# What you need

### A compass

One that holds its opening firmly; a screw-adjusted compass is best. Keep the lead sharp.

### A ruler

Any straight edge, 30 cm (12 in) or longer.

### Pencils and an eraser

A hard pencil (H or HB) for light construction lines, and a soft eraser.

### A fine black pen

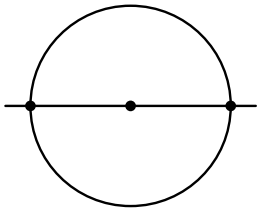
To ink the finished star before you erase the construction lines.

### Coloured pencils or markers

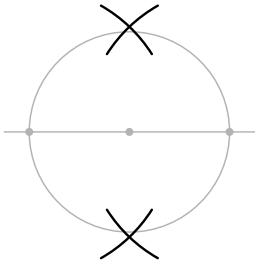
For the colouring pages. Markers may show through: slip a sheet of card behind the page.

# Divide a circle into eight

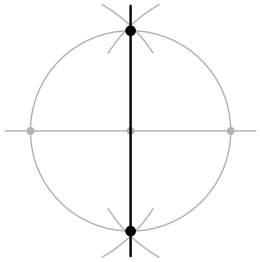
Every eight-pointed star begins with eight points spaced evenly around a circle. You only need a compass and a ruler: no protractor, no measuring.



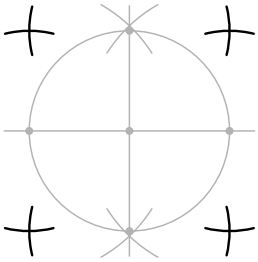
**1** Draw a circle and mark its centre. Rule a line through the centre: it meets the circle at two points.



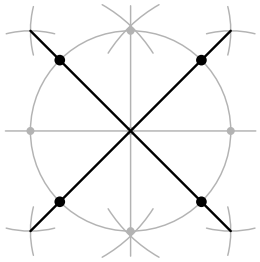
**2** Open the compass wider than the radius. From each of the two points, draw an arc above and below.



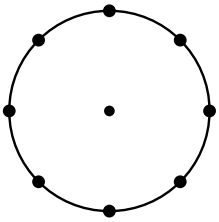
**3** Rule a line through the two crossings. It passes through the centre at a right angle: four points.



**4** Set the compass to the radius. From each of the four points, draw arcs outside the circle: neighbouring arcs cross in four corners.



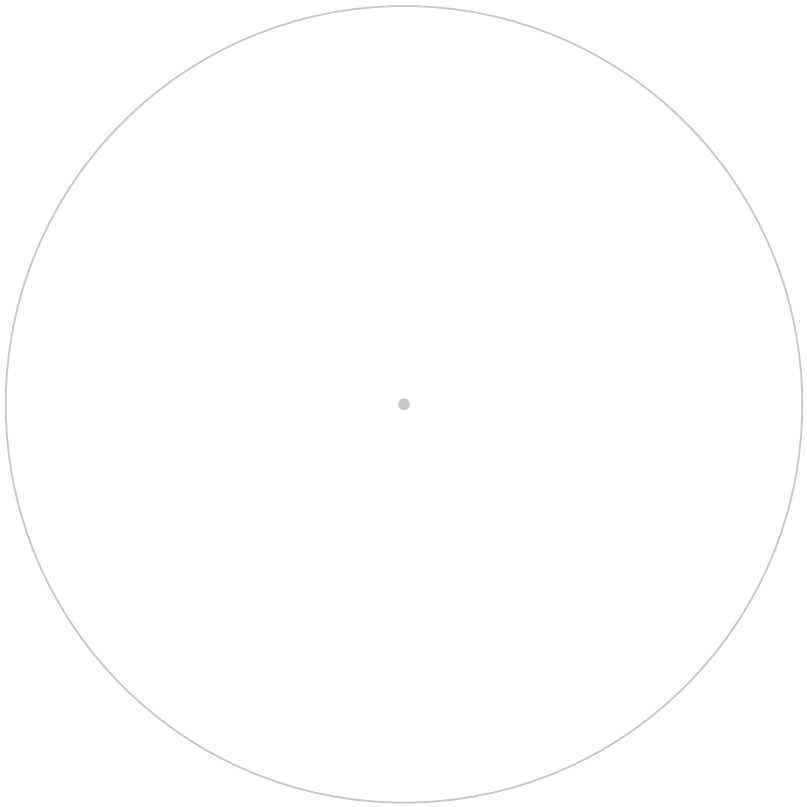
**5** Rule the two diagonals from corner to corner through the centre. They cut the circle at four more points.



**6** Eight points, exactly 45° apart: the starting point of every eight-fold star in this book.

# Your turn: divide a circle into eight

The circle is printed lightly. Follow the steps on the previous page.



