AREA –EXTEND TO HECTARES, SQUARE KILOMETRES.

INVESTIGATIONS OVERVIEW PAGE
THIS PAGE IS A SUMMARY OF THE INVESTIGATIONS THAT STUDENTS MAY ENGAGE IN TO DEEPEN THEIR RELATIONAL UNDERSTANDING.
NVESTIGATIONS WITH INSTRUCTIONS TO STUDENTS FOLLOW ON SUBSEQUENT PAGES.

- Children explain the distinction between square centimetres and centimetres square/d, reading cm^2 as square centimetre not centimetre square/d. Children explain the distinction between square metres and metres square/d, reading m^2 as square metre not metre square/d. Reflection: What is a square centimetre? What is a square metre?
- Children go to the playground or local park with a measuring device (for example, a trundle wheel or an app) and markers, (for example, cones), to mark out the area of a hectare as a square with sides 1 hectometre (100 metres) in length. Reflection: What is a hectare?
- Children have a map of the local area. They use the scale to work out a length of 1 kilometre (1000 metres). They turn the kilometre into a square with sides 1 kilometre long, to make a square kilometre. They visualise the size of a square kilometre. Reflection: What is a square kilometre?
- In pairs or small groups, children measure the length of the adjacent sides of the room in metres. Children work out the area by multiplying the number of square metres in each row by the number of rows. Children calculate area by multiplying the lengths of the adjacent sides. Children explain they are multiplying 'length' by 'width'. Reflection: How can we calculate area?
- Children investigate the Imperial measurement system, including the history and units of measurement used to measure area. Reflection: What is the Imperial measurement system?
- Children have a map of the local area which includes a local park. They use the scale on the map to work out a length of 1 hectometre (100 metres) in the park. They turn the hectometre into a square to make a hectare. They go to the park with a measuring device (for example, a trundle wheel or an app) and markers, (for example, cones), to mark out the area of a hectare as a square with sides 100 metres / 1 hectometre in length.Reflection: How can we measure the area of a hectare?
- Children have a map of the local area which includes a local park. They use the scale on the map to draw hectares in shapes other than squares. They go to the park with a measuring device (for example, a trundle wheel or an app) and markers, (for example, cones), to mark out the area of a hectare in shapes other than squares. For example, they may make hectares as 50 metres by 200 metres (half a hectometre by 2 hectometres), or 25 metres by 400 metres (quarter of a hectometre by 4 hectometres). They explain that the shapes all have an area of a hectare. They explain that a hectare need not be square. Reflection: How can we measure the area of a hectare?
- Children have a map of the local area. They use the scale on the map to draw square kilometres in shapes other than squares. For example, they may make

square kilometres as 500 metres by 2000 metres (half a kilometre by 2 kilometres), or 250 metres by 4000 metres (quarter of a kilometre by 4 kilometres). They explain that the shapes all have an area of a square kilometre. They explain that a square kilometre need not be square. Reflection: How can we measure the area of a square kilometre?

- Children have a rectangle. Children measure the area of the shape in square centimetres. Children measure the length of one side. They measure the length of the adjacent side. They calculate the area by multiplying the number of square centimetres on one side with the number of rows. Children calculate the area by multiplying the lengths of 2 adjacent sides. They call one side 'length' and the other side 'width' and calculate the area by multiplying length by width. Reflection: How can we measure and calculate area in square centimetres?
- In pairs, children have square centimetre grid paper. They use the scale 1 square centimetre:1 square metre to draw areas of a specific number of square metres on the square centimetre grid paper, for example, shapes that have areas of 12 square metres. Multiply the lengths of adjacent sides of the rectangle to calculate the area. Explain that you multiplied the 'length' of the rectangle by the 'width' of the rectangle to calculate the area. Reflection: How can we measure and calculate area in square metres?
- In pairs, children have square centimetre grid paper. They use the scale 1 square centimetre:1 hectare to draw areas of a specific number of hectares on the square centimetre grid paper, for example, shapes that have areas of 12 hectares. Multiply the lengths of adjacent sides of the rectangle to calculate the area. Explain that you multiplied the 'length' of the rectangle by the 'width' of the rectangle to calculate the area. Reflection: How can we measure and calculate area in hectares?
- In pairs, children have square centimetre grid paper. They use the scale 1 centimetre:1 square kilometre to draw areas of a specific number of square kilometres on the square centimetre grid paper, for example, shapes that have areas of 12 square kilometres. Multiply the lengths of adjacent sides of the rectangle to calculate the area. Explain that you multiplied the 'length' of the rectangle by the 'width' of the rectangle to calculate the area. Reflection: How can we measure and calculate area in square kilometres?
- In pairs, children roll a die twice to determine the length of adjacent sides of a rectangle in square centimetres, square metres, hectares or square kilometres They explain they calculated the area of the rectangle by multiplying the number of rows by the number of squares in each row. Children explain they are multiplying 'length' by 'width'. Reflection: How can we calculate area in square centimetres, square metres, hectares and square kilometres?

