Cavalieri's Principle

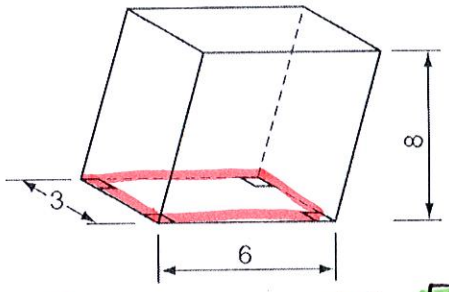
Consider This

Cavalieri's Principle states that the same formula, $V = Bh$, can be used to find the volume of a prism, whether it is a right prism or an oblique prism. The principle can be extended to right and oblique cylinders.

Cavalieri's Principle: If two prisms (solids) having the same height lie between parallel planes and have all cross sections equal distances from the bases with congruent areas, the solids have the same volume.

Find each volume. Use 3.14 for π. Round answers to the nearest cubic unit.

1

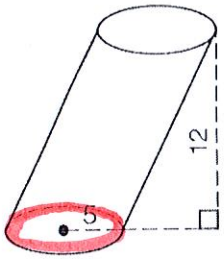


$B = 3 \cdot 6$

$B = 18$

$V = 18(8) = 144$

2



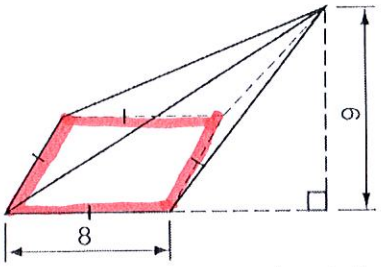
$B = \pi 5^2$

$B = 25\pi$

$V = 25\pi(12)$

$V = 300\pi$

3

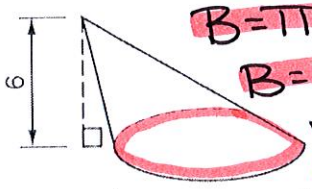


$B = 8 \cdot 8$

$B = 64$

$V = \frac{1}{3}(64)(9) = 192$

4



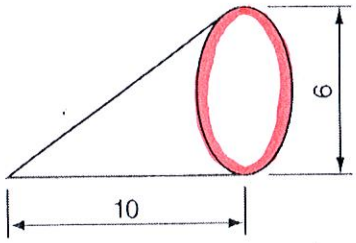
$B = \pi 5^2$

$B = 25\pi$

$V = \frac{1}{3}(25\pi)(6)$

$V = 50\pi$

5



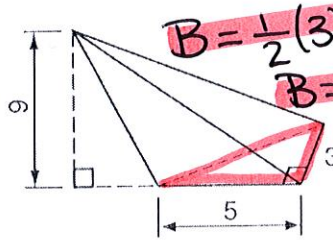
$B = \pi 6^2$

$B = 36\pi$

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

$V = 120\pi$

6



$B = \frac{1}{2}(3)(5)$

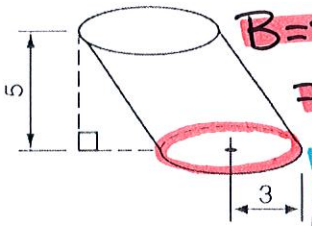
$B = 7.5$

$V = \frac{1}{3}(7.5)9 = 22.5$

V = 94

B = 9 pi

7



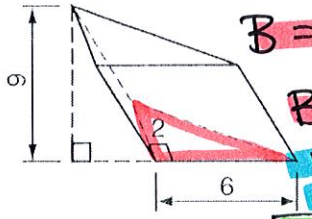
$B=\pi 3^2$

$=9\pi$

$V=(9\pi)(5)$

$V=45\pi$

8



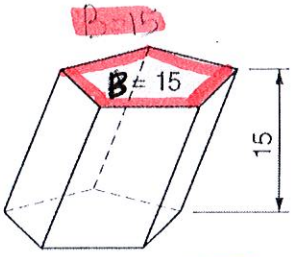
$B=\frac{1}{2}(2)(6)$

$B=6$

$V=(6)(9)$

$V=54$

9

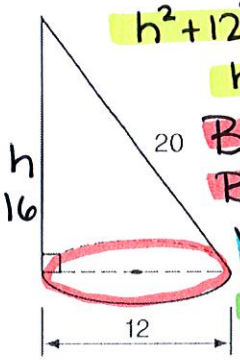


$B=15$

$V=(15)(15)$

$V=225$

10



$h^2+12^2=20^2$

$h=16$

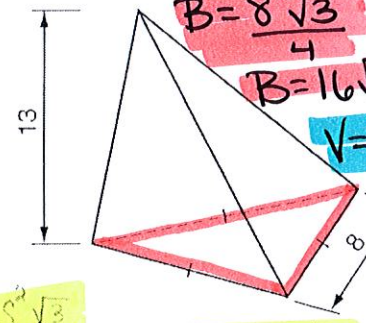
$B=\pi 6^2$

$B=36\pi$

$V=\frac{1}{3}(36\pi)(16)$

$V=192\pi$

11



$B=\frac{8^2\sqrt{3}}{4}$

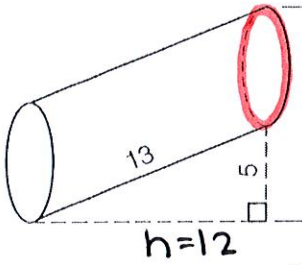
$B=16\sqrt{3}$

$V=\frac{1}{3}(16\sqrt{3})(13)$

$V=120.1$

$B=\frac{s^2\sqrt{3}}{4}$ where s is the side length

12



$h^2+5^2=13^2$

$h=12$

$B=\pi 2.5^2$

$B=6.25\pi$

$V=(6.25\pi)12$

$V=75\pi$

Answer Box

A	B	C	D	E	F
120	94	54	236	603	141
G	H	I	J	K	L
192	225	23	942	157	144