

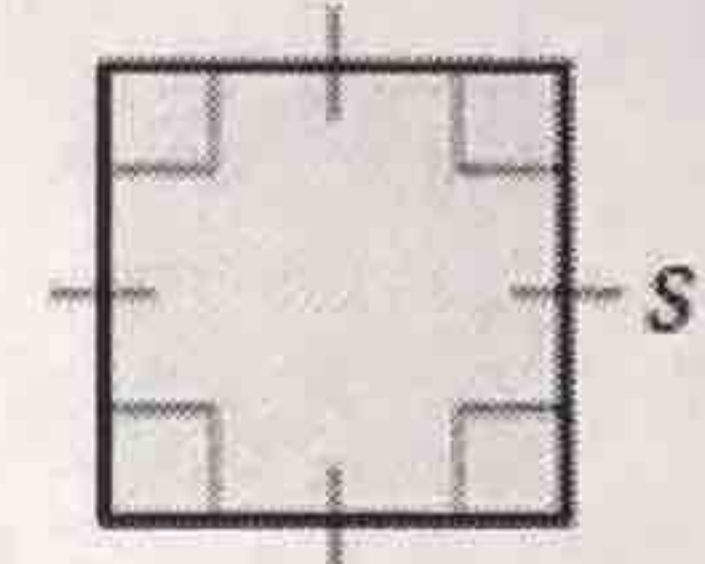
11.1 Areas of Triangles and Parallelograms

POSTULATES

For Your Notebook

POSTULATE 24 Area of a Square Postulate

The area of a square is the square of the length of its side.



$$A = s^2$$

POSTULATE 25 Area Congruence Postulate

If two polygons are congruent, then they have the same area.

POSTULATE 26 Area Addition Postulate

The area of a region is the sum of the areas of its nonoverlapping parts.

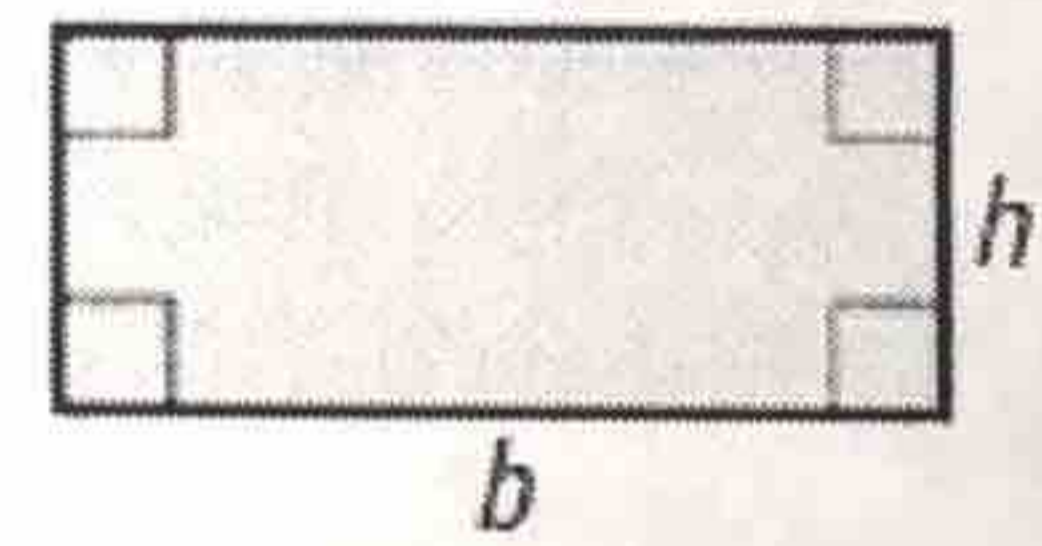
THEOREM

For Your Notebook

THEOREM 11.1 Area of a Rectangle

The area of a rectangle is the product of its base and height.

Justification: Ex. 46, p. 726



$$A = bh$$

On a parallelogram either of the parallel sides can be used as the bases. The height is the perpendicular distance between the bases.

