

GRE

Quant Reasoning Assessment

Geometry, Coordinate Geometry

Total Questions: 54

Duration: 55 Min

1. In a certain parallelogram, the degree measure of one interior angle exceeds that of another interior angle by 30. What is the size of the smaller angle?
 - A. 30°
 - B. 55°
 - C. 60°
 - D. 70°
 - E. 75°

2. The points A (0, 0), B (0, $4a - 5$) and C ($2a + 1$, $2a + 6$) form a triangle. If $\angle ABC = 90^\circ$, what is the area of triangle ABC?
 - A. 102
 - B. 120
 - C. 132
 - D. 144
 - E. 256

3. What is the measure of the radius of the circle that circumscribes a triangle whose side's measure 9, 40 and 41?
 - A. 6
 - B. 4
 - C. 24.5
 - D. 20.5
 - E. 12.5

4. A cubical block of metal weighs 6 pounds. How much will another cube of the same metal weigh if its sides are twice as long?
 - A. 48
 - B. 32
 - C. 24
 - D. 18
 - E. 12

5. How many complete tanks of water, each with a capacity of 3 cubic meters, are needed to fill an empty cylindrical tank whose height is 3 meters and whose base has a radius of 2 meters?

Note: The value of pi (π) \approx 3.14.

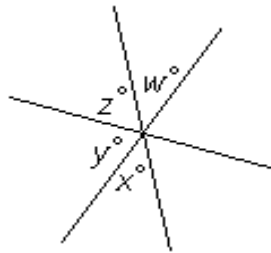
 - A.
 - B. 13
 - C. 14
 - D. 15
 - E. 16

6. A straight fence is to be constructed from posts 6 inches wide and separated by lengths of chain 5 feet long. If a certain fence begins and ends with a post, which of the following could be the length of the fence in feet? (12 inches = 1 foot).

Indicate ALL such answers.

- A. 17
- B. 28
- C. 35
- D. 39
- E. 50

7.



$$y + z = 130$$

Quantity A

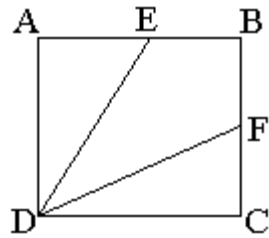
$$x + z$$

Quantity B

$$w + y$$

- A. Quantity A is greater.
 - B. Quantity B is greater.
 - C. The two quantities are equal.
 - D. The relationship cannot be determined from the information given
8. A 3 by 4 rectangle is inscribed in circle. What is the circumference of the circle?
- A. 2.5π
 - B. 3π
 - C. 5π
 - D. 4π
 - E. 10π
9. A circular logo is enlarged to fit the lid of a jar. The new diameter is 50 per cent larger than the original. By what percentage has the area of the logo increased?
- A. 50
 - B. 80
 - C. 100
 - D. 125
 - E. 250

10.



ABCD is a square of side 3, and E and F are the mid points of sides AB and BC respectively. What is the area of the quadrilateral EBFD?

- A. 2.25
- B. 3
- C. 4
- D. 4.5
- E. 6

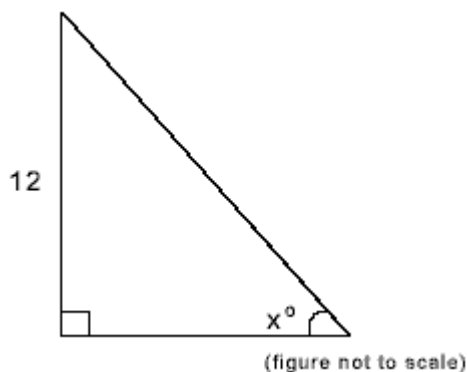
11. Length of a rectangle is increased by 10% and breadth is decreased by 10%. What is the change in the area of the rectangle

- A. 10% decrease
- B. 1% increase
- C. 10% increase
- D. 1% decrease
- E. None of the Above

12. A hollow cylinder of height 7 cm and base radius 4 cm is melted to form a cube of side 2 cm. How many such cubes are possible

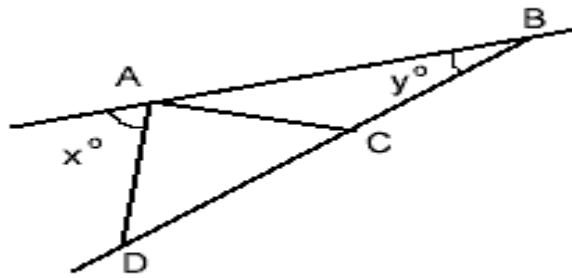
- A. 44
- B. 34
- C. 50
- D. Data Inadequate
- E. None of the Above

13.