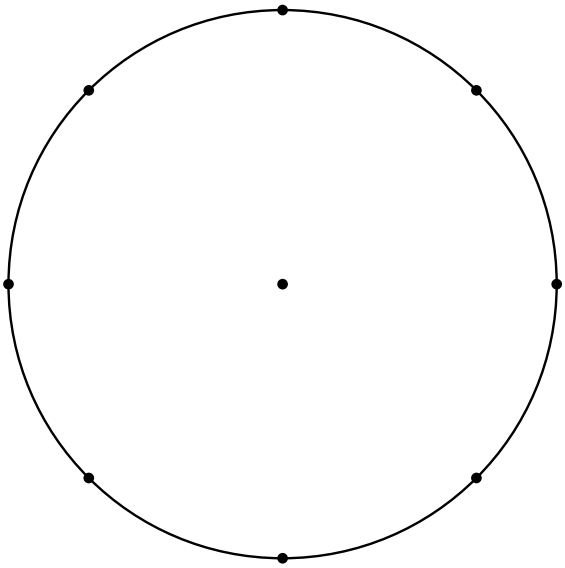
Tip: Press lightly with the pencil: construction lines are erased at the end.

# On your own

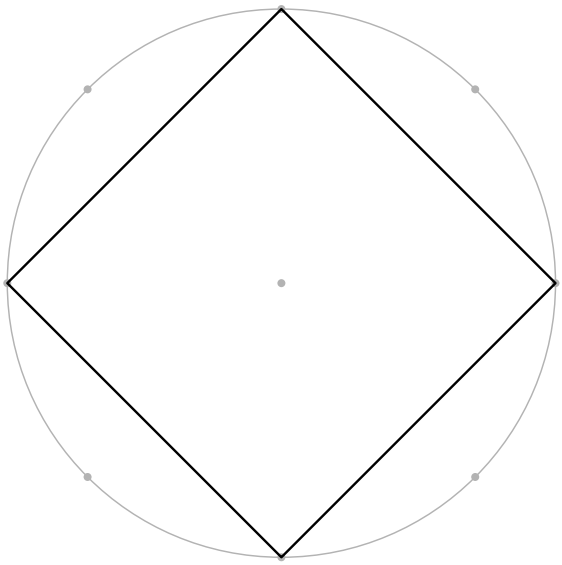
Draw a circle about 12 cm (5 in) across around the centre mark, and divide it again without looking at the steps.

# The eight-pointed star (khatam)

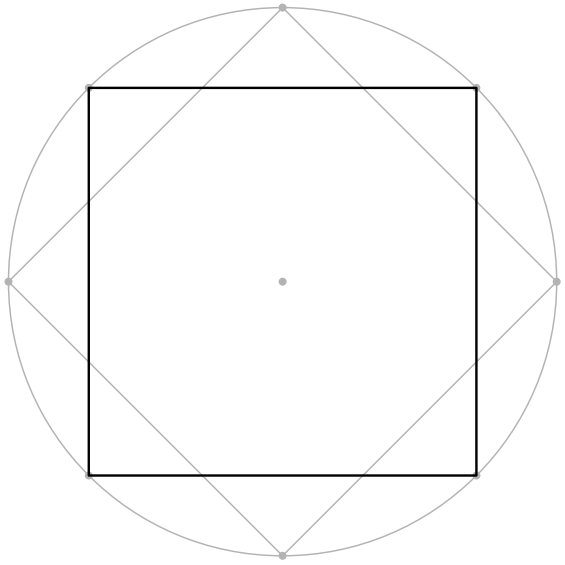
Two squares, one turned on the other: the khatam, the most common star of Islamic geometric art, from the zellige of Fez to the woodwork of Cairo.



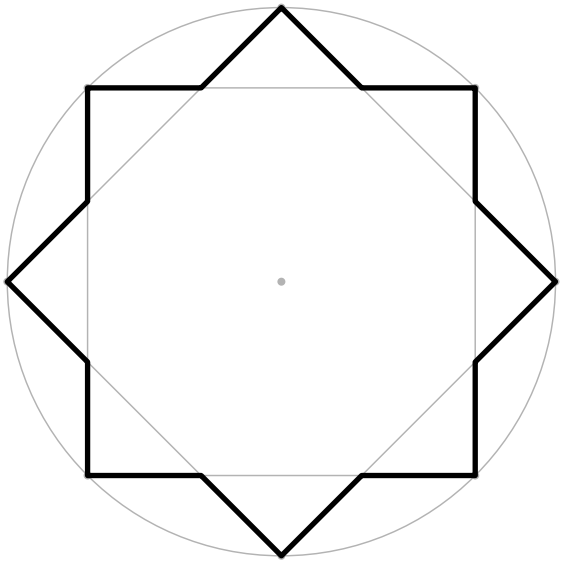
**1** Draw a circle and divide it into eight (lesson 1).



