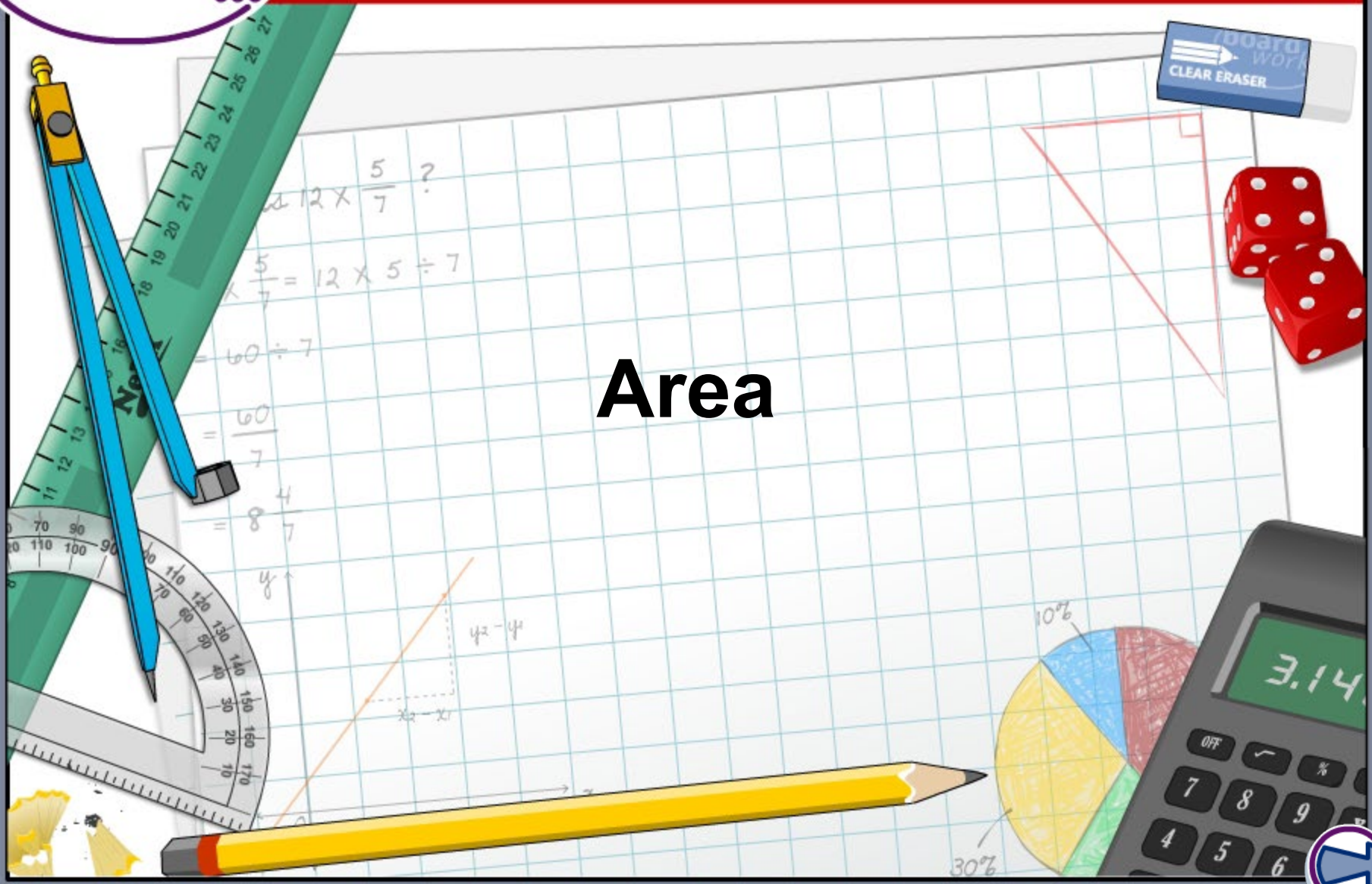
Area



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Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These are:

1) Make sense of problems and persevere in solving them.

2) Reason abstractly and quantitatively.

