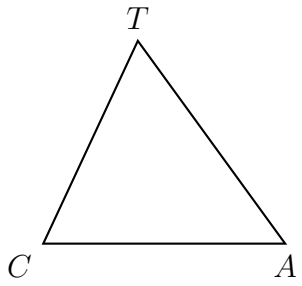
## 1.11 Review: Length and area

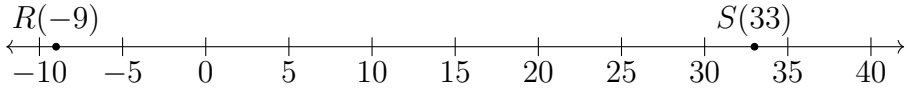
*Show units if given. Show calculation as an equation, starting with a capitalized variable.*

### Line segments, length, number lines

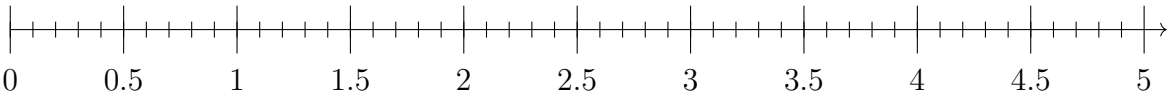
1. Given isosceles $\triangle CAT$ with $\overline{CA} \cong \overline{AT}$. On the diagram mark the congruent line segments with tick marks.




2. Points $R = -9$ and $S = 33$ are shown below. Find $RS$.




3. Mark and label irrational number $\pi = 3.14159265358...$ on the number line below.

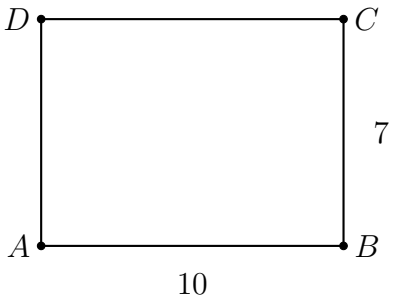



4. Given $\overline{DEF}$, $DE = 5\frac{3}{4}$, and $EF = 8\frac{1}{2}$. Find $DF$ as a mixed fraction.


5. Measure and mark the lengths of the sides of the rectangle in centimeters. Find its perimeter.

**Perimeter and area**

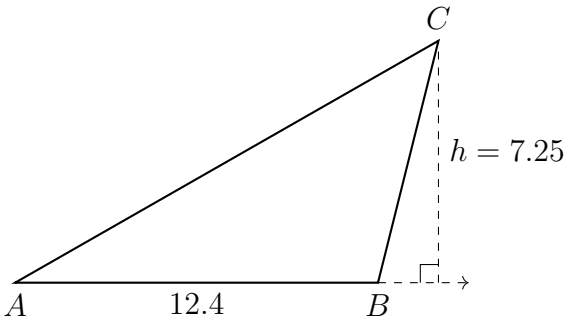
6. The rectangle $ABCD$ with dimensions $AB = 10$ inches, $BC = 7$ in.



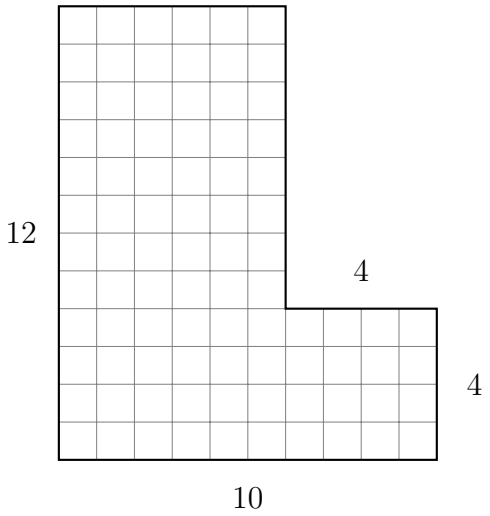

(a) Find the area of the rectangle.

(b) Find its perimeter.

7. The side $\overline{AB}$ of triangle $ABC$ is extended and an altitude to the vertex $C$ is drawn, as shown below. The triangle's height is $h = 7.25$ and its base measures $AB = 12.4$. Find the area of the triangle.



