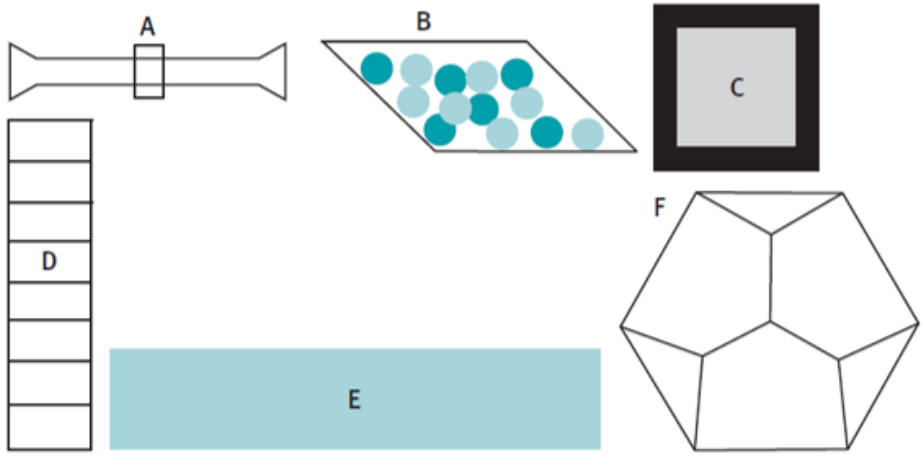
Lesson 23-2
Perimeter and Area of Composite Figures

Learning Targets:

- Model the area of a parallelogram by decomposing into triangles.
- Find the area of a special quadrilateral by decomposing into triangles.
- Write equations that represent problems related to the area of parallelograms and rectangles.
- Solve problems involving the area of parallelograms and rectangles.
- Find the area of special quadrilaterals and polygons by composing into rectangles or decomposing into triangles and other shapes.

2. List all the geometric shapes you can identify in each figure in the playground to complete the table.

Figure	Geometric Shape(s)
A	rectangle, square, octagon, hexagon
B	parallelogram, circles
C	square
D	rectangle
E	rectangle
F	triangle, hexagon, pentagon



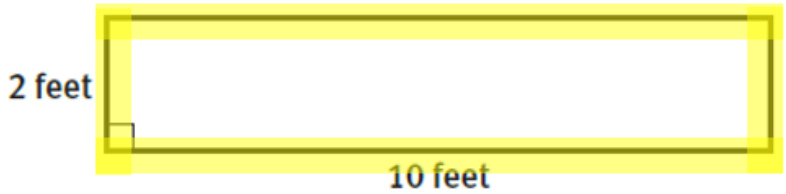
MATH TERMS

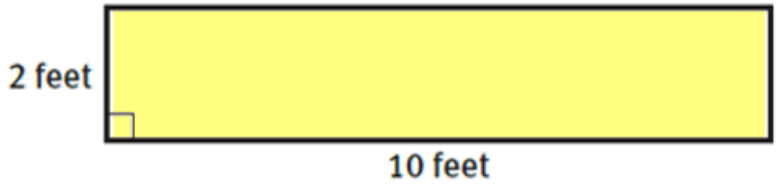
Perimeter is the distance around a figure.

Perimeter is measured in linear units, for example, feet or ft.

Area is the number of square units a figure covers.

Area is measured in square units, for example, square feet or ft^2.