3) Construct viable arguments and critique the reasoning of others.

4) Model with mathematics.

5) Use appropriate tools strategically.

6) Attend to precision.

7) Look for and make use of structure.

8) Look for and express regularity in repeated reasoning.

This icon indicates that the slide contains activities created in Flash. These activities are not editable.

This icon indicates teacher's notes in the Notes field.

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Area

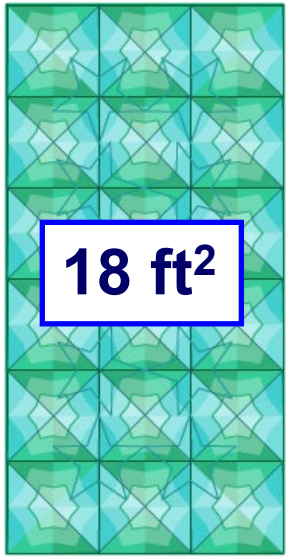
The **area** of a shape is a measure of how much surface the shape takes up.

Area is measured in **square units**, like in^2, ft^2, yd^2, mi^2, mm^2, cm^2, m^2, and km^2.

If each square is one square foot, which rug covers the largest area?

Rug a

Rug b



Rug c

Rug b

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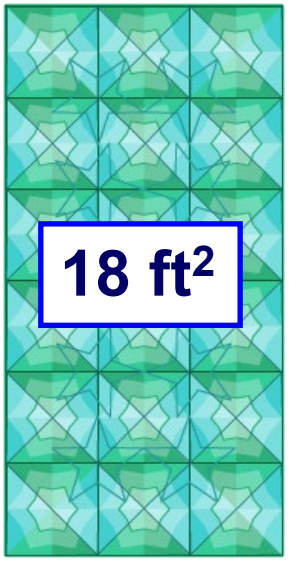
Area

Do you remember a faster way to find the area than counting the squares?

Rug a

4 ft × 4 ft = 16 ft²

Rug b



6 ft × 3 ft = 18 ft²

Rug c

3 ft × 5 ft = 15 ft²

A faster way to find the area of a rectangle is to multiply the length by the width.

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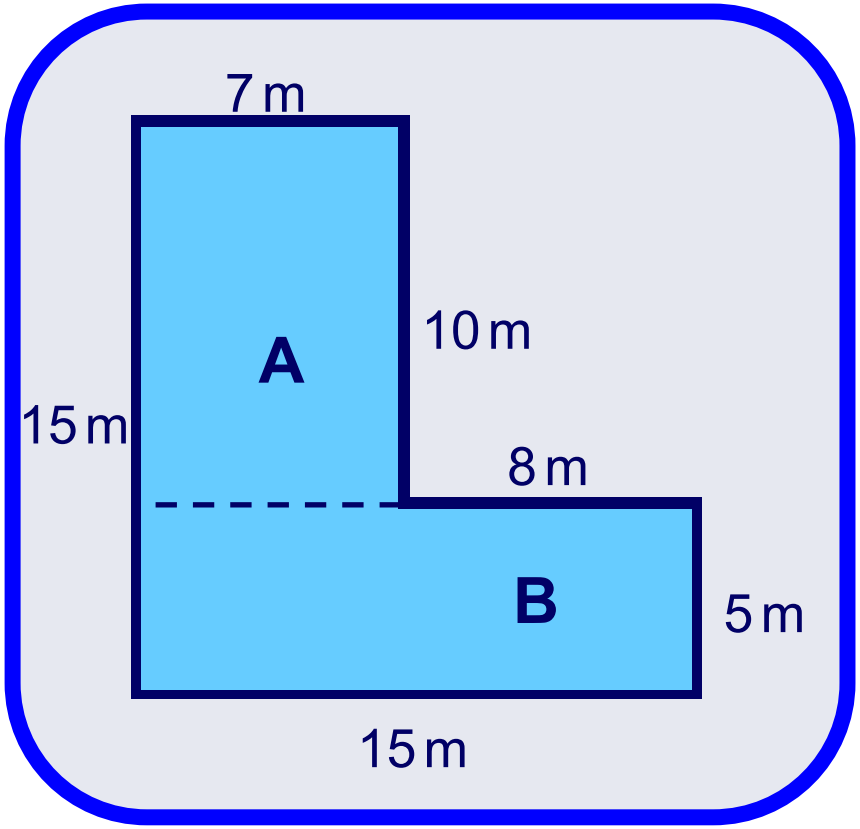
Area of a complex shape

Sarah needs to buy new carpet for her room. How can she find the area of the room so she knows how much to buy?