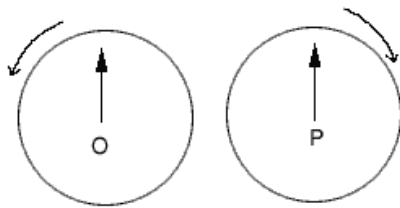
If the area of the right triangle above is 72, what is the value of x?

14.



(figure not to scale)

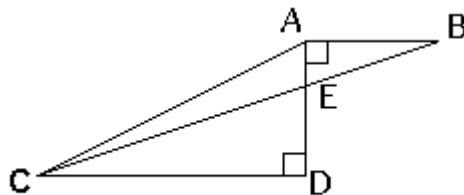
In the figure above, $AD = AC = CB$. If the value of y is 28, what is the value of x ?



15. Two dials O and P have pointers that start from the vertical position as shown. Pointer O rotates anticlockwise at a rate of 5 degrees per second and pointer P rotates clockwise at 9 degrees per second. How many complete revolutions will P have made when O completes 335 complete revolutions?

16. What is the total surface area of 2 identical cubes which together have a volume of 1458 units? Write the correct answer: _____

17.



In the figure above $AD = 4$, $AB = 3$ and $CD = 9$. What is the area of triangle AEC ?

- A. 18
- B. 13.5
- C. 9
- D. 4.5
- E. 3

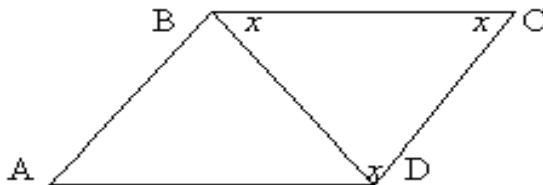
18. Three solid cubes of lead, each with edges 10 centimeters long, are melted together in a level, rectangular-shaped pan. The base of the pan has inside dimensions of 20 centimeters by 30 centimeters, and the pan is 15 centimeters deep. If the volume of the solid lead is approximately the same as the volume of the melted lead, approximately how many centimeters deep is the melted lead in the pan?

- A. 2.5
- B. 3
- C. 5
- D. 7.5
- E. 9

19. The measures of two angles of a parallelogram differ by 52 degrees. The number of degrees in the smaller angle is

- A. 38
- B. 52
- C. 64
- D. 76
- E. 128

20.

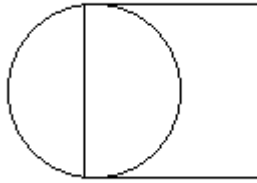


ABCD is a parallelogram. $BD = 2$. The angles of triangle BCD are all equal. What is the perimeter of the parallelogram?

- A. 12
- B. $9\sqrt{3}$
- C. 9
- D. 8
- E. $3\sqrt{3}$

21. A solid cube of side 6 is first painted pink and then cut into smaller cubes of side 2. How many of the smaller cubes have paint on exactly 2 sides?

- A. 30
- B. 24
- C. 12
- D. 8
- E. 6



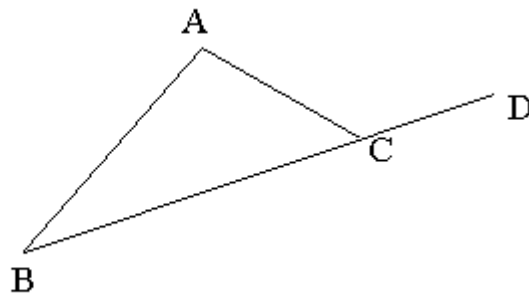
22. In the figure above the square has two sides which are tangent to the circle. If the area of the circle is $4a^2\pi$, what is the area of the square?

- A. $2a^2$
- B. $4a$
- C. $4a^2$
- D. $16a^2$
- E. $64a^2$

23. A triangle has a perimeter 13. The two shorter sides have integer lengths equal to x and $x + 1$. Which of the following could be the length of the other side?

Select as many as are correct.

