

7. Ahmad has containers of two different sizes. The total capacity of 16 containers of one size is x gallons, and the total capacity of 8 containers of the other size is also x gallons, and $x > 0$. In terms of x , what is the capacity, in gallons, of each of the larger containers?

(A) $4x$

(B) $2x$

(C) $\frac{x}{2}$

(D) $\frac{x}{8}$

(E) $\frac{x}{16}$

8. Rectangle $ABCD$ lies in the xy -coordinate plane so that its sides are not parallel to the axes. What is the product of the slopes of all four sides of rectangle $ABCD$?

(A) -2

(B) -1

(C) 0

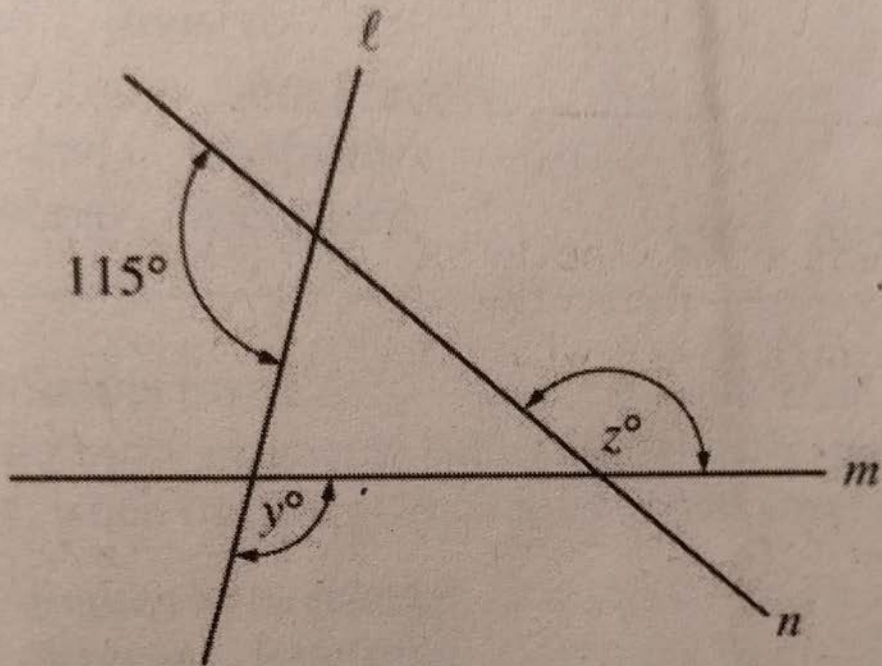
(D) 1

(E) 2

17. Alice and Corinne stand back-to-back. They each take 10 steps in opposite directions away from each other and stop. Alice then turns around, walks toward Corinne, and reaches her in 17 steps. The length of one of Alice's steps is how many times the length of one of Corinne's steps? (All of Alice's steps are the same length and all of Corinne's steps are the same length.)

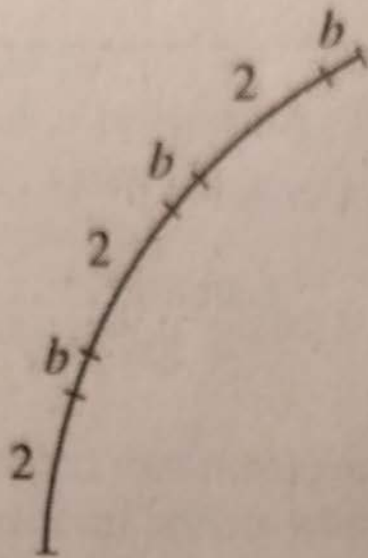
18. Let the function f be defined by $f(x) = x^2 + 18$.

If m is a positive number such that $f(2m) = 2f(m)$,
what is the value of m ?



