

Warm Up

1. List the properties that make a quadrilateral a parallelogram.
- $\text{opp. sides } \parallel$ $\text{opp. sides } \cong$ $\text{opp. l's } \cong$ cons. sides supp.
 diagonals bisect

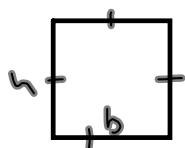


Solve:

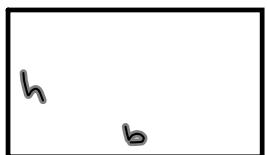
2. $x^2 + x^2 = 102$ $2x^2 = 102$
 $\sqrt{2x^2} = \sqrt{102}$ $\Rightarrow x = \pm \sqrt{51} \approx \pm 7.2$

3. $28 = \frac{1}{2}x(8)$ $28 = 4x$ $7 = x$

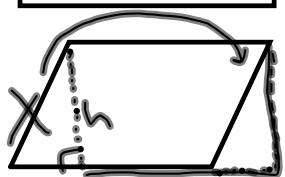
11-1 Areas of Triangles and Parallelograms



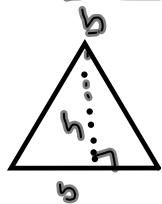
$$A = b \cdot h = s^2$$



$$A = b \cdot h$$

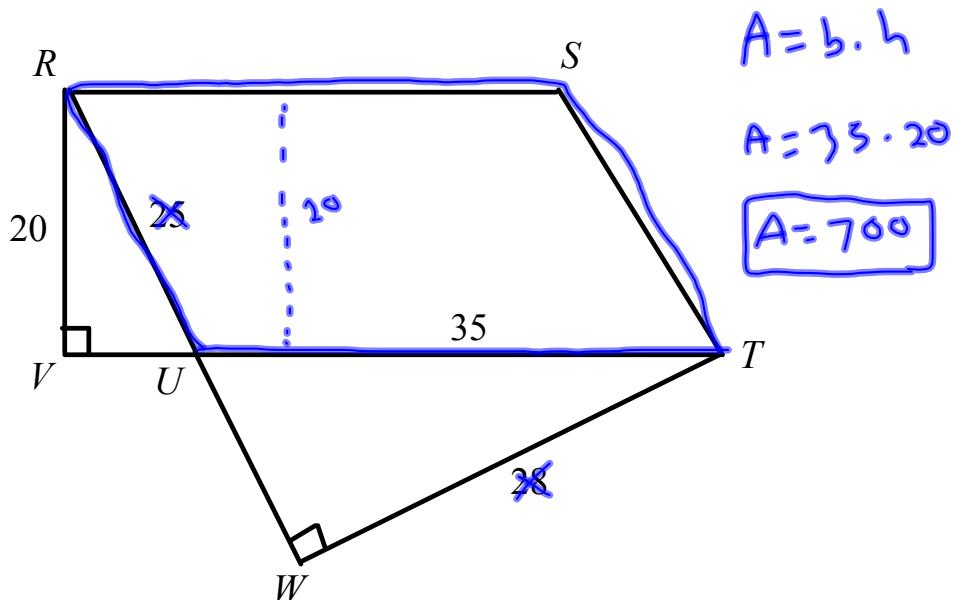


$$A = b \cdot h$$



$$A = \frac{1}{2} \cdot b \cdot h$$

Ex 1 Find the area of parallelogram $RSTU$



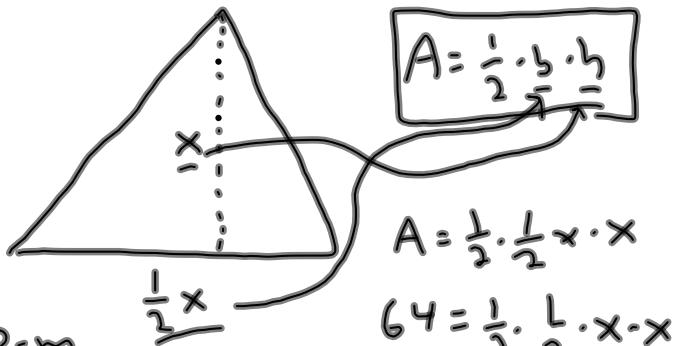
Ex 2 The base of a triangle is one half the height. The area of the triangle is 64 square centimeters. Find the base and height.

