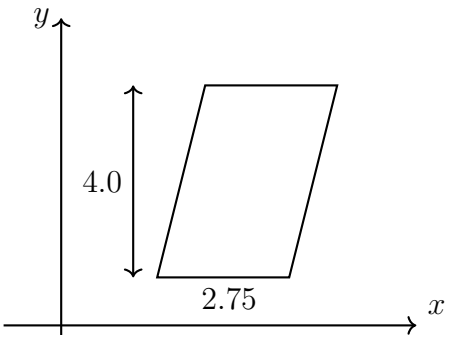
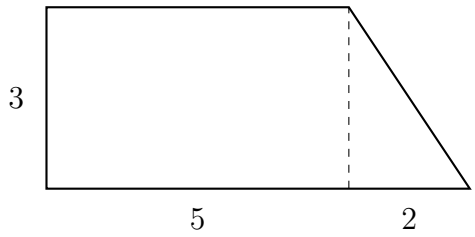
1.10 Homework: Area situations

1. A parallelogram is shown on the x-y plane having a base $b = 2.75$ and height $h = 4.0$.

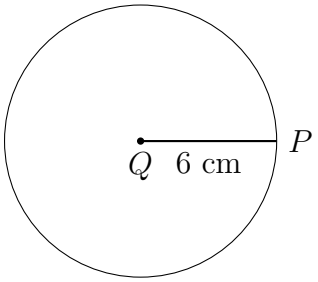
   Find its area, showing the calculation.



2. 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.

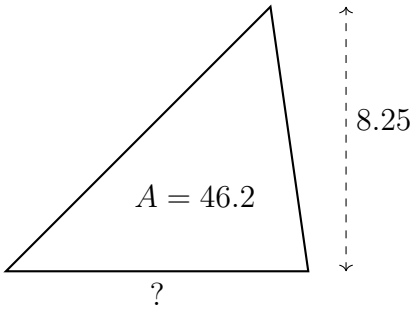


3. Find the area of circle Q with radius $r = 6$ centimeters, rounded to the *nearest tenth*.



4. Find the length of the base of a triangle with area $A = 46.2$ and height $h = 8.25$. Express your result as a decimal. Start with the form (use b or x):

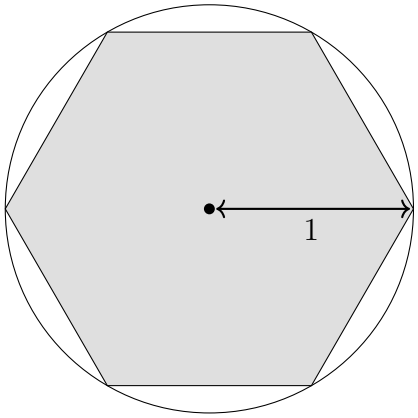
   $A = \frac{1}{2} \times b \times h = 46.2$



5. Archimedes used polygons to approximate π. He calculated the area of the inscribed hexagon below as $A_{hexagon} \approx 2.5981$.

   (a) Find the area of the circle with $r = 1$.

   (b) Find the percent error of Archimede's approximation using a hexagon.

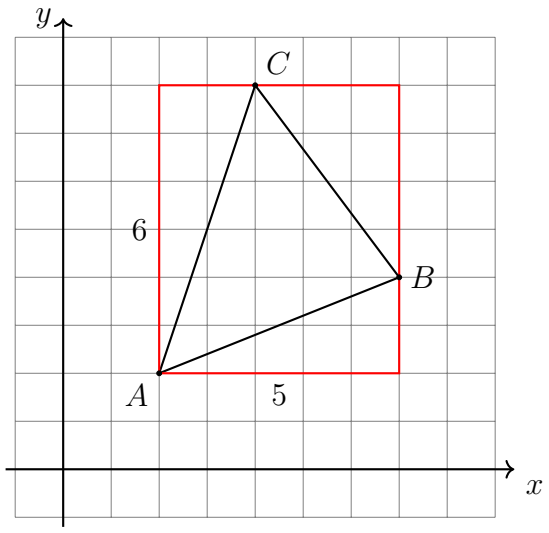


6. Spicy: Find the area of the $\triangle ABC$, shown below, with $A(2,2)$, $B(7,4)$, and $C(4,8)$.

   (a) First find the area of the red rectangle with sides $b = 5$, $h = 6$.

