

EXERCISE 4: GEOMETRY

(Use $\pi = 3.14$ unless otherwise specified)

1. The diameter of a round table is 70 cm. Which of the following is the approximate area of the table?
A) 220 cm^2
B) 440 cm^2
C) $3,850 \text{ cm}^2$
D) $15,400 \text{ cm}^2$

2. A bicycle tire has circumference of 107 cm. Which of the following is the best estimate for its diameter?
A) 17
B) 34
C) 54
D) 336

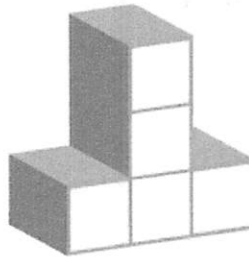
3. A merry-go-round has a diameter of 25 feet. Its outer edge moves at an average speed of 4 feet per second. One ride consists of 20 revolutions of the merry-go-round. Approximately how long does the ride take?
A) 20 seconds
B) 195 seconds
C) 390 seconds
D) 780 seconds

4. A truck wheel has a radius of 40 cm. If the truck moves a distance of 100 m, how many complete revolutions will the wheel make?
A) 2.5
B) 20
C) 30
D) 40

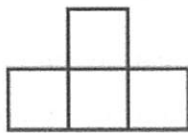
5. The circumference of a circular dinner plate is 80 cm. What is the approximate area of the dinner plate?

A) 510 cm^2
 B) $2,039 \text{ cm}^2$
 C) $5,024 \text{ cm}^2$
 D) $20,096 \text{ cm}^2$

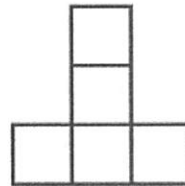
6. The figure below shows the proposed model of a shopping mall with a residential tower in the middle. Which of the following is a view from a point directly above the building?



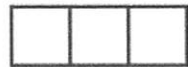
A)



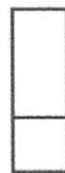
B)



C)

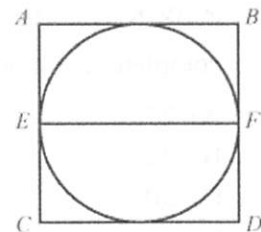


D)

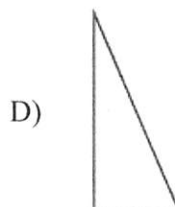
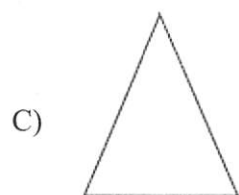
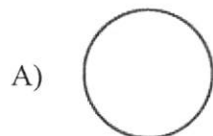
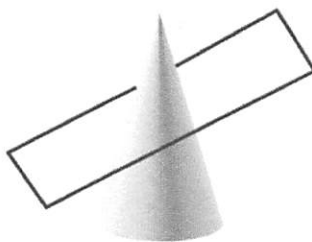


7. Which line segment is not equal to the diameter of the circle in the following figure?

A) $\overline{AB}$
 B) $\overline{AD}$
 C) $\overline{CD}$
 D) $\overline{EF}$

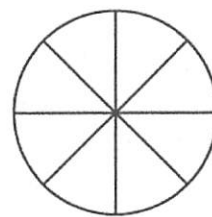


8. Which of the following shows the shape of the intersection of the cone and the plane?



9. A 12-inch in diameter pizza is cut up into 8 equal slices. What is the approximate length of the curved edge of each slice?

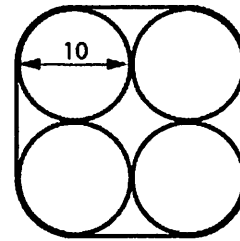
- A) 1.5 inches
B) 4.7 inches
C) 9.4 inches
D) 37.7 inches



