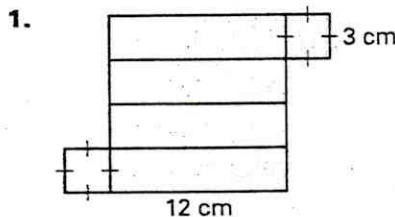


LESSON 122

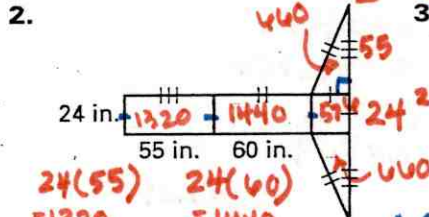
Practice

For use with pages 802-809

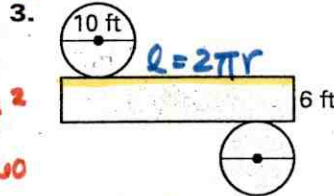
Find the surface area of the solid formed by the net. Round your answer to two decimal places.



$S = 2(9) + 4(36)$
 $S = 162 \text{ cm}^2$

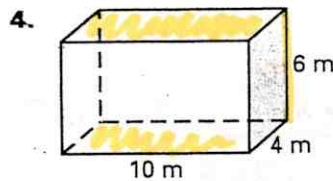


$2(\Delta) \rightarrow 2\left(\frac{55(24)}{2}\right)$
 $24(55) = 1320$
 $24(60) = 1440$
 $S = 4656 \text{ in}^2$

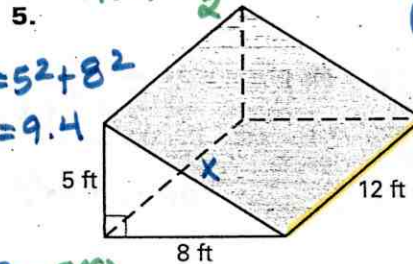


$A(\text{circle}) = \pi r^2$
 $\pi(5)^2 = 25\pi$
 $A(\text{rectangle}) = lw$
 $6(2\pi(5)) = 60\pi$
 $S = 85\pi \text{ ft}^2$

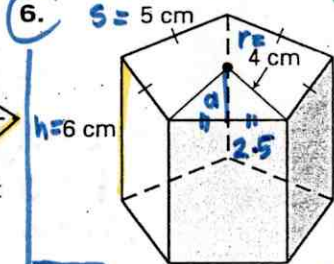
Find the surface area of the right prism. Round your answer to two decimal places.



$B = 10(4) = 40$
 $P = 2(10) + 2(4) = 28$
 $h = 6$
 $S = 2(40) + 28(6)$
 $S = 248 \text{ m}^2$



$A(\Delta) = \frac{bh}{2}$
 $x^2 = 5^2 + 8^2$
 $x = 9.4$
 $B = \frac{5(8)}{2} = 20$
 $P = 5 + 8 + 9.4 = 22.4$
 $h = 6$
 $S = 2(20) + 22.4(6)$
 $S = 308.8 \text{ ft}^2$



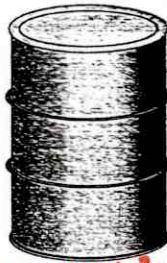
$A(\text{Pentagon}) = \frac{aP}{2}$
 $S = 5 \text{ cm}$
 $h = 6 \text{ cm}$
 $B = \frac{3.12(25)}{2} = 39$
 $h = 6$
 $S = 2(39) + 25(6)$
 $S = 228 \text{ cm}^2$

Find the surface area of the right cylinder using the given radius r and height h . Round your answer to two decimal places.

7. $r = 5 \text{ cm}; h = 15 \text{ cm}$ 8. $r = 1.1 \text{ ft}; h = 3.2 \text{ ft}$ 9. $r = 12 \text{ in.}; h = 18 \text{ in.}$



$S = 2\pi(5)^2 + 2\pi(5)(15)$
 $= 50\pi + 150\pi$
 $S = 200\pi \text{ cm}^2$



$S = 2\pi(1.1)^2 + 2\pi(1.1)(3.2)$
 $= 2.42\pi + 7.04\pi$
 $S = 9.46\pi \text{ ft}^2$



$S = 2\pi(12)^2 + 2\pi(12)(18)$
 $= 288\pi + 432\pi$
 $S = 720\pi \text{ in}^2$

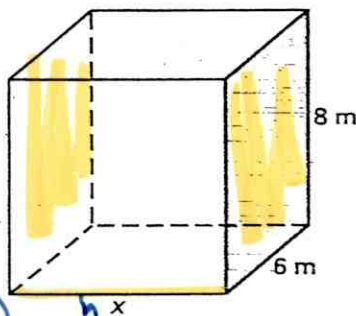
LESSON 12.2

Practice *continued*
For use with pages 802-809

$S = 2B + Ph$

Solve for x given the surface area S of the right prism or right cylinder.
Round your answer to two decimal places.