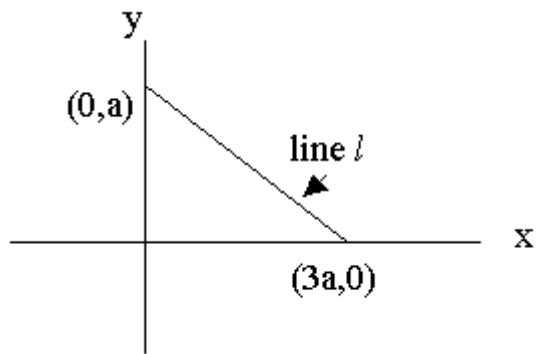
- A. 4
- B. 6
- C. 8



(figure not to scale)

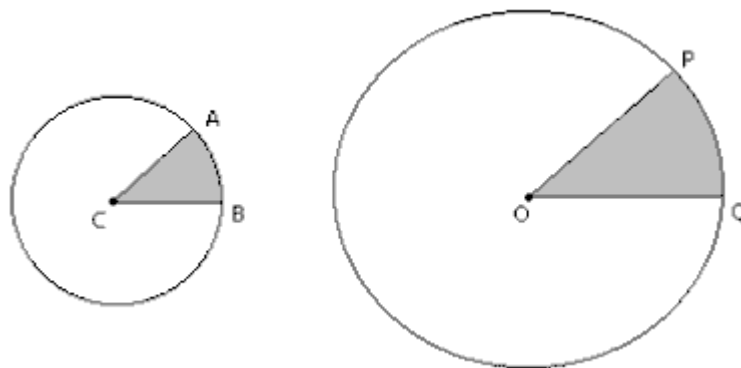
24. BCD is a line segment and Angle $BAC = \frac{1}{4}$ Angle ACB ; Angle $ACD = ?$

- A. 140
- B. 100
- C. 120
- D. 60
- E. it cannot be determined from the information given



25. In the figure below, what is the slope of line l ?

- A. -3
- B. $-1/3$
- C. 0
- D. $1/3$
- E. 3



26. Radius of circle center O is 3 times the radius of circle center C .

Angle $ACB =$ Angle POQ

If the shaded area of circle C is 2 then what is the area of the shaded part of circle O ?

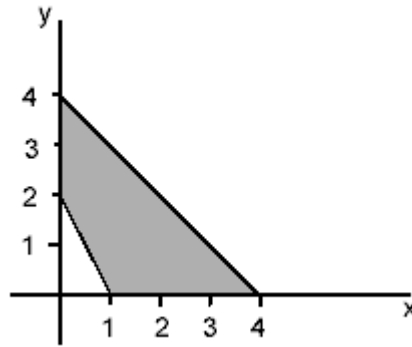
- A. 6
- B. 12
- C. 18
- D. 36
- E. $3/2$

27. A rectangular field is 400 feet long and 300 feet wide. If a square field has, the same perimeter as the rectangular field, what is the length, in feet, of each side of the square field?

- A. 175
- B. 350
- C. $200s$
- D. $350s$
- E. $100s$

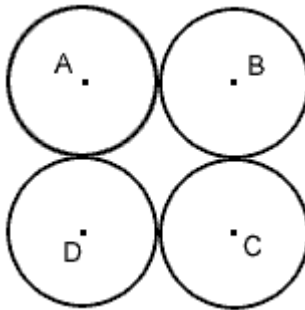
28. If two lines intersect at a point to form four angles, and one angle is twice as large as its adjacent (neighboring) angle, what is the degree measure of the smallest angle?

Ans _____



29. What is the area of the shaded region? Ans _____

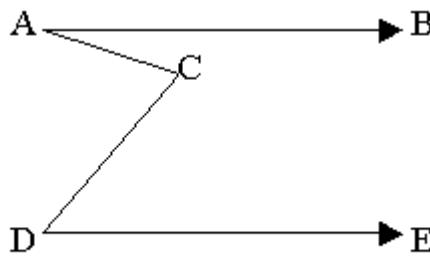
30. How many cubes with volume 8 cubic units can be cut from a cube with a surface area of 96 square units? Ans _____



31. Four circles of diameter $\sqrt{2}$ are placed tangent of each other as shown. What is the distance AC ?

Ans _____

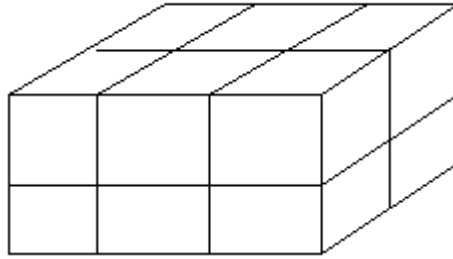
32.



