Name _____ Date _____ Class _____

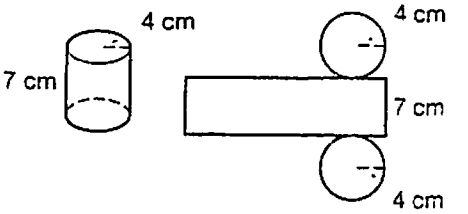
SKILL 16: Surface Area of Cylinders

All of a prism's faces are flat. Other three-dimensional objects have circular faces and curved sides. A **cylinder** has two parallel circular bases with the same radius.

You can use a net to see shapes and dimensions of the faces. Then you can use area formulas to calculate surface areas.

Example

Find the surface area of the cylinder. Use $\pi = 3.14$.



Find the area of each part of the net.

First find the area of each circle.

$A = \pi \times r^2 = 3.14 \times 4^2 = 3.14 \times 4 \times 4 \approx 50.24 \text{ cm}^2$

The length of the rectangle is equal to the circumference of the circle.

$C = 2 \times \pi \times r = 2 \times 3.14 \times 4 = 25.12 \text{ cm}$

The width of the rectangle is equal to the height of the cylinder, 7. Multiply 25.12 by 7.

$A = 25.12 \times 7 = 175.84 \text{ cm}^2$

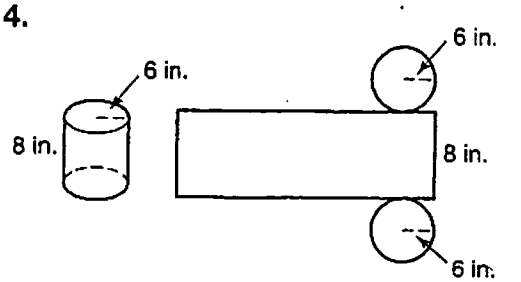
Add the areas to find the surface area.

$(2 \times 50.24)\text{cm}^2 + 175.84 \text{ cm}^2 = 276.32 \text{ cm}^2$

So, the surface area of the cylinder is 276.32 cm^2.

Guided Practice

Find the surface area of the cylinder. Use $\pi = 3.14$.



1. Area of each base $= \pi \times r^2$

$= 3.14 \times$ _____

$= 3.14 \times$ _____

$=$ _____ in^2

2. Length of rectangle (circumference of circle) $= 2 \times \pi \times r$

$= 2 \times 3.14 \times$ _____

$=$ _____

3. Width of the rectangle = _____

4. Area of the rectangle = length × width = _____ × _____ = _____ in^2

5. Surface area of the cylinder = area of both bases + area of rectangle

= (_____ × 113.04) + _____

= _____ in^2

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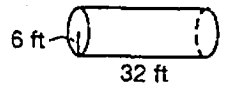
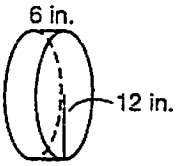
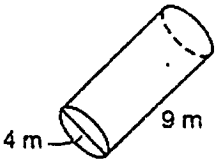
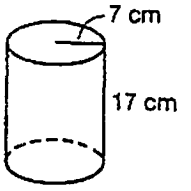
SKILL 16: Practice

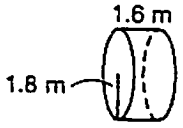
Find the surface area of each cylinder. Use 3.14 for π.

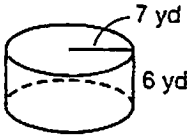
1. 

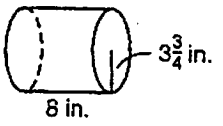
2. 

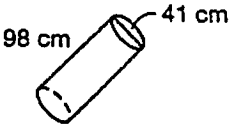
3. 

4. 

5. 

6. 

7. 

8. 

Given the radius and height of each cylinder, find the surface area (*SA*). Use 3.14 for π. Round to the nearest whole number.

9. $r = 3.8$ ft, $h = 15$ ft
   SA = _____

10. $r = 21$ m, $h = 4$ m
    SA = _____

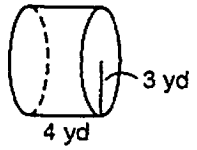
11. $r = 12$ in., $h = 13$ in.
    SA = _____

Solve. Round to the nearest whole number.

12. An oatmeal box has the shape of a cylinder with diameter $3\frac{7}{8}$ in. and height 7 in. What is the surface area of the box?
    _____

TEST PREP

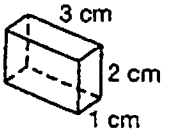
13. What is the surface area of the cylinder? Use 3.14 for π.



Skill 16

A 75.36 yd^2
B 131.88 yd^2
C 103.62 yd^2
D 150.72 yd^2

14. What is the surface area of the prism?



Skill 15

F 6 cm^2
G 11 cm^2
H 18 cm^2
J 22 cm^2