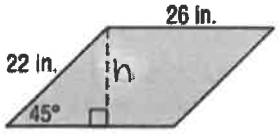
Chapter 11 and 12 Review
Geometry CP

1. Find the area and the perimeter of the following shaded region:

a.



$A = bh$

$A = (26)(22\sin 45)$

$= 404.5 \text{ in}^2$

$\sin 45 = \frac{h}{22}$

$22\sin 45 = h$

$P = 26+26+22+22$

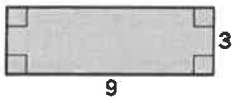
$= 96 \text{ in}$

Area = 404.5 in^2

Perimeter = 96 in

2. Find the area of the following shaded region:

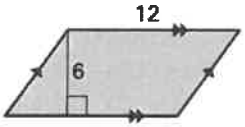
a.



$A = 3(9)$

Area = 27 u^2

b.

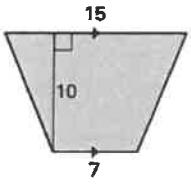


$A = bh$

$= 6(12)$

Area = 72 u^2

c.

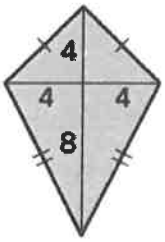


$A = \frac{1}{2}(10)(15+7)$

$= 110 \text{ u}^2$

Area = 110 u^2

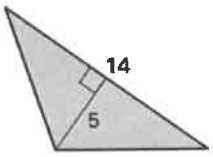
d.



$A = 1/2\ (12)(8)$

Area = 48 u^2

e.

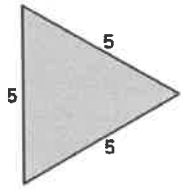


$A = \frac{1}{2} bh$

$= \frac{1}{2}(14)(5)$

Area = $35\ u^2$

f.

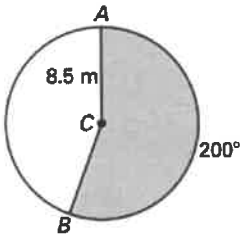


$A = \frac{\sqrt{3}}{4} s^2$

$= \frac{\sqrt{3}}{4}(5)^2$

Area = $10.8\ u^2$

g.

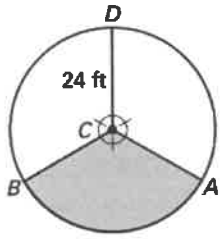


$\frac{A}{\pi(8.5)^2} = \frac{200}{360}$

$A = \frac{200}{360} \cdot (8.5)^2 \pi$

Area = $40.1\pi\ m^2$

h.



$\frac{A}{\pi(24)^2} = \frac{120}{360}$

$A = \frac{1}{3}\pi(24)^2$

Area = $192\pi\ ft^2$

5. Find the radius of the circle given that the area is $81\pi\ cm^2$.

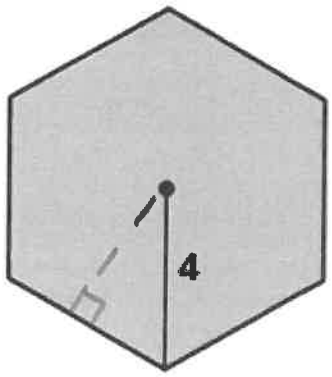
$81\pi = \pi r^2$

$81 = r^2$

$9 = r$

9 cm = r

6. Find the area of the polygon below. Be sure to show all of your work! (13 points total on test)



a. (1 pt) Number of sides = 6

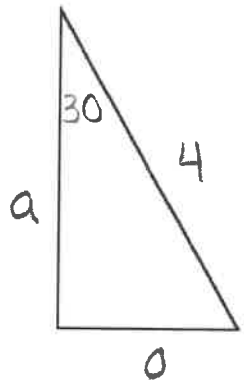
$\frac{360}{6} = 60$

b. (1 pt) Central Angle = 60°

c. (2 pts) Apothem = $4\cos 30$

$\cos 30 = \frac{a}{4}$

$4\cos 30 = a$



d. (3 pts) Side Length = $8\sin 30$

$\sin 30 = \frac{o}{4}$

$4\sin 30 = o$

side = $2(4\sin 30)$

$= 8\sin 30$

e. (2 pts) Perimeter = $48\sin 30$

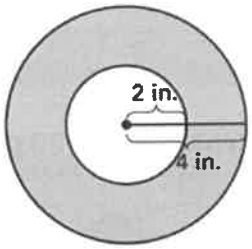
$P = 6(8\sin 30)$

$= 48\sin 30$

f. (4 pts) Area = $41.6\ u^2$

$A = \frac{1}{2}(4\cos 30)(48\sin 30)$

i.



