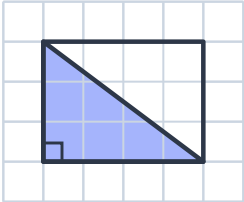


Half of a Rectangle

A right triangle is half of a rectangle. Find both areas.

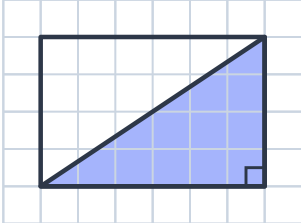
Find the area of the rectangle. The shaded right triangle is half of it.



Example

Rectangle:
 $4 \times 3 = 12$

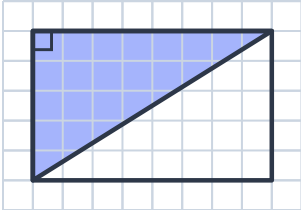
Triangle:
 $\frac{1}{2}$ of $12 = 6$



1.

Rectangle:
_____ $\times$ _____ = _____

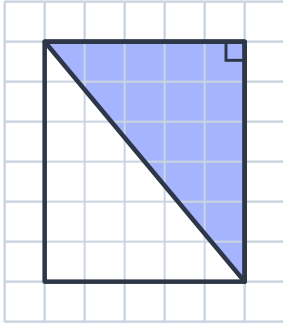
Triangle:
 $\frac{1}{2}$ of _____ = _____



2.

Rectangle:
_____ $\times$ _____ = _____

Triangle:
 $\frac{1}{2}$ of _____ = _____



3.

Rectangle:
_____ $\times$ _____ = _____

Triangle:
 $\frac{1}{2}$ of _____ = _____

Fill in the table. Then write the formula.

	Base	Height	Rectangle: $b \times h$	Triangle: half of $b \times h$
Example	10	4	40	20
4.	6	9	_____	_____
5.	12	7	_____	_____

Area of a right triangle = _____ $\times$ _____ $\times$ _____

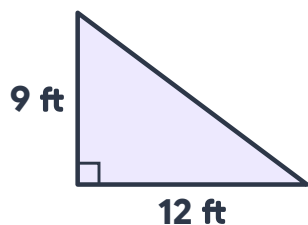
Why is the area of a right triangle half of $b \times h$? Explain.

Area of Right Triangles

Estimate first. Then find the exact area.

Round each side to the nearest ten to estimate. Then use $A = \frac{1}{2} \times b \times h$.

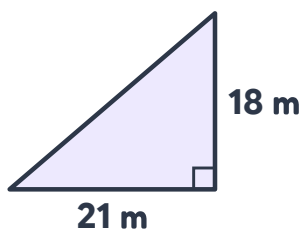
Example



Estimate: $\frac{1}{2} \times \underline{10} \times \underline{10} = \underline{50}$ square ft

Exact: $\frac{1}{2} \times \underline{12} \times \underline{9} = \underline{54}$ square ft

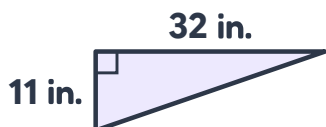
1.



Estimate: $\frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad}$ square m

Exact: $\frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad}$

2.

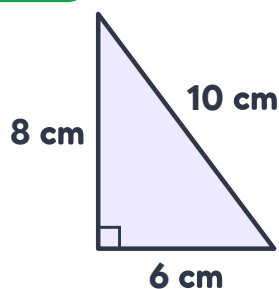


Estimate: $\frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad}$ square in.

Exact: $\frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad}$

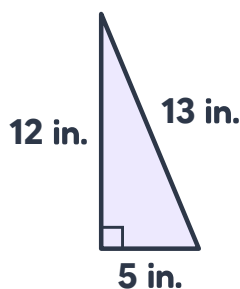
Use the two sides that meet at the right angle. Write the units.

Example



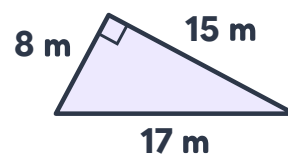
$A = \frac{1}{2} \times \underline{6} \times \underline{8}$
 $= \underline{24}$ square cm

3.



$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad}$
 $= \underline{\quad}$

4.

