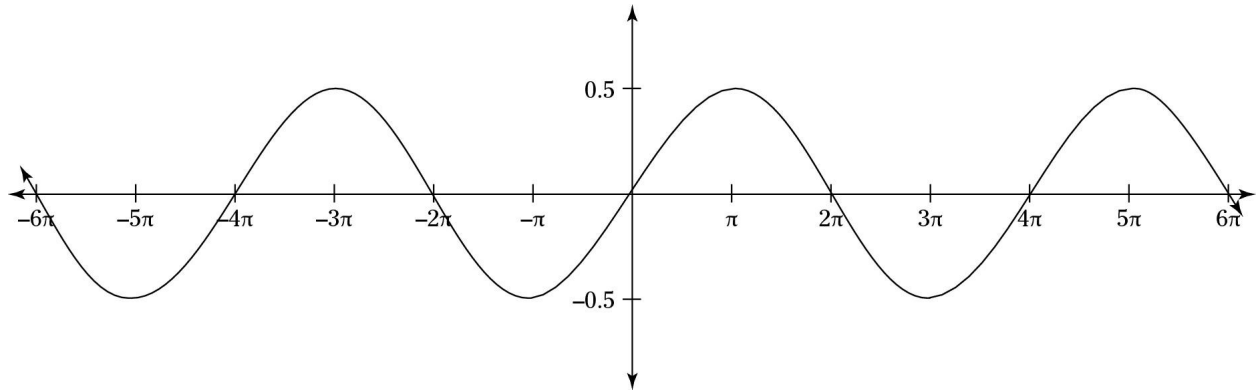
B. -17

C. 29

D. -29

E. Cannot be determined from the information given.

6. A scientist performs an experiment in which she measures four values two times each, with the following results:



F. 0.5

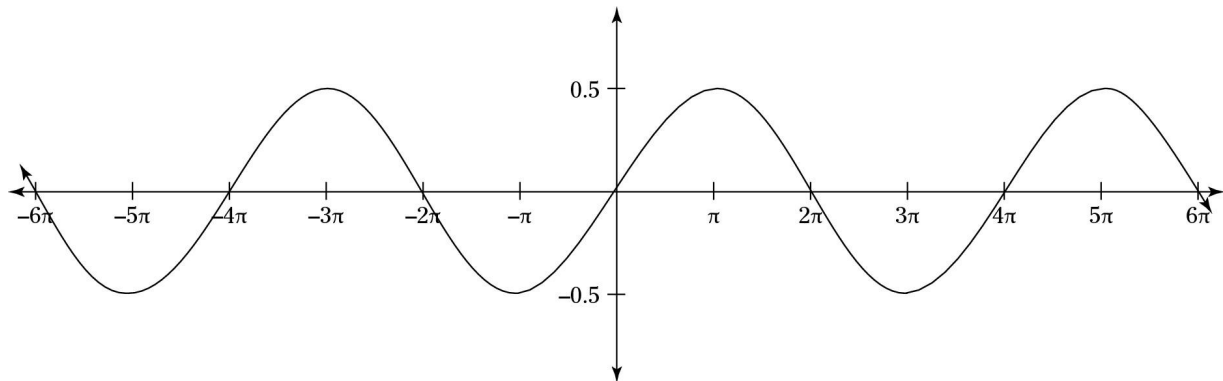
G. 1

H. π

J. 2π

K. 4π

7. Which of the following is the amplitude of the function shown in the following graph?



A. 0.5

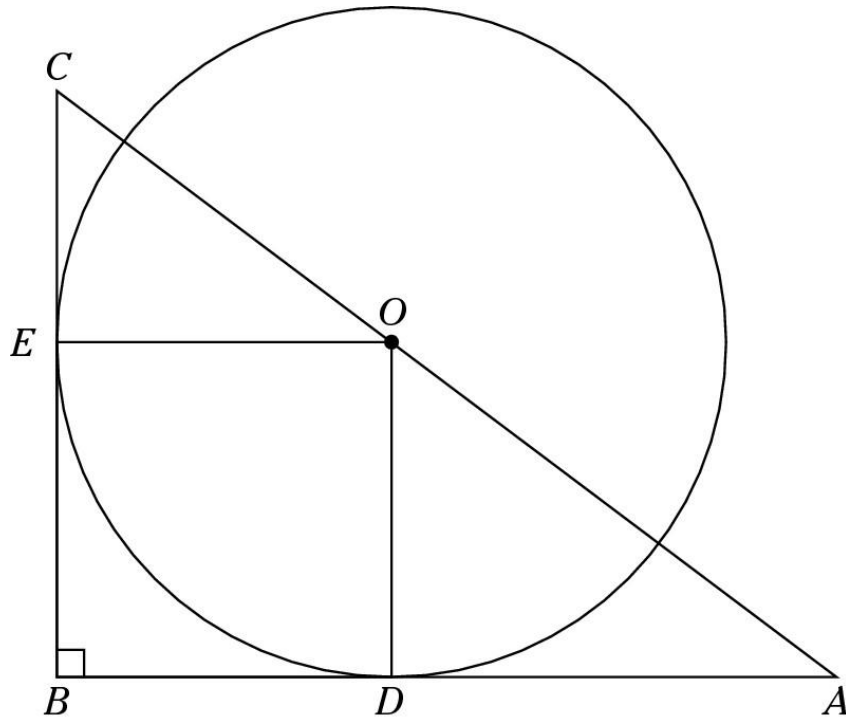
B. 1

C. π

D. 2π

E. 4π

8. In the following figure, O is the center of the circle, \overline{AB} is tangent to the circle at D , and \overline{BC} is tangent to the circle at E . Which of the following must be true?



F. $\overline{OC} \cong \overline{OD}$

G. $\triangle ABC$ is isosceles

H. $\triangle ABC \cong \triangle OEC$

J. $\triangle OEC \cong \triangle ADO$