$$4 \cdot 64 = \frac{1}{4} \times x^2 \cdot 1$$

$$256 = x^2$$

$$16 = x$$

$$h = 16 \text{ cm} \quad b = 8 \text{ cm}$$



If two triangles have the same base and height, must they be congruent?

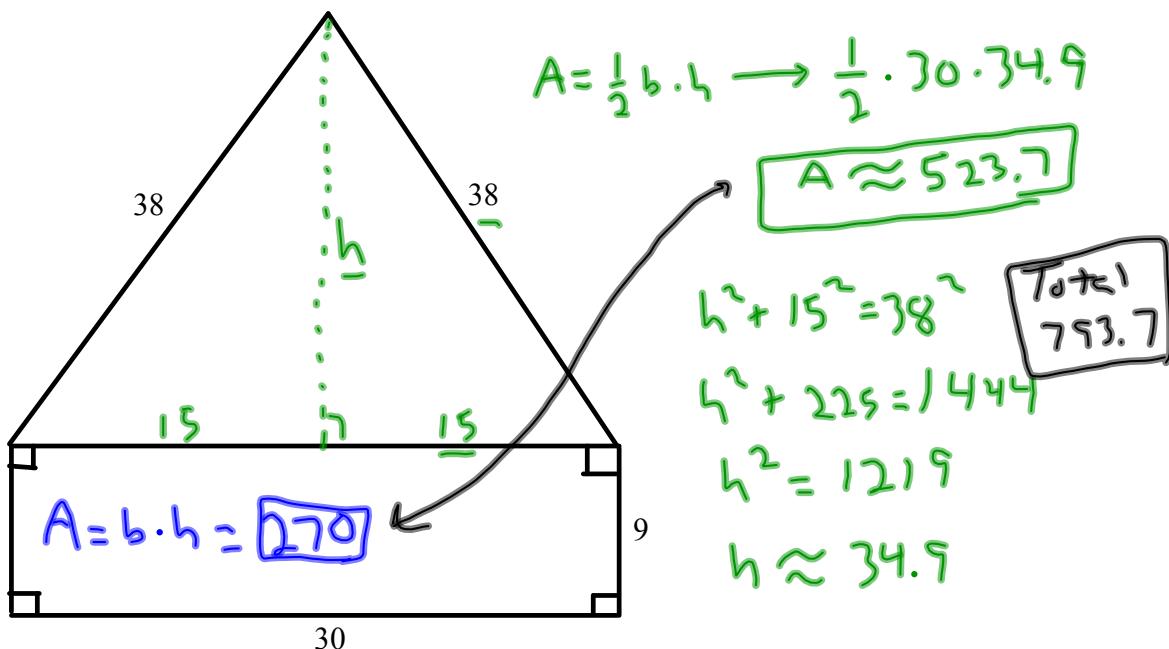


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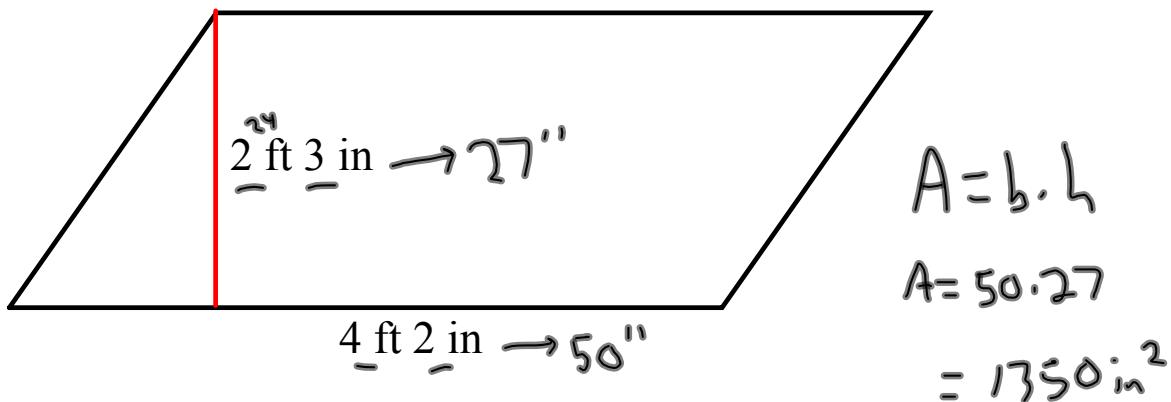
If two triangles have the same base and height, must they have the same area?

Yes

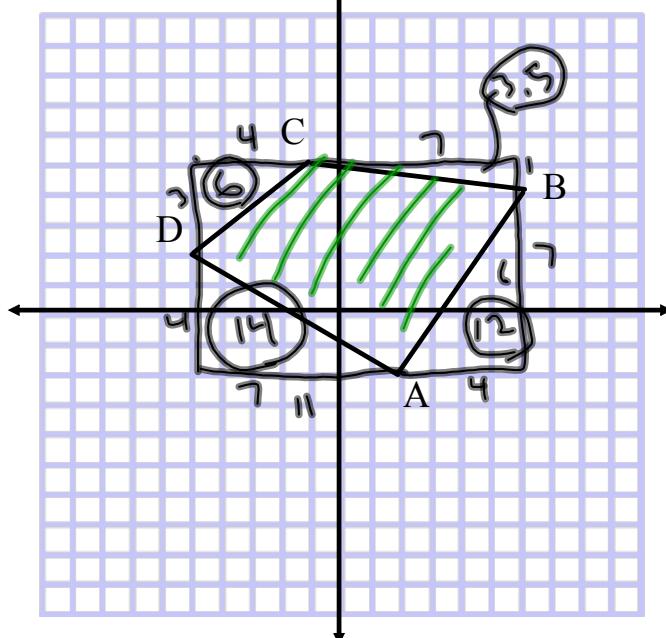
Ex 3 Find the area of the figure.



Ex 4 What is the area of the parallelogram?



