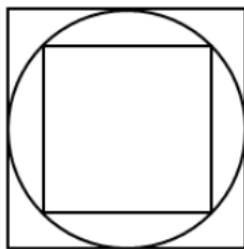


## SAMPLE QUESTIONS

- Ellen has received the following scores on 3 exams: 82, 74, and 90. What score will Ellen need to receive on the next exam so that the average (arithmetic mean) score for the 4 exams will be 85?  
(a) 84      (b) 90      (c) 94      (d) 92      (e) 80
- If \$10,000 is invested at a simple annual interest rate of 6 percent, what is the value of the investment after half a year?  
(a) \$10,500      (b) \$10,600      (c) \$10,400      (d) \$10,300      (e) \$11,000
- In the  $xy$ -plane, find the slope and  $y$ -intercept of the straight line  $2y + x = 6$ .  
(a) -2 and 3      (b) 1 and 6      (c) 2 and -1      (d) 6 and -2      (e) -1/2 and 3
- How many integers are in the solution set of the inequality  $x^2 - 10 \leq 0$ ?  
(a) 1      (b) 2      (c) 3      (d) 6      (e) 7
- If an integer is randomly selected from all positive 2-digit integers, what is the probability that the integer chosen has a 4 in the tens place?  
(a) 1/6      (b) 1/8      (c) 1/4      (d) 1/9      (e) 2/9
- Find  $f(-1) + f(t)$  for the function,  $f(x) = 3x^2 - 7x + 23$ .  
(a)  $3t^2 - 7t + 56$   
(b)  $t^2 - t + 23$   
(c)  $3t^2 - 7t + 33$   
(d)  $2t^2 - 7t + 33$   
(e)  $2t^2 - 7t + 56$
- If the area of the outer square is  $4x^2$ , then the area of the inner square is



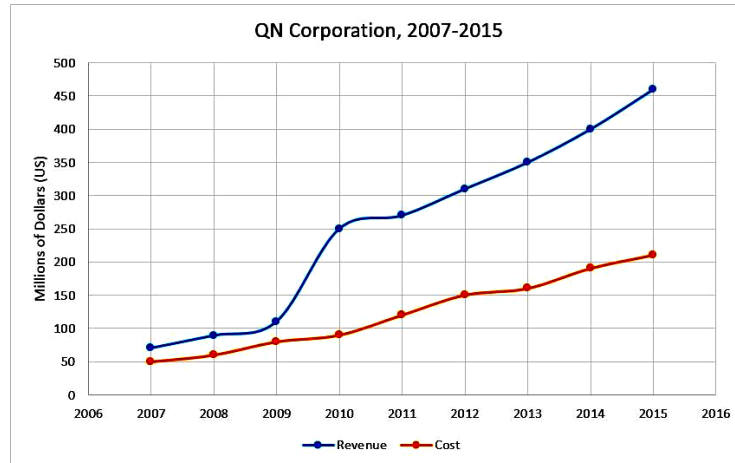
- (a)  $x^2/2$       (b)  $x^2$       (c)  $\sqrt{2}x^2$       (d)  $2x^2$       (e)  $2\sqrt{2}x^2$

## SAMPLE QUESTIONS

8. The length, width, and a height of a box are different integer lengths. If the volume is 125 cubic centimetres, then which of the following could be the length of the height in centimetres?

(a) 1                      (b) 5                      (c) 25                      (d) 125                      (e) 50

- 9-10. The following graph (for question 9 and 10) shows the total revenues and total costs of QN Corporation, a publicly traded company, over the span 2007-2015. Recall that, for any year, profit = (revenue) – (cost).



9. In 2013, the dollar amount of the profit at QN Corporation was approximately which of the following?

(a) \$80 million      (b) \$160 million      (c) \$190 million      (d) \$240 million      (e) \$350 million

10. From 2010 to 2015, revenue at QN Corporation increased by approximately what percent?

(a) 18%                      (b) 47%                      (c) 63%                      (d) 84%                      (e) 126%

11. If there are 15 boys and 25 girls in a class, what percent of the class is boys?

(a) 10%                      (b) 15%                      (c) 18%                      (d) 25%                      (e) 37.5%

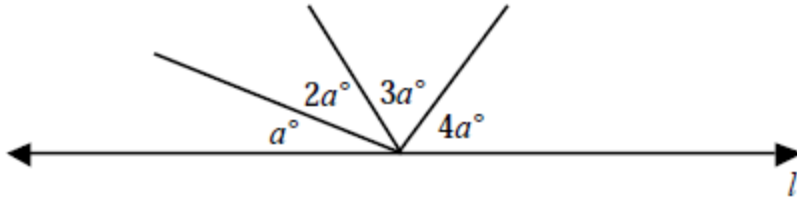
12. If  $5 < x < 10$  and  $y = x + 5$ , what is the greatest possible integer of  $x + y$ ?

(a) 18                      (b) 20                      (c) 23                      (d) 24                      (e) 25

13. In the figure, what is the value of  $a$ ?

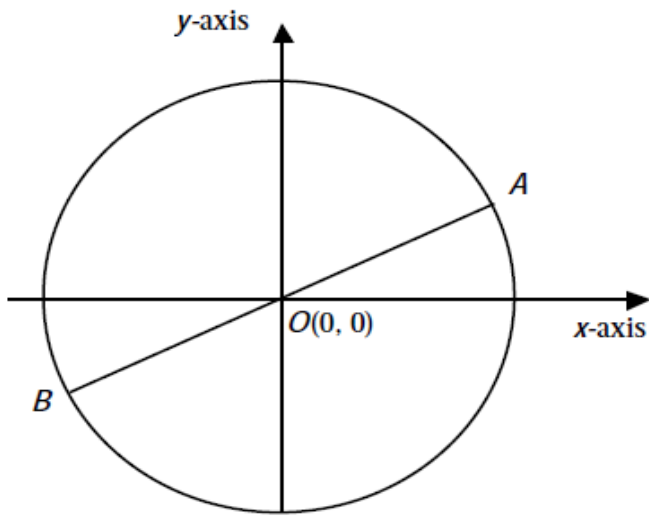
(a) 16                      (b) 18                      (c) 36                      (d) 54                      (e) 72

SAMPLE QUESTIONS



14. In the figure shown, AB is a diameter of the circle and O is the center of the circle. If  $A = (3, 4)$ , then what is the circumference of the circle?

- (a) 3      (b) 4      (c)  $4\pi$       (d)  $5\pi$       (e)  $10\pi$



15. If 80 percent of the number  $a$  is 80, then how much is 20 percent of the number  $a$ ?

- (a) 20      (b) 40      (c) 50      (d) 60      (e) 80