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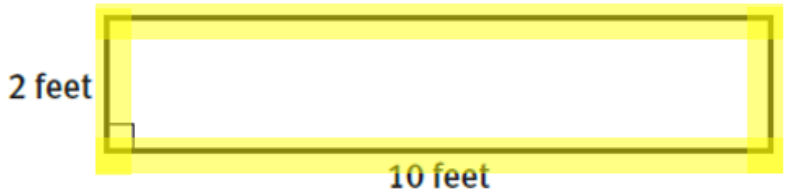
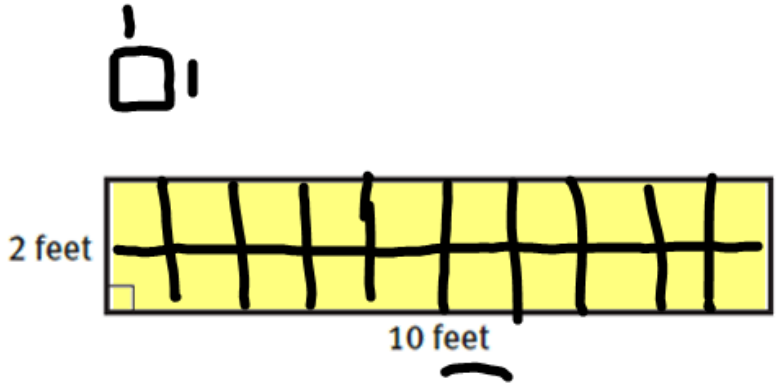
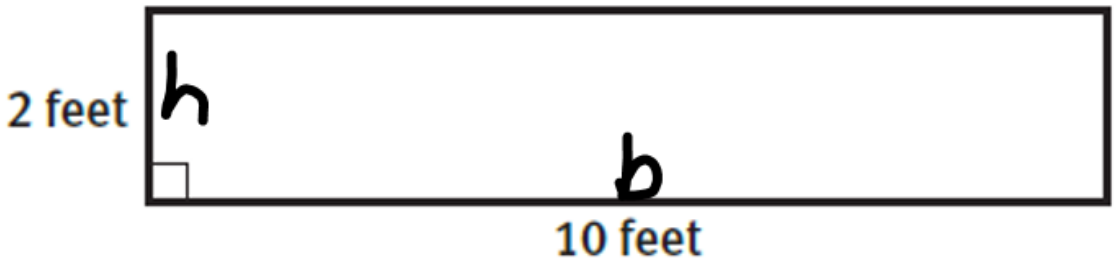




sq. ft.

3. The diagram shows the dimensions of Figure *E*.

What is the **perimeter** of Figure *E*? Explain how you found the perimeter.



24 ft. $P = 2(2) + 2(10)$ $P = 2(l + w)$ $2(10+2)$

4. What is the **area** of Figure *E*? Explain how you found the area.

$20 ft.^2$ $A = lw$ $A = bh$ $A = 10(2)$

5. There is also a parallelogram in the playground design. List some characteristics of a parallelogram.

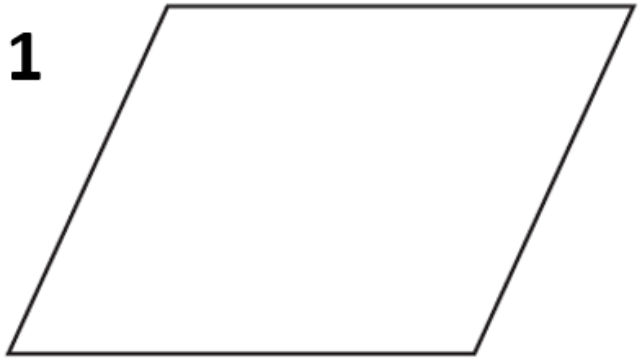
Opposite sides are parallel and congruent
Quadrilateral

6. Use appropriate tools strategically

a. Cut out the parallelogram on page 303. Then cut a right triangle from one side of the parallelogram so that you can form a rectangle with the two pieces. Put the two pieces together to form a rectangle.

b. Use a ruler to measure the rectangle you cut out and find its area.