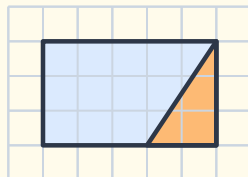
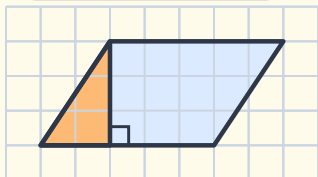


$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad}$
 $= \underline{\quad}$

Area of Parallelograms

Cut off a triangle and move it. You get a rectangle.

Cut and move

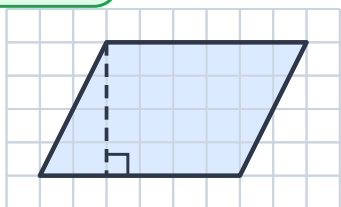


The rectangle has the same base and height, so it has the same area.

$$A = b \times h = 5 \times 3 = 15 \text{ square units}$$

Count the base and the height. Find each area.

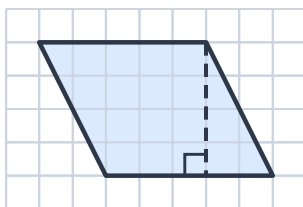
Example



$$b = 6 \quad h = 4$$

$$A = 24 \text{ square units}$$

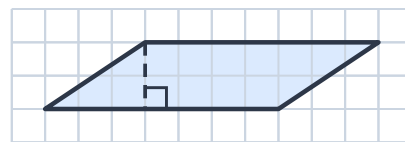
1.



$$b = \quad h = \quad$$

$$A = \quad \text{square units}$$

2.

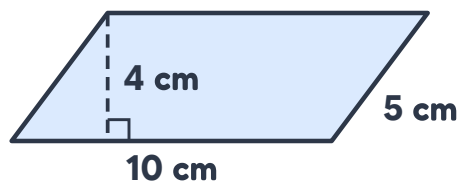


$$b = \quad h = \quad$$

$$A = \quad \text{square units}$$

Find the area and the perimeter of each parallelogram.

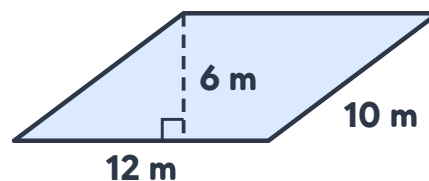
Example



$$\text{Area} = 10 \times 4 = 40 \text{ square cm}$$

$$\text{Perimeter} = 30 \text{ cm}$$

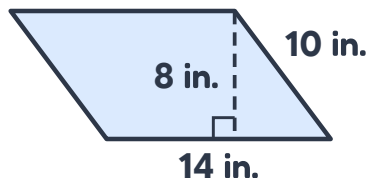
3.



$$\text{Area} = \quad \times \quad = \quad \text{square m}$$

$$\text{Perimeter} = \quad \text{m}$$

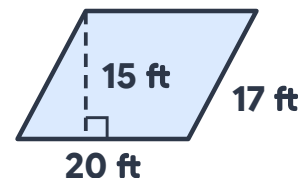
4.



$$\text{Area} = \quad \times \quad = \quad \text{square in.}$$

$$\text{Perimeter} = \quad \text{in.}$$

5.



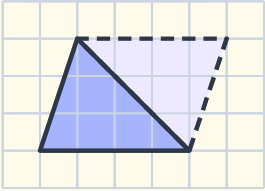
$$\text{Area} = \quad \times \quad = \quad \text{square ft}$$

$$\text{Perimeter} = \quad \text{ft}$$

Area of Triangles

Any triangle is half of a parallelogram with the same base and height.

Two copies



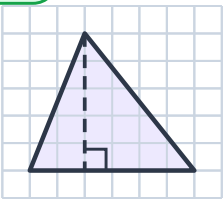
Two copies of a triangle make a parallelogram.

The triangle is half of it, so

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

Count the base and the height. Find each area.

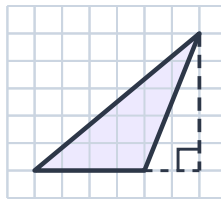
Example



$$A = \frac{1}{2} \times 6 \times 5$$

$$= 15 \text{ square units}$$

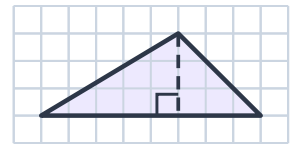
1.



$$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad}$$

$$= \underline{\quad} \text{ square units}$$

2.