Ex 5 The vertices of quadrilateral $ABCD$ are $A(2, -2)$, $B(6, 4)$, $C(-1, 5)$, and $D(-5, 2)$. Find the area of \overline{ABCD} .

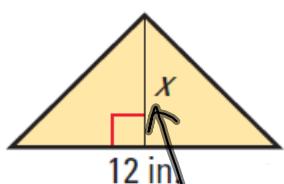


$$A_{\square} = 7 + 6 + 14 + 12$$

41.5

Ex. 6 Find the value of x .

$$A = 36 \text{ in}^2$$



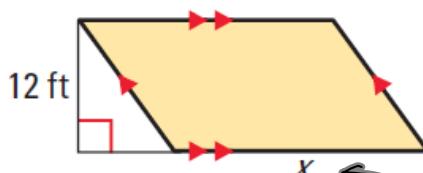
$$A = \frac{1}{2} b \cdot h$$

$$36 = \frac{1}{2} \cdot 12 \cdot x$$

$$36 = 6 \cdot x$$

$6 = x$

$$A = 276 \text{ ft}^2$$

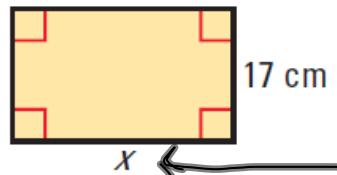


$$A = b \cdot h$$

$$276 = x \cdot 12$$

$x = 23$

$$A = 476 \text{ cm}^2$$



$$A = b \cdot h$$

$$476 = x \cdot 17$$

$x = 28$