1



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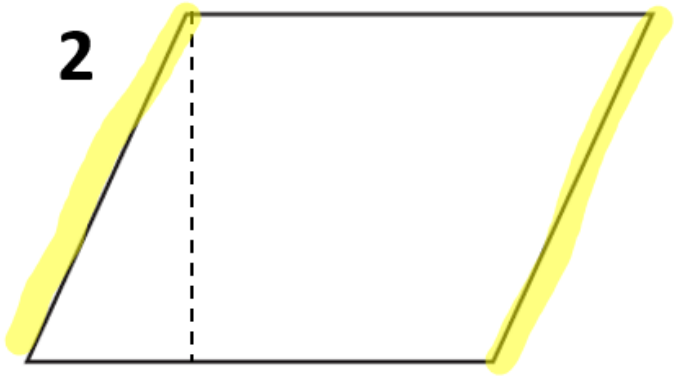

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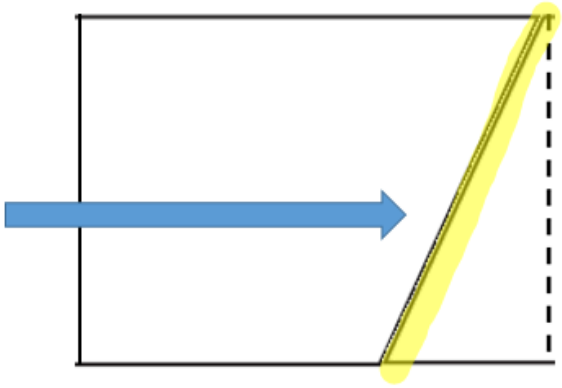

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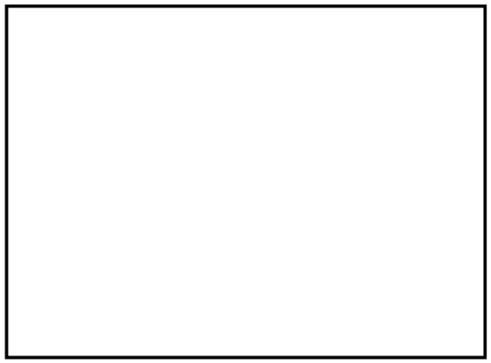
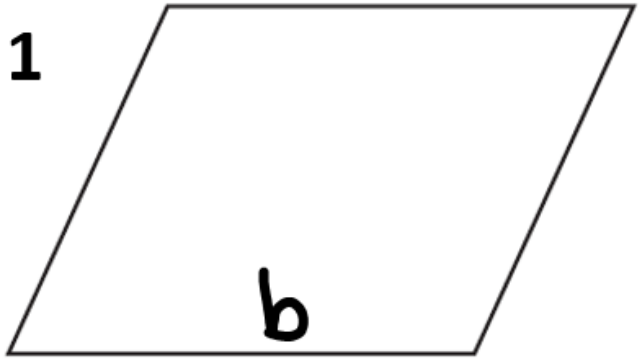


1



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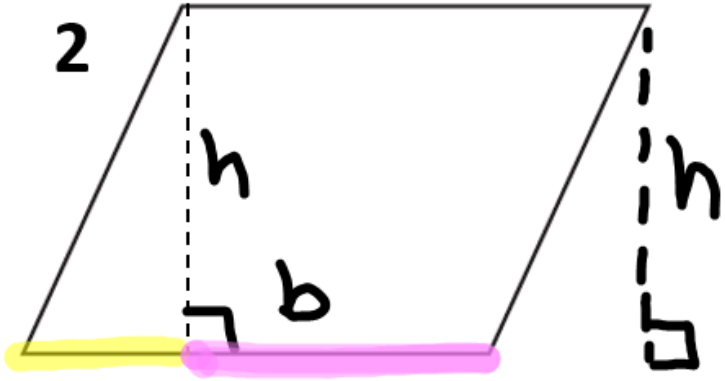

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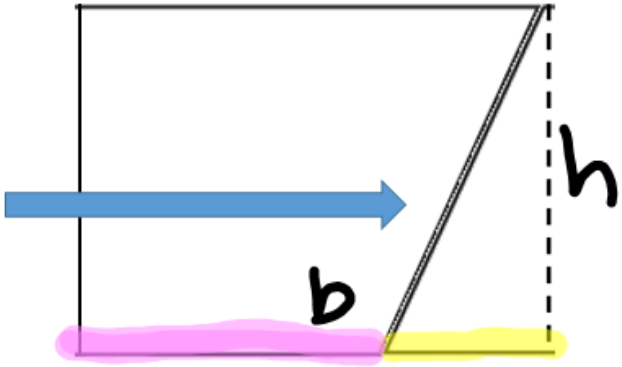

