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1.10 Classwork: Precision and percent error

- Unit conversion practice,
- test

$$\epsilon = \left| \frac{v_a - v_e}{v_e} \right| \times 100\%$$

- Write down the number of significant digits in each value.

(a) 8

(c) 60

(e) 105.5

(b) 27

(d) 120

(f) 1.7320

- Round each value to three sig figs

(a) 1,472,654

(c) 8,804,190

(population of the Bronx)

(population of NYC)

(b) π

(d) $\sqrt{2}$

- Do the calculation two ways: round each value to three sig figs before calculating versus round only at the end.

(a) $39.37^2 - 1510$

(c) $39.37^2 - 1510$

(b) $1.2548^2\pi$

(d) $1.2548^2\pi$

What do you notice. In calculations, when should values be rounded?

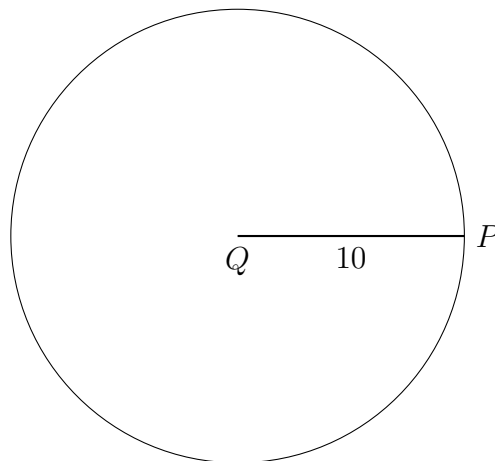
6. Find the area of the given circle Q with radius $r = 10$ centimeters.

Start with the formula

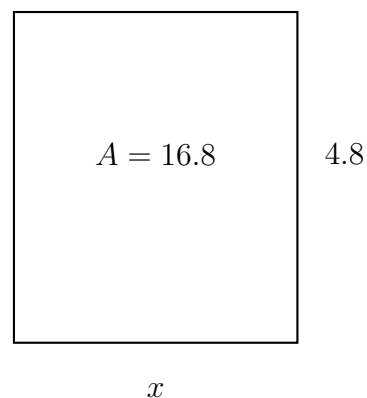
$$A = \pi r^2$$

- (a) State the area in terms of π

- (b) Now round to the nearest hundredth



7. 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.

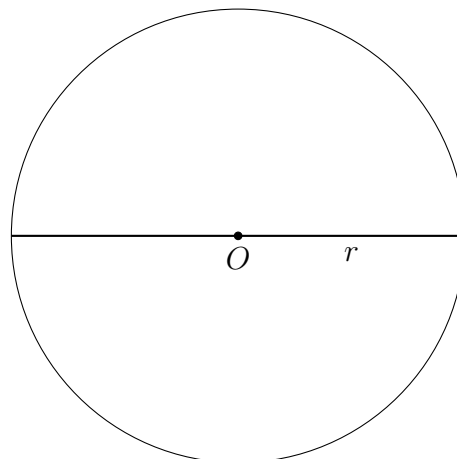


8. Find the radius and circumference of circle O with diameter $D = 14$ centimeters.

- (a) Write down the radius.

- (b) State the circumference in terms of π

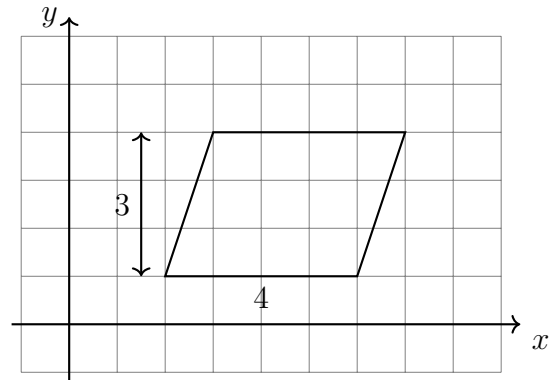
- (c) Express the circumference as a decimal, rounding to the nearest tenth.



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

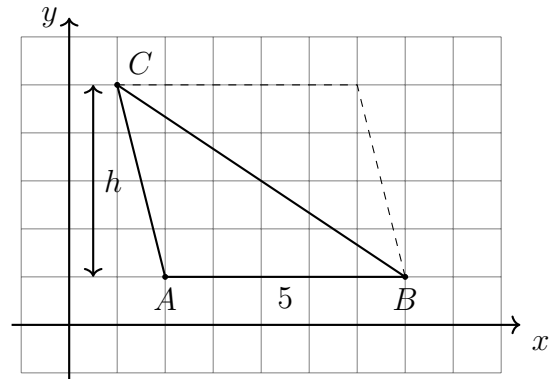
Find its area, showing the calculation.



10. 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 $AB = 5$.

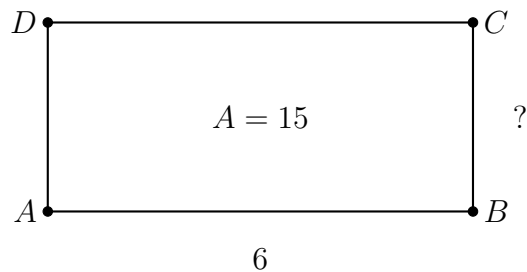
(a) Find the height h .

(b) Find its area, showing the calculation.

