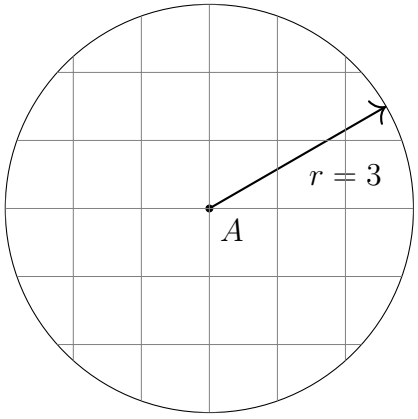
1.9 Rounding and circle area

1. Write in your notebook the formulas for the area and circumference of circles and these definitions:
   - The radius, r, is the distance from the center to the edge of a circle.
   - The diameter, D, is the distance all of the way across a circle, two times the radius. $D = 2r$.
   - The circumference, C, is the distance around the circle (its perimeter).

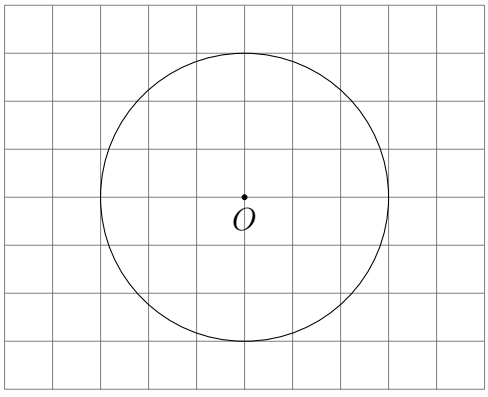
$$A = \pi r^2$$

$$C = \pi D = 2\pi r$$

2. Given the circle A with radius $r = 3$. Leave exact answers, in terms of π.
   (a) Find the circumference of circle A.
   (b) Find the area of the circle.

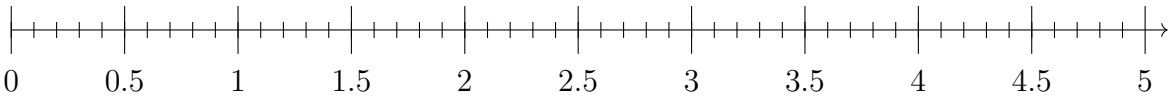


3. Given the circle centered at O with radius $r = 3$. Leave an exact answer, in terms of π if necessary.
   (a) Find the circumference of circle O.
   (b) Find the area of the circle.

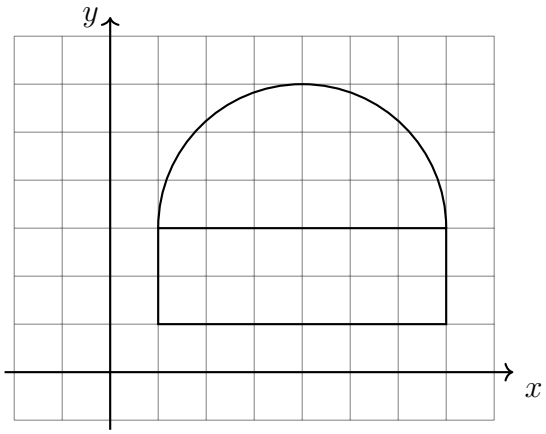


4. Find the area A and circumference C of a circle with radius 4 meters (in terms of π).
5. Find the area A and circumference C of a circle with radius 5 feet (in terms of π).

6. In mathematics we commonly use the special, irrational number, $\pi = 3.14159265358....$ Mark and label π on the number line below.



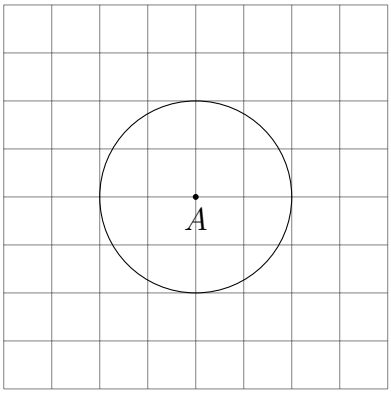
7. Find the area of the shape shown below composed of a rectangle and circular cap. Leave your answer as an exact value in terms of π.



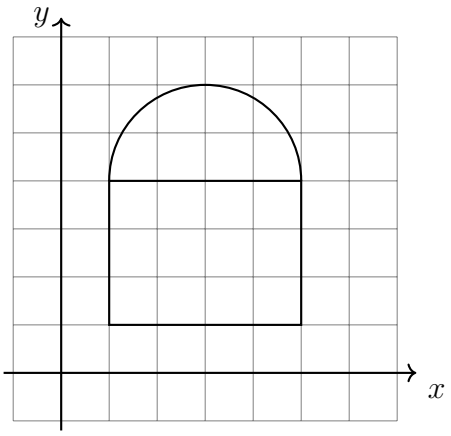
8. Given the circle centered at A with radius $r = 2$. Leave an exact answer, in terms of π if necessary.