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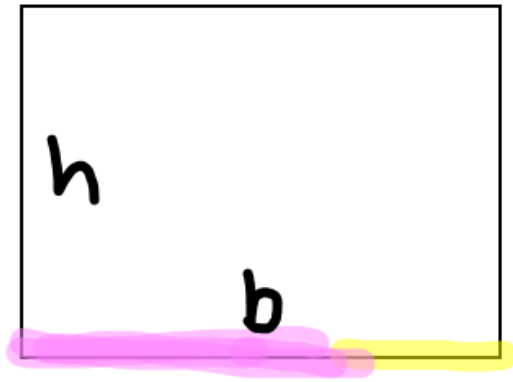
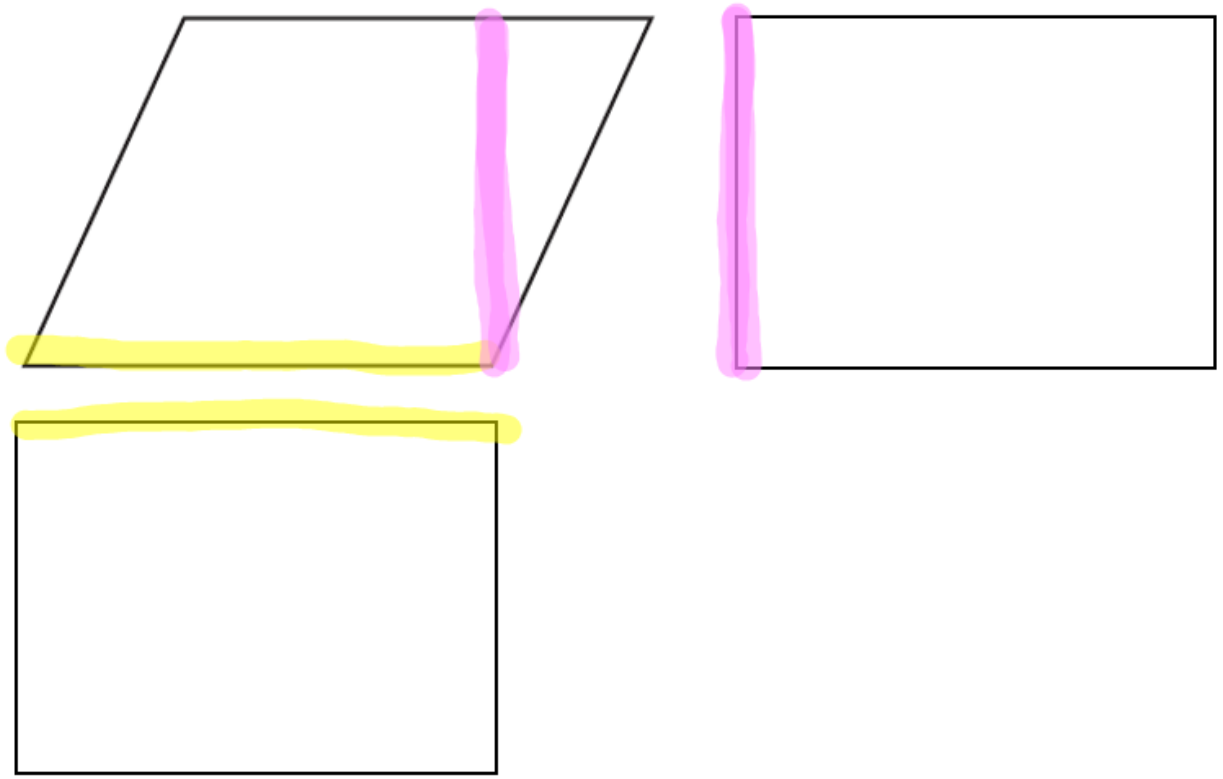
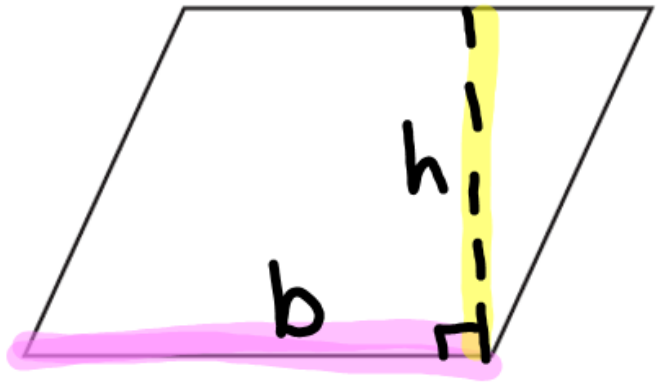
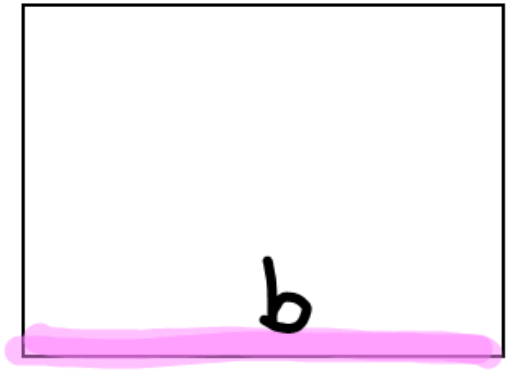




