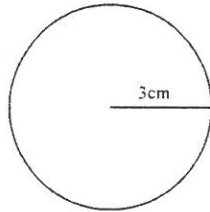


圓面積與柱體

A. 圓周界

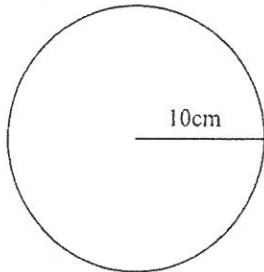
1. 求下列各圖的周界：(答案準確至三位有效數字)

(a).



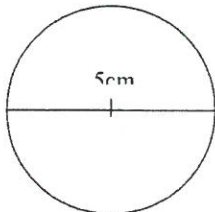
$\pi = 3.14$   
 $2\pi(3)$   
 $\approx 18.8\text{cm}$

(b).



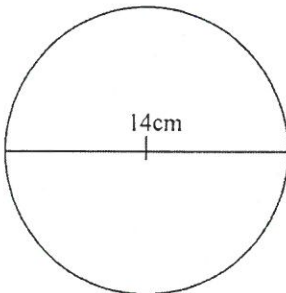
$2\pi(10)$   
 $= 62.8\text{cm}$

(c).



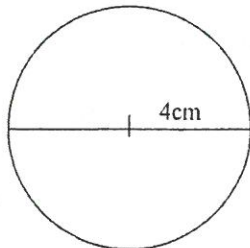
$2\pi\left(\frac{5}{2}\right)$   
 $= 15.7\text{cm}$

(d).



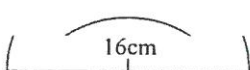
$2\pi\left(\frac{14}{2}\right)$   
 $\approx 44.0\text{cm}$

(e).



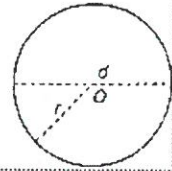
$2\pi\left(\frac{4}{2}\right)$   
 $\approx 12.6\text{cm}$

~~(f)~~



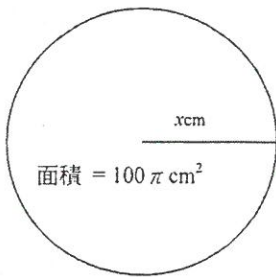
提提你：

圓周界 =  $2\pi r$



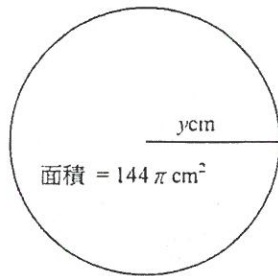
2. 求下列各圖未知數的值:

(a).



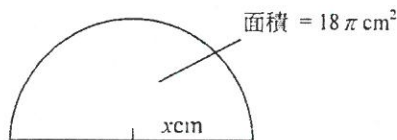
$$\begin{aligned} \pi(x)^2 &= 100\pi \\ x^2 &= 100 \\ x &= 10 \text{ 或 } x = -10 \text{ (捨去)} \\ \therefore x &= 10 \end{aligned}$$

(b).



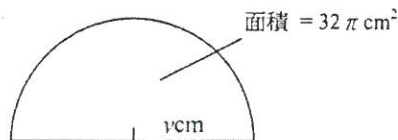
$$\begin{aligned} \pi(y)^2 &= 144\pi \\ y^2 &= 144 \\ y &= 12 \text{ 或 } y = -12 \text{ (捨去)} \\ \therefore y &= 12 \end{aligned}$$

(c).



$$\begin{aligned} \pi(x)^2 \div 2 &= 18\pi \\ x^2 &= 36 \\ x &= 6 \text{ 或 } x = -6 \text{ (捨去)} \\ \therefore x &= 6 \end{aligned}$$

(d).



$$\begin{aligned} \pi(v)^2 \div 2 &= 32\pi \\ v^2 &= 64 \\ v &= 8 \text{ 或 } v = -8 \text{ (捨去)} \\ \therefore v &= 8 \end{aligned}$$

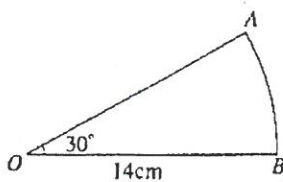
C. 弧長及扇形面積

$\pi = 3.14$

1. 求下列各題中  $AB$  的長度及扇形  $OAB$  的面積。

(答案準確至三位有效數字)

(a).