   (b) Find the area of the three triangles surrounding $\triangle ABC$ in the rectangle.

   (c) Subtract their areas from the rectangle to find $A_{\triangle ABC}$

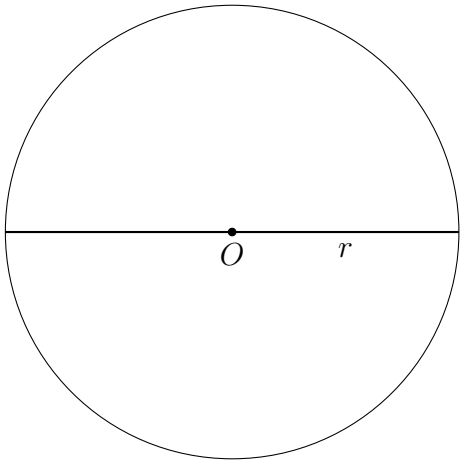


7. Find the radius and circumference of circle O with diameter $D = 15$ centimeters.

   (a) Write down the radius.

   (b) State the circumference in terms of π

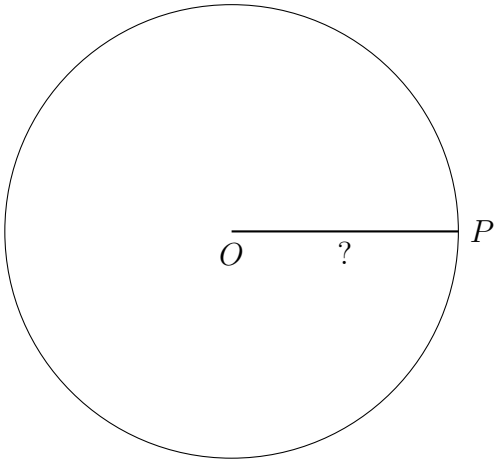
   (c) Express the circumference as a decimal, rounding to the *nearest hundredth*.



8. Given circle O with area $A = 64\pi$ square centimeters.

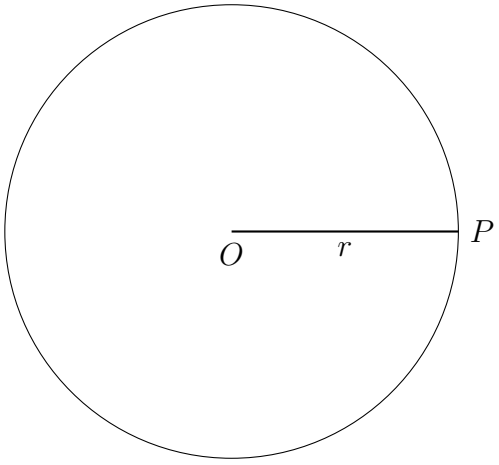
   Find the radius of circle, OP. Start with the formula

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



9. Given circle O with circumference $C = 48\pi$ centimeters.

   Find the radius of circle, OP.



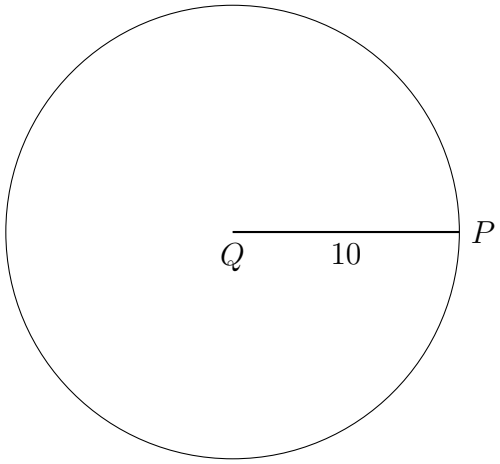
10. Find the area of the given circle Q with radius $r = 10$ centimeters.