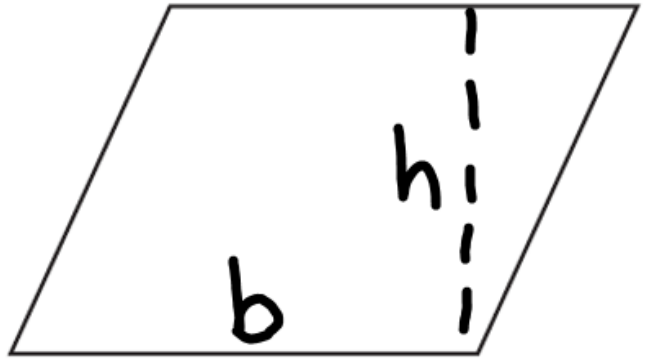
c. How do the lengths of the base and the height of the rectangle formed from the parallelogram relate to those of the original parallelogram?

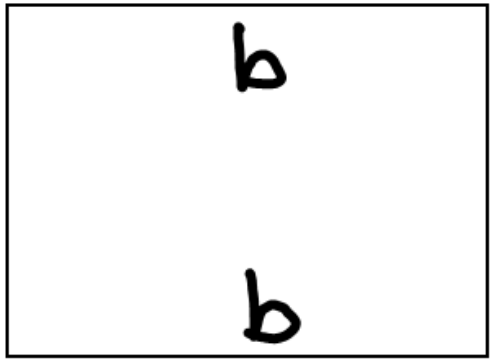




the base and height are congruent

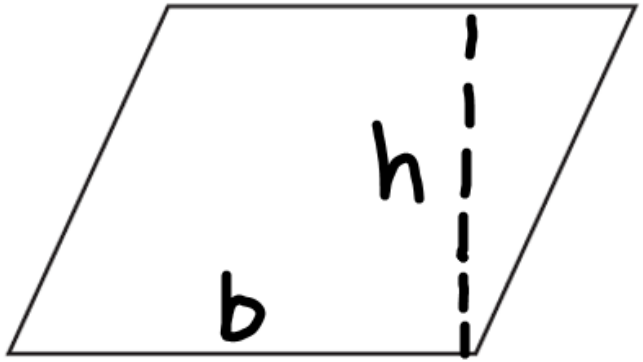
c. How do the lengths of the base and the height of the rectangle formed from the parallelogram relate to those of the original parallelogram?