Area –Extend to Hectares, Square Kilometres.

Explain the distinction between square centimetres and centimetres square/d.

Does cm^2 say square centimetre or centimetre square/d? Why?

Explain the distinction between square metres and metres square/d.

Does m^2 say square metre or metre square/d? Why?

Reflection: What is a square centimetre? What is a square metre?

Area –Extend to Hectares, Square Kilometres.

Go to the playground or park a measuring device (for example, a trundle wheel or an app) and markers, (for example, cones).

Mark out the area of a hectare as a square with sides 100 metres / 1 hectometre in length.

Reflection: What is a hectare?

Area –Extend to Hectares, Square Kilometres.

Select a map of the local area.

Use the scale to work out a length of 1 kilometre (1000 metres).

Turn the kilometre into a square with sides 1 kilometre (1000 metres) long, to make a square kilometre.

Visualise the size of a square kilometre using local landmarks.

Reflection: What is a square kilometre?

Area –Extend to Hectares, Square Kilometres.

Measure the length of the adjacent sides of the room in metres.

Work out the area by multiplying the number of square metres in each row by the number of rows.

Calculate area by multiplying the lengths of the adjacent sides.

Did you calculate area by multiplying length by width?

Reflection: How can we calculate area?

Area –Extend to Hectares, Square Kilometres.

Investigate the Imperial measurement system, including:

- the history and
- units of measurement used to measure area.

Reflection: What is the Imperial measurement system?

Area –Extend to Hectares, Square Kilometres.

Have a map of the local area which includes a local park.

Use the scale on the map to work out a length of 1 hectometre (100 metres) in the park.

Turn the hectometre into a square to make a hectare.

Go to the park with a measuring device (for example, a trundle wheel or an app) and markers, (for example, cones), to mark out the area of a hectare as a square with sides 100 metres / 1 hectometre in length.

Reflection: How can we measure the area of a hectare?

Area –Extend to Hectares, Square Kilometres.

Select a map of the local area which includes a local park.

Use the scale on the map to draw hectares in squares, and in shapes other than squares.

Go to the park with a measuring device (for example, a trundle wheel or an app) and markers, (for example, cones), to mark out the area of a hectare in squares and in shapes other than squares.

For example, you may make hectares as 50 metres by 200 metres (half a hectometre by 2 hectometres), or 25 metres by 400 metres (quarter of a hectometre by 4 hectometres) etc.

Explain that the shapes all have an area of a hectare.

Explain that a hectare need not be square.

Reflection: How can we measure the area of a hectare?

Area –Extend to Hectares, Square Kilometres.

Select a map of the local area.

Use the scale on the map to draw square kilometres in shapes other than squares.

For example, you may make square kilometres as 500 metres by 2000 metres (half a kilometre by 2 kilometres), or 250 metres by 4000 metres (quarter of a kilometre by 4 kilometres).

Explain that the shapes all have an area of a square kilometre.

Explain that a square kilometre need not be square.

Reflection: How can we measure the area of a hectare?

Area –Extend to Hectares, Square Kilometres.

Have a rectangle.

Measure the area of the rectangle in square centimetres.

Measure the length of one side.

