Discussion Problems
Step 2: Area and Perimeter

National Curriculum Objectives:

Mathematics Year 6: (6M7a) Recognise that shapes with the same areas can have different perimeters and vice versa
Mathematics Year 6: (6M7c) Recognise when it is possible to use formulae for the area of shapes

About this resource:

This resource has been designed for pupils who understand the concepts within this step. It provides pupils with more opportunities to enhance their reasoning and problem solving skills through more challenging problems. Pupils can work in pairs or small groups to discuss with each other about how best to tackle the problem, as there is often more than one answer or more than one way to work through the problem.

There may be various answers for each problem. Where this is the case, we have provided one example answer to guide discussion.

We recommend self or peer marking using the answer page provided to promote discussion and self-correction.

More Year 6 Perimeter, Area and Volume resources.

Did you like this resource? Don't forget to review it on our website.

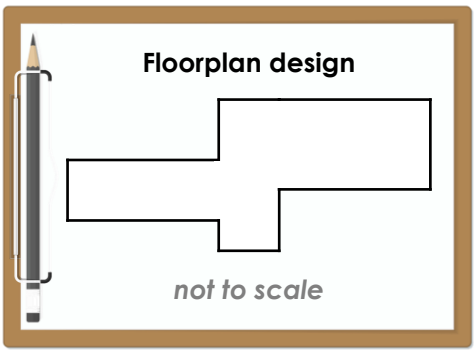
Area and Perimeter

1. Belinda the Builder is building a new house, however, the customer has made some specific requests.

Belinda has drawn a potential design for the floorplan below and says,

The total perimeter of the floorplan of the house needs to be between 100m and 160m.

The total area of the floorplan of the house must not exceed 650m^2.

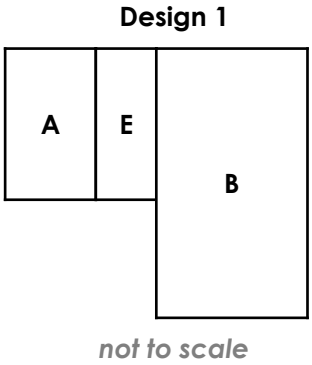


Explore the different measurements that would match the customer's requests.

DP

2. A new dog park is being designed, but the design is limited to the use of the rectangles shown in the table below.

Rectangle	Width	Length
A	650cm	3m
B	11.51m	500cm
C	6.5m	350cm
D	750cm	5.55m
E	6.5m	1.5m



Investigate which rectangles can be joined together in order to create a compound shape that has a total perimeter greater than 35.5m, but less than 70.55m, and a total area that is greater than 80.5m^2, but less than 109cm^2.

You must use at least 3 different rectangles in your design, and when joining your rectangles together, they must not overlap. A potential design is shown above.

DP

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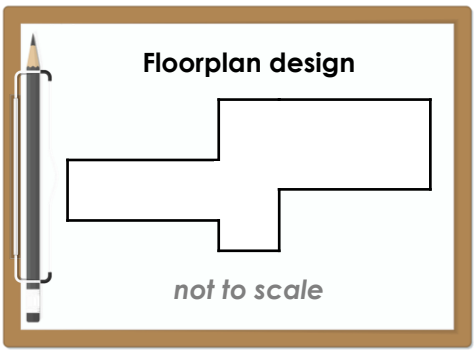
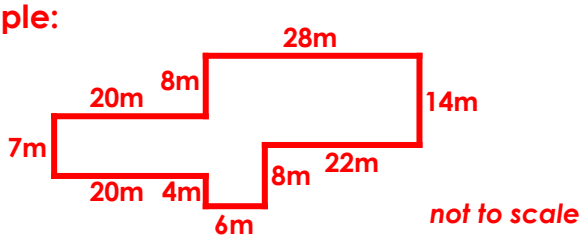


Explore the different measurements that would match the customer's requests.

Various answers, for example:
Total perimeter = 137m.
Total Area = 562m^2.



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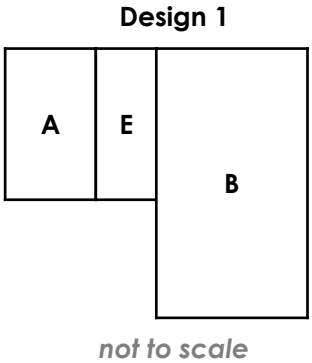

Investigate which rectangles can be joined together in order to create a compound shape that has a total perimeter greater than 35.5m, but less than 70.55m, and a total area that is greater than 80.5m^2, but less than 109cm^2.

You must use at least 3 different rectangles in your design, and when joining your rectangles together, they must not overlap. A potential design is shown above.

Various answers, for example:
For the shape shown above, the total perimeter is 42.02m and the area is 86.8cm^2.

DP