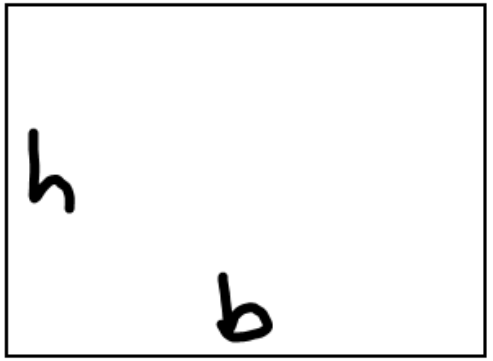


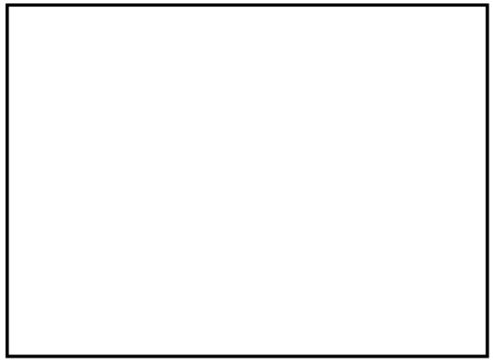


$A = bh$

7. What is the relationship between the area of a parallelogram and its base and height? Describe the relationship using words, symbols, or both.







$A = bh$

The area of both are congruent.

7. What is the relationship between the area of a parallelogram and its base and height? Describe the relationship using words, symbols, or both.

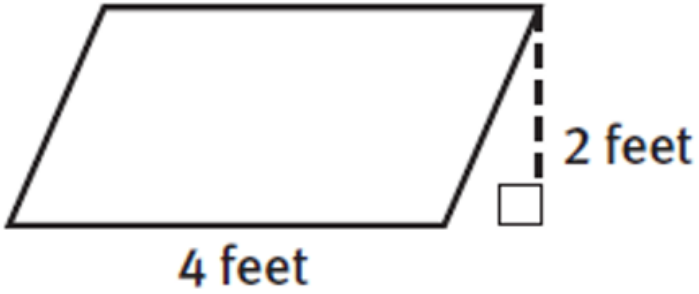
The area, A, of a rectangle or a parallelogram is equal to the length of the base, b, times the height, h: $A = b \times h$. $A = bh$

