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| **Mixed Volume and Surface Area Problems** | | | |
| **(a)** | **(b)** | **(c)** | **(d)** |
| The surface area of a sphere with radius is equal to the curved surface area of a cylinder with the same radius as the sphere and height . Find the height . | A cylinder with height and radius has the same volume as a sphere with radius . Find the value of . | A metal cylinder is to be melted down and turned into spheres with radius . The cylinder has a radius of and a height of . How many whole spheres can be made? | A cone with slanted height and radius has the same curved surface area as a hemisphere. Find the radius of the hemisphere. |
| **(e)** | **(f)** | **(g)** | **(h)** |
| A cylinder has a radius and height . A sphere has radius . Find the ratio of the volume of the sphere to the volume of the cylinder in its simplest form. | A hemisphere with radius has the same total surface area as a cylinder with radius . Find the height of the cylinder in terms of . | A cone has a radius of and a height of . A sphere has a radius of . The ratio of the volume of the cone to the volume of the sphere is . Find the value of as a fraction in its simplest form. | A hemisphere of radius is attached to the base of a cone with radius and slant height . The total surface area of the compound shape is . Find the volume of the compound shape. |