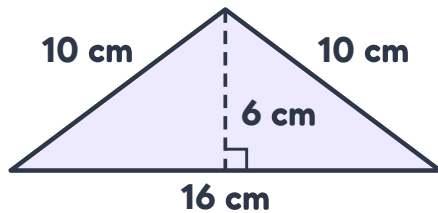


$$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad}$$

$$= \underline{\quad} \text{ square units}$$

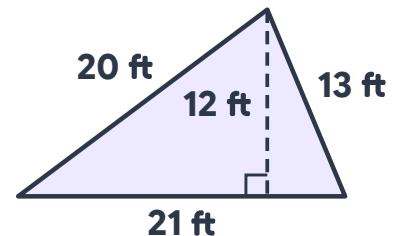
Use the base and the dashed height. Find each area.

Example



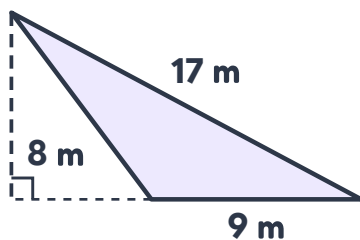
$$A = \frac{1}{2} \times 16 \times 6 = 48 \text{ square cm}$$

3.



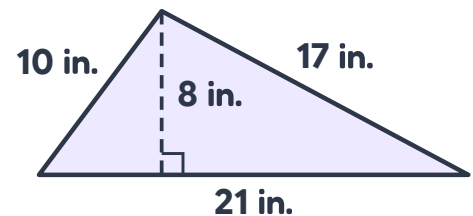
$$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad} \text{ square ft}$$

4.



$$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad} \text{ square m}$$

5.

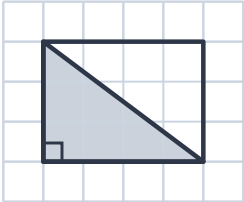


$$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad} \text{ square in.}$$

Half of a Rectangle

A right triangle is half of a rectangle. Find both areas.

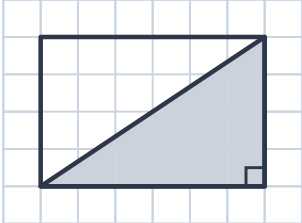
Find the area of the rectangle. The shaded right triangle is half of it.



Example

Rectangle:
 $4 \times 3 = 12$

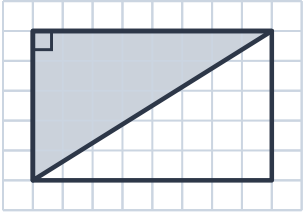
Triangle:
 $\frac{1}{2}$ of $12 = 6$



1.

Rectangle:
_____ $\times$ _____ = _____

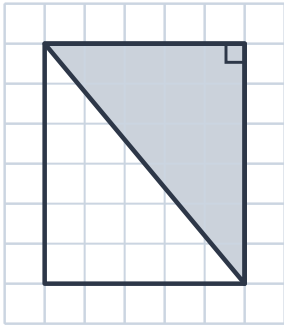
Triangle:
 $\frac{1}{2}$ of _____ = _____



2.

Rectangle:
_____ $\times$ _____ = _____

Triangle:
 $\frac{1}{2}$ of _____ = _____



3.

Rectangle:
_____ $\times$ _____ = _____

Triangle:
 $\frac{1}{2}$ of _____ = _____

Fill in the table. Then write the formula.

	Base	Height	Rectangle: $b \times h$	Triangle: half of $b \times h$
Example	10	4	40	20
4.	6	9	_____	_____
5.	12	7	_____	_____

Area of a right triangle = _____ $\times$ _____ $\times$ _____

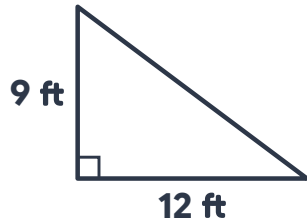
Why is the area of a right triangle half of $b \times h$? Explain.

Area of Right Triangles

Estimate first. Then find the exact area.

Round each side to the nearest ten to estimate. Then use $A = \frac{1}{2} \times b \times h$.

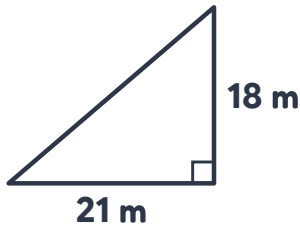
Example



Estimate: $\frac{1}{2} \times \underline{10} \times \underline{10} = \underline{50}$ square ft

Exact: $\frac{1}{2} \times \underline{12} \times \underline{9} = \underline{54}$ square ft

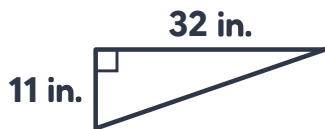
1.