(figure not to scale)

AB and DE are parallel. Angle BAC = 30 , angle CDE = 50. What is the measure of angle ACD?

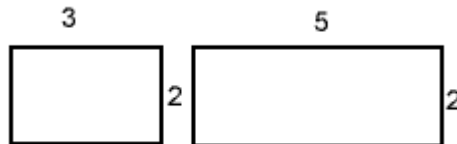
- A. 100
- B. 90
- C. 80
- D. 70
- E. cannot be determined from the information



33. The solid brick shown is made of small bricks of side 1. When the large brick is disassembled into its component small bricks, the total surface area of all the small bricks is how much greater than the surface area of the large brick?

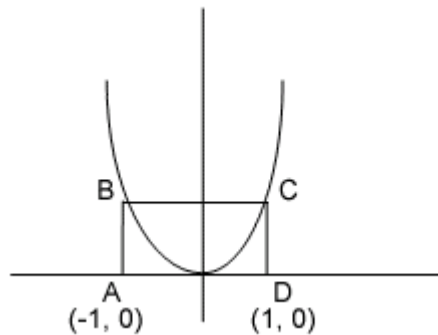
- A. 32
- B. 40
- C. 60
- D. 72
- E. 80

34. A right triangle has perimeter 12 and sides x , $(x + 1)$ and $(x + 2)$. What is the area of the triangle? Ans _____

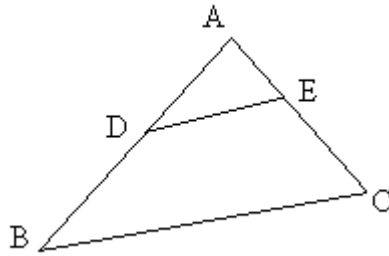


35. A rectangular box is made by putting together pieces of the dimensions shown above. What is the volume of the resulting box? Ans _____

36.

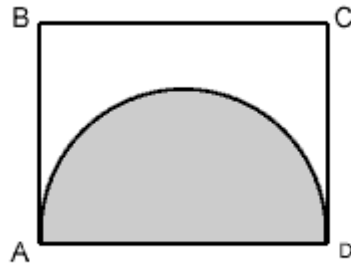


ABCD is a rectangle. Points B and C lie on the graph of $y = wx^2$, where w is a constant. If the perimeter of ABCD is 10, what is the value of w ? Ans _____



37. In triangle ABC, $AD = DB$, DE is parallel to BC, and the area of triangle ABC is 40. What is the area of triangle ADE ?

- A. 10
- B. 15
- C. 20
- D. 30
- E. it cannot be determined from the information given



(figure not to scale)

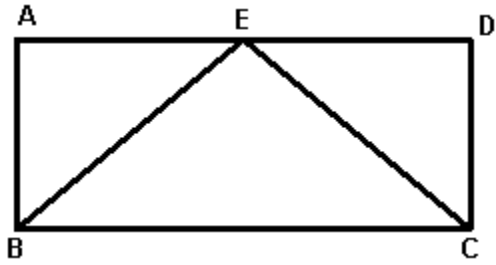
38. Rectangle ABCD has a perimeter of 26. The half circle with diameter AD has an area of 8π . What is the perimeter of the part of the figure that is not shaded?

- A. $26 + 4\pi$
- B. $18 + 8\pi$
- C. $18 + 4\pi$
- D. $14 + 4\pi$
- E. $14 + 2\pi$

39. Three cubes of side 6 are glued together to make a rectangular box. The surface area of the rectangular box is how much less than the total surface area of the three separate cubes?

Ans _____

40. Rectangle ABCD below has $AB = 4$, $AD = 6$ and triangle EBC is isosceles, $EB = EC$. What is the perimeter of triangle EDC

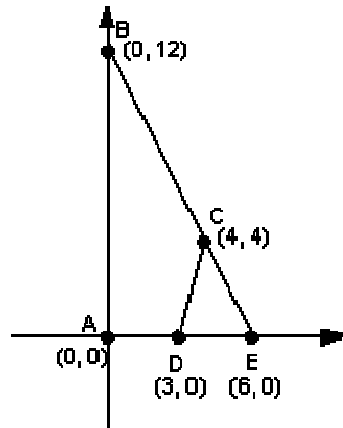


- A. 9
- B. 10
- C. 12
- D. 13
- E. 15

41. In the x, y plane, find the y -intercept of a line with slope equal to -2 and that passes through the point $(3, 2)$.