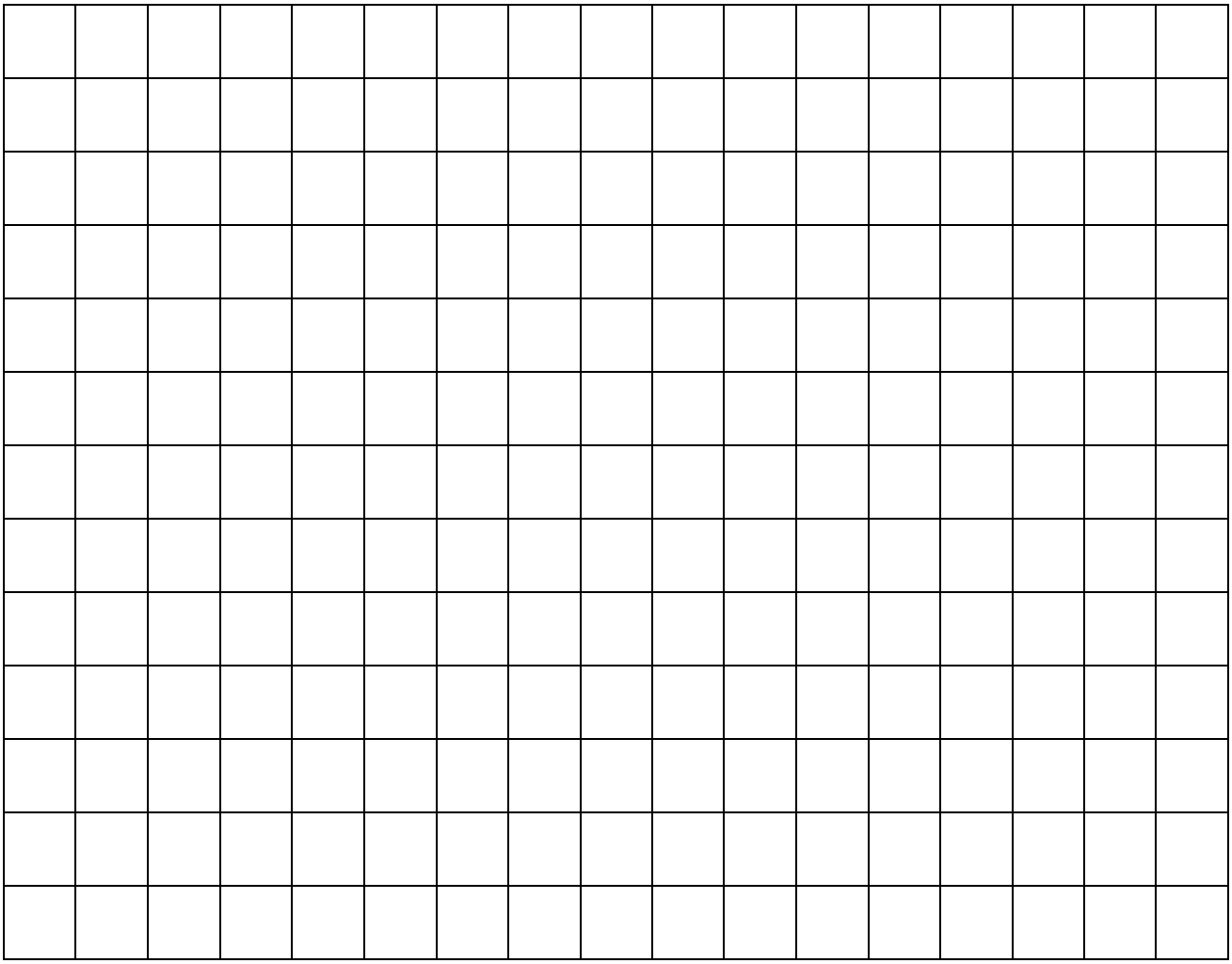
Measure the length of the adjacent side.

Calculate the area by multiplying the number of square centimetres on one side with the number of rows.

Calculate the area by multiplying the lengths of 2 adjacent sides.

Did you multiply ‘length’ by ‘width’ to calculate the area?

Reflection: How can we measure and calculate area in square centimetres?



Area –Extend to Hectares, Square Kilometres.

Have square centimetre grid paper.

