Loci
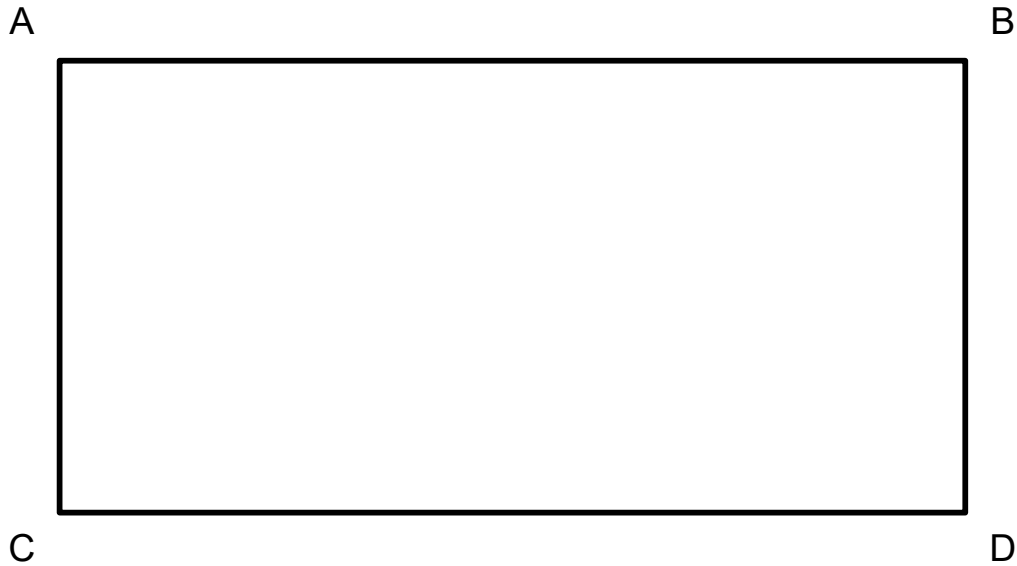
Definition: The locus is the set of points whose location is determined by a rule.

Q1

Shade in the area which is *closer to AB than AC* AND is also *within 8cm of D*.

A   B

C   D
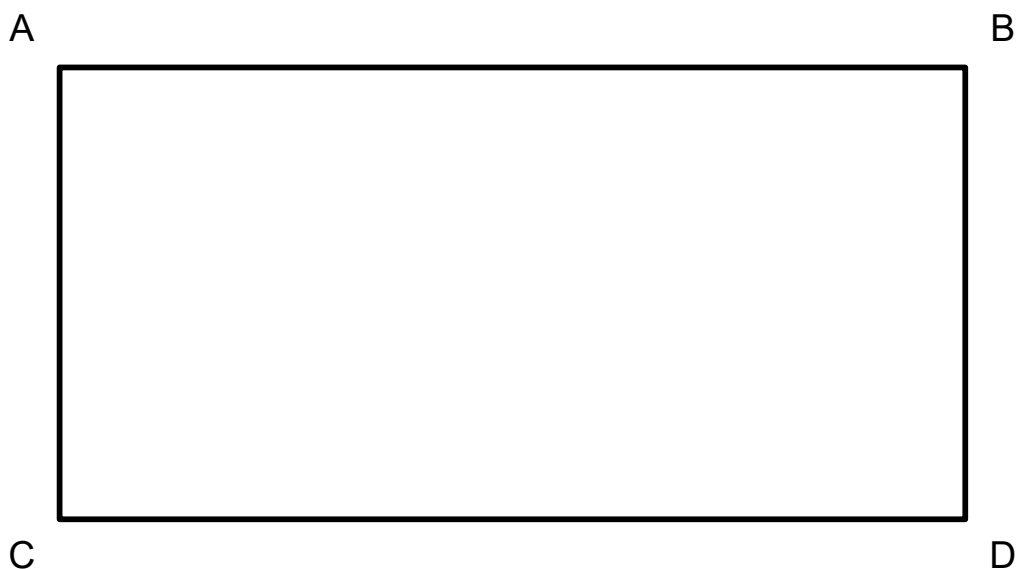
How to do it:

1. Bisect angle BAC. NOTE that this bisection does not go through point D.
2. Set your compass to 8cm and put the point on point D. Draw an arc and shade in the relevant section.

Q2

Shade in the area that is closer to DB than CD and also lies within 5cm of B.

A   B

C   D

Q3

Shade in the area that is closer to point B and within 4cm of point C.

A
●

● B

●
C

1   Set your compass to more than half the length between A and B.
2   Put the compass point on A and draw an arc between A and B.
3   Keep the compass at the same setting and put the point on point B. Draw an arc.
4   Join where the two arcs intercept (cross each other) with a straight line.
5   Draw a circle of radius 4cm round point C.
6   Shade in the part that complies with the question.

Q4

Shade in the area that is closer to point B and within 4cm of point C.

