

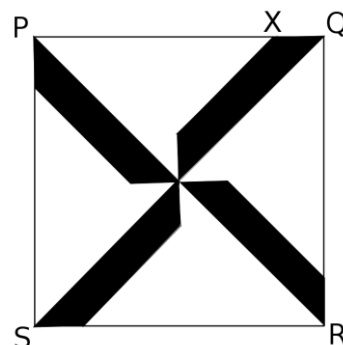


Stage 4 ★★
Mixed Selection 1

1. Quarters

Four congruent isosceles trapeziums are placed so that their longer parallel sides form the diagonals of a square PQRS, as shown. The point X divides PQ in the ratio 3:1.

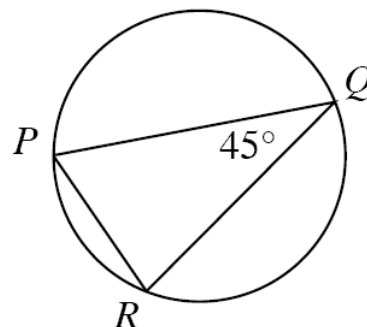
What fraction of the square is shaded?



2. Angle to chord

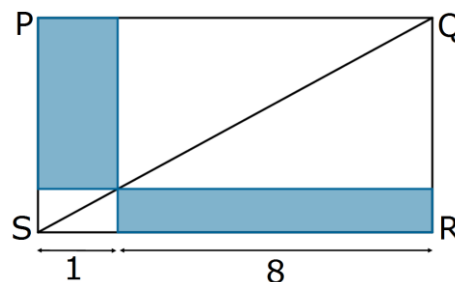
P , Q and R are points on the circumference of a circle of radius 4cm. $\angle PQR = 45^\circ$.

What is the length of chord PR ?



3. Diagonal touch

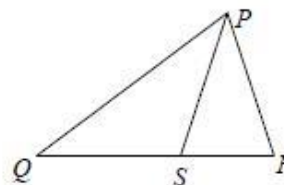
What fraction of rectangle PQRS is shaded?



4. Isosceles reduction

PQR is a triangle and S is a point on QR . $QP = QR = 9\text{cm}$ and $PR = PS = 6\text{cm}$.

What is the length of SR ?



These problems are adapted from UKMT Mathematical Challenge problems (ukmt.org.uk)