

## Quadrilaterals — questions

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### Question 1

Consider quadrilaterals for which

- (i) the perimeter is 8 cm, and
- (ii) the length of each side is a whole number of centimetres.

What types of quadrilateral are possible?

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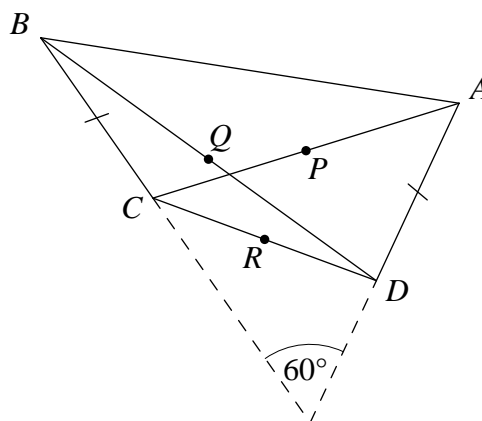
### Question 2

Consider quadrilaterals whose diagonals are perpendicular.

- (a) Suppose the diagonals have lengths  $p$  cm and  $q$  cm. What is the area of the quadrilateral in terms of  $p$  and  $q$ ? Prove your result.
  - (b) Suppose the sides (in order) have lengths  $a$  cm,  $b$  cm,  $c$  cm and  $d$  cm. Find a relationship between  $a$ ,  $b$ ,  $c$  and  $d$ . Prove your result.
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### Question 3

A convex quadrilateral  $ABCD$  is said to be *equilic* if the sides  $AD$  and  $BC$  are equal and are inclined at  $60^\circ$  to each other, as shown in the diagram.



Let the midpoints of the diagonals  $AC$ ,  $BD$  and the side  $CD$  of an equilic quadrilateral be  $P$ ,  $Q$  and  $R$ .

Prove that triangle  $PQR$  is equilateral.

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