We can think of this shape as being made up of two rectangles.

Either like this …

… or like this.

Label the rectangles A and B.

Area A = $10 \times 7 = 70$ m^2

Area B = $5 \times 15 = 75$ m^2

Total area = $70 + 75 =$ **145 m^2**

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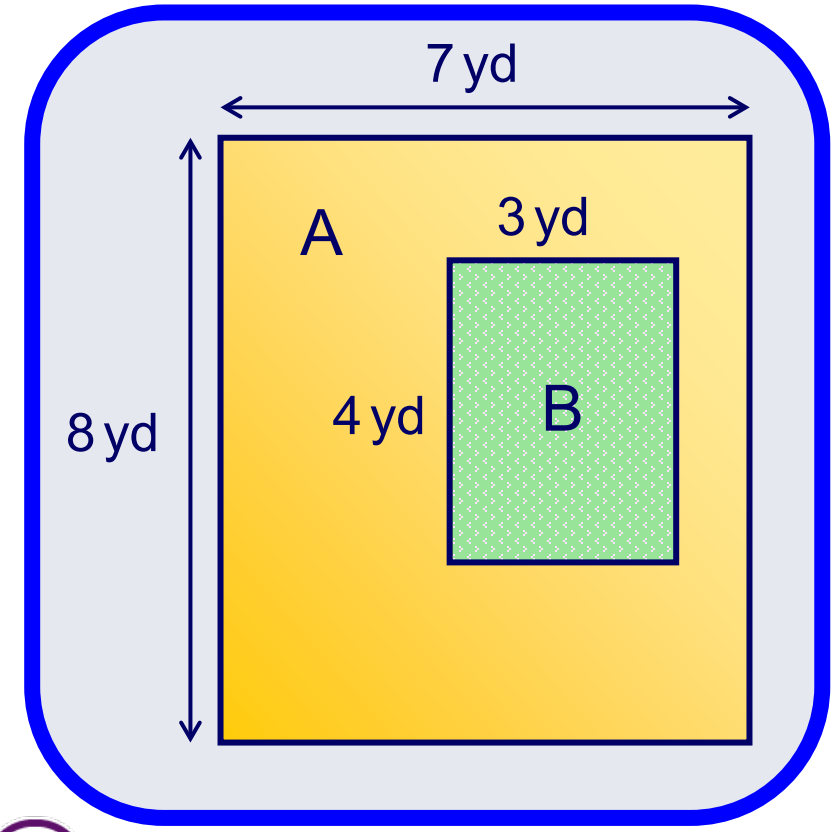
Area of a complex shape

Antonio wants to replace the tiles on his patio, but it has a small flowerbed in the middle. How would he find the area of the tiled space?



We can think of this shape as being made up of one rectangle with another rectangle cut out of it.

Label the rectangles A and B.