K. $DBEO$ is a square

9. If $g(x)$ is a transformation that moves $f(x)$ three units to the right and then reflects it across the x -axis, then $g(x) =$

A. $f(-x) + 3$

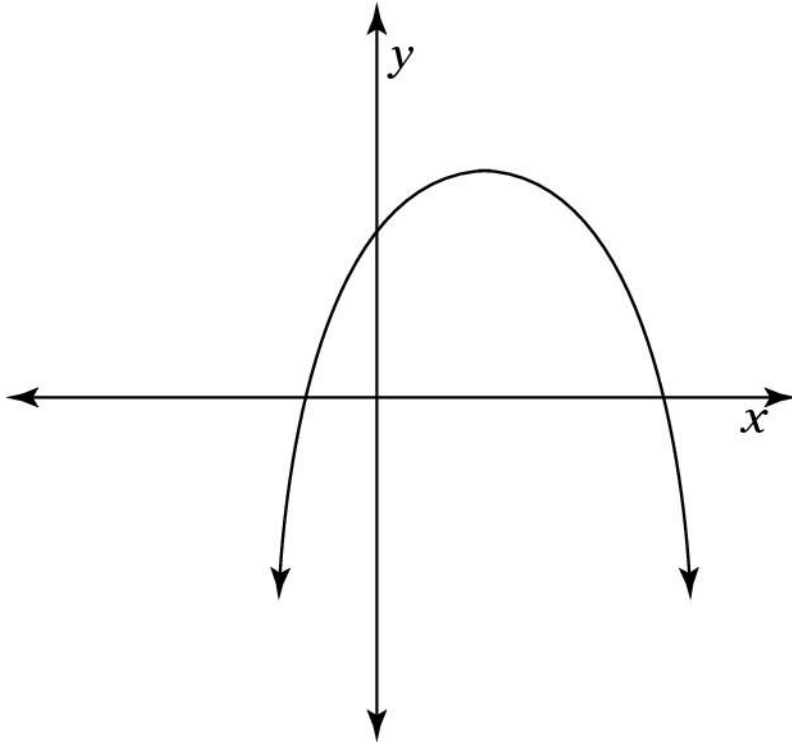
B. $f(-x) - 3$

C. $f(x) + 3$

D. $-f(x+3)$

E. $-f(x-3)$

10. The following figure shows the graph of an equation $y = ax^2 + bx + c$. Which of the answer choices CANNOT be true?



- F. $a < b$
- G. $a > b$
- H. $a < c$
- J. $b < c$
- K. $b > c$

11. Which of the following is the domain of the function $f(x) = \frac{3-x}{\sqrt{x^2-9}}$?

- A. $-3 > x > 3$
- B. $-3 \leq x \leq 3$
- C. $-3 \leq x < 3$
- D. $x < -3$ or $x < 3$
- E. $x \leq -3$ or $x \geq 3$

12. If a number sequence begins 1, 3, 4, 6, 7, 9, 10, 12 . . . , which of the following numbers does NOT appear in the sequence?

