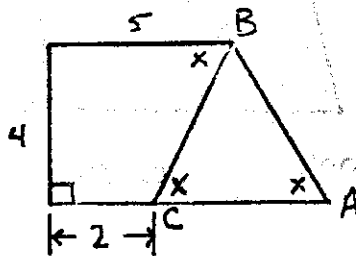


If the correct answer is not given use answer E.  
 nota: None Of The Above

1. Two sides of a triangle are 15 and 20. The altitude to the 15-side is 8. How long is the altitude to the 20-side?

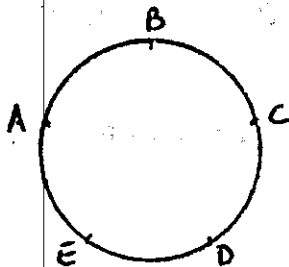
- a. 3                      b. 6                      c. 7.5                      d. 9                      e. NOTA

2. What is the area of  $\triangle ABC$  ?



- a. 6                      b. 12                      c. 14                      d. 24                      e. NOTA

3. Points A, B, C, D, and E divide the circle into 5 equal arcs. If the area of the circle is  $25\pi$ , what is the length of arc CDE?



- a.  $10\pi$                       b.  $5\pi$                       c.  $4\pi$                       d.  $2\pi$                       e. NOTA

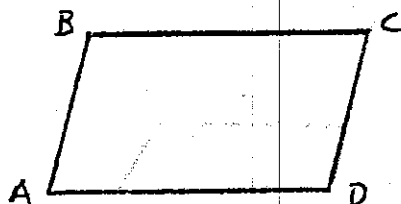
4. A polygon has 14 diagonals. How many vertices does the polygon have?

- a. 6                      b. 7                      c. 8                      d. 9                      e. NOTA

5. If the geometric mean between two numbers,  $p$  and  $q$ , is 3 and the sum of their squares is 8, then  $(p + q)^2 =$

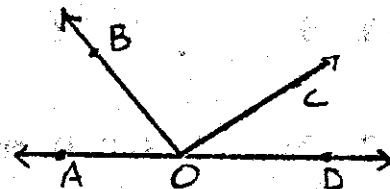
- a. 8                      b. 11                      c. 17                      d. 26                      e. NOTA

6. Given a parallelogram ABCD with  $m\angle B = (4x + 15)^\circ$  and  $m\angle D = (6x - 2)^\circ$ , then  $m\angle C =$



- a.  $49^\circ$                       b.  $99^\circ$                       c.  $80^\circ$                       d.  $139^\circ$                       e. NOTA

7. Points A, O, and D are collinear.  $\angle AOB$ ,  $\angle BOC$  and  $\angle COD$  have measures in the ratio 2 : 6 : 1. Find the measure of  $\angle AOB$ .



- a.  $20^\circ$                       b.  $40^\circ$                       c.  $60^\circ$                       d.  $80^\circ$                       e. NOTA

8. Which of the following number triples can not represent the lengths of the sides of a triangle?

- a. (2,3,4)                      b. (3,1,1)                      c. (3,4,5)                      d. (3,4,4)                      e. NOTA

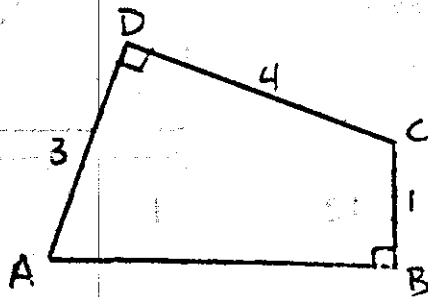
9. The difference between the supplement and the complement of an acute angle  $x$  is

- a.  $90^\circ$       b.  $(x - 90)^\circ$       c.  $180^\circ$       d. cannot be determined      e. NOTA

10. In  $\triangle ABC$ ,  $\angle A$  is 4 times as large as  $\angle B$ . If the measure of the exterior angle at  $C$  is  $130^\circ$ , what is the number of degrees in the measure of  $\angle A$ ?

