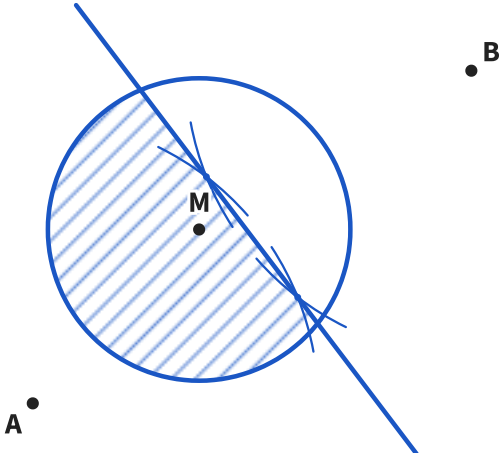


Loci: Combining Rules and Regions

1

Scale: 1 cm represents 10 km

A mobile mast M sends a signal up to 20 km. Shade where a phone gets the signal and is closer to town A than to town B.

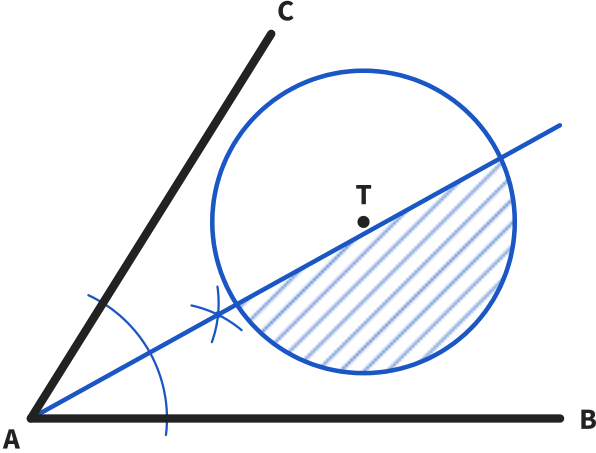


Rule	Locus	On the plan
up to 20 km from M	circle	radius 2 cm
closer to A than B	perp. bisector of AB	shade A's side

2

Scale: 1 cm represents 10 m

Treasure is less than 20 m from the tree T and nearer to the wall AB than to the wall AC. Shade where it could be.

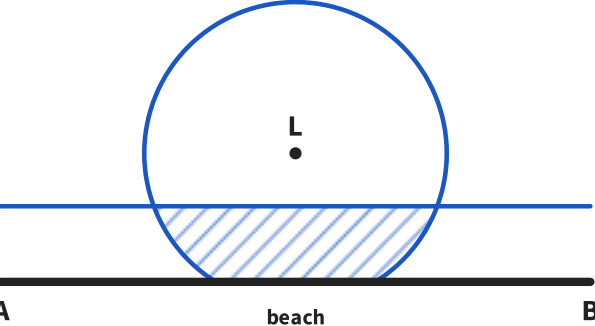


Rule	Locus	On the plan
less than 20 m from T	circle	radius 2 cm
nearer to AB than AC	angle bisector at A	shade AB's side

3

Scale: 1 cm represents 10 m

A lifeguard on the tower L can see up to 20 m. Swimmers must stay less than 10 m from the beach AB and where the lifeguard can see them. Shade where they can swim.

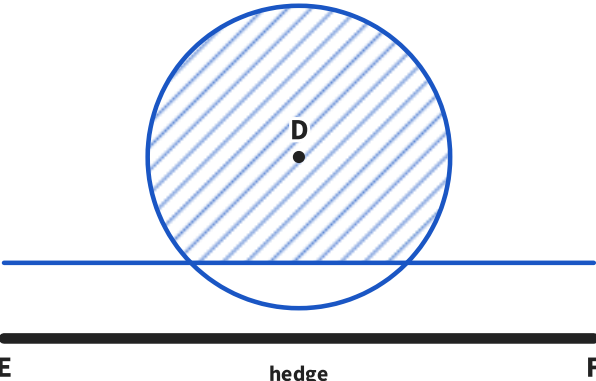


Rule	Locus	On the plan
up to 20 m from L	circle	radius 2 cm
less than 10 m from AB	parallel line	1 cm from AB

4

Scale: 1 cm represents 2 m

A dog's lead is fixed at D. It reaches up to 4 m. The dog is kept more than 2 m from the hedge EF. Shade where the dog can go.