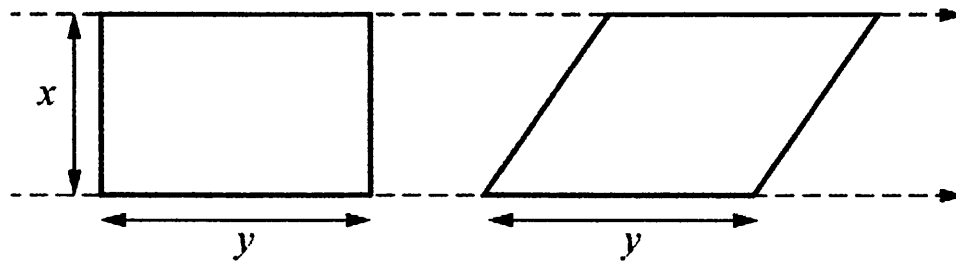
10. A teacher asked a group of students to stand shoulder-to-shoulder, such that every student is exactly 10 feet away from her. The students, in this arrangement, would be standing on the edge of which of the following shapes?
- A) A square with a side length of 10 feet
B) A square with a side length of 20 feet
C) A circle with a diameter of 10 feet.
D) A circle with a diameter of 20 feet

11. The figure below shows four cylindrical cans tied together by a piece of string. The diameter of each can is 10 cm. What is the approximate length of the string around the cans?

- A) 31
B) 51
C) 71
D) 126



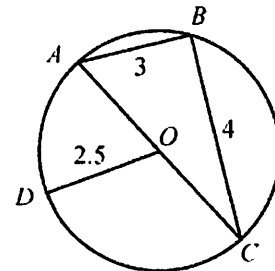
12. The figure below shows a rectangle and a parallelogram between two parallel lines. Which of the following statements is true about the areas of the two shapes?



- A) The area of the rectangle is greater than the area of the parallelogram.
B) The area of the rectangle is less than the area of the parallelogram.
C) The area of the rectangle is equal to the area of the parallelogram.
D) If $x > y$ then the area of the rectangle is greater than the area of the parallelogram.

13. The figure shows a circle in which $\overline{OD}$ is the radius and $\overline{AC}$ is the diameter. What is the perimeter of the triangle ABC ?

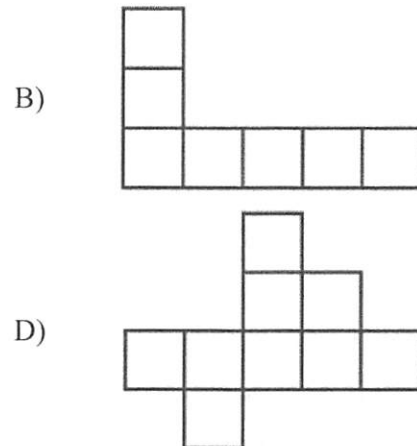
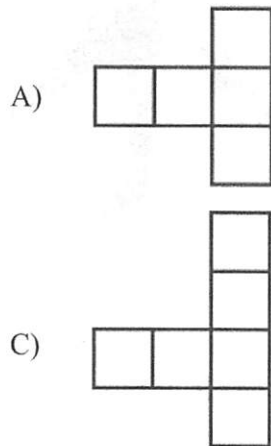
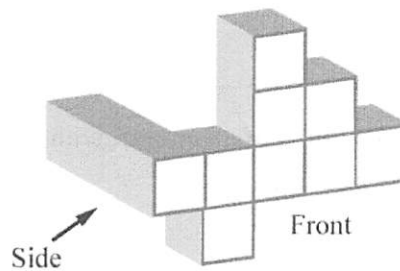
- A) 12
B) 9.5
C) 8
D) 7



14. What is the perimeter of a rectangle with an area of 143 cm^2 and a side length of 13 cm ?

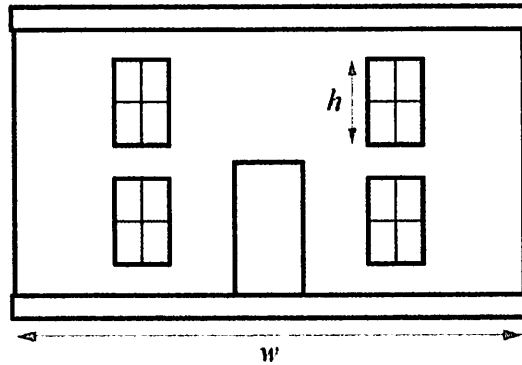
- A) 11 cm
- B) 24 cm
- C) 37 cm
- D) 48 cm