- F. 34
- G. 43

H. 57

J. 65

K. 72

13. A two-digit number from 10 to 99, inclusive, is chosen at random. What is the probability that this number is divisible by 5?

A. $\frac{1}{5}$

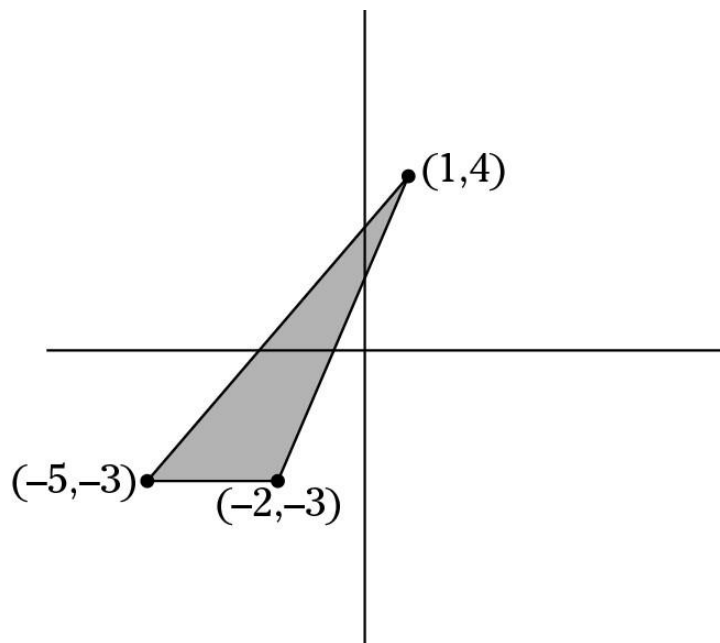
B. $\frac{2}{9}$

C. $\frac{19}{90}$

D. $\frac{18}{91}$

E. $\frac{19}{91}$

14. What is the area of the shaded region in the following figure?



F. 10.5

G. 12.5

H. 18

J. 21

K. 24

15. An isosceles triangle contains three angles that measure 40° , x° , and y° . Which of the following CANNOT be true?

A. $x = y$

B. $x = 50$