Area A = $7 \times 8 = 56$ yd^2

Area B = $3 \times 4 = 12$ yd^2

Yellow area = $56 - 12 =$ **44 yd^2**

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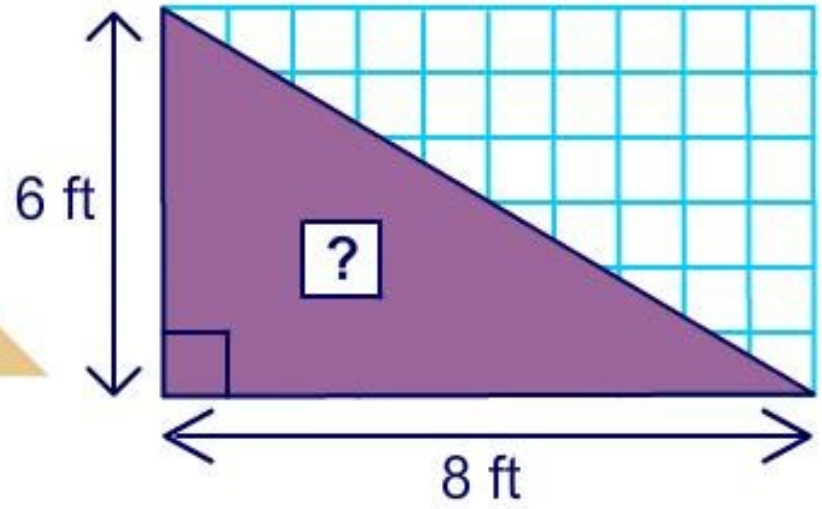
Area of a right triangle

Laura needs to put wallpaper on this part of a wall. How can she find the area so she knows how much to buy?



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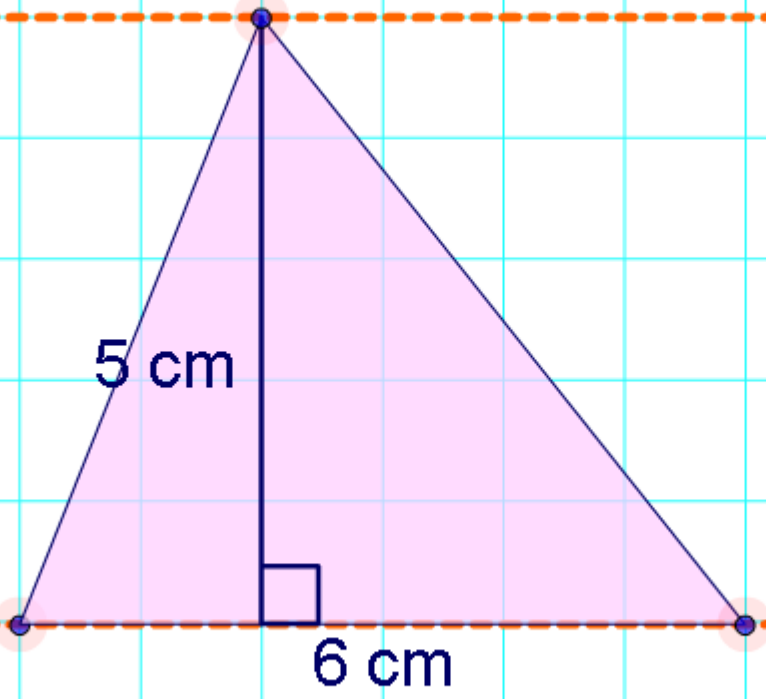
Area of a triangle

Find the area of the shape.



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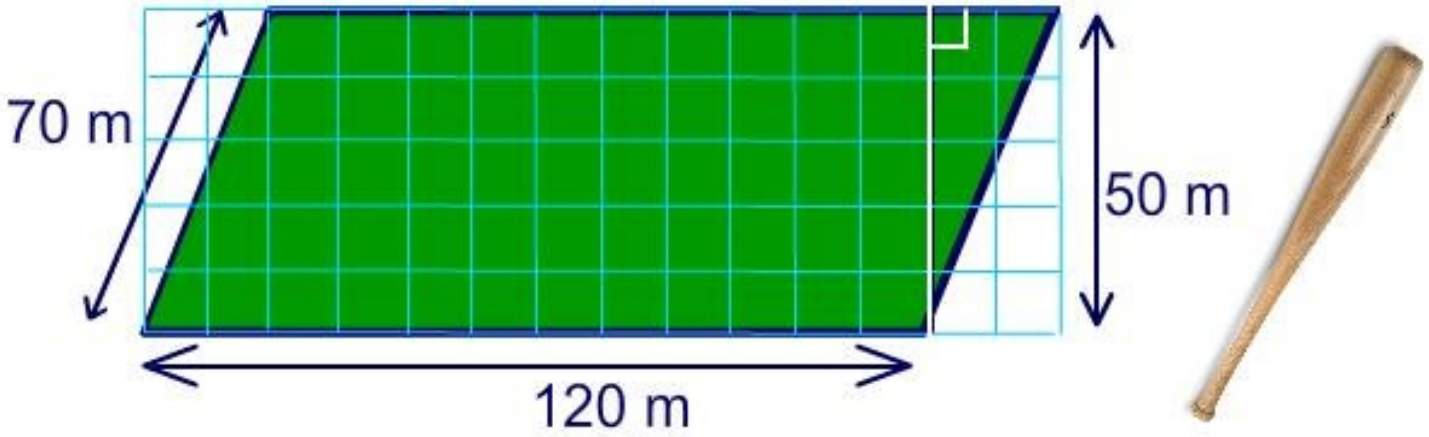
Area of a parallelogram