Rule	Locus	On the plan
up to 4 m from D	circle	radius 2 cm
more than 2 m from EF	parallel line	1 cm from EF

Loci: Combining Rules and Regions

5

Notice the change!

Scale: 1 cm represents 2 m

A goat is tied to the corner C of a shed with a 4 m rope. The shed is 3 m by 1 m. Shade where the goat can graze.

Rule	Locus	On the plan
4 m rope from C	$\frac{3}{4}$ circle about C	radius 2 cm
round the shed	quarter circles	0.5 cm and 1.5 cm

6

Scale: 1 cm represents 10 km

A beacon is the same distance from A as from B, and exactly 20 km from C. Mark the places it could be.

Rule	Locus	On the plan
same distance from A and B	perp. bisector	through the middle of AB
exactly 20 km from C	circle	radius 2 cm

7

Scale: 1 cm represents 5 km

A shop must be closer to Ashby (A) than to Bury (B), less than 9 km from Carr (C) and more than 4 km from the main road. Shade where it can go.

Rule	Locus	On the plan
closer to A than B	perp. bisector	shade A's side
less than 9 km from C	circle	radius 1.8 cm
more than 4 km from road	parallel line	0.8 cm from road

8

Kim shades the points less than 2.5 cm from P and closer to Q than to P. Spot her mistake and shade the right region.

Mistake

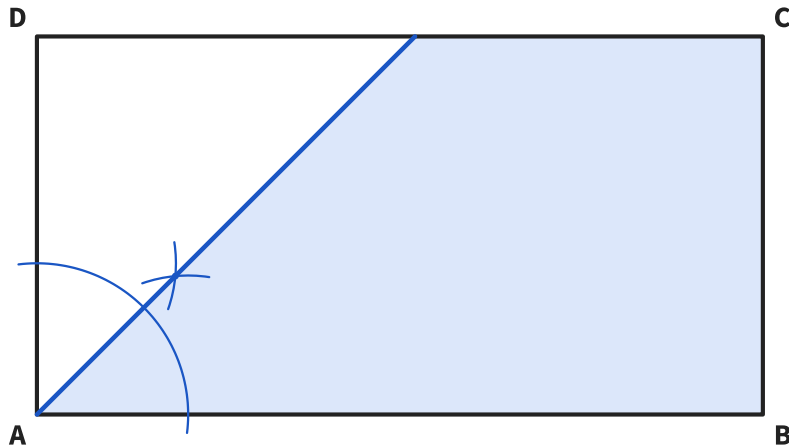
She shaded the side closer to P. Shade the part of the circle on Q's side.

Loci: Combining Rules and Regions *further practice*

ANSWERS

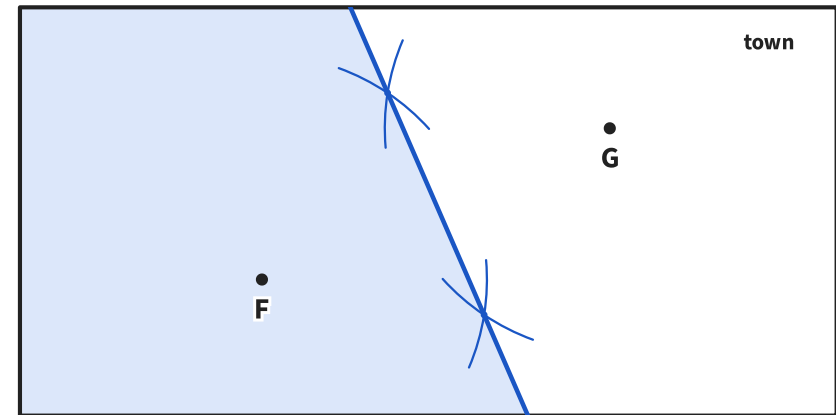
9

Shade the region inside the rectangle that is nearer to the side AB than to the side AD.