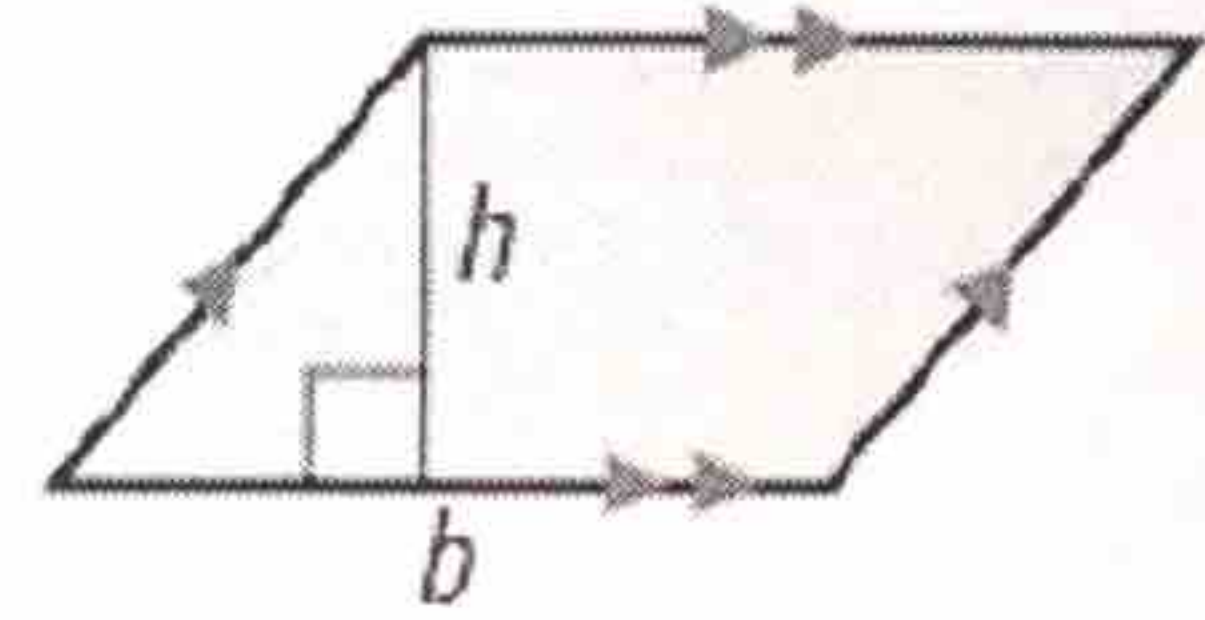
THEOREMS

For Your Notebook

THEOREM 11.2 Area of a Parallelogram

The area of a parallelogram is the product of a base and its corresponding height.

