Sr. No.	Questions	A	B	C	D
1	If two polygons are similar, then:	their corresponding angles are equal. ✓	their areas are equal.	their volumes are equal.	their corresponding sides are equal.
2	The ratio of the areas of two similar polygons is:	equal to the ratio of their perimeters.	equal to the square of the ratio of their corresponding sides. ✓	equal to the cube of the ratio of their corresponding sides.	equal to the sum of their corresponding sides.
3	If the volume of two similar solids is $125\ cm^3$ and $27\ cm^3$, the ratio of their corresponding heights is:	$3:5$	$5:3$✓	$25:9$	$9:25$
4	The exterior angle of a regular pentagon is:	40°	45°	60°	72°✓
5	A parallelogram has an area of $64\ cm^2$ and a similar parallelogram has an area of $144\ cm^2$. If a side of the smaller parallelogram is $8\ cm$, the corresponding side of the larger parallelogram is:	$10\ cm$	$12\ cm$✓	$18\ cm$	$16\ cm$
6	The total number of diagonals in a polygon with 9 sides is:	18	21	25	27✓
7	Two spheres are similar, and their radii are in the ratio $4:5$. If the surface area of the larger sphere is $500\pi\ cm^2$, what is the surface area of the smaller sphere?	$256\pi\ cm^2$	$320\pi\ cm^2$✓	$400\pi\ cm^2$	$405\pi\ cm^2$
8	A regular polygon has an exterior angle of 30°. How many diagonals does the polygon have?	54✓	90	72	108
9	In a regular hexagon, the ratio of the length of a diagonal to the side length is:	$\sqrt{3}:1$	$2:1$✓	$3:2$	$2:3$
10	A regular polygon has an interior angle of 165°. How many sides does it have?	15	16	20	24✓

Solution of MCQs

1	Similar polygons have corresponding angles equal and corresponding sides proportional.
2	The area ratio of similar polygons is the square of the ratio of their corresponding sides.
3	$$\frac{V_1}{V_2} = \left(\frac{l_1}{l_2}\right)^3$$ $$\Rightarrow \frac{125}{27} = \left(\frac{l_1}{l_2}\right)^3$$ $$\sqrt[3]{\frac{125}{27}} = \sqrt[3]{\left(\frac{l_1}{l_2}\right)^3}$$ $$\frac{5}{3} = \frac{l_1}{l_2}$$ $$\frac{l_1}{l_2} = \frac{5}{3}$$
4	Exterior angle of pentagon is $= \frac{360^\circ}{5} = 72^\circ$
5	Ratio of areas of similar figures $\frac{A_1}{A_2} = \left(\frac{l_1}{l_2}\right)^2$ $$\frac{64}{144} = \left(\frac{8}{l_2}\right)^2$$ $$\sqrt{\frac{64}{144}} = \sqrt{\left(\frac{8}{l_2}\right)^2}$$ $$\frac{8}{12} = \frac{8}{l_2}$$ $$l_2 \times 8 = 12 \times 8$$ $$l_2 = \frac{96}{2}$$ $$l_2 = 12\ cm$$
6	The total number of diagonals in a polygon with 9 sides is $= \frac{n(n-3)}{2} = \frac{9(9-3)}{2} = \frac{54}{2} = 27$
7	Ratio of areas of similar figures is $\frac{A_1}{A_2} = \left(\frac{l_1}{l_2}\right)^2$ $$\frac{A_1}{500\pi} = \left(\frac{4}{5}\right)^2$$ $$\frac{A_1}{500\pi} = \frac{16}{25}$$ $$A_1 \times 25 = 16 \times 500\pi$$ $$A_1 = \frac{16 \times 500\pi}{25}$$ $$A_1 = 320\pi$$
8	Exterior angle of a regular polygon is given $$Exterior\ Angle = \frac{360^\circ}{n}$$ $$30^\circ = \frac{360^\circ}{n}$$ $$n = \frac{360^\circ}{30^\circ}$$ $$no.of\ sides = 12$$ Now the total number of diagonals in a polygon with 12 sides is $= \frac{n(n-3)}{2} = \frac{12(12-3)}{2} = \frac{108}{2} = 54$
9	In a regular hexagon, the longest diagonal connects opposite vertices and is **twice the side length**, so the ratio is 2: 1.

10	Exterior angle $= 180^\circ - 165^\circ = 15^\circ$ $$Exterior\ Angle = \frac{360^\circ}{n}$$ $$15^\circ = \frac{360^\circ}{n}$$ $$n = \frac{360^\circ}{15^\circ}$$ $$no.of\ sides = 24$$