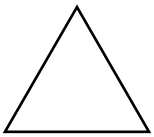
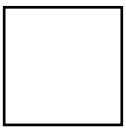
Which shapes tessellate?

A regular shape tiles on its own only if its corners fit exactly around a point (360°).



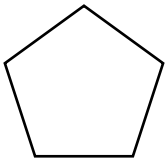
Triangle: each corner is _____°

360 ÷ corner = _____ Does it tile on its own? yes / no



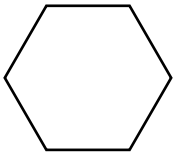
Square: each corner is _____°

360 ÷ corner = _____ Does it tile on its own? yes / no



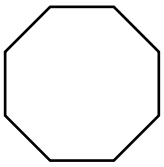
Pentagon: each corner is _____°

360 ÷ corner = _____ Does it tile on its own? yes / no



Hexagon: each corner is _____°

360 ÷ corner = _____ Does it tile on its own? yes / no



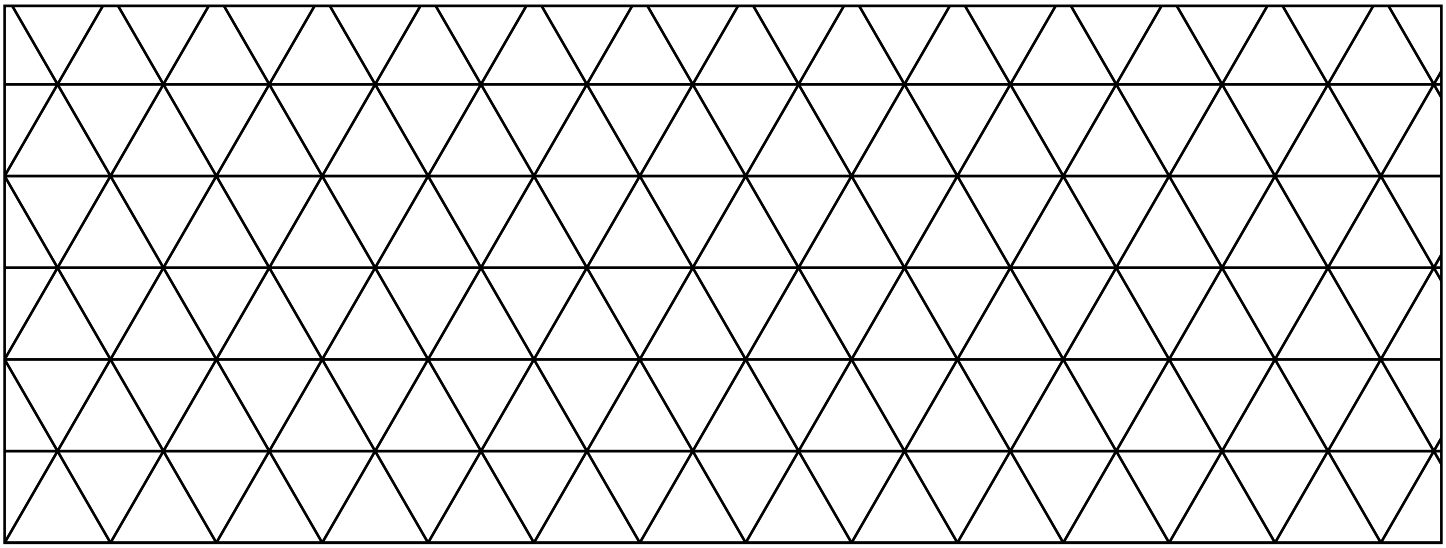
Octagon: each corner is _____°

360 ÷ corner = _____ Does it tile on its own? yes / no

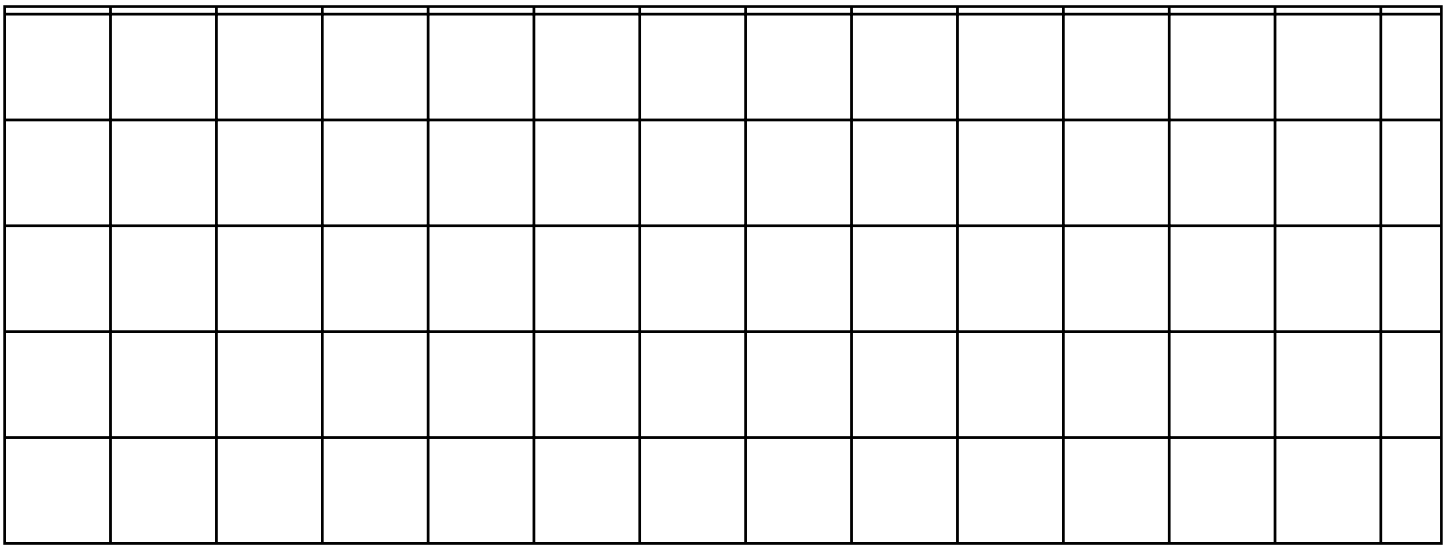
Teacher's answers: triangle 60° (6 fit), square 90° (4), pentagon 108° (no), hexagon 120° (3), octagon 135° (no).
Octagons do tile with squares: 135° + 135° + 90° = 360°. That is the tiling behind the Fez star pattern (page 3).

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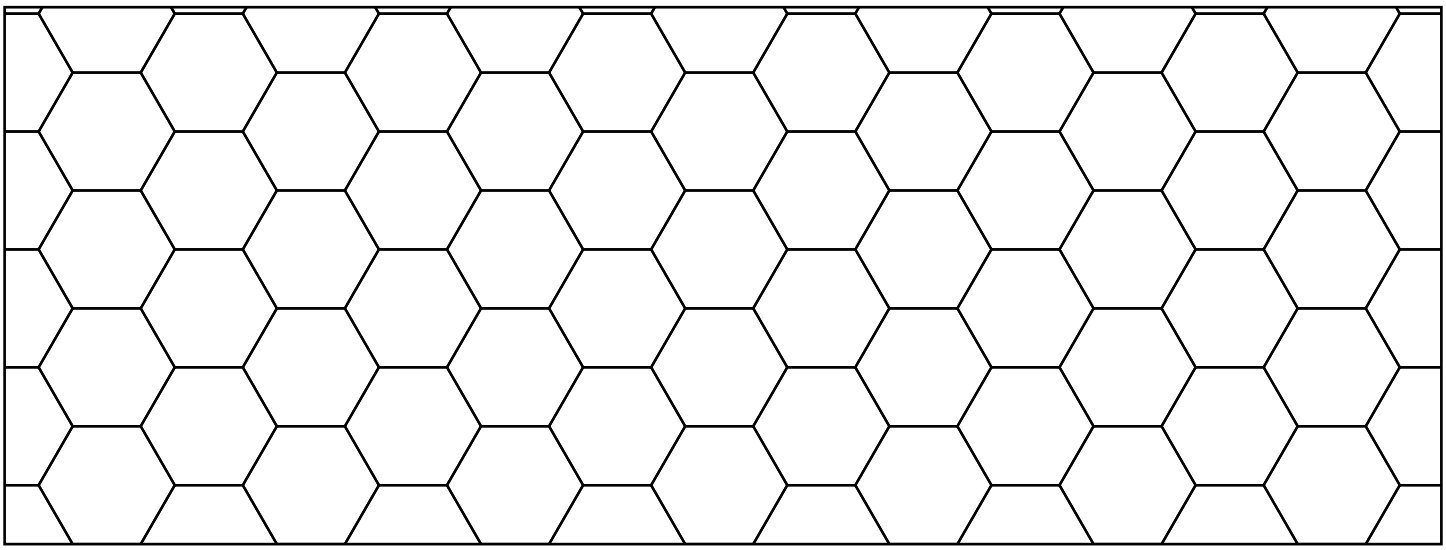
The three regular tessellations: colour them in