$A = \pi(4)^2 - \pi(2)^2$

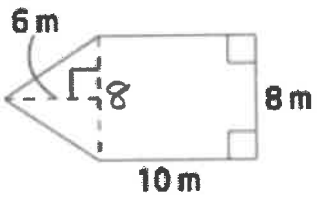
$= 16\pi - 4\pi$

$= 12\pi \text{ in}^2$

Area = $12\pi \text{ in}^2$

3. Find the area of the composite figures.

a.



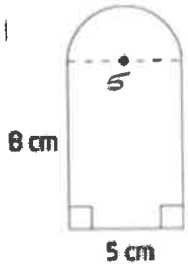
$A = \frac{1}{2}(8)(6) + 8(10)$

$= 24 + 80$

$= 104 \text{ m}^2$

Area = 104 m^2

b.



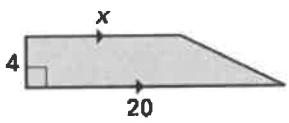
$A = \frac{1}{2}\pi(5/2)^2 + 8(5)$

$= \frac{25}{8}\pi + 40$

$= 49.8 \text{ cm}^2$

Area = 49.8 cm^2

4. The quadrilateral below has an area of 64 square units. Find the value of x.



$64 = \frac{1}{2}h(b_1 + b_2)$

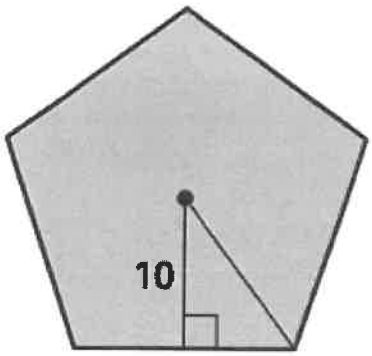
$64 = \frac{1}{2}(4)(x + 20)$

$64 = 2x + 40$

$24 = 2x$

$12 u = x$

7. Find the area of the polygon below. Be sure to show all of your work! (13 points total on test)

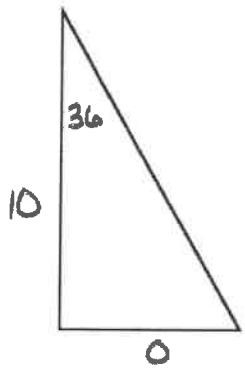


a. (1 pt) Number of sides = 5

$\frac{360}{5}$

b. (1 pt) Central Angle = 72°

c. (2 pts) Apothem = 10



d. (3 pts) Side Length = $20 \tan 36$

$\tan 36 = \frac{0}{10}$

side = $2(10 \tan 36)$

$10 \tan 36 = 0$

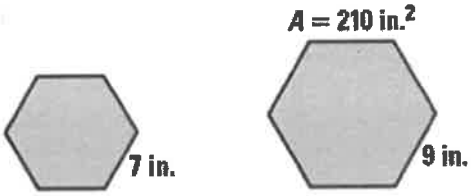
e. (2 pts) Perimeter = $100 \tan 36$

$P = 5(20 \tan 36)$

f. (4 pts) Area = $363.3\ u^2$

$A = \frac{1}{2}(10)(100 \tan 36)$

8. Corresponding lengths in the similar hexagon are given. Find the ratios (small to large) of the perimeters and areas. Find the area of the small hexagon. (6 points)



Perimeter Ratio = 7/9

Area Ratio = 49/81

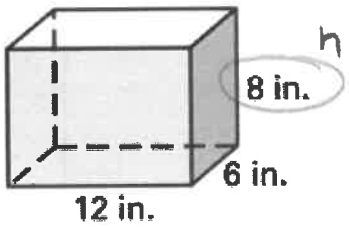
$\frac{A}{210} = \frac{49}{81}$

$81A = 10290$ $A = 127.04 \text{ in}^2$

Area of Small Hexagon = 127.04 in²

9. Find the surface area of the right prisms below:

a.

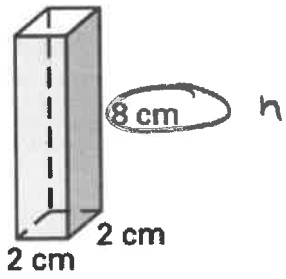


$S = 2B + Ph$

$= 2(12)(6) + (12+12+6+6)(8)$

$= 432 \text{ in}^2$

b.



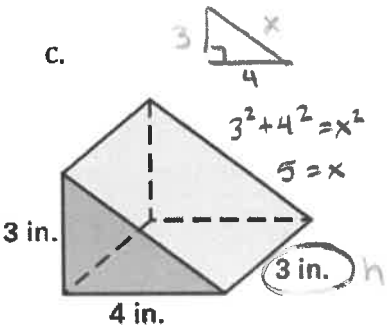
$S = 2B + Ph$

$= 2(2)(2) + (8)(8)$

$= 8 + 64$

$= 72 \text{ cm}^2$

c.