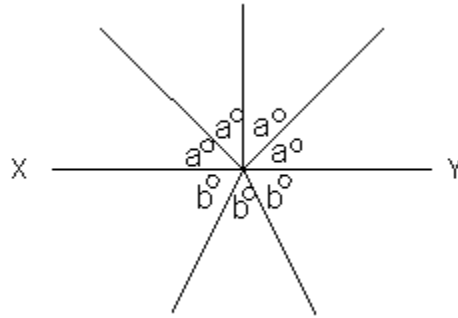
- A. 6.5
- B. 7
- C. 8
- D. 8.5
- E. 9.5

42. Find the area of the graph above enclosed by figure ABCD.



- A. 36
- B. 30
- C. 42
- D. 72
- E. 84

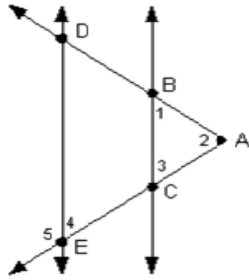
43.



In the figure above, XY is a line segment. What is the value of $\frac{a+b}{a-b}$?
Note that a and b are measured in degrees.

- A. $-1/7$
 - B. 7
 - C. $3/4$
 - D. -7
 - E. Not enough information is given to answer this question
44. What is the area of a circle that is inscribed in a square whose area is 81 square inches?
- A. 81π square inches
 - B. 18π square inches
 - C. 9π square inches
 - D. 20.25π square inches
 - E. 40.5π square inches
45. A water treatment plant is built with two cylindrical tanks to contain water for a town. Each tank has a radius of 10 feet and a depth of 20 feet. If there are about 7.5 gallons in a cubic foot of water, approximately how many gallons of water can be treated at the plant at any one time?
- A. 6280
 - B. 12560
 - C. 94200
 - D. 2000
 - E. 47100

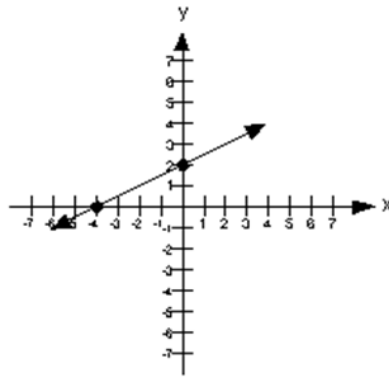
46.



Looking at the figure above, if triangle ABC is an equilateral triangle and line BC is parallel to line DE, what is the measure of angle 5?

- A. 60 degrees
- B. 90 degrees
- C. 120 degrees
- D. 180 degrees
- E. Not enough information is given to answer this question

47.



Column A

Slope of the line on graph above

Column B

The y-intercept of the line on the graph above.

- A. Column A's quantity is greater.
- B. Column B's quantity is greater.
- C. The quantities are the same
- D. The relationship cannot be determined from the information given.

48. **A, B and C are the measures of the angles of isosceles triangle ABC. X, Y, and Z are the measures of the angles of right triangle XYZ.**

Column A : The average of A, B, and C **Column B:** The average of X, Y, and Z

49. **Column A:** The area of the circle whose radius is 17

Column B: The area of a circle whose diameter is 35

50. The number of square inches in the surface area of a cube is equal to the number of cubic inches in its volume

Column A: The length of an edge of the cube

Column B: 6 inches

51. **Column A:** The area of a square whose sides are four

Column B: Twice the area of an equilateral triangle whose sides are four

52. How many diagonals are there in a polygon with 9 sides? Indicate all correct options.

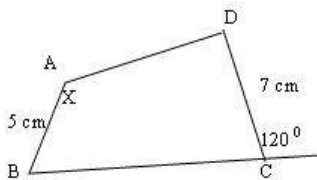
A. $C(9,2)$

B. $P(9,2)$

C. 36

D. 27

E. $C(9,4)$



53.

In the figure, ABCD is a cyclic quadrilateral. Find the value of X

A. 60°

B. 50°

C. 120°

D. 100°

E. 140°

54. What can be the maximum length of a rod that can fit into a rectangular room of dimension 5 m x 4 m x 3 m. (Assume rod has negligible thickness)

A. 6 m

B. 7.07 m

C. 10 m

D. Data Inadequate

E. None of the Above