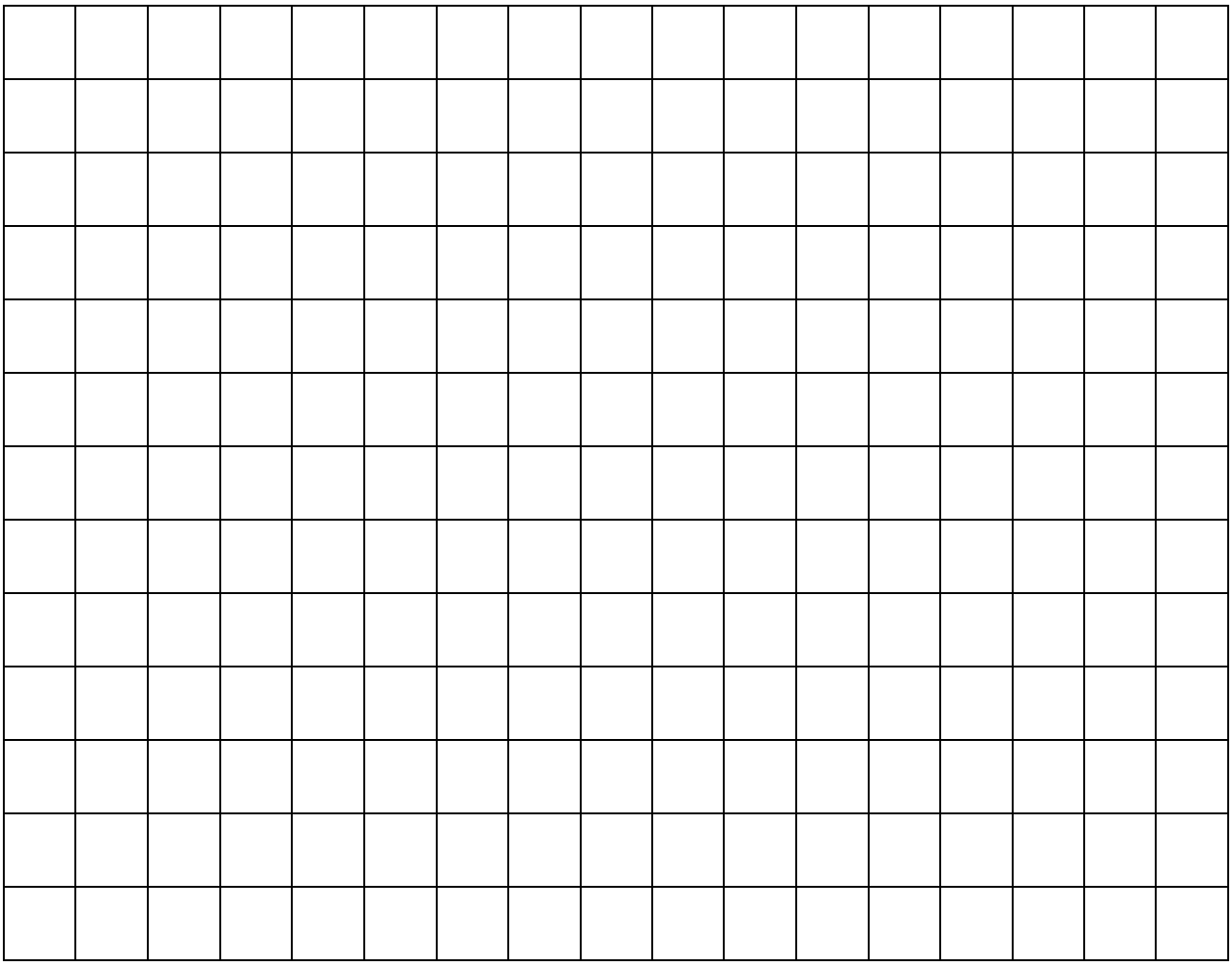
Use the scale 1 centimetre:1 metre to draw rectangles with areas of a specific number of square metres on the square centimetre grid paper.

For example, rectangles that have areas of 12 square metres.

Multiply the lengths of adjacent sides of the rectangle to calculate the area.

Explain that you multiplied the ‘length’ of the rectangle by the ‘width’ of the rectangle to calculate the area.

Reflection: How can we measure and calculate area in square metres?



Area –Extend to Hectares, Square Kilometres.

Have square centimetre grid paper.