15. Which outline below shows the view of the following 3-dimensional object from the side?



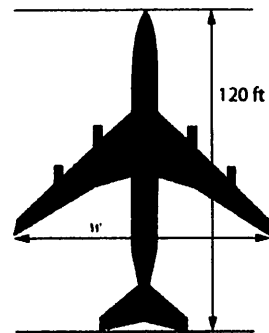
16. The figure below shows the scaled drawing of a house. Given that the height h of the window is 3 feet, what is the width w of the house?

- A) 12
B) 18
C) 24
D) 36



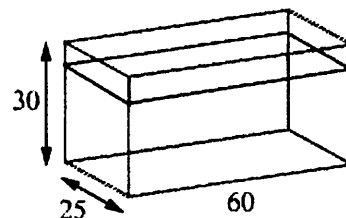
17. The scale drawing shows the outline of an aircraft with a length of 120 feet. Use the figure to estimate the wingspan w of the aircraft.

- A) 80 ft
B) 96 ft
C) 120 ft
D) 150 ft



18. The figure shows the dimensions, in cm, of an aquarium that is partially filled with water. If the level of water is 3 cm below the top of the aquarium what is the volume of water in the aquarium? (1 liter = 1,000 cm³)

- A) 40.5 liters
B) 45.0 liters
C) 405 liters
D) 450 liters



19. A 1 : 120 scale drawing of a swimming pool shows the length of the pool as 5.0 cm. What would be the length of the pool in a 1 : 25 scale drawing of the pool?

- A) 1.04 cm
 - B) 12.5 cm
 - C) 24 cm
 - D) 25 cm
-

20. The area of a square garden on a 1 : 40 scaled drawing is 36 cm^2 . What is the area of the actual garden in m^2 ?

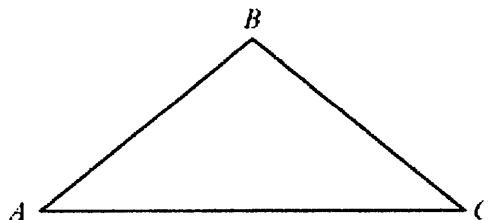
- A) 1.44
 - B) 5.76
 - C) 1,440
 - D) 57,600
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21. Which of the following sets of side lengths cannot be used to draw a triangle?

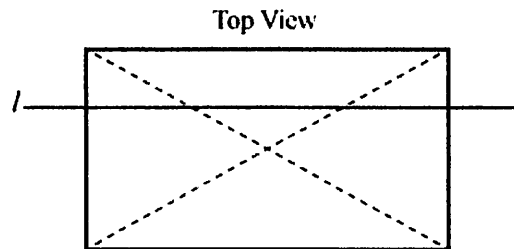
- A) 3, 4, 5
 - B) 7, 9, 14
 - C) 9, 5, 12
 - D) 12, 18, 31
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22. Consider a triangle ABC . Which of the following sets of measurements do not define a unique triangle?

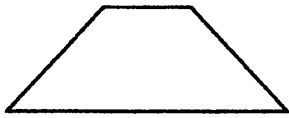
- A) $\overline{AB} = 6$, $\overline{BC} = 8$, $\overline{AC} = 10$
- B) $\overline{AB} = 7$, $\overline{BC} = 7$, $\angle ABC = 110^\circ$
- C) $\overline{AB} = 8$, $\angle CAB = 45^\circ$, $\angle ABC = 100^\circ$
- D) $\angle ABC = 100^\circ$, $\angle BCA = 45^\circ$, $\angle CAB = 35^\circ$



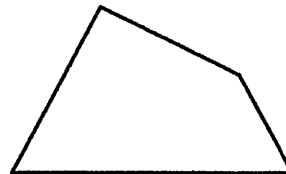
23. The figure shows the view from above of a right rectangular pyramid. A plane cuts the pyramid vertically down along the line l . Which of the following shows the correct planer section of the pyramid?



