

The Pentagram cafe

Use Mathomat to make accurate geometric drawings.

Sam was putting up a sign for his new cafe.

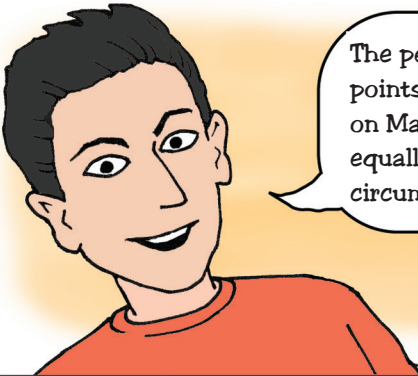


Sorry Sam, but that sign looks terrible.

I know! I just can't get it right, Brad.

I can show you how to draw a good pentagram.

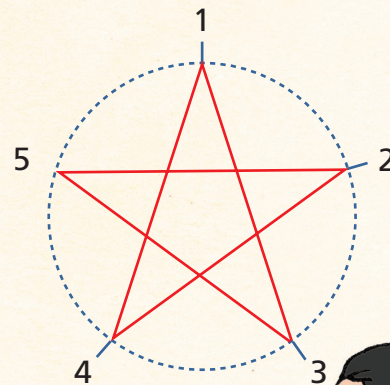
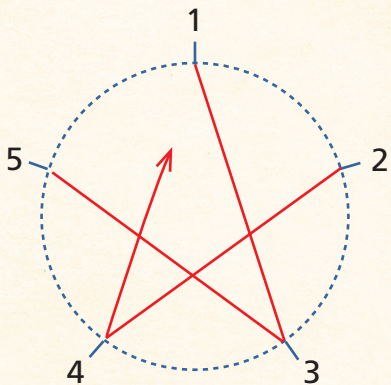
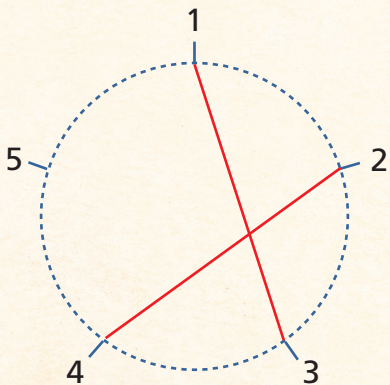
Brad got out his Mathomat and a sheet of paper.



The pentagram has five points. I'm using the clockface on Mathomat to mark five equally spaced points on the circumference of the circle.

The clock face shows 60 minutes. I divided 5 into 60. That means the points are 12 minutes apart...

...or 72° . Then I start at 1, joining every second point with a straight line.

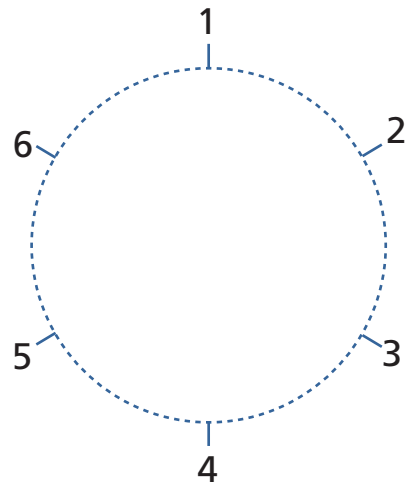
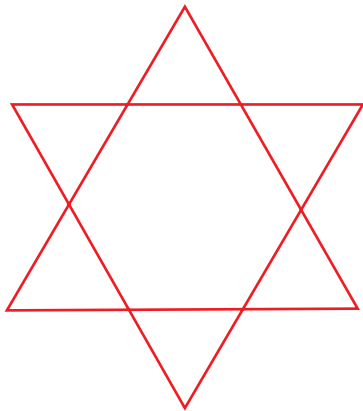


What is the shape in the middle?

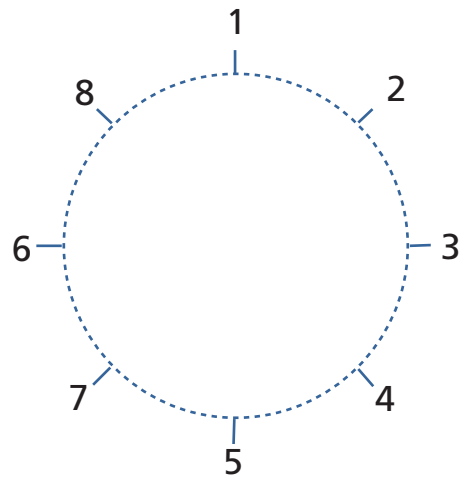
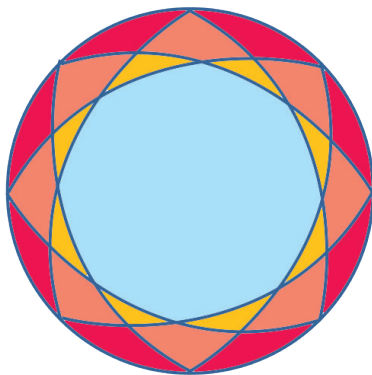


Investigate star polygons

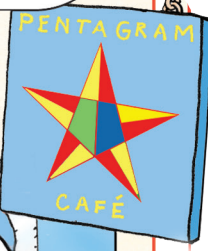
The pentagram is a star polygon like the hexagram below. You can draw one by marking 6 equally spaced points on circle 12 (the clockface), then joining every second line.



Try this design by marking 8 equally spaced points on circle 26 and then joining every third point with an arc, and carefully colour in the regions.



Back to Sam's sign...Sam needed a large pentagram than one drawn inside circle 26 so Jack showed Sam how to draw larger polygons with the Mathomat...



Mark the centre point and then 5 points spaced at 72° intervals around the circumference of the protractor.

Extend lines from the centre through each corner. Mark the same extra length on each extension...

Extend each side to make...

...a pentagon.

...and join these up to make a larger pentagon.

...the arms of the pentagram.