Estimate: $\frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad}$ square m

Exact: $\frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad}$

2.

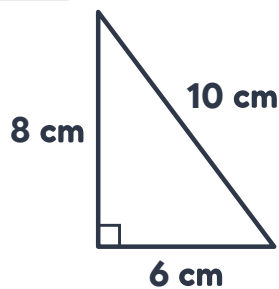


Estimate: $\frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad}$ square in.

Exact: $\frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad}$

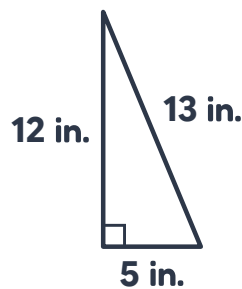
Use the two sides that meet at the right angle. Write the units.

Example



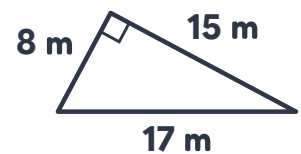
$A = \frac{1}{2} \times \underline{6} \times \underline{8}$
 $= \underline{24}$ square cm

3.



$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad}$
 $= \underline{\quad}$

4.

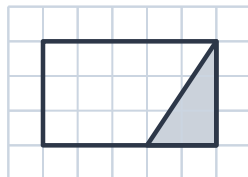
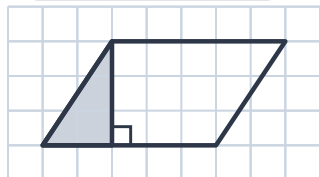


$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad}$
 $= \underline{\quad}$

Area of Parallelograms

Cut off a triangle and move it. You get a rectangle.

Cut and move

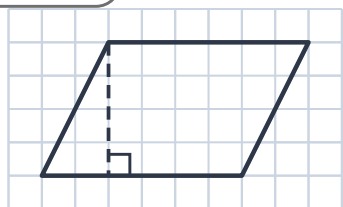


The rectangle has the same base and height, so it has the same area.

$$A = b \times h = 5 \times 3 = 15 \text{ square units}$$

Count the base and the height. Find each area.

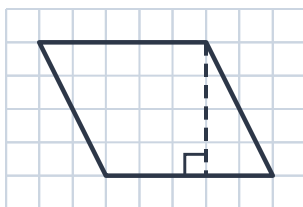
Example



$$b = 6 \quad h = 4$$

$$A = 24 \text{ square units}$$

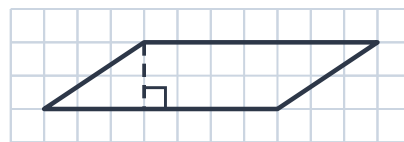
1.



$$b = \quad h = \quad$$

$$A = \quad \text{square units}$$

2.



$$b = \quad h = \quad$$

$$A = \quad \text{square units}$$

Find the area and the perimeter of each parallelogram.

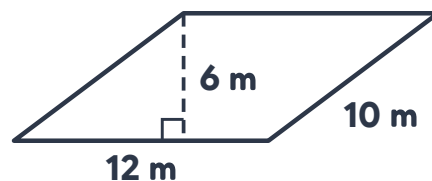
Example



$$\text{Area} = 10 \times 4 = 40 \text{ square cm}$$

$$\text{Perimeter} = 30 \text{ cm}$$

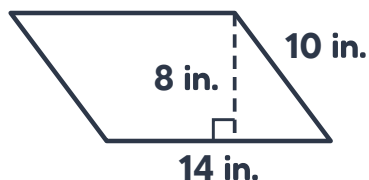
3.



$$\text{Area} = \quad \times \quad = \quad \text{square m}$$

$$\text{Perimeter} = \quad \text{m}$$

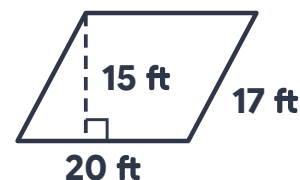
4.



$$\text{Area} = \quad \times \quad = \quad \text{square in.}$$

$$\text{Perimeter} = \quad \text{in.}$$

5.



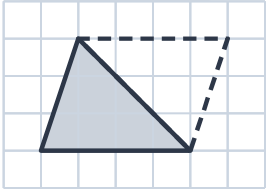
$$\text{Area} = \quad \times \quad = \quad \text{square ft}$$

$$\text{Perimeter} = \quad \text{ft}$$

Area of Triangles

Any triangle is half of a parallelogram with the same base and height.