- a.  $10^\circ$       b.  $26^\circ$       c.  $40^\circ$       d.  $104^\circ$       e. NOTA

11. What is the area of quadrilateral  $ABCD$  if angles  $B$  and  $D$  are right angles?

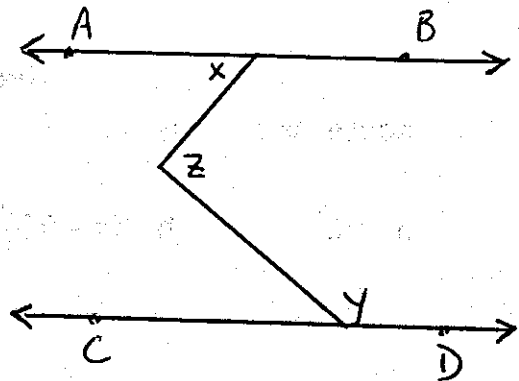


- a. 8      b.  $6 + \sqrt{6}$       c.  $12 + 2\sqrt{6}$       d. 17      e. NOTA

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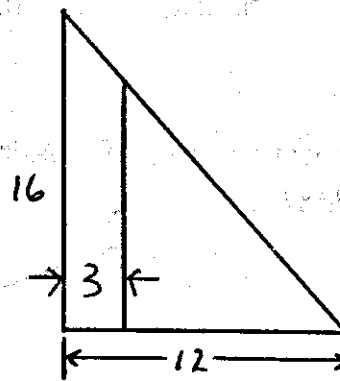
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12. In the accompanying figure  $AB \parallel CD$ ,  $x=68^\circ$  and  $y=117^\circ$ . Find the measure of  $\angle Z$ .



- a.  $87.5^\circ$       b.  $92.5^\circ$       c.  $121^\circ$       d.  $131^\circ$       e. NOTA

13. In the accompanying figure, the legs of a right triangle are 16 and 12. Find the length of the segment parallel to the 16-side and 3 units from it.



- a. 4      b. 9      c. 12      d. 13      e. NOTA

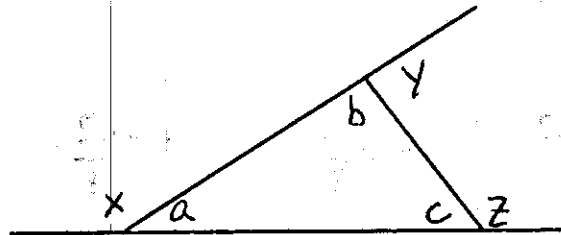
14. Angle A of  $\triangle ABC$  measures  $60^\circ$ , angle B is an obtuse angle, and  $AB=10$ . Find the length of the altitude from vertex B.

- a. 10      b. 5      c.  $5\sqrt{3}$       d.  $10\sqrt{3}$       e. NOTA

15. The length of the bases of an isosceles trapezoid are 8 and 12 respectively. Two of the base angles measure  $45^\circ$  each. Find the length of the altitude of the trapezoid.

- a. 2                      b. 4                      c. 6                      d. 8                      e. NOTA

16. Calculate  $x + y + z - a - b - c$



- a.  $90^\circ$                       b.  $180^\circ$                       c.  $360^\circ$                       d. cannot be determined.                      e. NOTA

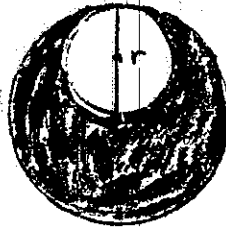
17. Cube X has a volume of 27. If point C is the center of one face of cube X and point D is the center of the opposite parallel face, what is the length of CD?

- a. 3                      b.  $3\sqrt{2}$                       c.  $3\sqrt{3}$                       d.  $3\sqrt{3}$                       e. NOTA

18. Given the statement "All rectangles are parallelograms" which statement is a logical conclusion?

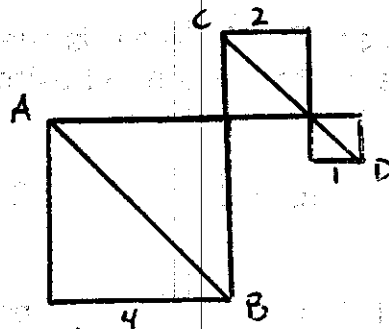
- a. If ABCD is a parallelogram, then it is a rectangle.  
 b. If ABCD is not a rectangle then it is not a parallelogram.  
 c. If ABCD is not a parallelogram then it is not a rectangle.  
 d. All parallelograms are rectangles.  
 e. NOTA