Justification: Ex. 42, p. 725

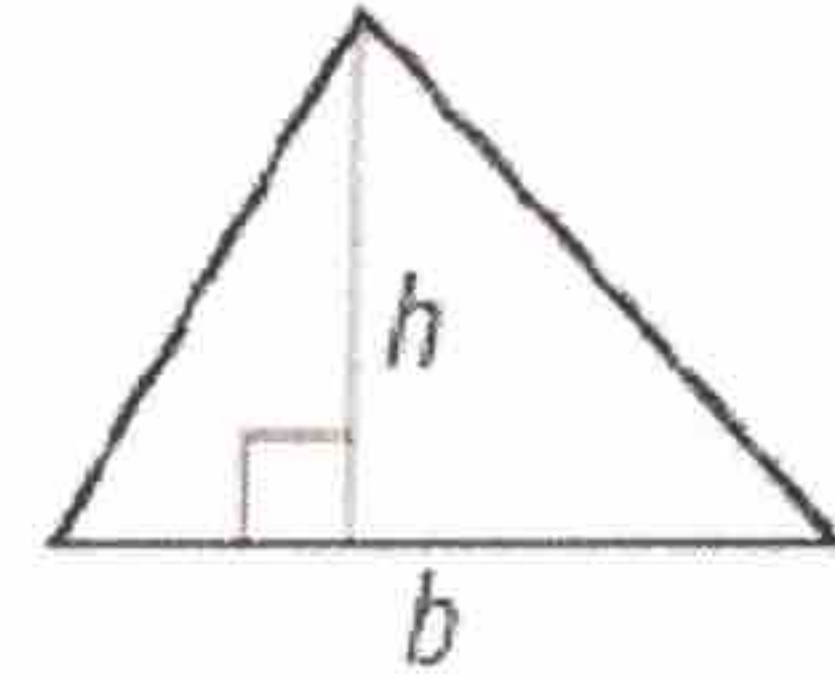


$$A = bh$$

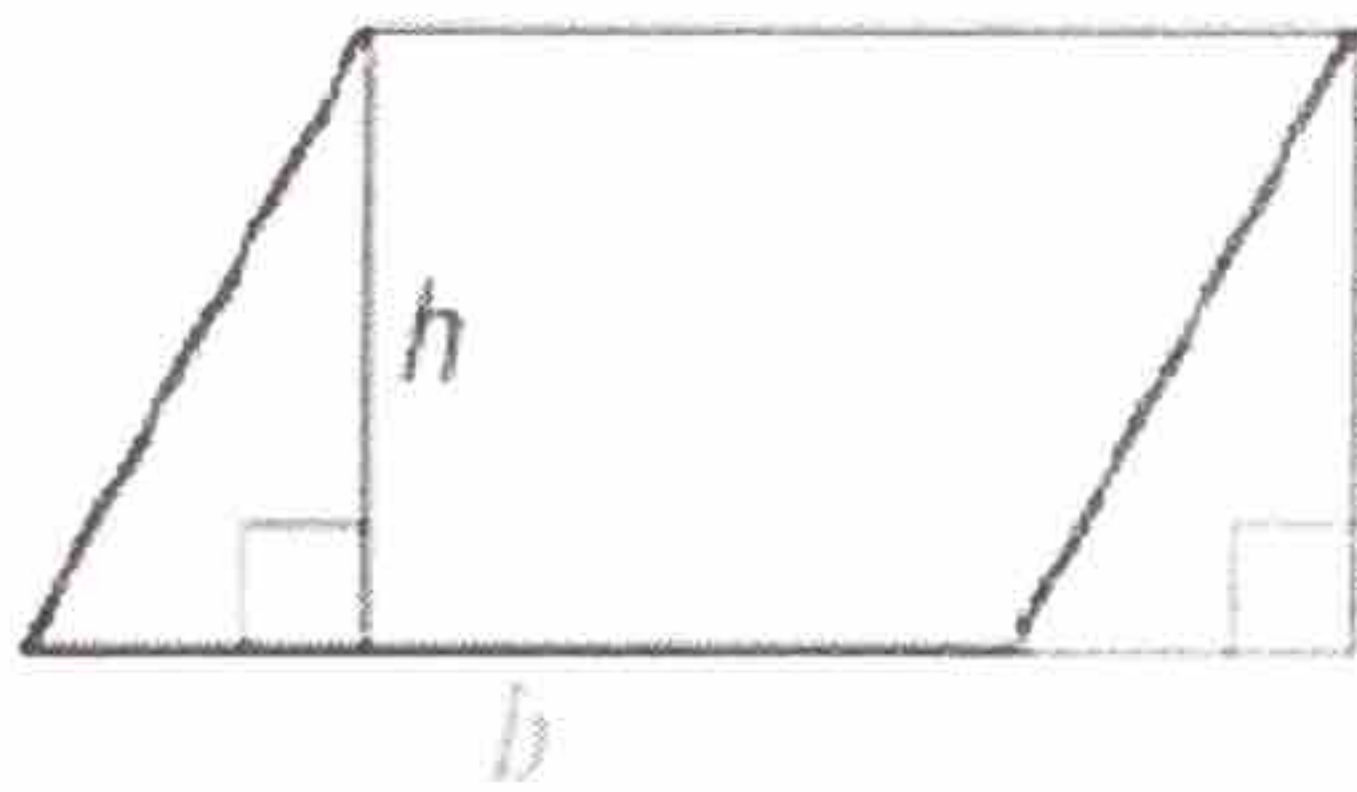
THEOREM 11.3 Area of a Triangle

The area of a triangle is one half the product of a base and its corresponding height.