    Start with the formula

    $A = \pi r^2$

    (a) State the area in terms of π

    (b) Now round to the nearest hundredth

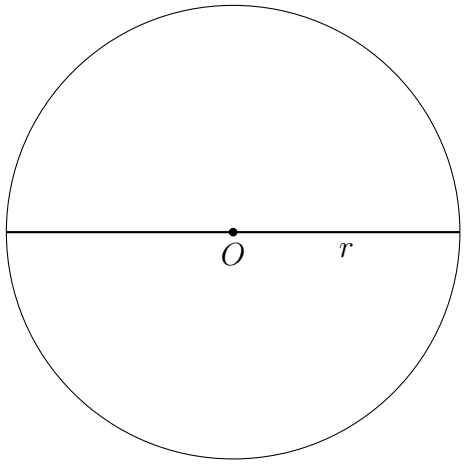


11. Find the radius and circumference of circle O with diameter $D = 14$ centimeters.

    (a) Write down the radius.

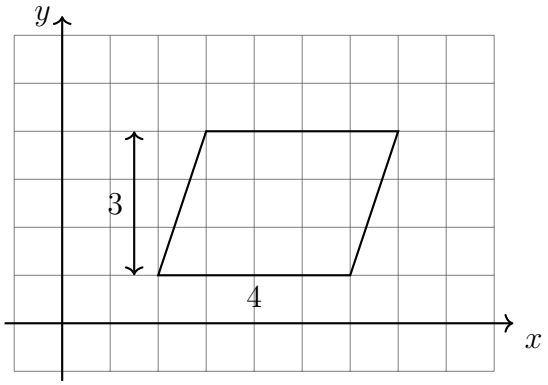
    (b) State the circumference in terms of π

    (c) Express the circumference as a decimal, rounding to the nearest tenth.



12. A parallelogram is shown on the x-y plane having a base $b = 4$ and height $h = 3$.

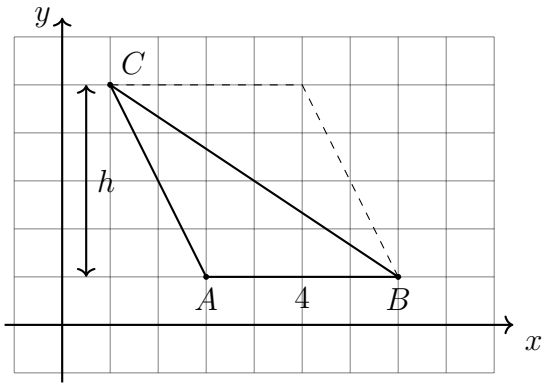
    Find its area, showing the calculation.



13. The $\triangle ABC$ is shown below with $A(3, 1)$, $B(7, 1)$, and $C(1, 5)$. The length of the base of the triangle is $AB = 4$.

    (a) Find the height h.

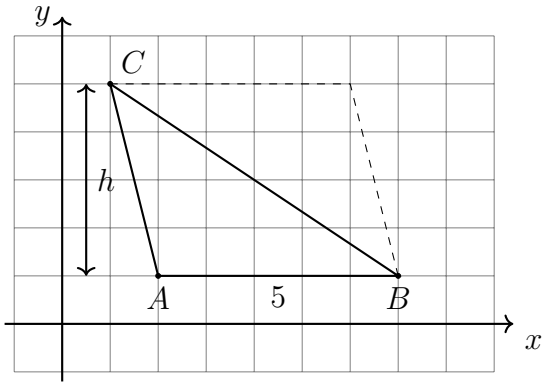
    (b) Find the triangle's area, showing the calculation.



14. The $\triangle ABC$ is shown below with $A(2, 1)$, $B(7, 1)$, and $C(1, 5)$. The length of the base of the triangle is $AB = 5$.

    (a) Find the height h.

    (b) Find its area, showing the calculation.