Two copies



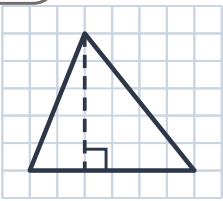
Two copies of a triangle make a parallelogram.

The triangle is half of it, so

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

Count the base and the height. Find each area.

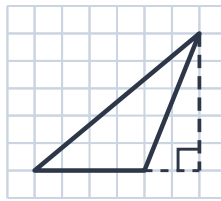
Example



$$A = \frac{1}{2} \times 6 \times 5$$

$$= 15 \text{ square units}$$

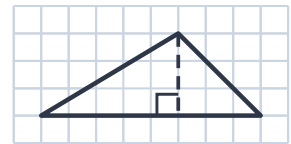
1.



$$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad}$$

$$= \underline{\quad} \text{ square units}$$

2.

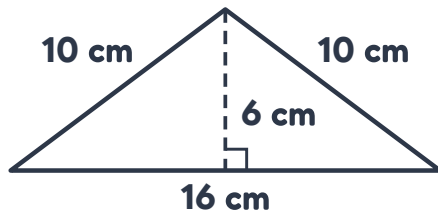


$$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad}$$

$$= \underline{\quad} \text{ square units}$$

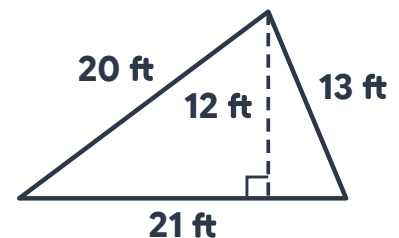
Use the base and the dashed height. Find each area.

Example



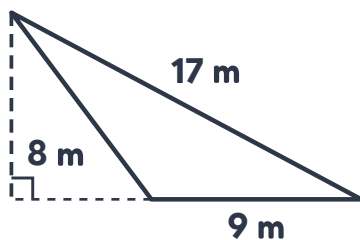
$$A = \frac{1}{2} \times 16 \times 6 = 48 \text{ square cm}$$

3.



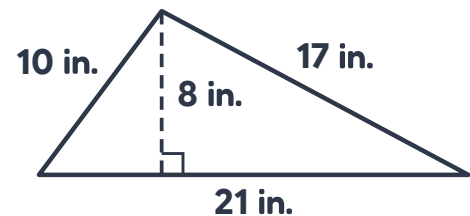
$$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad} \text{ square ft}$$

4.



$$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad} \text{ square m}$$

5.



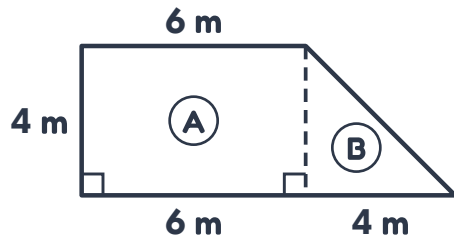
$$A = \frac{1}{2} \times \underline{\quad} \times \underline{\quad} = \underline{\quad} \text{ square in.}$$

Trapezoids and Stories

Split shapes into parts you know. Use the right units.

Split each trapezoid into a rectangle and triangles. Add the areas.

Example

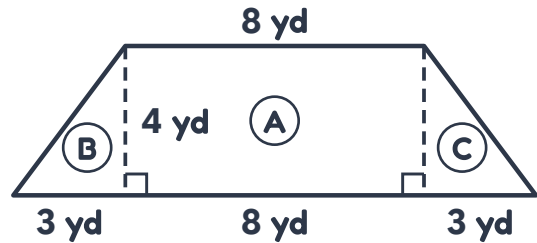


A: $6 \times 4 = 24$

B: $\frac{1}{2} \times 4 \times 4 = 8$

Area = 32 square m

1.



A: $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

B: $\frac{1}{2} \times \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

C: $\frac{1}{2} \times \underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

Area = square yd

Solve. Write the number and the units.

A sail is a triangle with a base of 6 ft and a height of 10 ft. How much cloth is in the sail?

Example 30 square feet

2. A flower bed is a parallelogram. Its base is 9 m and its height is 4 m. What is its area?

3. A park is a triangle with sides of 30 yd, 40 yd, and 50 yd. How much fence goes around it?

4. A tile is a parallelogram with sides of 8 cm and 5 cm. What is its perimeter?

5. A pennant is a triangle with a base of 12 in. and a height of 30 in. What is its area?

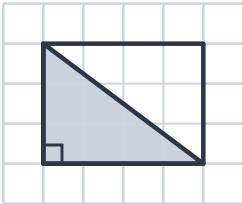
6. A triangle has an area of 24 square cm. Its base is 8 cm. What is its height?