A)



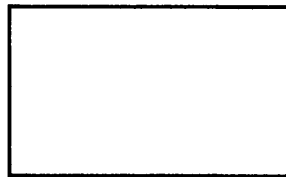
B)



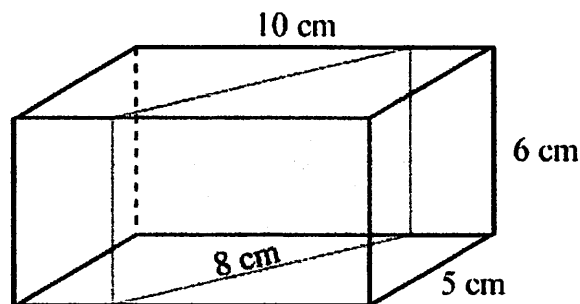
C)



D)



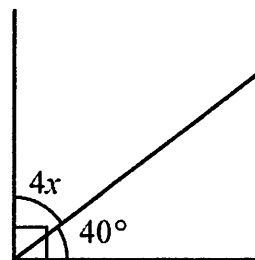
24. The right rectangular prism in the figure below was sliced with a plane perpendicular to the base as shown. Which of the following gives the dimensions of the resulting rectangular slice of the prism (the shaded area)?



- A) $10 \text{ cm} \times 6 \text{ cm}$
 B) $8 \text{ cm} \times 6 \text{ cm}$
 C) $8 \text{ cm} \times 5 \text{ cm}$
 D) $10 \text{ cm} \times 8 \text{ cm}$

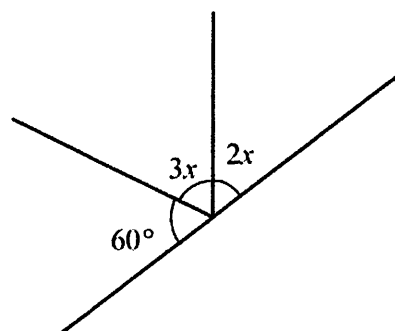
25. What is the value of x ?

- A) 12.5°
- B) 25°
- C) 35°
- D) 50°



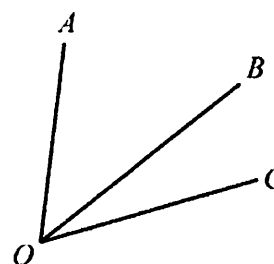
26. What is the value of x ?

- A) 6°
- B) 12°
- C) 20°
- D) 24°



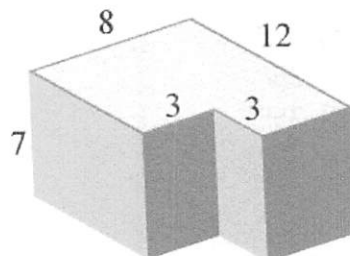
27. Given that $\angle AOC = 68^\circ$ and $\angle AOB = 35^\circ$, what is the measure of $\angle BOC$?

- A) 22°
- B) 33°
- C) 55°
- D) 103°



28. The figure shows a cuboid from which a corner has been cut away. All angles on the object are right angles. What is the total surface area of all the faces of the resulting object?

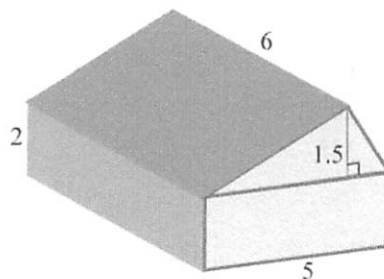
- A) 236
B) 367
C) 454
D) 472



29. The figure shows a warehouse, which consists of a triangular prism on top of a cuboid. The dimensions of the warehouse, in meters, are indicated on the Figure.

What is the volume of the warehouse?

- A) 22.5 m^3
B) 60.0 m^3
C) 82.5 m^3
D) 105 m^3



30. George wants to build a bird cage by bending a piece of metal wire in the shape shown below. He needs 18 such pieces to build the entire cage.

What is the total length of wire he must buy? ($\pi \approx \frac{22}{7}$)

- A) 142 cm
B) 256 cm
C) 2,268 cm
D) 2,556 cm

