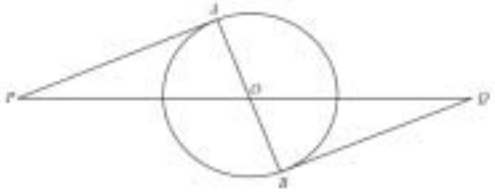
1	$A\hat{C}D = D\hat{C}E$, shared angle $A\hat{D}C = D\hat{E}C = 90$, [given] $D\hat{A}C = E\hat{D}C$ [third] angles in a triangle Three angles equal, therefore the triangles are similar	**3**	**B2** for two correct pairs of angles with correct reasons or **B1** for one correct pair of angles with correct reason or two correct pairs of angles with incorrect/no reasons
2	*AC*=*BD* equal diameters *AB* is common $\angle ABC = \angle BAD = 90°$ angle in semicircle Congruent RHS	**3**	**B1** for correct pair of angles and one correct pair of sides or for two correct pairs of sides **B1** for correct reasons for two pairs of sides/angles
3	*OA* = *OC* radii $\angle APO = \angle CQO$ perpendicular to chord *AP* = *CQ* midpoints [of equal chords] RHS **OR** *OA* = *OC* radii *OP* = *OQ* equal chords [equidistant from centre] *AP* = *CQ* midpoints [of equal chords] SSS **OR** *OP* = *OQ* equal chords [equidistant from centre] $\angle APO = \angle CQO$ perpendicular to chord *AP* = *CQ* midpoints [of equal chords] SAS	**3**	**B1** for the correct pair of angles and one correct pair of sides or for two correct pairs of sides **B1** for correct reason for two pairs of sides/angles
4	$\angle BAX = \angle OCX$, alternate [angles] $\angle ABX = \angle COX$, alternate [angles] $\angle AXB = \angle CXO$, [vertically] opposite	**3**	**B1** for two correct pairs of angles **B1** for correct reason for one pair of angles
5	$\angle POA = \angle QOB$ vertically opposite *AO* = *OB* equal radii $\angle PAO = \angle QBO = 90°$ tangent perpendicular to radius 	3*	**B1** for two pairs of equal angles: $\angle POA = \angle QOB$ **and** $\angle PAO = \angle QBO$ or for one pair of angles and pair of sides: $\angle POA = \angle QOB$ **or** $\angle PAO = \angle QBO$ **and** *AO* = *OB* AND **B1** for a correct reason linked with a correct pair of angles / sides

6	$x = 45$ $y = 20$ $z = 115$	1 1 1	
7	$p = 3.8$ $q = 77°$	2	**B1** for one correct
8 (a)	140	**1**	
(b)	1.2	**2**	**M1** for $3\times\left(\frac{7}{5}-1\right)$; or $3\times\left(\frac{their(a)}{100}-1\right)$; oe or a complete algebraic method.
9 (a)	1 : 2 oe	**1**	
(b)	1 : 8 oe, or ft *their*(a) cubed	**1**√	
10 (a) (i)	$EC = BE$ or $AC = FE$ **and** $\angle AEC = \angle FBE$ or $\angle ECA = \angle BEF$ Two correct reasons for their choices Third statement, leading to correct congruence condition i.e. RHS, SAS, SSA	B1 B1 B1	Statements and reasons: $EC = BE$; radii $AC = FE$; diameters $\angle AEC = \angle FBE$ [= 90°]; angle in semicircle $\angle ECA = \angle BEF$ [= 60°]; equilateral triangle
(ii)	*BFD*	1	
11 (a)	Establishing, with reasons, that two pairs of angles are equal; and a conclusion (or an introductory statement), that the triangles are similar. e.g. $A\hat{B}D = B\hat{D}C$ (alternate angles) $A\hat{D}B = B\hat{C}D$ (given) Since two angles are equal, triangles *ABD* and *BDC* are similar.	2	**B1** for $A\hat{B}D = B\hat{D}C$, **with** mention of alternate angles
(b) (i)	6.3	2	**B1** for $\frac{BC}{4.2}=\frac{6}{4}$ oe
(ii)	$\frac{4}{9}$	1	
12 (i)	Similar triangles established www	**2**	**B1** for a correct pair of equal angles
(ii)	7.2	**2**	**B1** for corresponding sides in the ratio 5 : 2 soi

13	**(a)** 3 **(b)** $13\frac{1}{2}$ oe **(c)** $4\frac{1}{2}$ oe	**1** **1** **1**	
14	**(a)** $180 - x - y$ or $180 - (x + y)$ only **(b)** $3\frac{3}{4}$ or any equiv. **(c)** $\frac{9}{16}$	**1** **1** **1**	
15	18	2	B1 for attempt at $\sqrt[3]{8}$: $\sqrt[3]{27}$ or M1 for $12^3 : x^3 = 8 : 27$ oe