Half of a Rectangle

A right triangle is half of a rectangle. Find both areas.

Find the area of the rectangle. The shaded right triangle is half of it.

Example



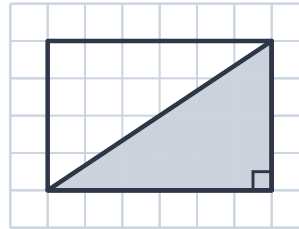
Rectangle:

$$4 \times 3 = 12$$

Triangle:

$$\frac{1}{2} \text{ of } 12 = 6$$

1.



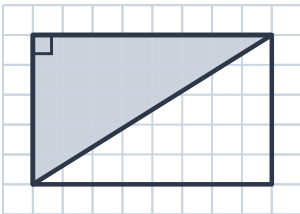
Rectangle:

$$6 \times 4 = 24$$

Triangle:

$$\frac{1}{2} \text{ of } 24 = 12$$

2.



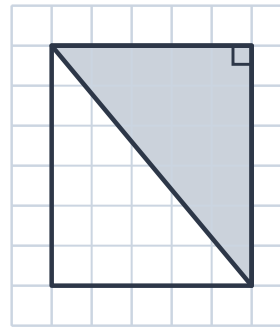
Rectangle:

$$8 \times 5 = 40$$

Triangle:

$$\frac{1}{2} \text{ of } 40 = 20$$

3.



Rectangle:

$$5 \times 6 = 30$$

Triangle:

$$\frac{1}{2} \text{ of } 30 = 15$$

Fill in the table. Then write the formula.

	Base	Height	Rectangle: $b \times h$	Triangle: half of $b \times h$
Example	10	4	40	20
4.	6	9	54	27
5.	12	7	84	42

Area of a right triangle = $\frac{1}{2} \times \text{base} \times \text{height}$

Why is the area of a right triangle half of $b \times h$? Explain.

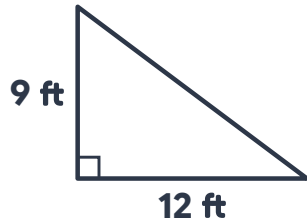
Sample answer: Two copies of the triangle make a rectangle with the same base and height, so one triangle covers half of the rectangle: half of $b \times h$.

Area of Right Triangles

Estimate first. Then find the exact area.

Round each side to the nearest ten to estimate. Then use $A = \frac{1}{2} \times b \times h$.

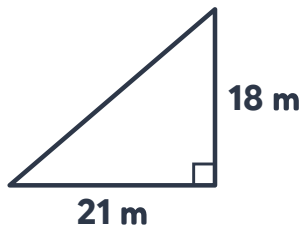
Example



Estimate: $\frac{1}{2} \times \underline{10} \times \underline{10} = \underline{50}$ square ft

Exact: $\frac{1}{2} \times \underline{12} \times \underline{9} = \underline{54}$ square ft

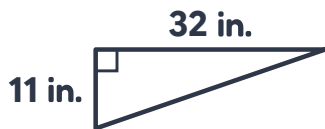
1.



Estimate: $\frac{1}{2} \times \underline{20} \times \underline{20} = \underline{200}$ square m

Exact: $\frac{1}{2} \times \underline{21} \times \underline{18} = \underline{189}$ square m

2.

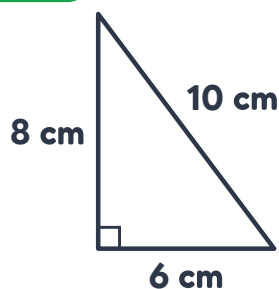


Estimate: $\frac{1}{2} \times \underline{30} \times \underline{10} = \underline{150}$ square in.

Exact: $\frac{1}{2} \times \underline{32} \times \underline{11} = \underline{176}$ square in.

Use the two sides that meet at the right angle. Write the units.