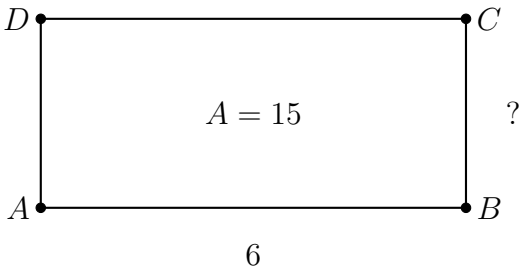


15. Find the area of rectangle $ABCD$ having length $l = 12$ and width $w = 4\frac{1}{2}$. Start with a formula of this form, substituting the given values:

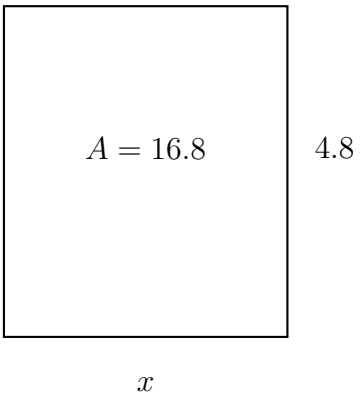
    $A = l \times w$

16. Rectangle $ABCD$ has area $A = 15$ and base $b = 6$ but unknown height. Write an equation then solve. Start with this form (for the unknown, use h, x, or BC) and state your answer as a fraction:

    $A = b \times h = 15$



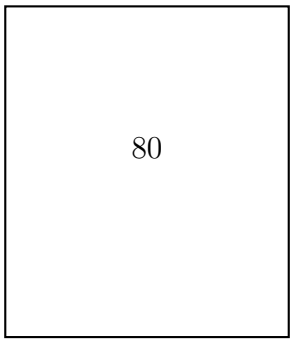
17. Find the base of a rectangle with area $A = 16.8$ and height $h = 4.8$, expressed as a decimal. First write an equation substituting the given values in the area formula.



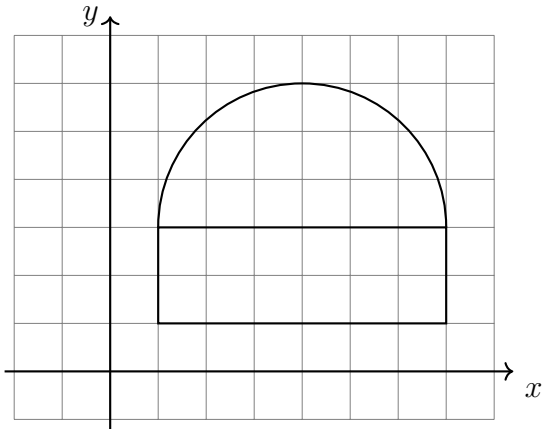
18. Find the length of the base of a rectangle with area $A = 80$ and height $h = 10$. Start with the form (use b or x):

    $A = b \times h = 80$

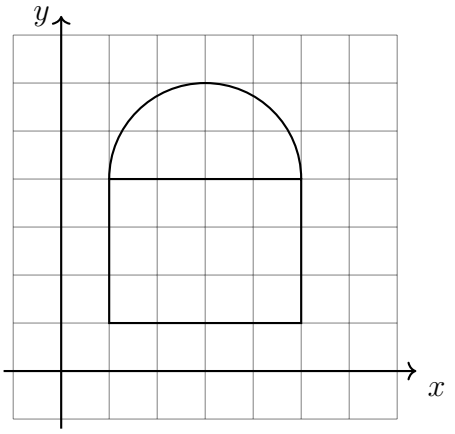
8



19. 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.



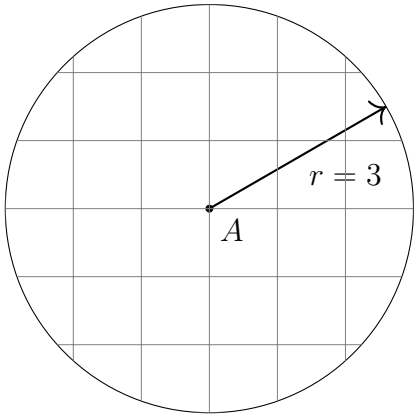
20. Find the *perimeter* of the shape shown below composed of a rectangle and circular cap. Leave your answer as an exact value in terms of π.