   (a) Find the circumference of circle A.

   (b) Find the area of the circle.



9. Find the area of the shape shown below composed of a rectangle and circular cap. Leave your answer as an exact value in terms of π.



10. Mark each statement true of false.

    (a) T F 3.14 is the exact value of π

    (b) T F 4π is the area of a circle with radius 2 in terms of π

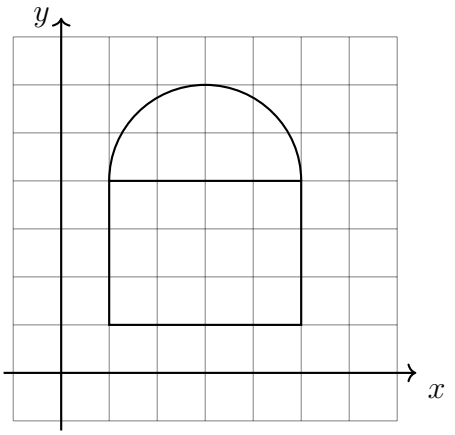
    (c) T F $C = 10\pi \approx 31.4$ is an approximation

    (d) T F $3\sqrt{2}$ is an exact value

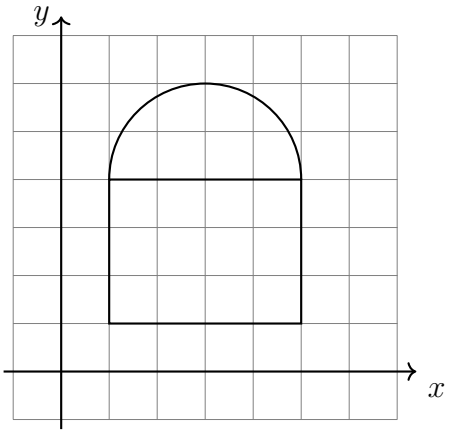
    (e) T F $0.707\ldots$ is an approximation for $\dfrac{1}{\sqrt{2}}$

11. Find the area A and circumference C of a circle with radius 5 feet (in terms of π).

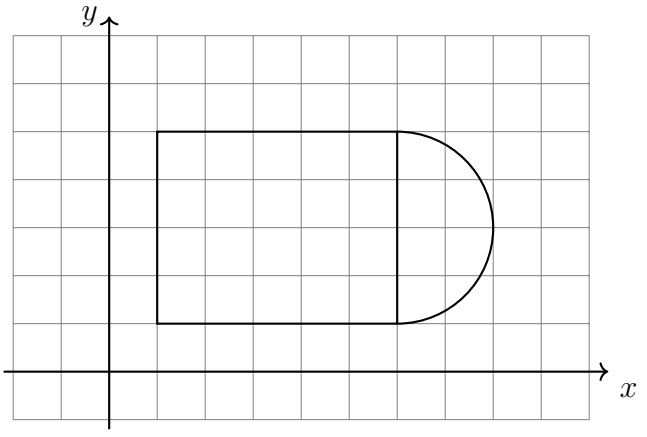
12. Find the area of the shape shown below composed of a rectangle and circular cap. Leave your answer as an exact value in terms of π.



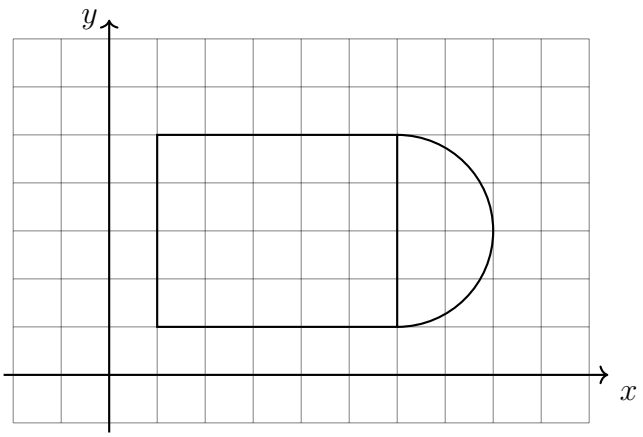
13. Find the *perimeter* of the shape shown below composed of a rectangle and circular cap. Leave your answer as an exact value in terms of π.



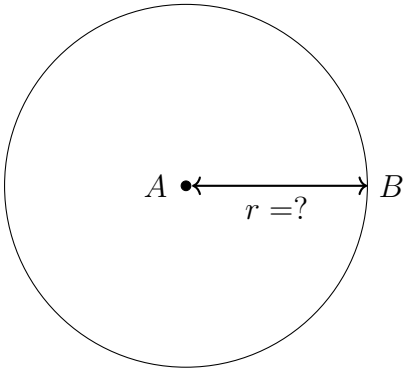
14. Find the area of the shape shown below composed of a rectangle and a semi-circle.



