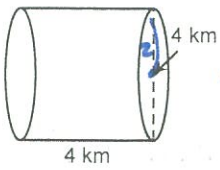
Surface Area and Volume Practice

Date_____ Period____

Find the surface area of each figure. Round your answers to the nearest hundredth, if necessary. Leave your answers in terms of π for answers that contain π.

1)



$B = 4\pi\ km^2$
$C = 4\pi\ km$
$h = 4\ km$

$SA = 2(4\pi) + 4\pi(4)$
$= 8\pi + 16\pi = 24\pi\ km^2$

$V = 4\pi \cdot 4 = 16\pi\ km^3$

2)

$B = 4\pi\ mi^2$
$C = 4\pi\ mi$
$l = 11.2\ mi$
$h = 11.02\ mi$

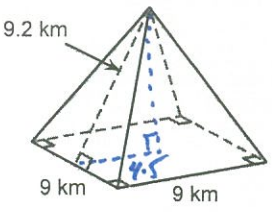
$2^2 + h^2 = 11.2^2$
$h^2 = 11.02$

$SA = 4\pi + \frac{1}{2}4\pi(11.2)$
$= 4\pi + 22.4\pi = 26.4\pi\ mi^2$

$V = \frac{1}{3}(4\pi)(11.02) \approx 14.69\pi\ mi^3$

$4.5^2 + h^2 = 9.2^2$

3)

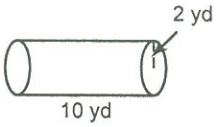


$B = 81\ km^2$
$P = 36\ km$
$l = 9.2\ km$
$h \approx 8.02$

$S.A = 81\ km^2 + \frac{1}{2}(36\ km)(9.2\ km)$
$= 81\ km^2 + 165.6\ km^2$
$= 246.6\ km^2$

$V = \frac{1}{3}(81)(8.02) = 216.54\ km^3$

4)



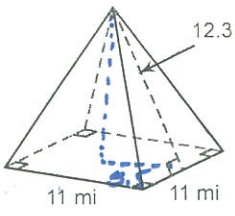
$B = 4\pi\ yd^2$
$C = 4\pi\ yd$
$h = 10$

$SA = 2(4\pi) + 4\pi(10)$
$= 8\pi + 40\pi = 48\pi\ yd^2$

$V = 4\pi(10) = 40\pi\ yd^3$

$h^2 = 12.3^2 - 5.5^2 \approx 121.04$

5)



$B = 121 mi^2$

$P = 44 mi$

$\ell = 12.3 mi$

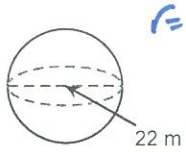
$h \approx 11$

$S.A. = 121 + \frac{1}{2}(44)(12.3)$

$= 391.6 mi^2$

$V = \frac{1}{3}(121)(11) \approx 443.67 mi^3$

6)



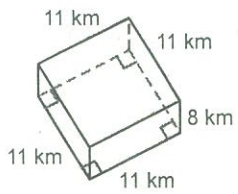
$r = 11m$

$SA = 4\pi(11)^2$

$= 484\pi m^2$

$V = \frac{4}{3}\pi(11)^3 \approx 1774.67 m^3$

7)



$B = 121 km$

$P = 44 km$

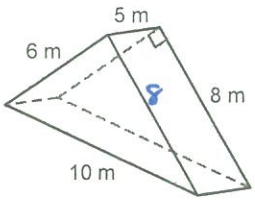
$h = 8 km$

$S.A = 2(121) + 44(8)$

$= 594 km^2$

$V = (121)(8) = 968 km^3$

8)



$B = \frac{1}{2}(6)(8) = 24m^2$

$h = 5m$

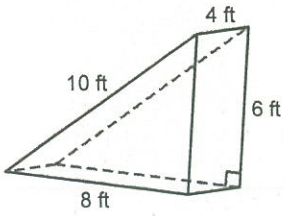
$P = 24m$

$SA = 2(24) + 24(5)$

$= 168m^2$

$V = 24(5) = 120m^3$

9)



$B = 24 ft^2$

$P = 24 ft$

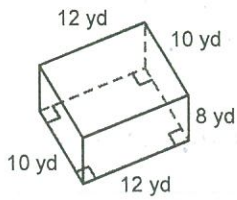
$h = 4ft$

$SA = 2(24) + 24(4)$

$= 144 ft^2$

$V = 24(4) = 96 ft^3$

10)



$B = 12(10) = 120 yd^2$

$P = 44 yd$

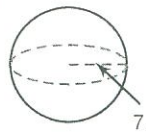
$h = 8 yd$

$SA = 2(120) + 44(8)$

$= 592 yd^2$

$V = 120(8) = 960 yd^3$

11)



$r = 7.4$ in

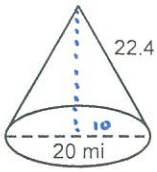
$SA = 4\pi(7.4)^2$

$= 219.04\pi$ in^2

$V = \frac{4}{3}\pi(7.4)^3$

≈ 540.30 in^3

12)



$h = \sqrt{22.4^2 - 10^2}$

$B = 100\pi$ mi^2

$C = 20\pi$ mi

$\ell = 22.4$

$h \approx 20.04$

$SA = 100\pi + \frac{1}{2}(20\pi)(22.4)$

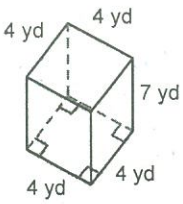
$= 324\pi$ mi^2

$V = \frac{1}{3}(100\pi)(20.04)$

$\approx 668\pi$ mi^3

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary. Leave your answers in terms of π for answers that contain π.