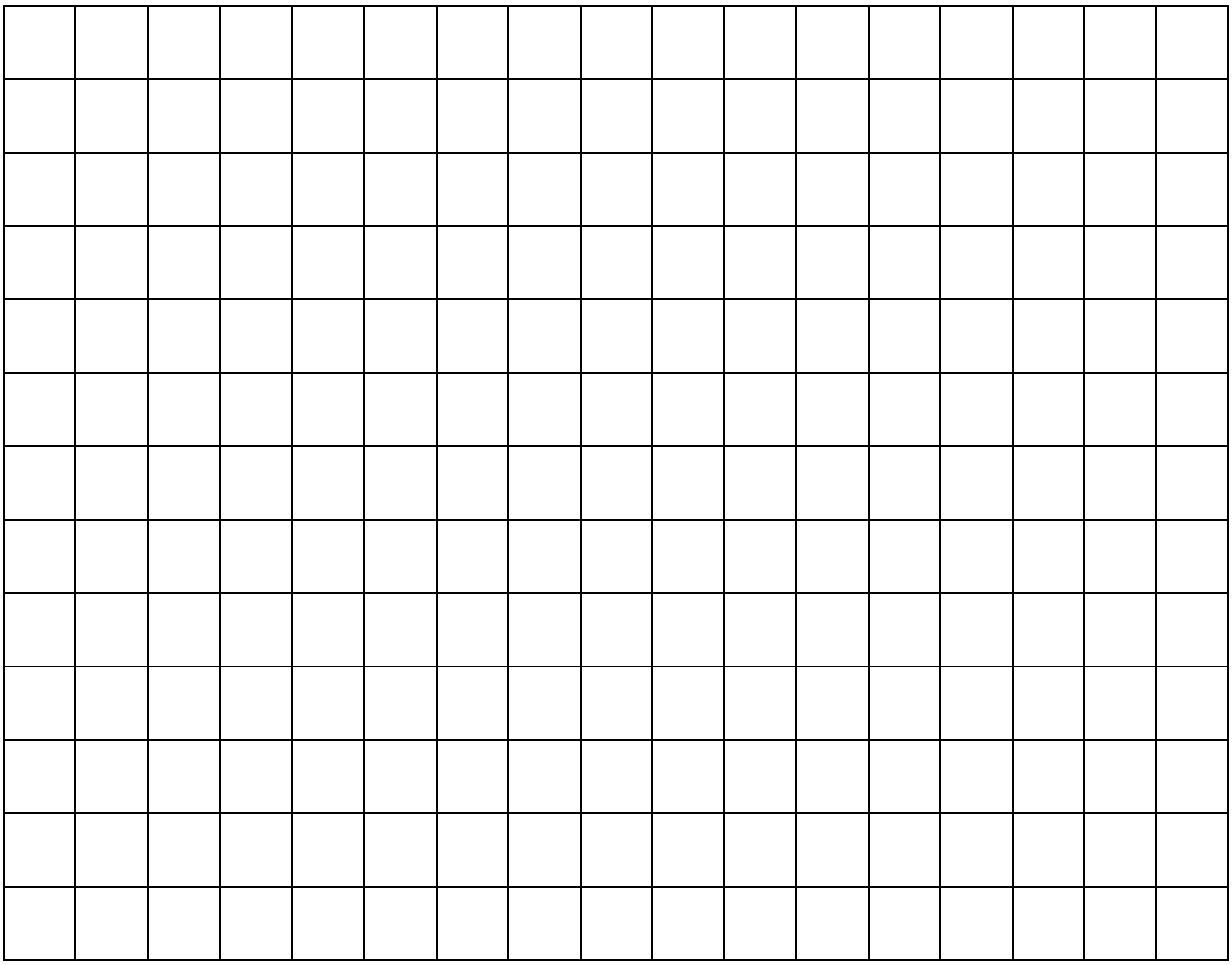
Use the scale 1 centimetre:1 hectare to draw rectangles with areas of a specific number of hectares on the square centimetre grid paper.

For example, rectangles that have areas of 12 hectares.

Multiply the lengths of adjacent sides of the rectangle to calculate the area.

Explain that you multiplied the ‘length’ of the rectangle by the ‘width’ of the rectangle to calculate the area.

Reflection: How can we measure and calculate area in hectares?



Area –Extend to Hectares, Square Kilometres.

Have square centimetre grid paper.