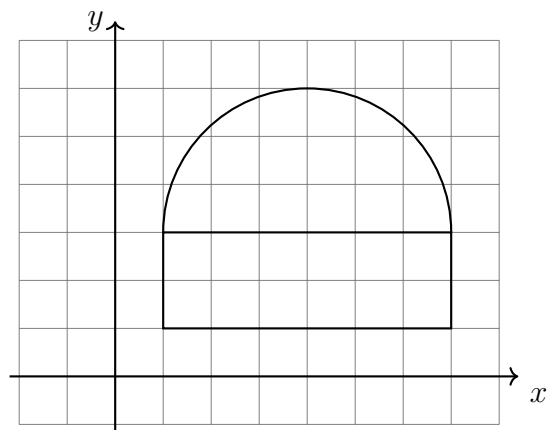


11. Rectangle $ABCD$ has area $A = 15$ and base $b = 6$ but unknown height. Write an equation then solve. Start with this form (for the unknown, use h , x , or BC) and state your answer as a fraction:

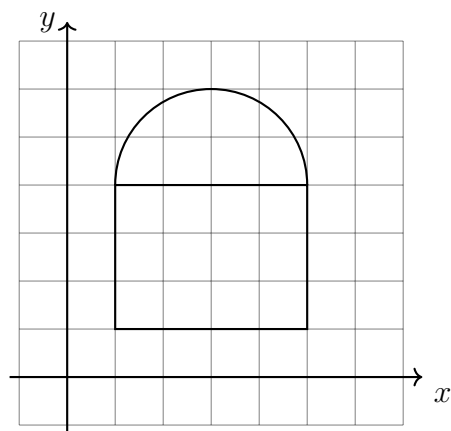
$$A = b \times h = 15$$



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 .



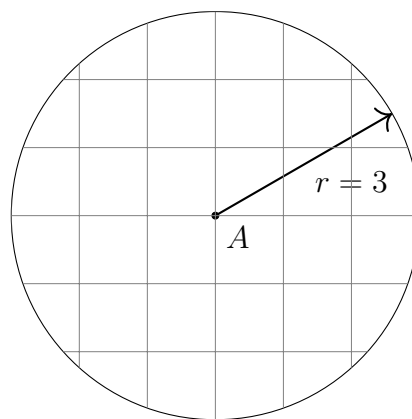
13. Find the *perimeter* of the shape shown below composed of a rectangle and circular cap. Leave your answer as an exact value in terms of π .



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

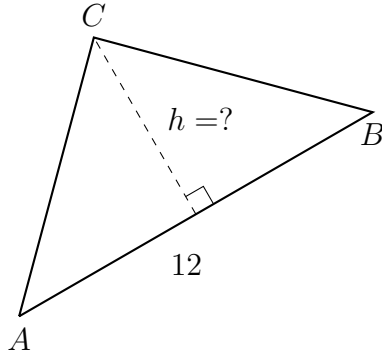
(a) Find the circumference of circle A .

(b) Find the area of the circle.

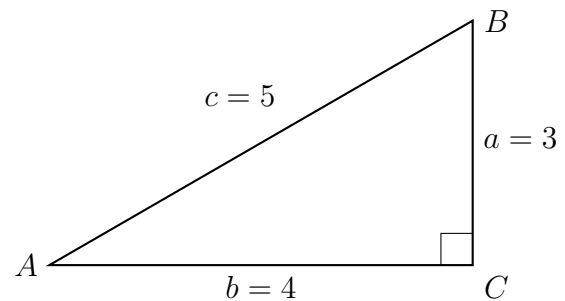


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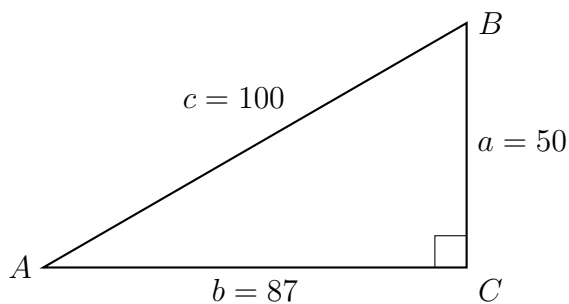
15. One side of the $\triangle ABC$ has a length $AB = 12$. The triangle's area is 60. Find the length of the altitude h of the triangle to vertex C and perpendicular to side \overline{AB} .



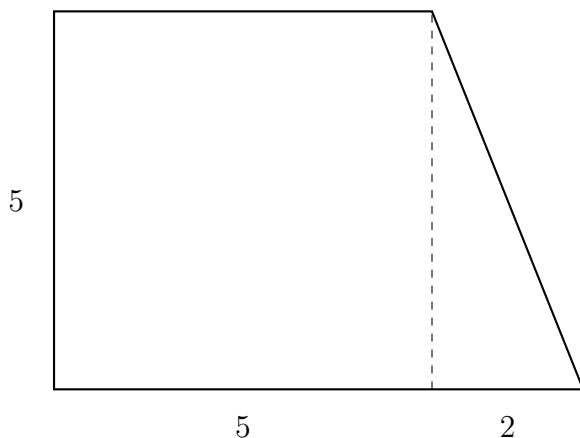
16. Find the area of $\triangle ABC$ shown below (not actual size) with $m\angle C = 90^\circ$ and the lengths of the triangle's sides as $a = 3$, $b = 4$, and $c = 5$.



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

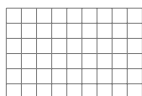


18. The compound shape shown below is composed of a square with side length 5 cm and a triangle with base 2 cm. Find the total area of the combined shape.

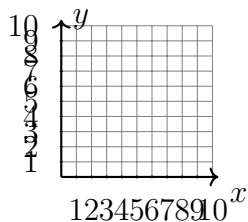


19. Repeat the calculation for the figure above using the trapezoid area formula.
20. On the grid below, accurately draw and label two adjacent squares, one with a side length of 4 cm, the other with a side length of 3 cm. The grid is in centimeters.

Find the area A and perimeter P of combined shape.



21. 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.



22. 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)