13)



$B = 16$ yd^2

$P = 16$ yd

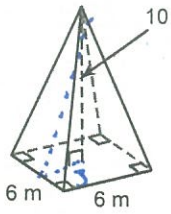
$h = 7$ yd

$SA = 2(16) + 16(7)$

$= 144$ yd^2

$V = 16(7) = 112$ yd^3

14)



$\ell^2 = 3^2 + 10^2 = 109$

$B = 36$m^2

$P = 24$m

$h = 10$m

$\ell \approx 10.44$m

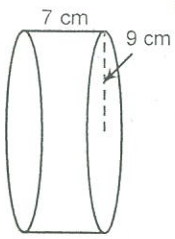
$SA = 36 + \frac{1}{2}(24)(10.44)$

$= 161.28$m^2

$V = \frac{1}{3}(36)(10)$

$= 120$m^3

15)



$B = 81\pi cm^2$

$C = 18\pi cm$

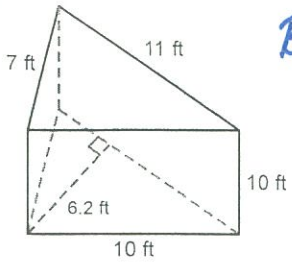
$h = 7cm$

$SA = 2(81\pi) + 18\pi(7)$

$= 288\pi cm^2$

$V = 81\pi(7) = 567\pi cm^3$

16)



$B = \frac{1}{2}(6.2)(11)$

$= 34.1 ft^2$

$P = 28 ft$

$h = 10 ft$

$SA = 2(34.1) + 28(10)$

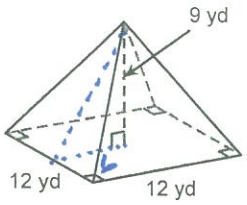
$= 348.2 ft^2$

$V = (34.1)(10) = 341 ft^3$

$l^2 = \sqrt{6^2 + 9^2} \approx 10.82$

$l = \sqrt{10^2 + 20^2} \approx 22.36$

17)



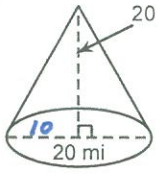
$B = 144 yd^2$

$P = 48 yd$

$h = 9 yd$

$l \approx 10.82 yd$

18)



$B = 100\pi mi^2$

$P = 20\pi mi$

$h = 20 mi$

$l \approx 22.36 mi$

$S.A. = 144 + \frac{1}{2}(48)(10.82)$

$= 403.68 yd^2$

$V = \frac{1}{3}(144)(9) = 432 yd^3$

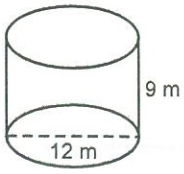
$S.A = 100\pi + \frac{1}{2}(20\pi)(22.36)$

$\approx 323.6\pi mi^2$

$V = \frac{1}{3}(100\pi)(20)$

$\approx 666.67 mi^3$

19)



$B = 36\pi m^2$

$P = 12\pi m$

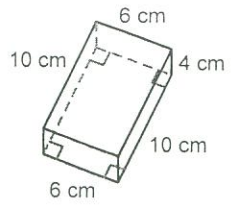
$h = 9m$

$SA = 2(36\pi) + 12\pi(9)$

$= 180\pi m^2$

$V = 36\pi(9) = 324\pi m^3$

20)



$B = 60 cm^2$

$P = 32 cm$

$h = 4 cm$

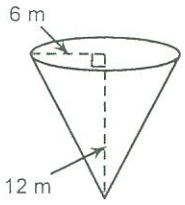
$SA = 2(60) + 32(4)$

$= 248 cm^2$

$V = 60(4) = 240 cm^3$

$x = \sqrt{12^2 - 6^2} =$

21)



$B = 36\pi m^2$

$C = 12\pi m$

$h = 12 m$

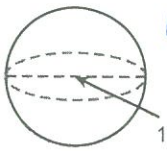
$\ell \approx 10.39 m$

$SA = 36\pi + \frac{1}{2}(12\pi)(10.39)$

$\approx 98.34 m^2$

$V = \frac{1}{3}(36\pi)(12) = 144\pi m^3$

22)



$r = 5.7 km$

$SA = 4\pi(5.7)^2$

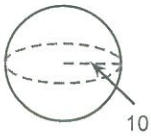
$= 129.96\pi km^2$

$V = \frac{4}{3}(5.7)^3\pi$

$\approx 29.93\pi km^3$

23)

~~$B = 100\pi$~~



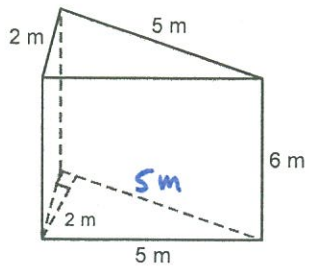
$SA = 4\pi(10)^2$

$= 400\pi km^2$

$V = \frac{4}{3}(10)^3\pi$

$\approx 1333.33\pi km^3$

24)



$B = \frac{1}{2}(2)(5)$

$= 5 m^2$

$P = 12 m$

$h = 6 m$

$SA = 2(5) + 12(6)$

$= 82 m^2$

$V = (5)(6) = 30 m^2$

Answers to Surface Area and Volume Practice (ID: 1)

1) 24π km^2
2) 26.4π mi^2
3) 246.6 km^2
4) 48π yd^2
5) 391.6 mi^2
6) 484π m^2
7) 594 km^2
8) 168 m^2
9) 144 ft^2
10) 592 yd^2
11) 219.04π in^2
12) 324π mi^2
13) 112 yd^3
14) 120 m^3
15) 567π cm^3
16) 341 ft^3
17) 432 yd^3
18) 666.67π mi^3
19) 324π m^3
20) 240 cm^3
21) 144π m^3
22) 246.92π km^3
23) 1333.33π km^3
24) 30 m^3