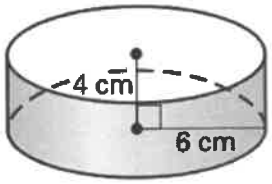


$S = 2\left(\frac{1}{2}(4)(3)\right) + (3+4+5)(3)$

$= 48 \text{ in}^2$

10. Find the surface area of the right cylinders below:

a.



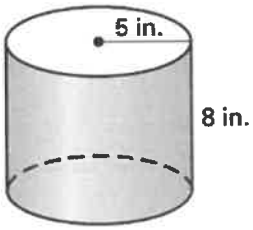
$S = 2\pi r^2 + 2\pi rh$

$= 2\pi(6)^2 + 2\pi(6)(4)$

$= 72\pi + 48\pi$

$= 120\pi \text{ cm}^2$

b.

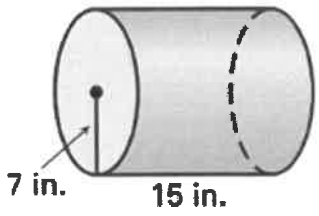


$S = 2\pi(5)^2 + 2\pi(5)(8)$

$= 50\pi + 80\pi$

$= 130\pi \text{ in}^2$

c.



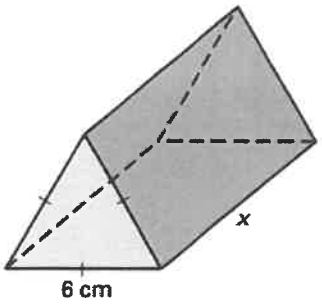
$S = 2\pi(7)^2 + 2\pi(7)(15)$

$= 98\pi + 210\pi$

$= 308\pi \text{ in}^2$

11. Solve for the variable given the surface area of the right prism

$S = 229.2\ cm^2$



$229.2 = 2\left(\frac{\sqrt{3}}{4}(6)^2\right) + (6+6+6)x$

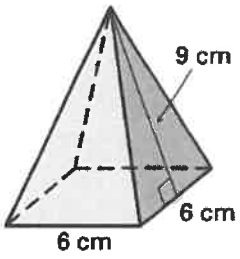
$229.2 = 18\sqrt{3} + 18x$

$198.023 = 18x$

$11\ cm \approx x$

12. Find the surface area of the regular pyramid or right cone:

a.

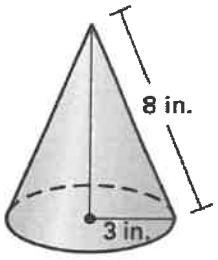


$S = B + \frac{1}{2}Pl$

$= 36 + \frac{1}{2}(24)(9)$

$= 144\ cm^2$

b.

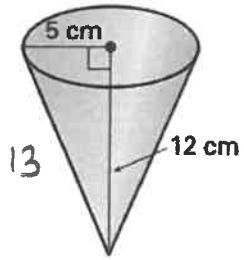


$S = \pi(3)^2 + \pi(3)(8)$

$= 9\pi + 24\pi$

$= 33\pi\ in^2$

c.



$5^2 + 12^2 = l^2$

$169 = l^2$

$13 = l$

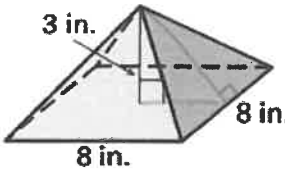
$S = \pi r^2 + \pi r l$

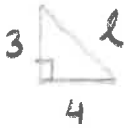
$= \pi(5)^2 + \pi(5)(13)$

$= 25\pi + 65\pi$

$= 90\pi\ cm^2$

d.





$l = 5$

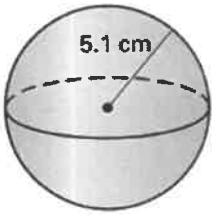
$S = 8(8) + \frac{1}{2}(32)(5)$

$= 64 + 80$

$= 144\ in^2$

13. Find the surface area of the sphere below:

a.



$S = 4\pi (5.1)^2$

$= 104.04\pi \text{ cm}^2$

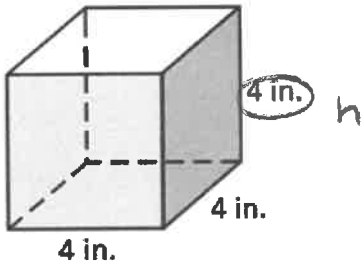
b.