C ●

A
●

● B
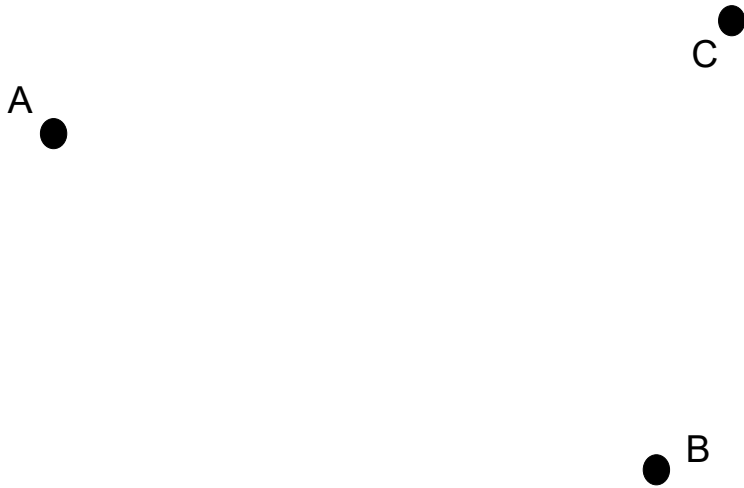
Q5

Cut this line into exactly half.

A ———————————— B

Q6

The line below is one side of an equilateral triangle. Construct the rest of the triangle.

_____

1   Put the point of the compass onto one side of the line and set your compass so that the pencil is at the other point of the line.
2   Draw an arc.
3   Keeping your compass set to the same length, put the point on the other end of the line and draw another arc going through the original arc.
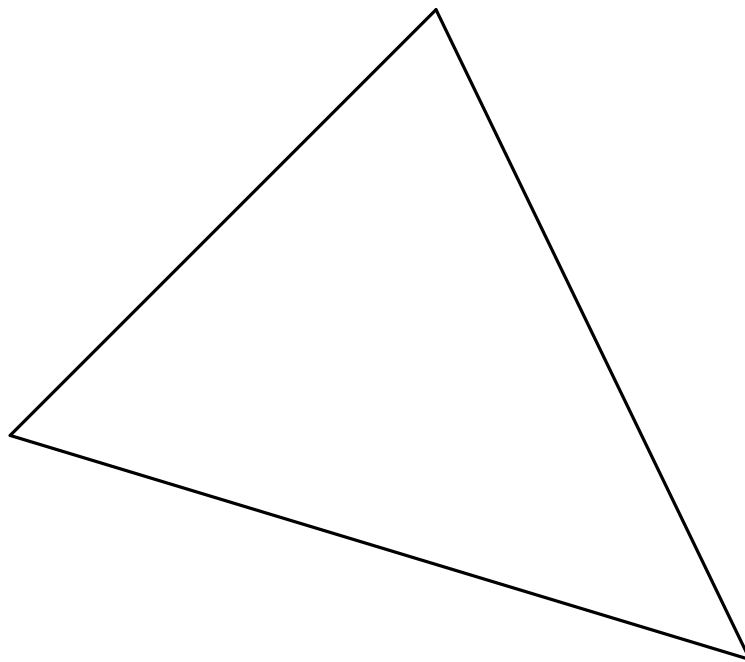4   Using a ruler, join where the two arcs cross to each of the ends of the line.

Q7

Draw a line that runs perpendicular to AB and splits it into exactly half.

A

B
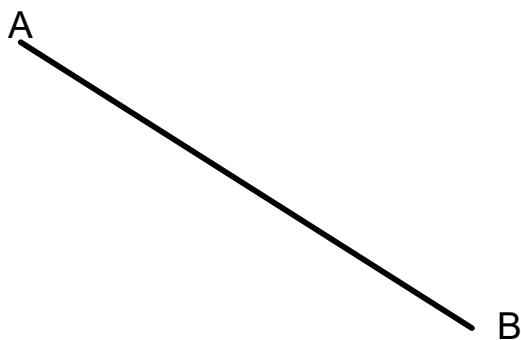
Q8

Circumscribe the triangle below.

1. Construct a perpendicular bisector for any two of the lines.
2. Where the two bisecting lines cross, put the point of your compass and set the width of your compass so that the pencil is on one of the vertices of the triangle.
3. Draw a circle and you should find that it goes through all three angles.

Q9

ABCD is the plan of a garden.

The owner of the garden builds a 3m wide patio whose edge runs parallel to side AC. Draw the edge of the patio on the diagram below.

Three metres from point B and three and a half metres from point D, a tree is planted. Mark the position of the tree with a cross.

A flower bed is planted which is closer to CD than BD. The flower bed is within 3m of point D. Mark the flower bed onto the plan below.

A   B

C   D

Scale 1:50

1   Think of the scale. 1cm on the plan represents 50cm in real live so 2cm represents 100cm (or 1 metre), 4cm represents 2 metres etc.
2   Measure the correct distance from line AB by putting an arc on line CD and line AB at 6cm. Join the two points where the arcs cross the lines AB and CD together. That is the patio edge drawn.
3   Again, thinking about the scale, set your compass to represent 3m and put the point of your compass on vertex B. Draw an arc. Do the same thing for point D but not forgetting to change the width of your compass to match the scale for three and a half metres. Where the two arcs cross, draw a cross. The position of the tree is marked.
4   Bisect the angle CDB. Draw an arc from point D to represent 3m on the plan. Mark the outline of the flower bed. The flower bed is drawn.