15. Find the area of the shape shown below composed of a rectangle and a semi-circle.



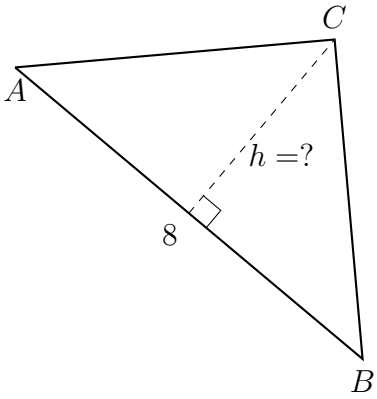
16. Given circle O with area $A = 64\pi$ square centimeters. Find the radius, AB.



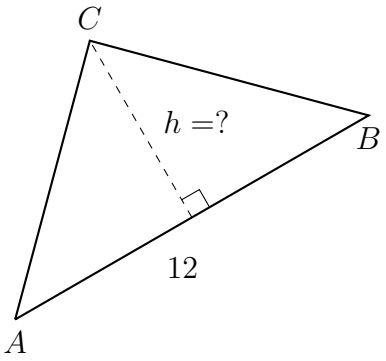
Start with the formula

$A = \pi r^2 = 64\pi$

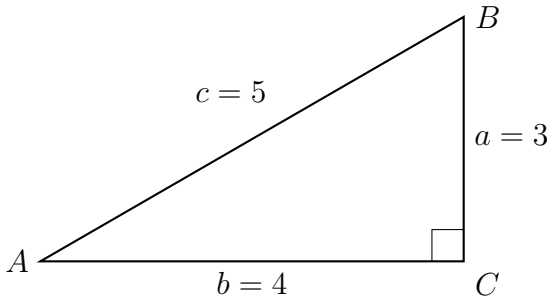
17. One side of the $\triangle ABC$ has a length $AB = 8$. The triangle's area is 44. Find the length of the altitude h of the triangle to vertex C and perpendicular to side $\overline{AB}$.



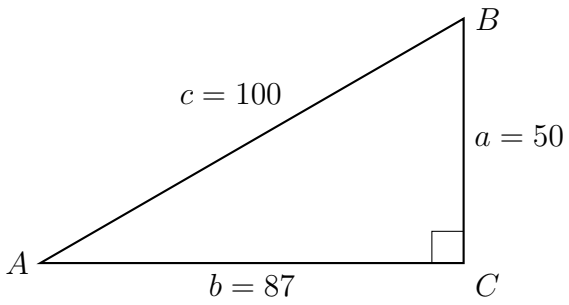
18. One side of the $\triangle ABC$ has a length $AB = 12$. The triangle's area is 60. Find the length of the altitude h of the triangle to vertex C and perpendicular to side $\overline{AB}$.



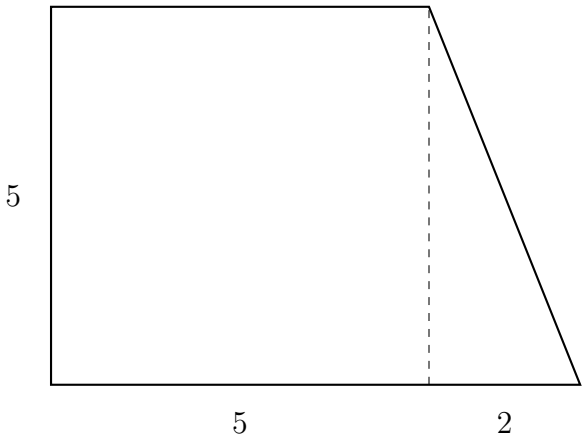
19. Find the area of $\triangle ABC$ shown below (not actual size) with $m\angle C = 90°$ and the lengths of the triangle's sides as $a = 3$, $b = 4$, and $c = 5$.



20. Find the area of $\triangle ABC$ shown below (not actual size) with $m\angle C = 90°$ and the lengths of the triangle's sides as $a = 50$, $b = 87$, and $c = 100$.



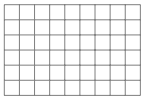
21. The compound shape shown below is composed of a square with side length 5 cm and a triangle with base 2 cm. Find the total area of the combined shape.



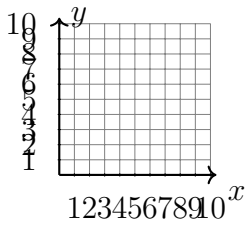
22. Repeat the calculation for the figure above using the trapezoid area formula.

23. On the grid below, accurately draw and label two adjacent squares, one with a side length of 4 cm, the other with a side length of 3 cm. The grid is in centimeters.

    Find the area A and perimeter P of combined shape.



24. On the graph, draw polygon ABCDEF with vertices A(1, 1), B(1, 4), C(3, 4), D(3, 7), E(8, 7), and F(8, 1). Find the perimeter and the area of the polygon.



25. Draw and label a triangle $\triangle ABC$ with base $\overline{AB}$ 8 centimeters long and altitude of 5 centimeters. (show the altitude as a dotted line, and make sure it is perpendicular to the base)