The grass on the school's sports field needs to be replanted. How could we find the area?



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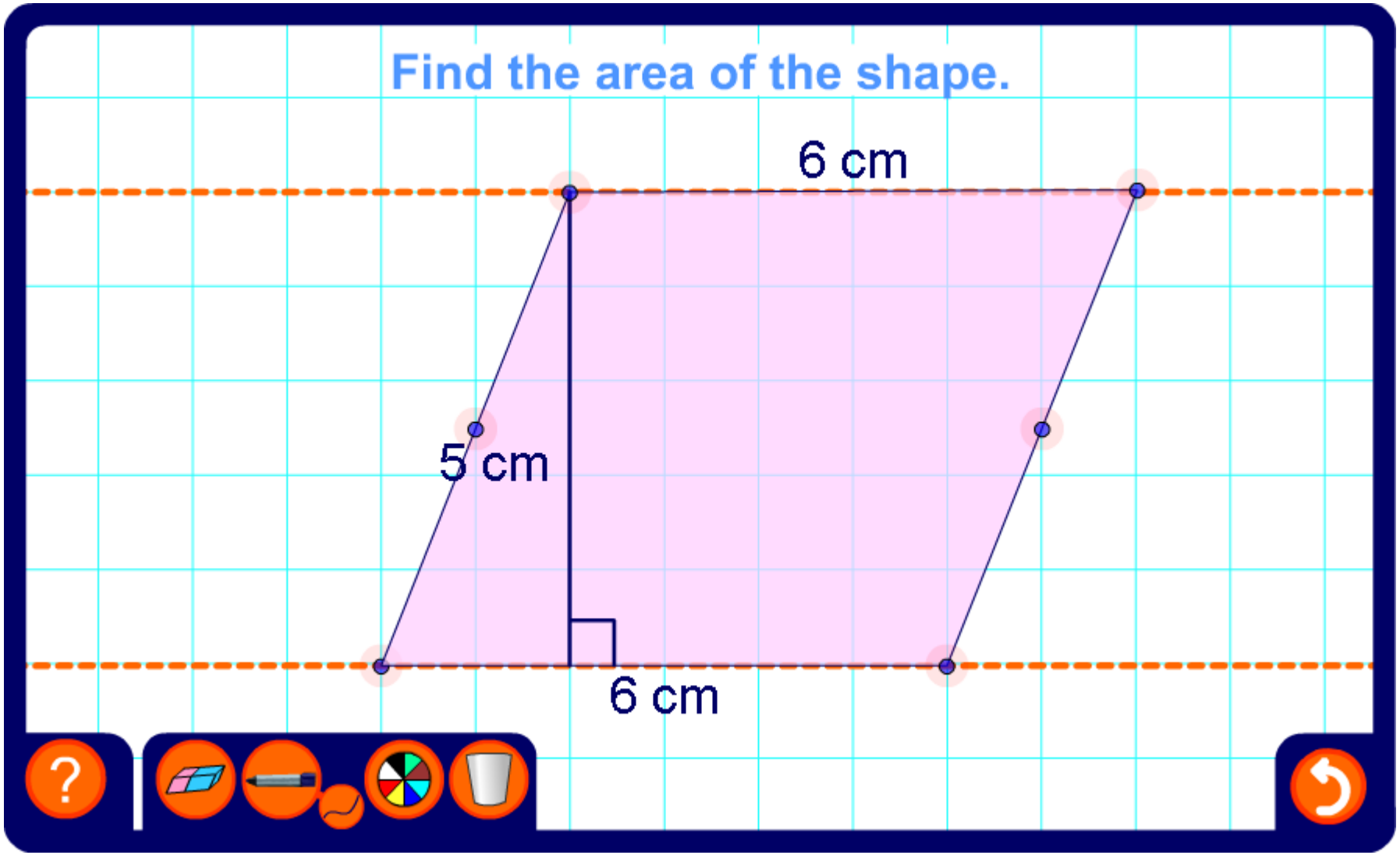
Area of a parallelogram