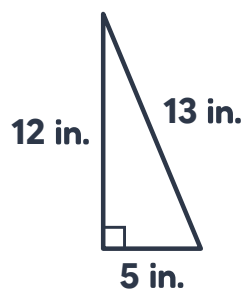
Example



$$A = \frac{1}{2} \times \underline{6} \times \underline{8}$$

$$= \underline{24} \text{ square cm}$$

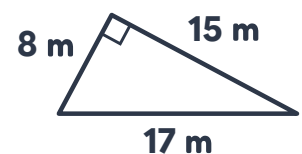
3.



$$A = \frac{1}{2} \times \underline{5} \times \underline{12}$$

$$= \underline{30} \text{ square in.}$$

4.



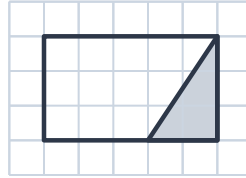
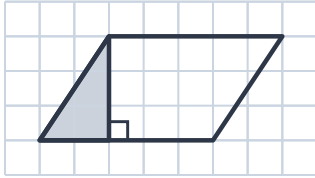
$$A = \frac{1}{2} \times \underline{8} \times \underline{15}$$

$$= \underline{60} \text{ square m}$$

Area of Parallelograms

Cut off a triangle and move it. You get a rectangle.

Cut and move

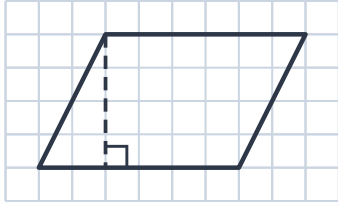


The rectangle has the same base and height, so it has the same area.

$$A = b \times h = 5 \times 3 = 15 \text{ square units}$$

Count the base and the height. Find each area.

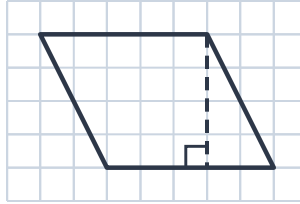
Example



$$b = \underline{6} \quad h = \underline{4}$$

$$A = \underline{24} \text{ square units}$$

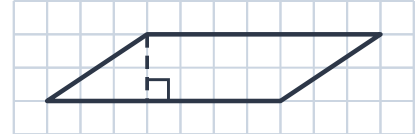
1.



$$b = \underline{5} \quad h = \underline{4}$$

$$A = \underline{20} \text{ square units}$$

2.



$$b = \underline{7} \quad h = \underline{2}$$

$$A = \underline{14} \text{ square units}$$

Find the area and the perimeter of each parallelogram.

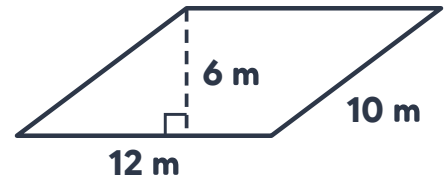
Example



$$\text{Area} = \underline{10} \times \underline{4} = \underline{40} \text{ square cm}$$

$$\text{Perimeter} = \underline{30} \text{ cm}$$

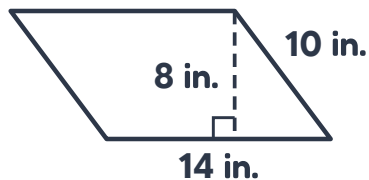
3.



$$\text{Area} = \underline{12} \times \underline{6} = \underline{72} \text{ square m}$$

$$\text{Perimeter} = \underline{44} \text{ m}$$

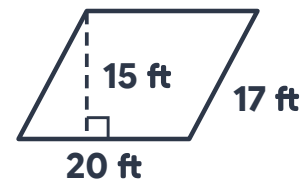
4.



$$\text{Area} = \underline{14} \times \underline{8} = \underline{112} \text{ square in.}$$

$$\text{Perimeter} = \underline{48} \text{ in.}$$

5.



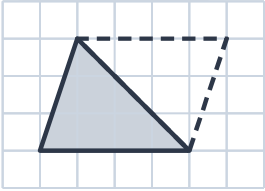
$$\text{Area} = \underline{20} \times \underline{15} = \underline{300} \text{ square ft}$$

$$\text{Perimeter} = \underline{74} \text{ ft}$$

Area of Triangles

Any triangle is half of a parallelogram with the same base and height.

Two copies



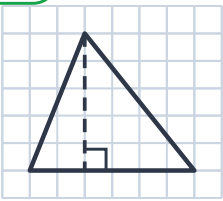
Two copies of a triangle make a parallelogram.

The triangle is half of it, so

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

Count the base and the height. Find each area.