16. In the figure above, $y + z =$

- (A) 180
- (B) 195
- (C) 215
- (D) 230
- (E) 245

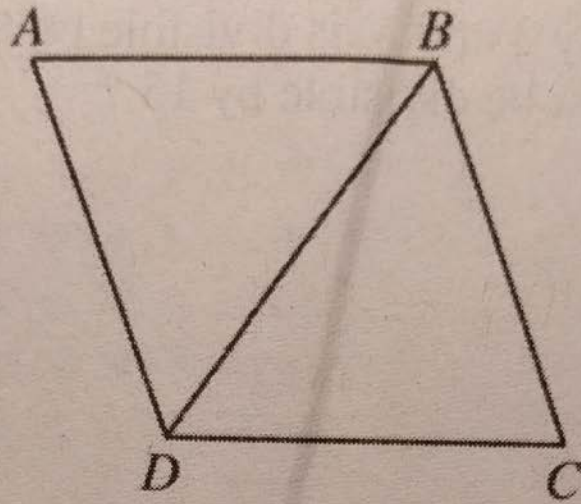


18. The figure above shows part of a circle whose circumference is 45. If arcs of length 2 and length b continue to alternate around the entire circle so that there are 18 arcs of each length, what is the degree measure of each of the arcs of length b ?

- (A) 4°
- (B) 6°
- (C) 10°
- (D) 16°
- (E) 20°

19. The cost of maintenance on an automobile increases each year by 10 percent, and Andrew paid \$300 this year for maintenance on his automobile. If the cost c for maintenance on Andrew's automobile n years from now is given by the function $c(n) = 300x^n$, what is the value of x ?

- (A) 0.1
- (B) 0.3
- (C) 1.1
- (D) 1.3
- (E) 30



Note: Figure not drawn to scale.

20. If the five line segments in the figure above are all congruent, what is the ratio of the length of \overline{AC} (not shown) to the length of \overline{BD} ?

- (A) $\sqrt{2}$ to 1
- (B) $\sqrt{3}$ to 1
- (C) $\sqrt{2}$ to 2
- (D) $\sqrt{3}$ to 2
- (E) $\sqrt{3}$ to $\sqrt{2}$

14. If n and p are integers greater than 1 and if p is a factor of both $n + 3$ and $n + 10$, what is the value of p ?

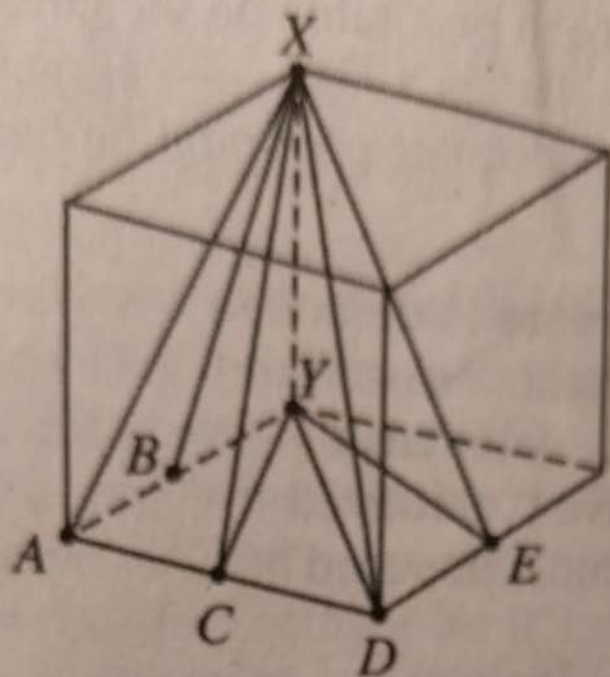
(A) 3

(B) 7

(C) 10

(D) 13

(E) 30



15. In the cube shown above, points B , C , and E are midpoints of three of the edges. Which of the following angles has the least measure?

- (A) $\angle XAY$
- (B) $\angle XBY$
- (C) $\angle XCY$
- (D) $\angle XDY$
- (E) $\angle XEY$