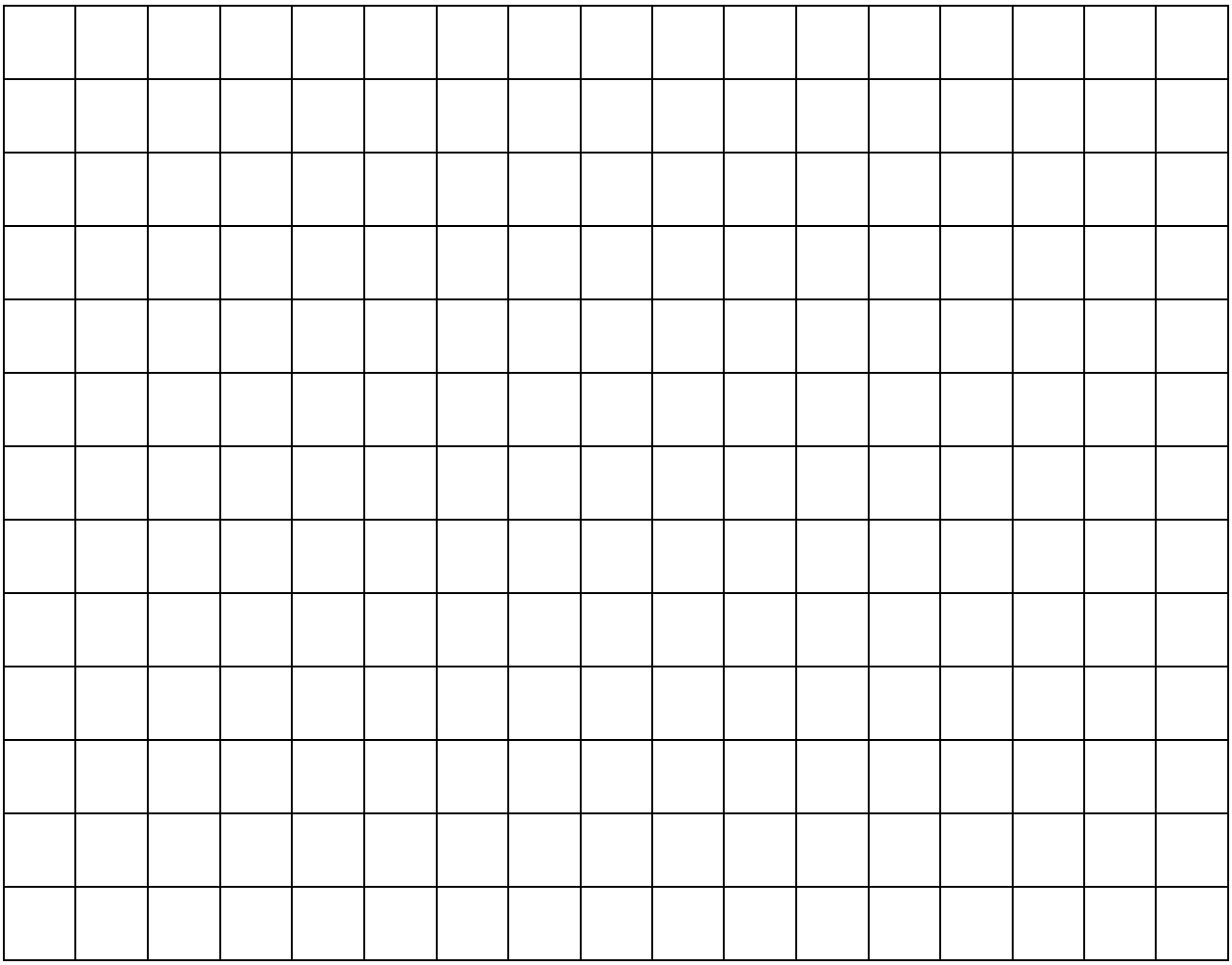
Use the scale 1 centimetre:1 kilometre to draw rectangles with areas of a specific number of square kilometres on the square centimetre grid paper.

For example, rectangles that have areas of 12 square kilometres.

Multiply the lengths of adjacent sides of the rectangle to calculate the area.

Explain that you multiplied the ‘length’ of the rectangle by the ‘width’ of the rectangle to calculate the area.

Reflection: How can we measure and calculate area in square kilometres?



Area –Extend to Hectares, Square Kilometres.

Roll a die twice to determine the lengths of adjacent sides of a rectangle.

Decide on a unit of measurement for area, for example, square centimetre or square metre or hectare or square kilometre.

Calculate the area by multiplying the number of square centimetres or square metres or hectares or square kilometres in each row with the number of rows.

Calculate the area by multiplying the lengths of the adjacent sides.

Explain that you multiplied the ‘length’ of the rectangle by the ‘width’ of the rectangle to calculate the area.

Reflection: How can we calculate area in square centimetres, square metres, hectares and square kilometres?