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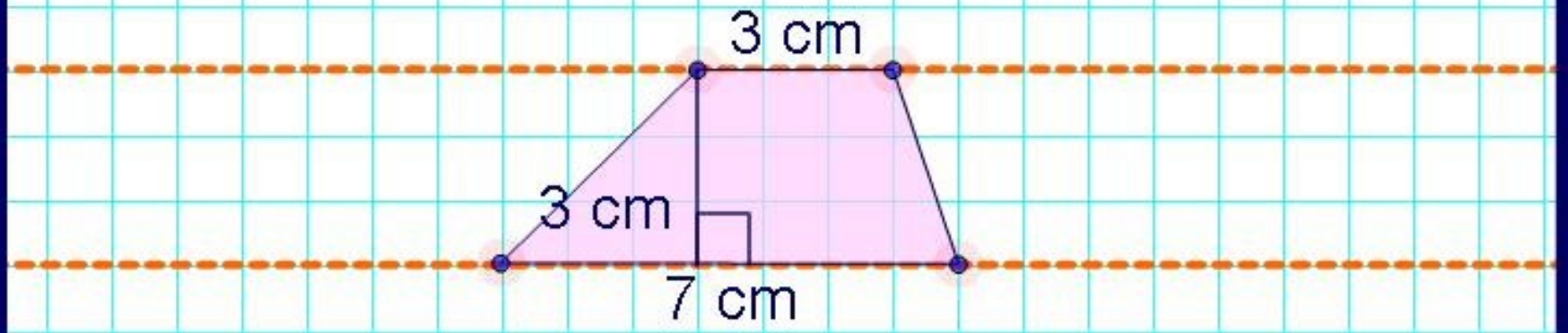
Area of a trapezoid

What if the school's sports field were shaped like this? How could we find the area?



Rotate Shape

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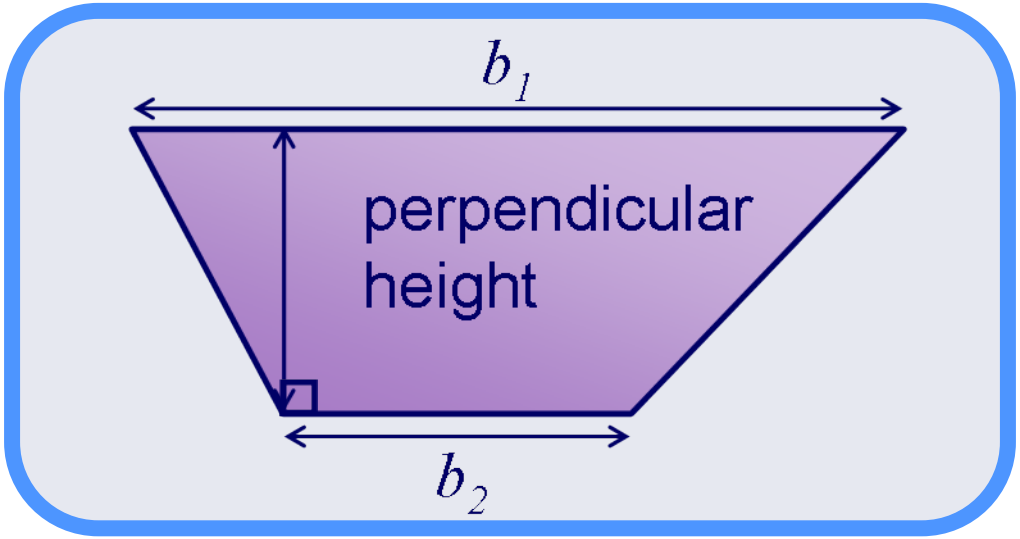
Area of a trapezoid