C. $x - y = 60$

D. $x = 70$

E. $x = 100$

SET 2

1. In the complex numbers, where $i^2 = -1$, what is the value of $5 + 6i$ multiplied by $3 - 2i$?

F. 27

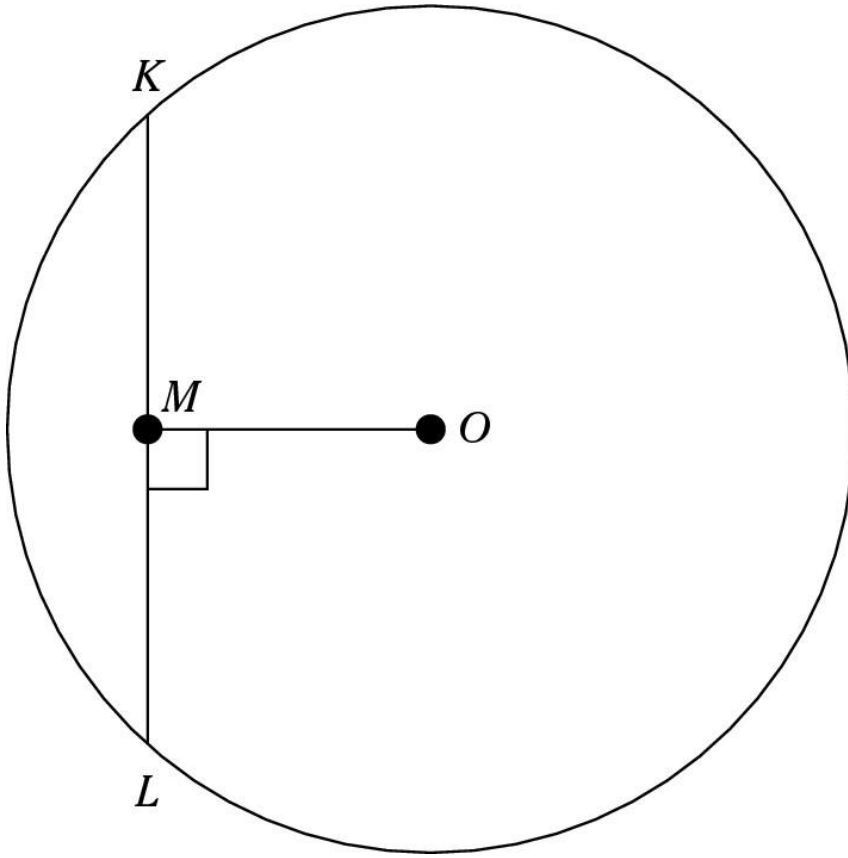
G. $27i$

H. $27 + 8i$

J. $15 + 8i$

K. $15 - 18i$

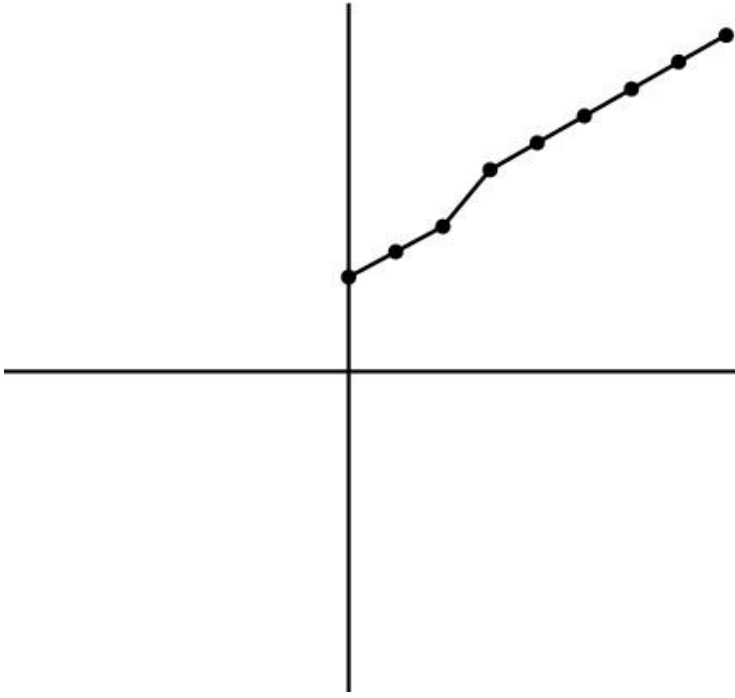
2. In the following figure, \overline{KL} is a chord of the circle centered at O , with $\overline{KL} \perp \overline{MO}$. If $KL = 12$ and $MO = 6$, what is the area of the circle?



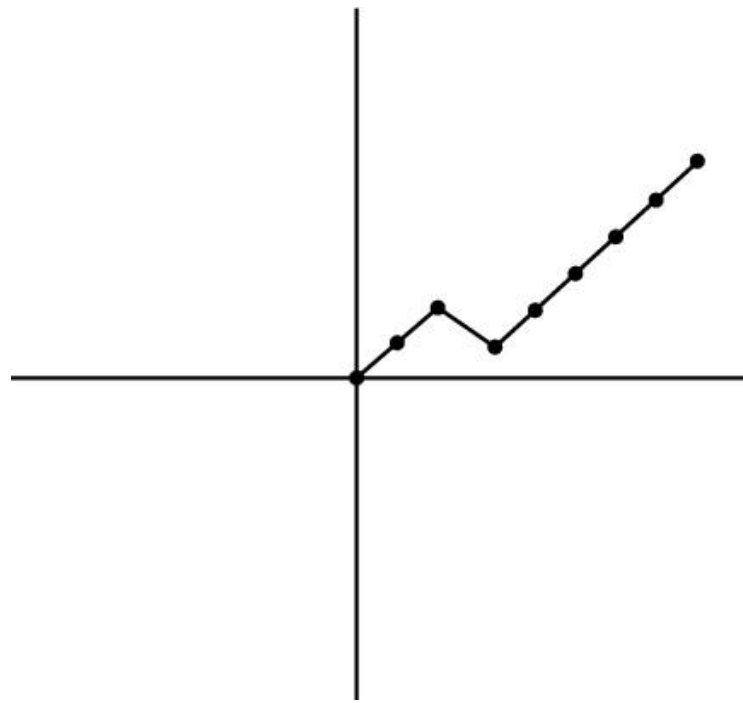
- A. 36π
- B. 48π
- C. 72π
- D. 96π
- E. 144π