21. Given the circle A with radius $r = 3$. Leave exact answers, in terms of π.

    (a) Find the circumference of circle A.

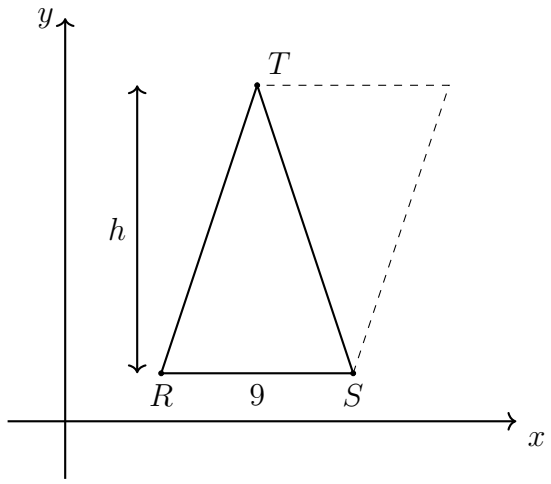
    (b) Find the area of the circle.



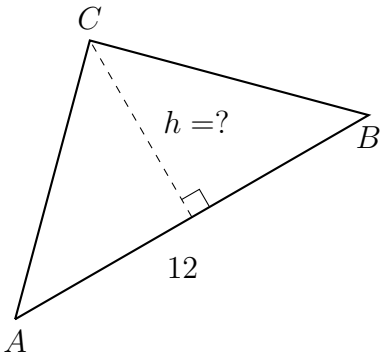
22. Find the height of the $\triangle RST$, having an area of $A = 117$ and base $RS = 9$.

    Start by substituting values in the area formula:

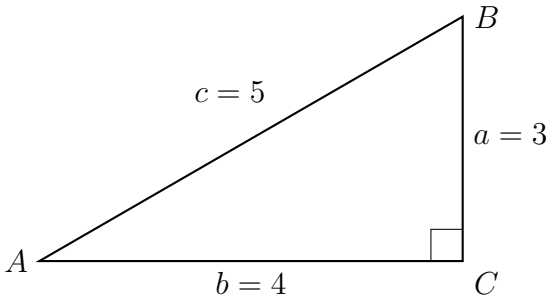
    $A = \frac{1}{2}bh = 117$



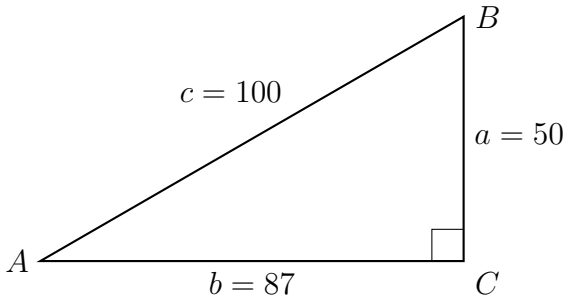
23. One side of the $\triangle ABC$ has a length $AB = 12$. The triangle's area is 60. Find the length of the altitude h of the triangle to vertex C and perpendicular to side $\overline{AB}$.



24. 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 $c = 5$.

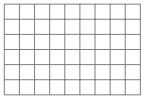


25. Find the area of $\triangle ABC$ shown below (not actual size) with $m\angle C = 90°$ and the lengths of the triangle's sides as $a = 50$, $b = 87$, and $c = 100$.

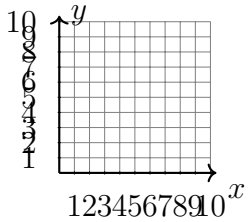


26. On the grid below, accurately draw and label two adjacent squares, one with a side length of 4 cm, the other with a side length of 3 cm. The grid is in centimeters.

    Find the area A and perimeter P of combined shape.



27. 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.



28. 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)