The area of any trapezoid can be found using the formula:

$$\text{Area of a trapezoid} = \frac{1}{2}\text{height (sum of parallel bases)}$$



Or using letter symbols:

$$\text{Area of a trapezoid} = \frac{1}{2}h(b_1 + b_2)$$

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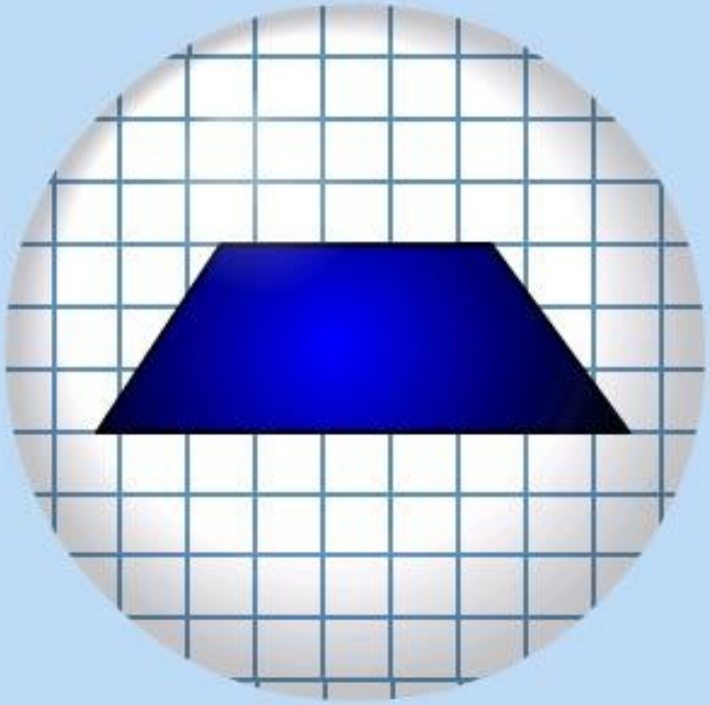
Area of a trapezoid

Can you find the area of these trapezoids?

Press **"start"** to begin.

start



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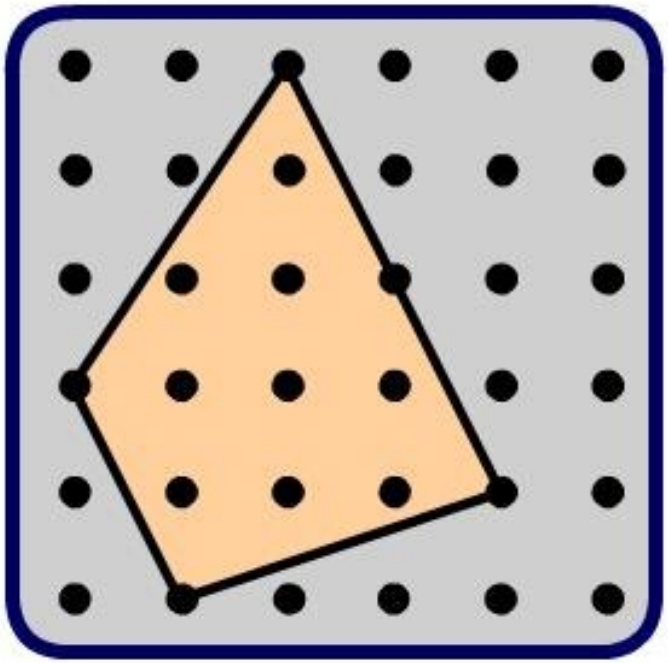
Area on a pegboard

How can we find the area of this quadrilateral constructed on a pegboard?