8. The diagram shows the dimensions of Figure B, the ball pit in the playground. What is the area of Figure B?

$A = bh$

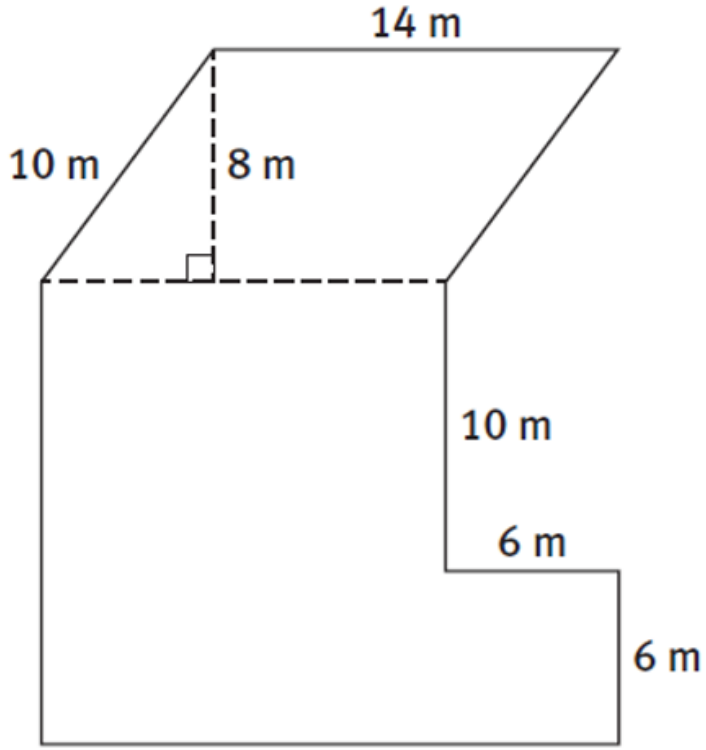
$A = 4(2)$

$A = 8 \text{ ft.}^2$



A ***composite*** figure is a figure that can be decomposed into two or more figures. You can find the area of a figure that can be decomposed, or divided, into rectangles and parallelograms.

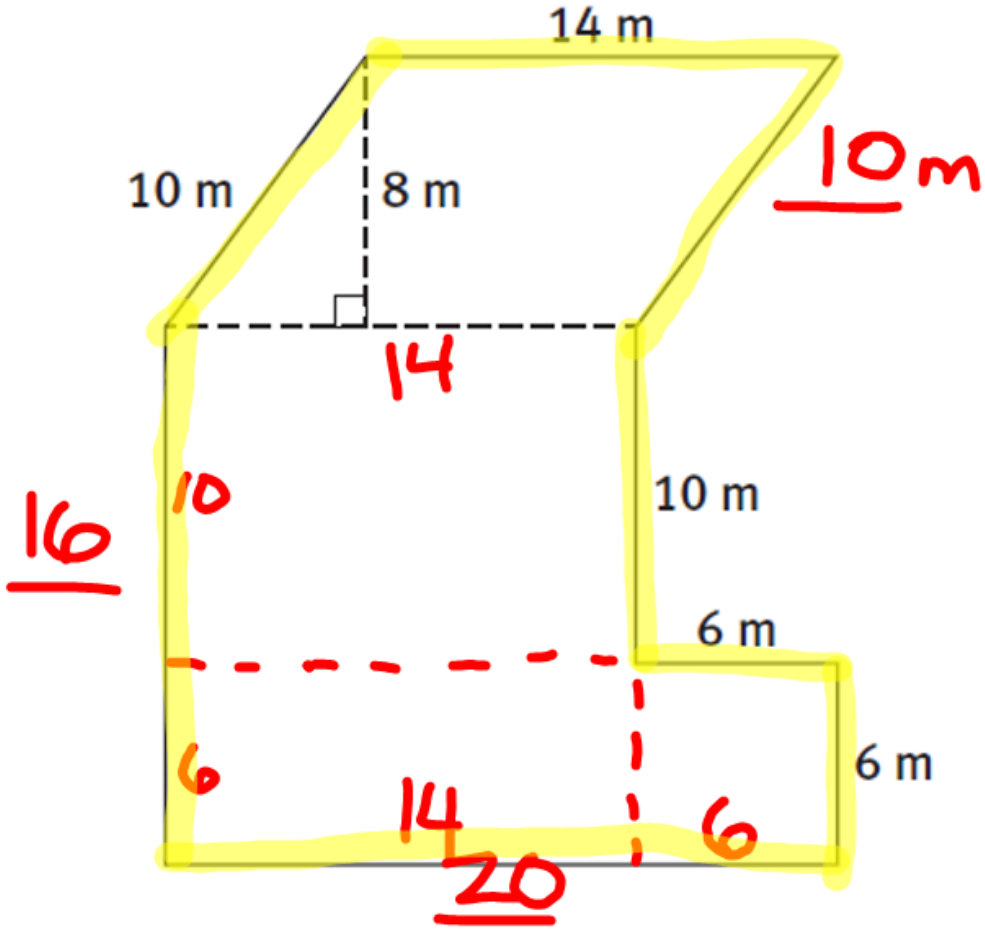
9. Persevere in problem solving. The diagram shows the shape of a playground in a park.



ACADEMIC VOCABULARY

Composite means made up of various separate parts or pieces.

92m



a. Fill in missing dimensions on the playground. Then find the perimeter of the playground.