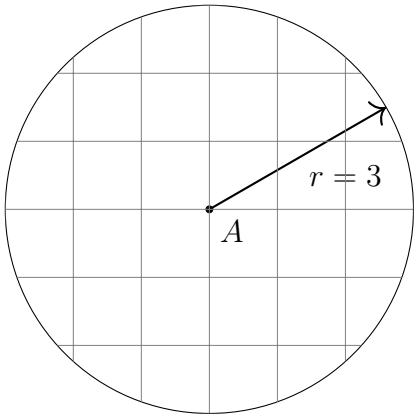

8. Find the area of the compound rectangular shape. Use area formulas for full credit.



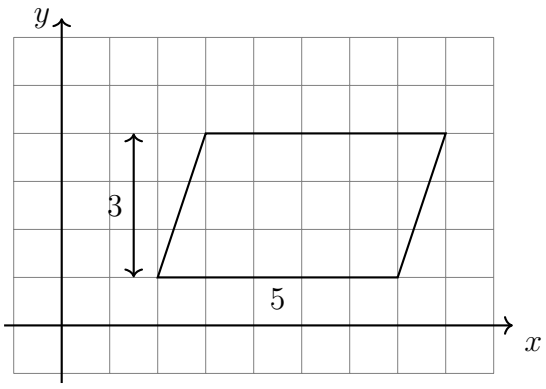
9. Given the circle $A$ with radius $r = 3$. Leave exact answers, in terms of $\pi$.

   (a) Find the circumference of circle $A$.

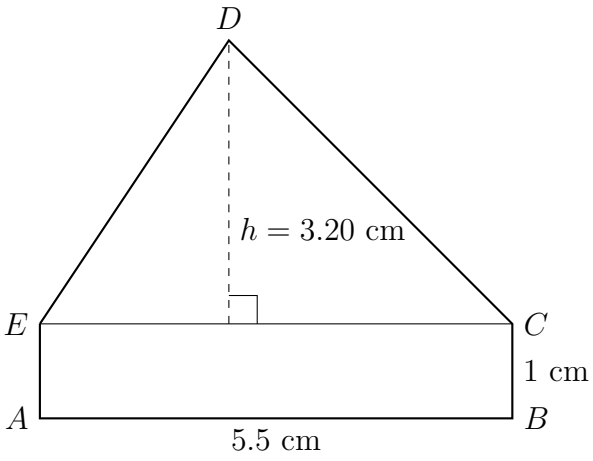
   (b) Find the area of the circle.




10. Find the area of the parallelogram shown with a base $b = 5$ and height $h = 3$.




11. Find the area of shape $ABCDE$ below, a triangle on a rectangle. The altitude $h$ of the triangle is 3.20 centimeters and the base $EC = 5.5$ cm. The rectangle is 1 cm tall. (diagram not to scale)



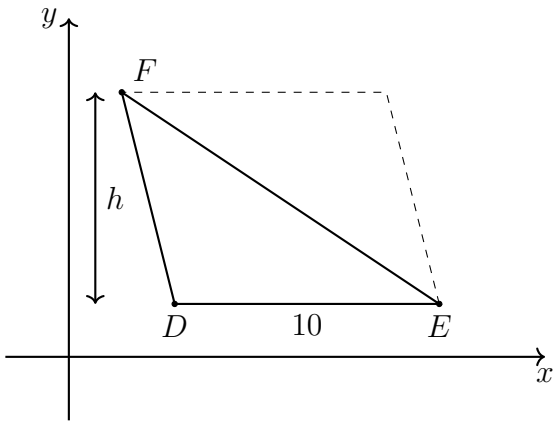
**Precision, percent error**

12. tem;

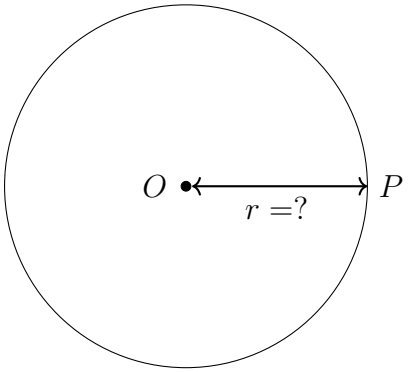
**Modeling situations and solving with algebra**