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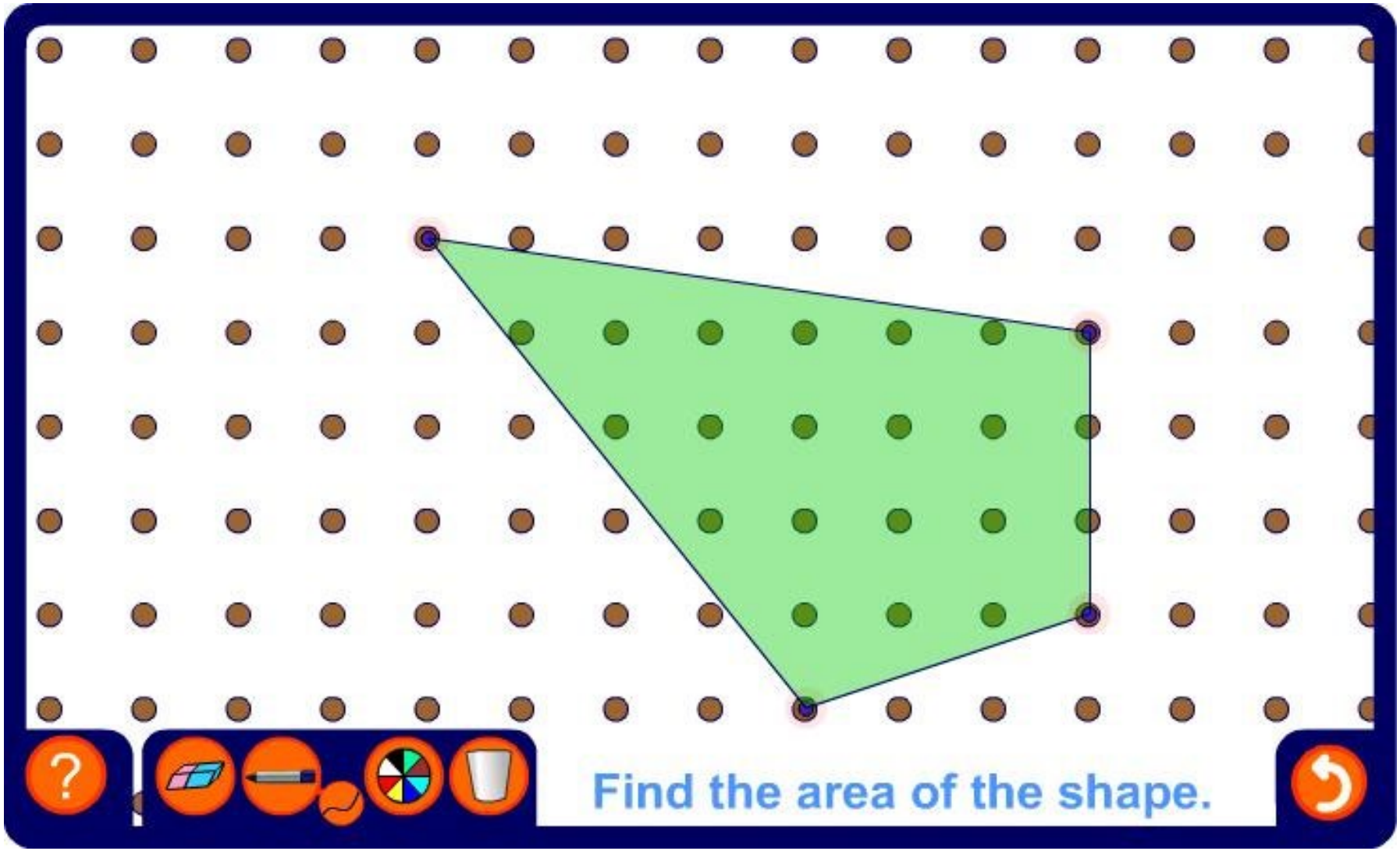
Area of an irregular shape



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