Triangles: 6 meet at every corner



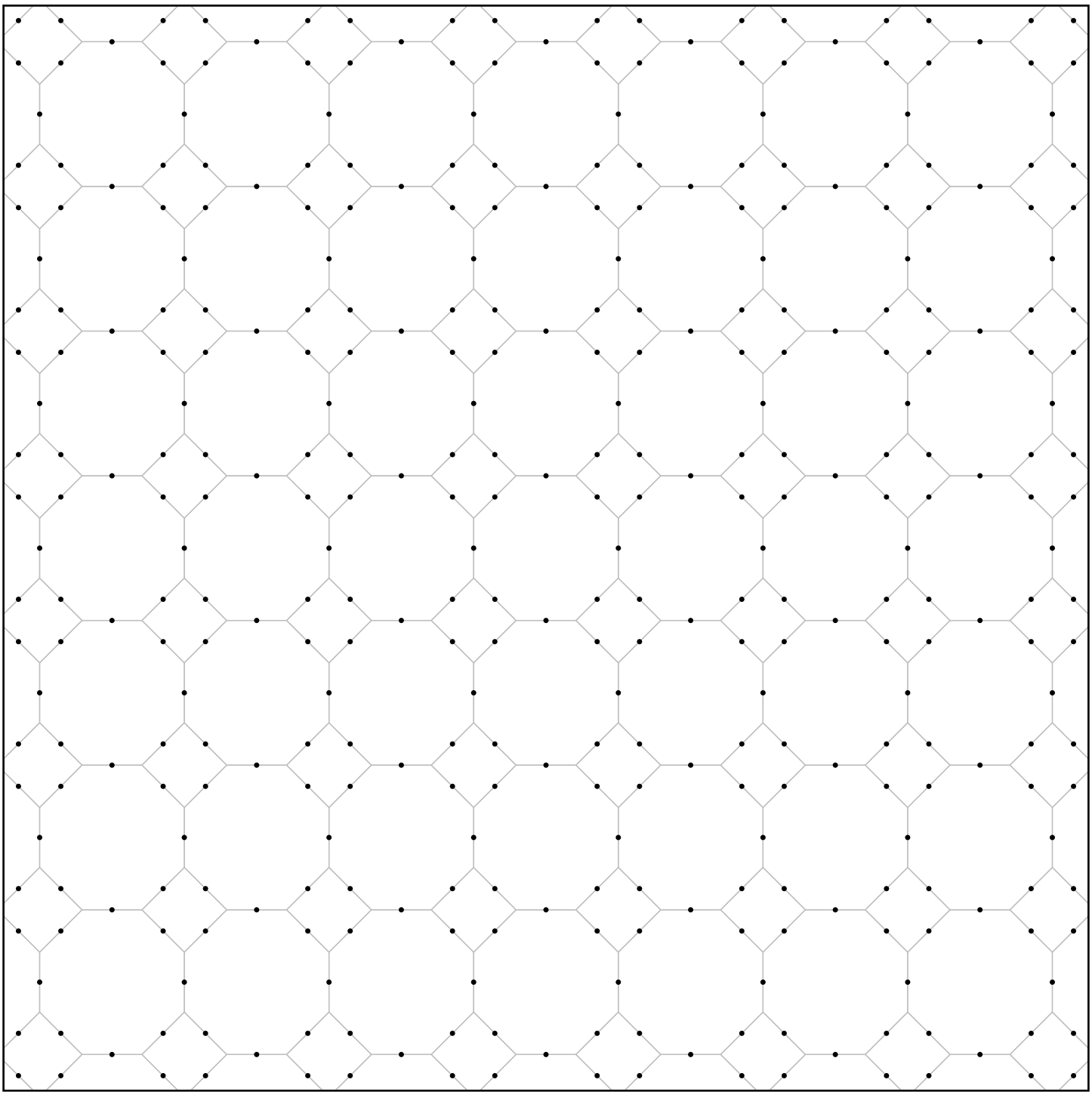
Squares: 4 meet at every corner



Hexagons: 3 meet at every corner

Turn the tiling into an Islamic star pattern

1. Every edge has a dot at its middle. From each dot, draw two lines into each shape, leaning about 67° from the edge (like a narrow V).
2. Stop each line where it meets a line from the next edge.
3. Go over the new lines in pen: eight-pointed stars appear in the octagons.



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The finished pattern: colour it in

Check your drawing against it. Colour every star the same, then the petals: the symmetry shows.

