Cylinder surface area

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Find the total surface area of a closed cylinder with radius 4 cm and height 6 cm. Give an exact answer. [2 marks]

$2\pi(4^2) + 2\pi(4)(6) = 32\pi + 48\pi = 80\pi$ cm².

Answer: 80π cm²

2. A closed cylinder has diameter 10 cm and height 7 cm. Find its surface area. [2 marks]

The radius is 5 cm. Area $= 2\pi(25) + 2\pi(5)(7) = 50\pi + 70\pi = 120\pi$ cm².

Answer: 120π cm²

3. Find the curved surface area of a cylinder with radius 3 cm and height 12 cm. [2 marks]

$2\pi rh = 2\pi(3)(12) = 72\pi$ cm².

Answer: 72π cm²

4. An open cylindrical container has radius 5 cm and height 10 cm. It has one base. Find its material area. [3 marks]

One base 25π plus wall $2\pi(5)(10) = 100\pi$ gives 125π cm².

Answer: 125π cm²

5. A label covers only the wall of a can with radius 2 cm and height 6 cm. Find the label area. [2 marks]

Only curved area is needed: $2\pi(2)(6) = 24\pi$ cm².

Answer: 24π cm²

6. A closed cylinder has radius 3 cm and total surface area 90π cm². Find its height. [3 marks]

$18\pi + 6\pi h = 90\pi$. Divide by π: $18 + 6h = 90$, so $h = 12$ cm.

Answer: 12 cm