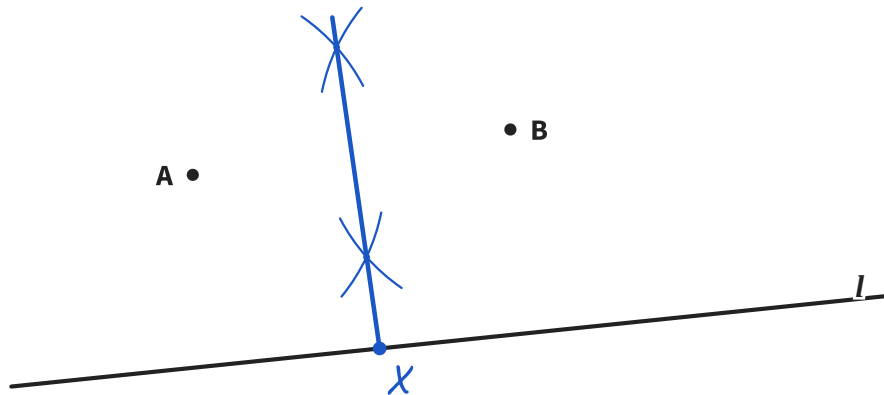
10

A fire is put out by whichever fire station, F or G, is nearer to it. Shade the part of the town that station F covers.



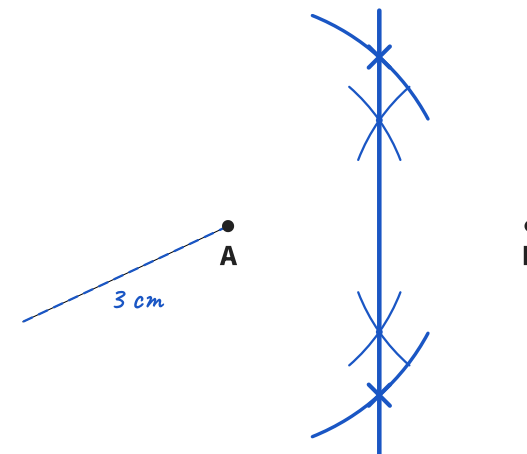
11

Mark the point on the line l that is the same distance from A as from B.



12

Mark the points that are the same distance from A as from B and are also 3 cm from A.