**2** Join every other point with the ruler: a square.



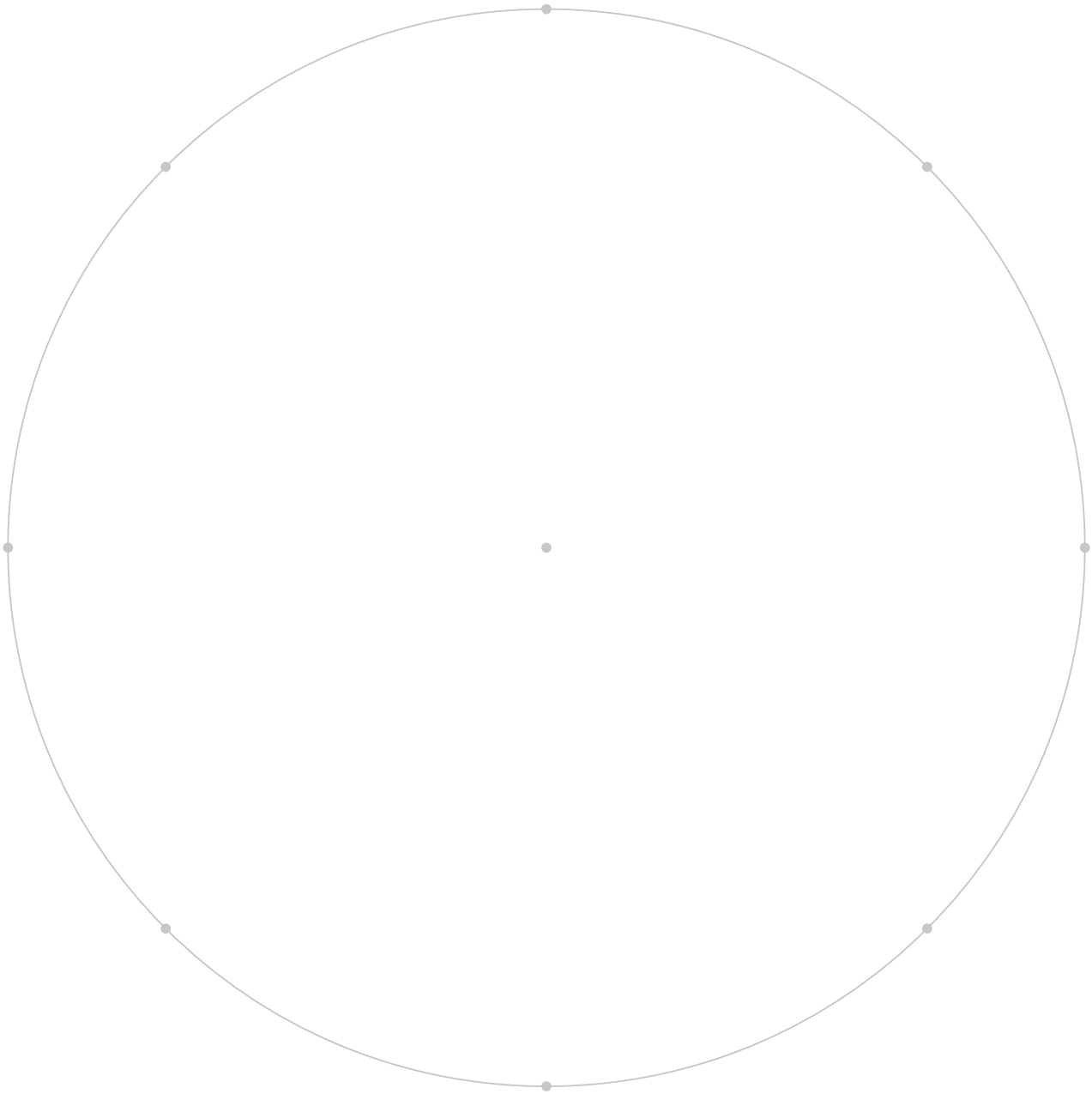
**3** Join the remaining points: a second square, turned 45° from the first.



**4** Go over the outer edge in ink, from point to notch to point. Erase every line inside and the circle.

# Your turn: the eight-pointed star (khatam)

The circle and its points are printed lightly. Join them as on the previous page, then ink the outline.



# On your own

Draw a circle about 12 cm (5 in) across around the centre mark, divide it, and draw the star from memory.

# Colour it: the eight-pointed star (khatam)

Keep every line this time, and colour the pieces. Pieces of the same shape in the same colour make the star stand out.