3. Eldridge opened a savings account with an initial balance of \$1,000. After that, every month for 8 months, she made one deposit to the account, always for the same amount. During that time, she made just one withdrawal.

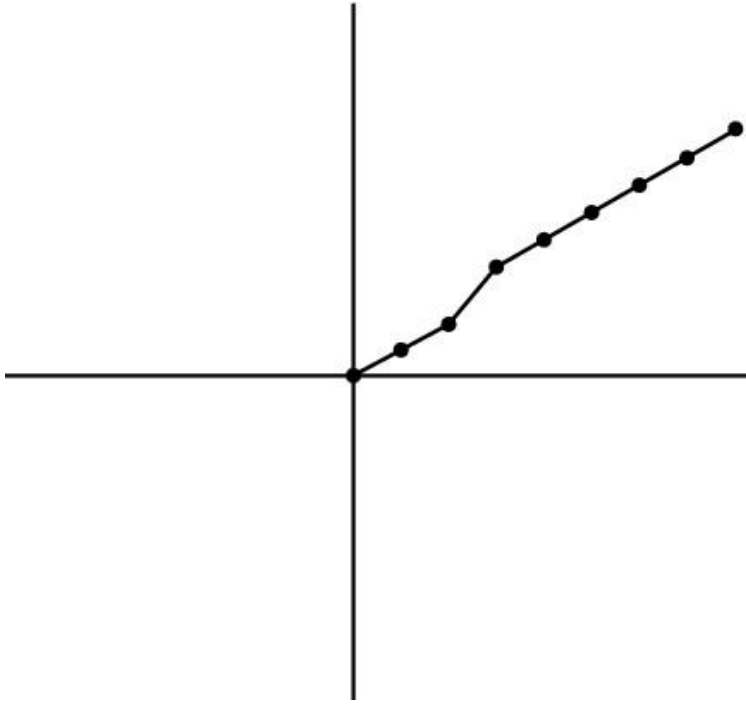
Which of the following graphs accurately describes these transactions over an 8-month period?



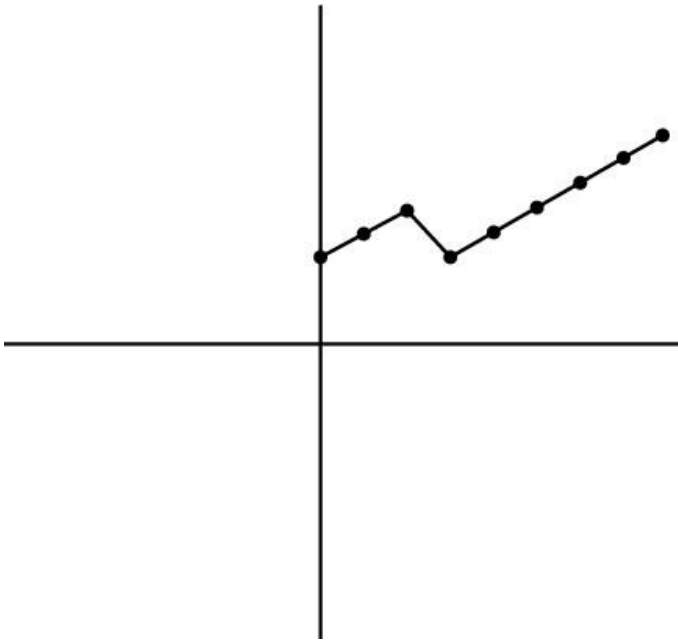
F.