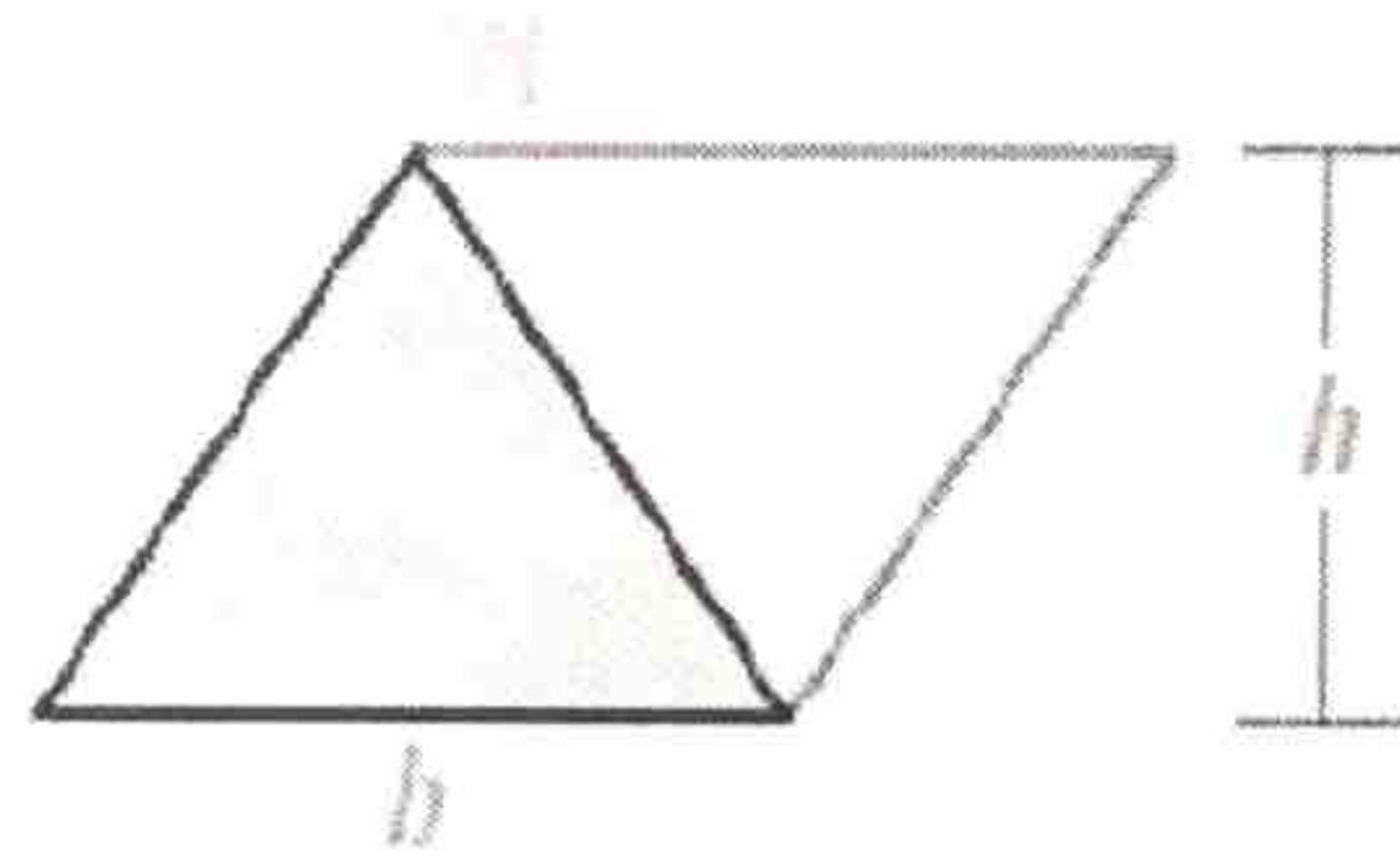
Justification: Ex. 43, p. 726



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



Area of \square = Area of Rectangle



Area of \triangle = $\frac{1}{2}$ • Area of \square

Ex 1: You need to buy paint so that you can paint the side of a barn. A gallon of paint covers 350 square feet. How many gallons should you buy?