13. The $\triangle DEF$ has an area $A = 30$ and base $DE = 10$. Find its height $h$.

Start with $A = \frac{1}{2}bh = 30$




14. Given circle $O$ with area $A = 121\pi$ square centimeters. Find the radius, $OP$.

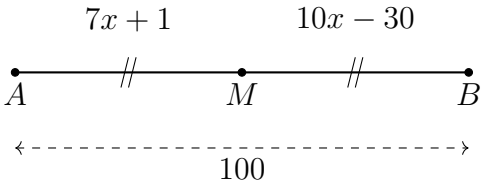



Start with the formula

$A = \pi r^2 = 121\pi$

15. A rectangle has an area of 44 square inches. Its width is 4 inches. Find its length.

16. Given that point $M$ bisects $\overline{PQ}$, $PM = 7x + 1$, $MQ = 10x - 30$, $PQ = 100$. Circle True or False for each equation.




(a) T F $7x + 1 = 100$

(b) T F $7x + 1 = 10x - 30$

(c) T F $(7x + 1) + (10x - 30) = 100$

(d) T F $2(10x - 30) = 100$

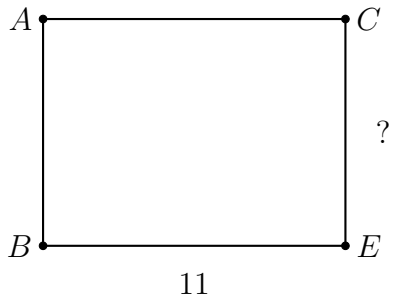
17. The perimeter of a square is 10 inches. Find its area.

**Extra problems**

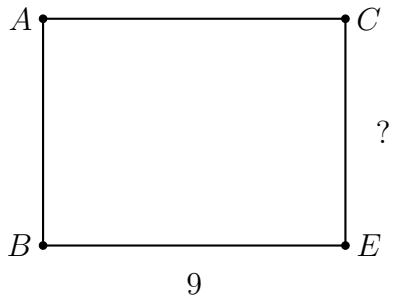
18. A triangle has an area of 68 square centimeters. Its height is 16 centimeters. Find the length of its base.

19. A triangle has an area of 75 square centimeters. Its height is 12 centimeters. Find the length of its base.

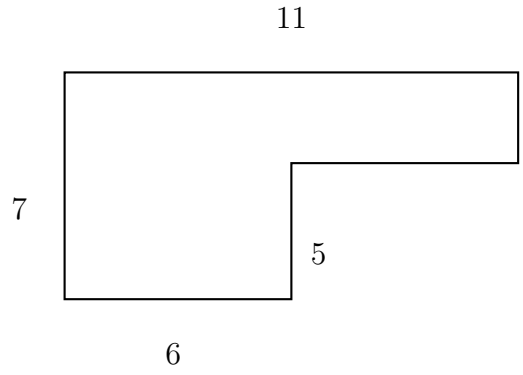
20. The rectangle $BECA$ has an area of 77, with length $BE = 11$.
    (a) Write an equation with the unknown $w$ as the width of the rectangle.
    (b) Solve.



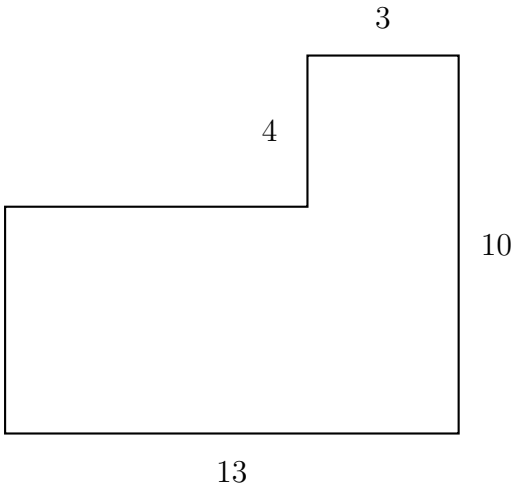

21. The rectangle $BECA$ has an area of 63, with length $BE = 9$.
    (a) Write an equation with the unknown $w$ as the width of the rectangle.
    (b) Solve.