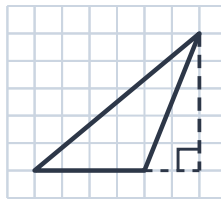
Example



$$A = \frac{1}{2} \times 6 \times 5$$

$$= 15 \text{ square units}$$

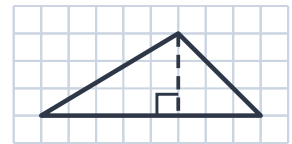
1.



$$A = \frac{1}{2} \times 4 \times 5$$

$$= 10 \text{ square units}$$

2.

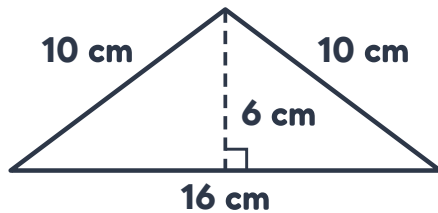


$$A = \frac{1}{2} \times 8 \times 3$$

$$= 12 \text{ square units}$$

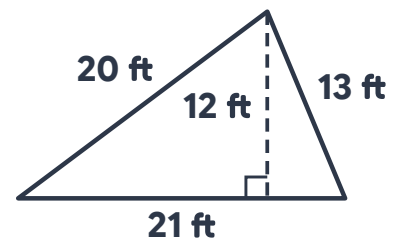
Use the base and the dashed height. Find each area.

Example



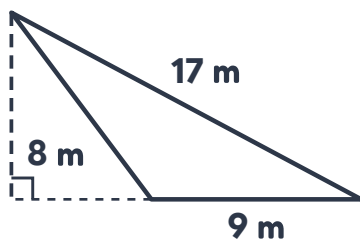
$$A = \frac{1}{2} \times 16 \times 6 = 48 \text{ square cm}$$

3.



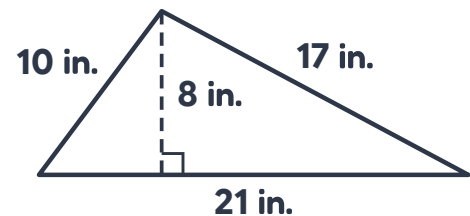
$$A = \frac{1}{2} \times 21 \times 12 = 126 \text{ square ft}$$

4.



$$A = \frac{1}{2} \times 9 \times 8 = 36 \text{ square m}$$

5.



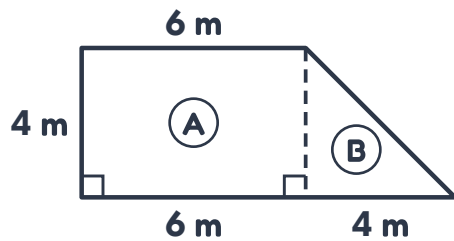
$$A = \frac{1}{2} \times 21 \times 8 = 84 \text{ square in.}$$

Trapezoids and Stories

Split shapes into parts you know. Use the right units.

Split each trapezoid into a rectangle and triangles. Add the areas.

Example

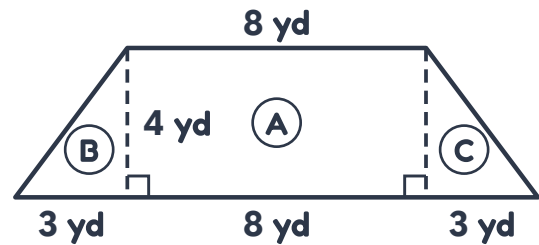


$$\text{A: } 6 \times 4 = 24$$

$$\text{B: } \frac{1}{2} \times 4 \times 4 = 8$$

$$\text{Area} = 32 \text{ square m}$$

1.



$$\text{A: } 8 \times 4 = 32$$

$$\text{B: } \frac{1}{2} \times 3 \times 4 = 6$$

$$\text{C: } \frac{1}{2} \times 3 \times 4 = 6$$

$$\text{Area} = 44 \text{ square yd}$$

Solve. Write the number and the units.

A sail is a triangle with a base of 6 ft and a height of 10 ft. How much cloth is in the sail?

Example 30 square feet

2. A flower bed is a parallelogram. Its base is 9 m and its height is 4 m. What is its area?

36 square meters

3. A park is a triangle with sides of 30 yd, 40 yd, and 50 yd. How much fence goes around it?

120 yards

4. A tile is a parallelogram with sides of 8 cm and 5 cm. What is its perimeter?

26 centimeters

5. A pennant is a triangle with a base of 12 in. and a height of 30 in. What is its area?

180 square inches

6. A triangle has an area of 24 square cm. Its base is 8 cm. What is its height?

6 centimeters