10. $S = 320 \text{ m}^2$



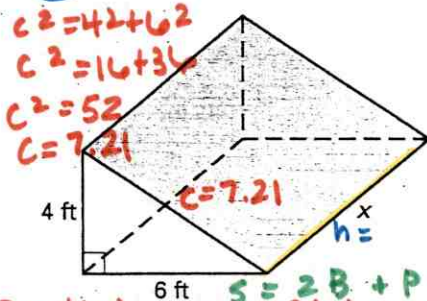
$B = 8(6)$
 $= 48$

$P = 2(8) + 2(6)$
 $= 28$

$S = 2B + Ph$
 $320 = 2(48) + 28x$

$x = 8 \text{ m}$

11. $S = 200 \text{ ft}^2$



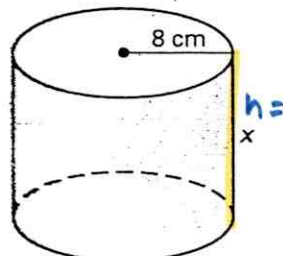
$c^2 = 4^2 + 6^2$
 $c^2 = 16 + 36$
 $c^2 = 52$
 $c = 7.21$

$B = \frac{4(6)}{2}$
 $= 12$

$P = 7.21 + 4 + 6$
 $P = 17.21$

$S = 2B + Ph$
 $200 = 2(12) + 17.21x$
 $200 = 24 + 17.21x$
 $176 = 17.21x$
 $x = 10.23 \text{ ft}$

12. $S = 1000 \text{ cm}^2$



$S = 2\pi r^2 + 2\pi rh$

$1000 = 2\pi(8)^2 + 2\pi(8)x$
 $1000 = 128\pi + 16\pi x$
 $597.88 = 16\pi x$
 $x = 11.89 \text{ cm}$

13. **Surface Area of a Prism** A rectangular prism has a base with a width of x units and a height of y units. The depth of the prism is z units. Write the surface area S in terms of x , y , and z .

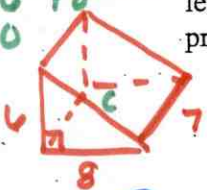


$S = 2B + Ph$

$B = xy$
 $P = 2x + 2y$
 $h = z$

$S = 2(xy) + (2x + 2y)z$ units²
or $S = 2xy + 2xz + 2yz$

14. **Surface Area of a Prism** A triangular prism with a right triangular base has one leg length that is 6 inches and the other leg length that is 8 inches. The height of the prism is 7 inches. What is the surface area of the prism?



$B = \frac{6(8)}{2}$
 $= 24$
 $P = 6 + 8 + 10$
 $P = 24$
 $h = 7$

$S = 2B + Ph$
 $S = 2(24) + 24(7)$
 $S = 48 + 168$
 $S = 216 \text{ in}^2$

15. **Surface Area of a Prism** A triangular prism with a triangular base has legs with lengths of 5 inches, 5 inches, and 6 inches. The height of the prism is 10 inches. What is the surface area of the prism?



$5^2 = 3^2 + h^2$
 $25 = 9 + h^2$
 $16 = h^2$
 $h = 4$

$B = \frac{6(4)}{2}$
 $= 12$
 $h = 10$
 $P = 5 + 5 + 6$
 $= 16$
 $S = 2(12) + 16(10)$
 $S = 184 \text{ in}^2$

16. **Multiple Choice** The radius and height of a right cylinder are each multiplied by 2. What is the change in the surface area of the cylinder?

- A. The surface area is 2 times the original surface area.
- B. The surface area is 4 times the original surface area.
- C. The surface area is 6 times the original surface area.
- D. The surface area is 8 times the original surface area.

Ratio of sides	Ratio of Area
1	1
2	4

Side lengths are doubled

LESSON
12.2

Practice *continued*

For use with pages 802-809

17. **Surface Area of a Cylinder** The radius and height of a right cylinder are each divided by 2. What is the change in surface area of the cylinder?

	Ratio of Sides	Ratio of Area	
← ÷2	$\frac{2}{1}$	$\frac{4}{1}$	→ ÷4

The new cylinder is $\frac{1}{4}$ the size of the original

18. **Radius of a Cylinder** Find the radius of a right cylinder with a surface area of 48π square feet. The height of the cylinder is 5 feet.

$S = 48\pi$
 $h = 5$

$48\pi = 2\pi r(5) + 2\pi r^2$
 $48\pi = 10\pi r + 2\pi r^2$
 $0 = 2\pi r^2 + 10\pi r - 48\pi$

$S = 2\pi rh + 2\pi r^2$
 $0 = r^2 + 5r - 24$
 $(r + 8)(r - 3) = 0$
 $r = -8, 3$

$r = 3$

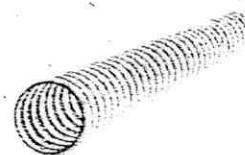
Can't have a negative length

19. **Candy Box** As a birthday present for a friend, you buy a cylindrical box of candy. The diameter of the box is 6 inches and the height is 8 inches. What is the minimum amount of wrapping paper needed to wrap the gift? Round your answer to two decimal places.



In Exercises 20-22, use the following information.

Water Drainage Pipe The figure at the right shows a drainage pipe that is needed for the construction of a new driveway. The pipe has a length of 15 feet and a diameter that is one tenth that of the length. Round your answers to two decimal places.



20. If the design is to have at least one foot of pavement over the drainage pipe, what is the minimum depth of the ditch?
21. What is the surface area of the drainage pipe?
22. What is the surface area of the drainage pipe, if the diameter of the pipe is one sixth of the length of the pipe?