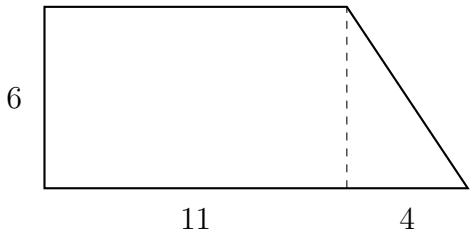

22. Find the area and perimeter of the shape shown below. Mark the missing side lengths first. All angles are 90°. *(not drawn to scale)*



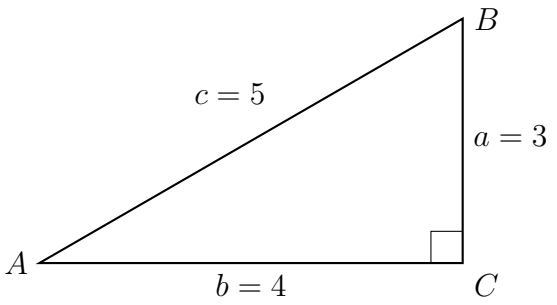

23. Find the area and perimeter of the shape shown below. Mark the missing side lengths first. All angles are 90°. *(not drawn to scale)*



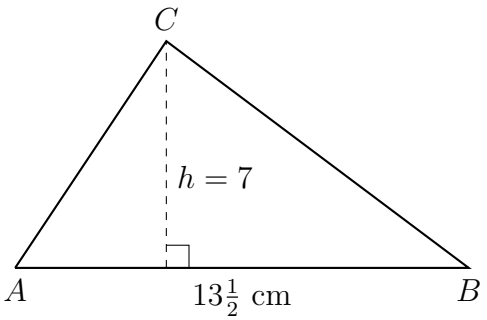

24. The compound shape shown below is composed of a rectangle 6 inches by 11 inches, and a triangle with base 4 inches. Find the total area of the combined shape.



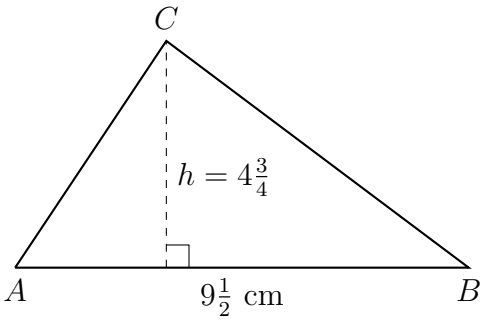

25. Find the area of $\triangle ABC$ shown below (not actual size) with $m\angle C = 90°$ and the lengths of the triangle's sides as $a = 3$, $b = 4$, and $c = 5$.




26. Find the area of $\triangle ABC$. The altitude $h$ of the triangle is 7 centimeters and the base $AB = 13\frac{1}{2}$ cm. (diagram not to scale)




27. Find the area of $\triangle ABC$. The altitude $h$ of the triangle is $4\frac{3}{4}$ centimeters and the base $AB = 9\frac{1}{2}$ cm. (diagram not to scale)




28. The compound shape shown below is composed of a rectangle 6 inches by 11 inches, and a triangle with base 4 inches. Find the total area of the combined shape.

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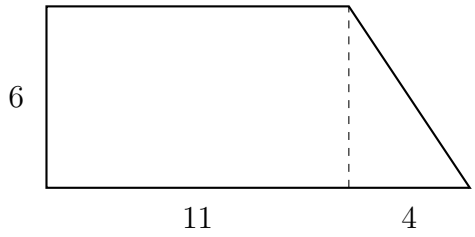
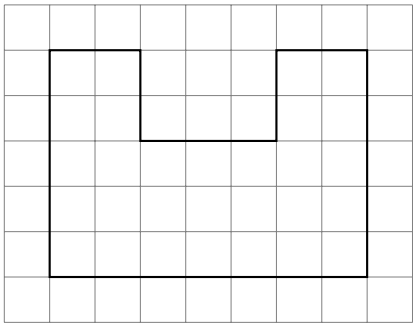



29. Find the area $A$ of the shape shown below in terms of unit squares.



30. Find the area of $\triangle ABC$. The altitude $h$ of the triangle is 7 centimeters and the base $AB = 13\frac{1}{2}$ cm. (diagram not to scale)