$S = 4\pi (6)^2$

$= 144\pi \text{ cm}^2$

14. Find the volume of the following:

a.

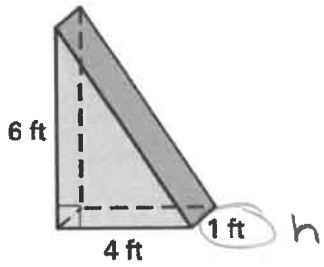


$V = Bh$

$= 16(4)$

$= 64 \text{ in}^3$

b.

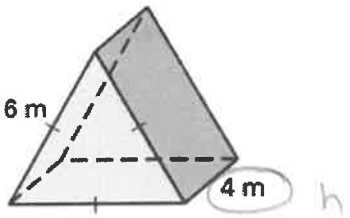


$V = \frac{1}{2}bh_b h$

$= \frac{1}{2}(4)(6)(1)$

$= 12 \text{ ft}^3$

c.

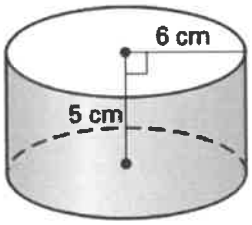


$V = \frac{\sqrt{3}}{4} s^2 h$

$= \frac{\sqrt{3}}{4}(6^2)(4)$

$= 36\sqrt{3} \text{ m}^3 \text{ or } 62.4 \text{ m}^3$

d.



$V = \pi r^2 h$

$= \pi (6)^2 (5)$

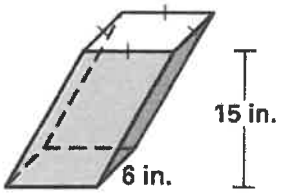
$= 180 \text{ cm}^3$

e.

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

$= 176\pi \text{ in}^3$

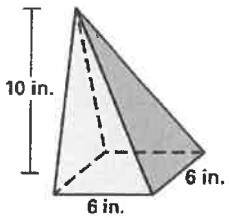
f.



$V = 36(15)$

$= 540 \text{ in}^3$

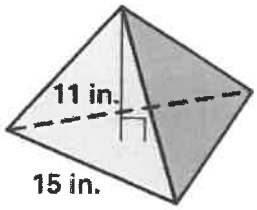
g.



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

$= 120 \text{ in}^3$

h. The pyramid below has a regular polygon for a base:

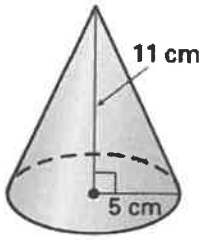


$V = \frac{1}{3}\left(\frac{\sqrt{3}}{4} s^2\right) h$

$= \frac{1}{3}\left(\frac{\sqrt{3}}{4}(15)^2\right)(11)$

$= 357.2 \text{ in}^3$

i.

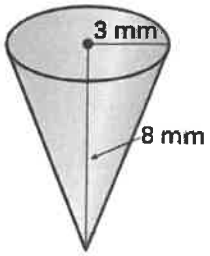


$V = \frac{1}{3}\pi r^2 h$

$= \frac{1}{3}\pi (5)^2 (11)$

$= 91.67\pi \text{ cm}^3$

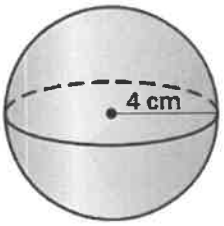
j.



$V = \frac{1}{3}\pi (3)^2 (8)$

$= 24\pi \text{ mm}^3$

k.

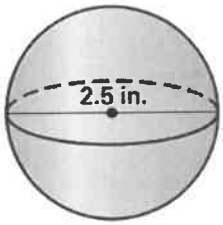


$V = 4/3\ \pi r^3$

$= 4/3\ \pi\ (4)^3$

$= 85.\bar{3}\ \pi\ cm^3$

l.



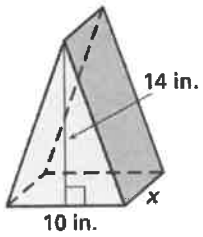
$V = 4/3\ \pi\ (1.25)^3$

$= 2.6\pi\ in^3$

15. Solve for the variable using the given measurements.

a.

Volume = 455 in.^{3}



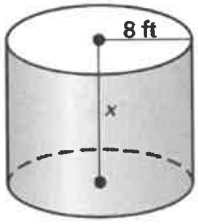
$455 = \frac{1}{2}(10)(14)x$

$455 = 70x$

$6.5\ in = x$

b.

Volume = 2420 ft^3



$2420 = \pi r^2 h$

$2420 = \pi\ (8)^2\ x$

$12.04\ ft \approx x$