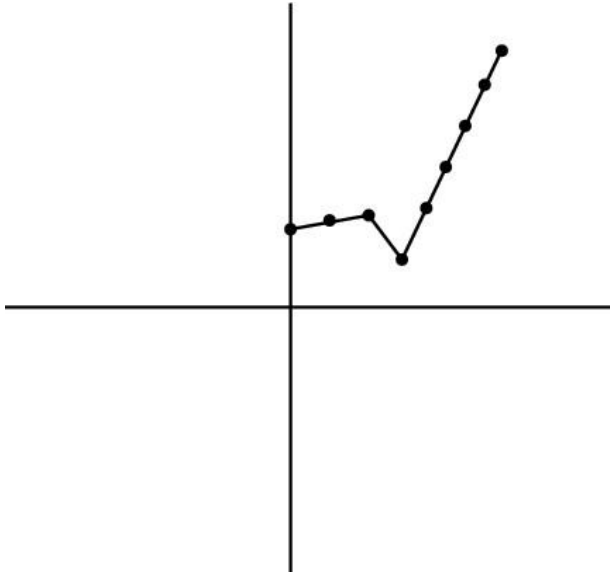
G.



H.



J.



K.

4. Eldridge opened a savings account with an initial balance of \$1,000. After that, every month for 8 months, she made one deposit to the account, always for the same amount. During that time, she made just one withdrawal.

If each of Eldridge's 8 deposits was in the amount of \$200 and her withdrawal was \$350, how much money did her account have at the end of 8 months?

- A. \$850
- B. \$1,550
- C. \$2,250
- D. \$2,350
- E. \$2,950

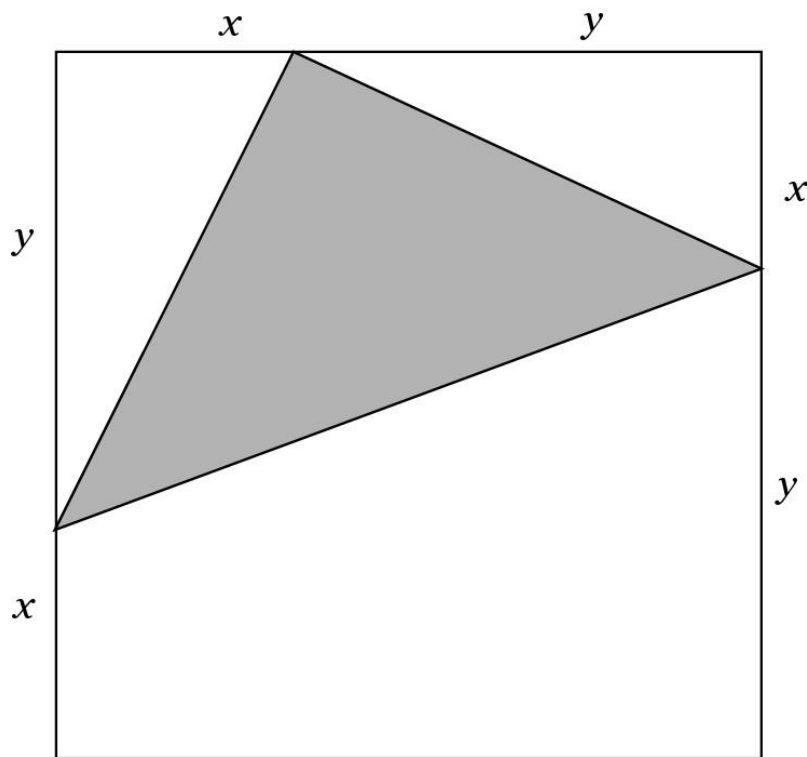
5. Martha picked out a pair of shoes she wanted and brought them to the front of the store to pay. The cashier told her that the shoes were on sale for 30% off the original price. She rang up the sale price plus 5% sales tax, so Martha ended up paying \$58.80 for the shoes. What was the original price for the shoes?

- F. \$70
- G. \$75
- H. \$80
- J. \$85
- K. \$90

6. Which of the following is equivalent to $\frac{\tan n \csc n}{\sin n \sec n}$?

- A. 1
- B. $\sin n$
- C. $\cos n$
- D. $\cot n$
- E. $\csc n$

7. In the following figure, the large quadrilateral is a square. What is the area of the shaded region in terms of x and y ?