Find each leg of roof (Δ):

$$x^2 + x^2 = 26^2$$

$$2x^2 = 676$$

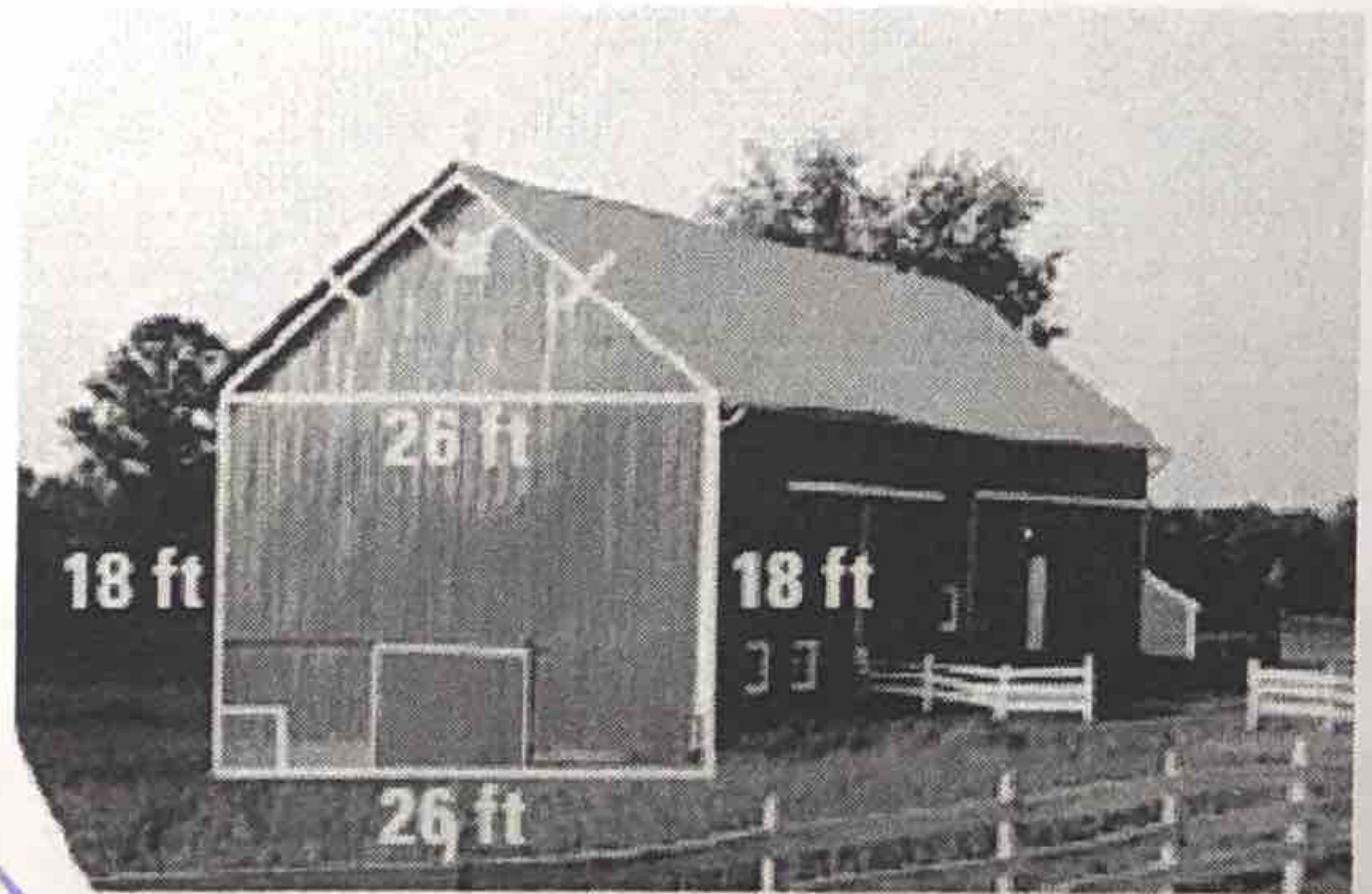
$$x = \sqrt{338}$$

Find area of barn:

$$A_{\square} = A_{\square} + A_{\Delta}$$

$$A = (26)(18) + \frac{1}{2}(\sqrt{338})(\sqrt{338})$$

$$A = 637 \text{ ft}^2$$



How much paint:

$$637 \text{ ft}^2 \cdot \frac{1 \text{ gal}}{350 \text{ ft}^2} \approx \boxed{1.82 \text{ gal}}$$