19. If one circle has a radius of  $r$  and the other has a diameter of  $r$ , what is the area of the shaded region?



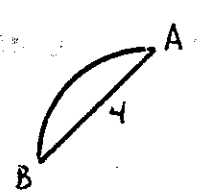
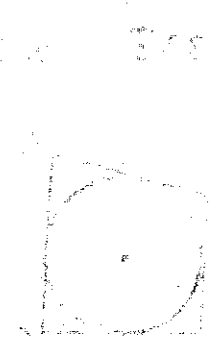
- a.  $\pi r^2$       b.  $2\pi r^2$       c.  $\frac{\pi r^2}{2}$       d.  $\frac{\pi r^2}{4}$       e. NOTA

20. In the diagram of three squares, what is the ratio  $CD : AB$ ?



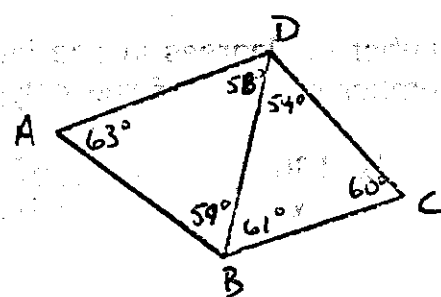
- a.  $9 : 16$       b.  $3\sqrt{2} : 4$       c.  $3 : 4$       d.  $3 : 4\sqrt{2}$       e. NOTA

21. If arc AB is  $\frac{1}{4}$  of the circumference of a certain circle and if the length of chord AB is 4, what is the diameter of the circle?



- a. 4      b. 8      c.  $4\sqrt{2}$       d.  $8\sqrt{2}$       e. NOTA

22. In the figure the angles have the indicated measures. Which segment is largest?



- a.  $\overline{AB}$       b.  $\overline{BC}$       c.  $\overline{BD}$       d.  $\overline{CD}$       e. NOTA

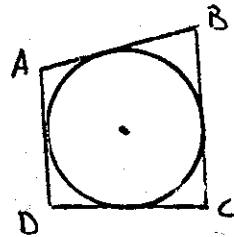
23. If the ratio of the diameters of two concentric circles is 2 : 1, then the ratio of the area between the two circles to the area of the small circle is:

- a. 3 : 1      b. 4 : 1      c. 1 : 1      d. 2 : 1      e. NOTA

24. If the diagonal of a rectangle is  $4\sqrt{3}$  and its area is 8, then its perimeter is:

- a. 16      b.  $14\sqrt{3}/3$       c. 48      d.  $48 + 32\sqrt{2}$       e. NOTA

25. In the figure, ABCD is a circumscribed quadrilateral with  $AB=4$ ,  $BC=5$ , and  $CD=3$ . Find AD.



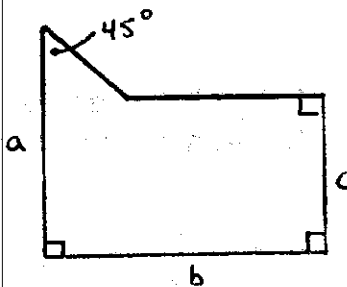
- a. 1      b. 2      c. 2.4      d. 3      e. NOTA

26. The number of degrees in one interior angle of a regular polygon is  $x$ . The number of sides of the polygon in terms of  $x$  is:

- a.  $\frac{x+360}{180}$       b.  $\frac{180}{x}$       c.  $\frac{360}{180-x}$       d.  $\frac{360}{x}$       e. NOTA

27. The area formula for the given figure in terms of  $a$ ,  $b$  and  $c$  is:

- a.  $bc + \frac{1}{2}(a - c)$   
 b.  $bc + (a - c)^2$   
 c.  $bc + \frac{1}{4}(a - c)^2$   
 d.  $bc + \frac{1}{2}(a - c)^2$   
 e. NOTA





28. A circle has the same diameter as the side of a square. The circle's area is what multiple of the area of the square?

- a.  $\pi/4$       b.  $\pi/2$       c.  $4\pi$       d.  $2\pi$       e. NOTA

29. Each side of a rhombus is 10 inches long and the smaller angles are half the larger angles. What is the area of the rhombus?

- a. 50      b. 100      c.  $50\sqrt{3}$       d.  $100\sqrt{3}$       e. NOTA

30. Which point lies the greatest distance from the origin?

- a. (0,-9)      b. (-2,9)      c. (-7,-6)      d. (8,5)      e. (10, 0)