- F. $\frac{x^2 + y^2}{2}$
- G. $\frac{(x+y)^2}{2}$
- H. $\frac{\sqrt{x^2 + y^2}}{2}$
- J. $\frac{x^2 + y^2}{4}$
- K. $\frac{(x+y)^2}{4}$

8. If $\frac{f}{g} = \frac{1}{4}$ and $\frac{g}{h} = \frac{2}{5}$, what is the ratio of $f:h$?

A. 1:06

B. 1:08

C. 1:10

D. 1:12

E. 1:20

9. If $49^{3y} = \sqrt{7^{y+1}}$, then $y =$

F. $\frac{1}{2}$

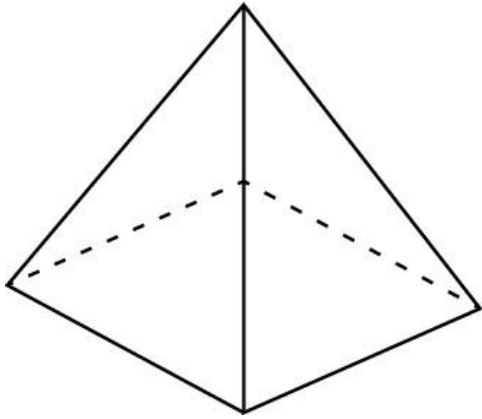
G. $\frac{1}{3}$

H. $\frac{1}{5}$

J. $\frac{1}{7}$

K. $\frac{1}{11}$

10. In the following figure, the base of the pyramid has the same area as the base of the cylinder, and the cylinder is twice the height of the pyramid. What is the ratio of the volume of the pyramid to the volume of the cylinder?



- A. 1 to 3
- B. 1 to 6
- C. 2 to 3
- D. 3 to 2
- E. 6 to 1

11. Which of the following is a possible solution for x in terms of k for the equation $x = \frac{2k}{x+2}$?

- F. $\sqrt{2k}$
- G. $\sqrt{-2k}$
- H. $1 - \sqrt{1+2k}$
- J. $\sqrt{1+2k} + 1$
- K. $\sqrt{1+2k} - 1$

12. If $\frac{a^2 + 2ab + b^2}{a^2 - b^2} = 2a + 2b$, what is the value of $a - b$?

- A. 1
- B. -1
- C. 2

D. $\frac{1}{2}$

E. $-\frac{1}{2}$

13. Which of the following functions has a range of $f(x) \geq 4$?

F. $f(x) = |x+ 4|$

G. $f(x) = |x- 4|$

H. $f(x) = |x+ 4| - 4$

J. $f(x) = |x- 4| + 4$

K. $f(x) = |x- 4| - 4$

14. If $\log_a \sqrt{b} = \frac{1}{4}$, then $a =$

A. \sqrt{b}

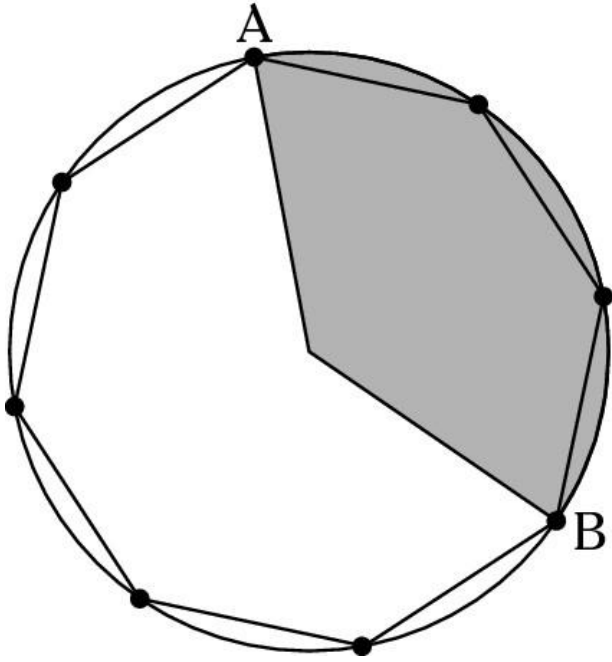
B. b

C. b^2

D. b^4

E. b^8

15. The following figure shows a regular octagon inscribed in a circle. The arc length from A to B is 6π . What is the area of the shaded region of the circle?



- F. 8π
- G. 16π
- H. 24π
- J. 36π
- K. 64π