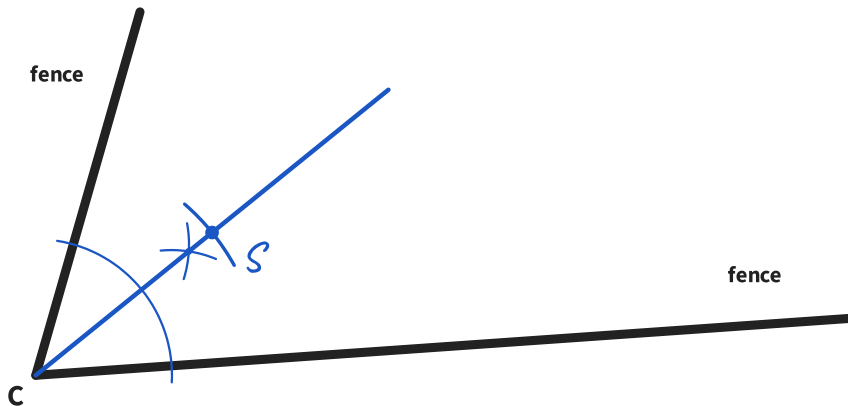


Loci: Combining Rules and Regions *further practice*

ANSWERS

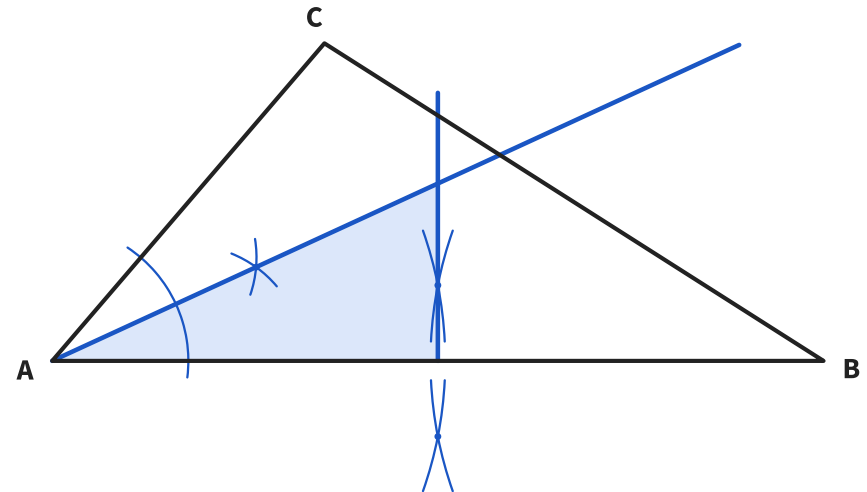
13

Two straight fences meet at the corner C of a garden. A sprinkler in the garden is the same distance from both fences and 30 m from C. Scale: 1 cm represents 10 m. Mark the sprinkler S.



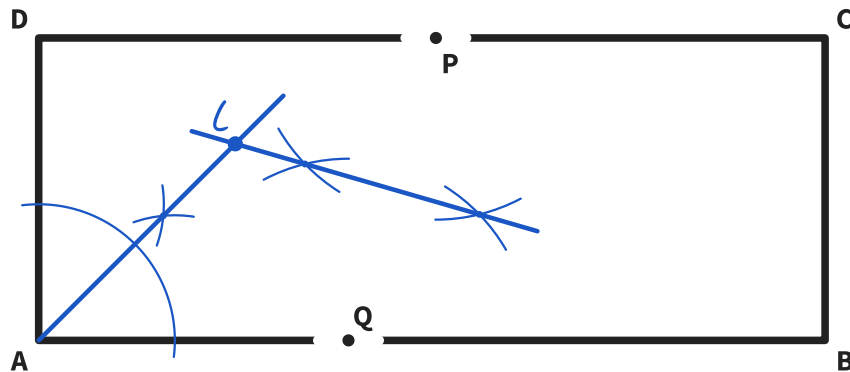
14

Shade the region inside triangle ABC that is nearer to A than to B and nearer to the side AB than to the side AC.



15

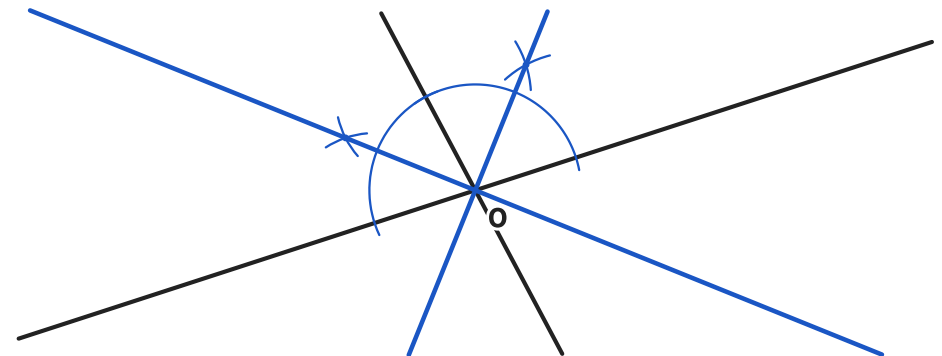
A lamp post goes in the yard ABCD. It is the same distance from the walls AB and AD, and the same distance from the gates P and Q. Scale: 1 cm represents 5 m. About how far is the lamp post from A?



Distance = about 18.5 m (accept 17.5 to 19.5 m)

16

Mia says the points that are the same distance from both lines all lie on one straight line. Construct the locus. Explain why Mia is wrong.



Answer There are two lines, at right angles, one through each pair of opposite angles.