$\widehat{AB}$  的長度

$$= 2\pi(14) \times \frac{30^\circ}{360^\circ}$$

$$\approx 7.33 \text{ cm}$$

提提你:

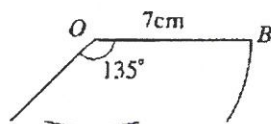
弧長 =  $2\pi \times \frac{\theta}{360^\circ}$

扇形面積 =  $\pi r^2 \times \frac{\theta}{360^\circ}$

$OAB$  的面積 =  $\pi(14)^2 \times \frac{30^\circ}{360^\circ}$

$$\approx 51.3 \text{ cm}^2$$

(b).



$\widehat{AB}$  的長度

$$= 2\pi(7) \times \frac{135^\circ}{360^\circ}$$

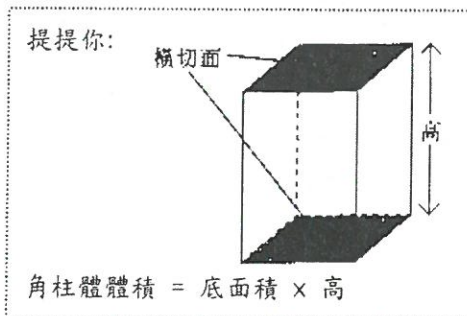
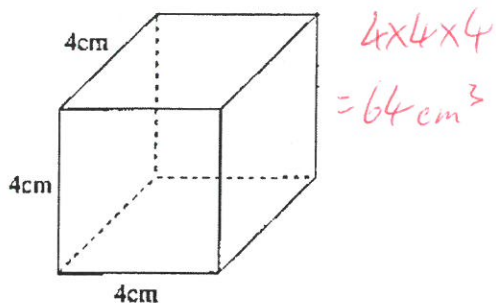
$$\approx 16.5 \text{ cm}$$

$OAB$  的面積 =  $\pi(7)^2 \times \frac{135^\circ}{360^\circ}$

$$\approx 57.7 \text{ cm}^2$$

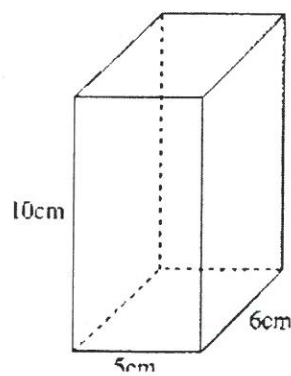
D. 角柱體體積

1. 計算下圖中正立方體的體積。



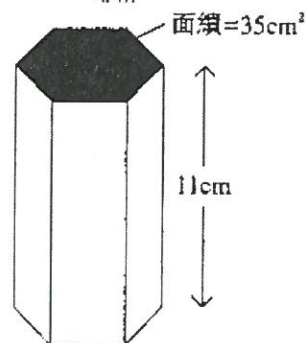
2. 計算右圖中長方體的體積。

$10 \times 5 \times 6 = 300 \text{ cm}^3$



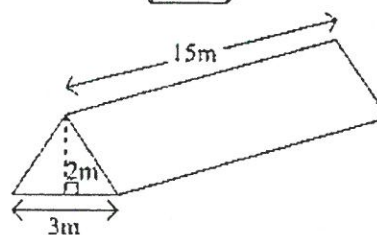
3. 計算右圖中六角柱體的體積。

$35 \times 11 = 385 \text{ cm}^3$



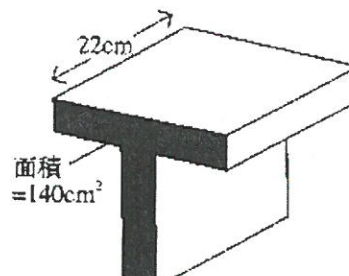
4. 計算右圖中三角柱體的體積。

$\frac{2 \times 3}{2} \times 15 = 45 \text{ m}^3$



5. 計算右圖的體積。

$140 \times 22 = 3080 \text{ cm}^3$

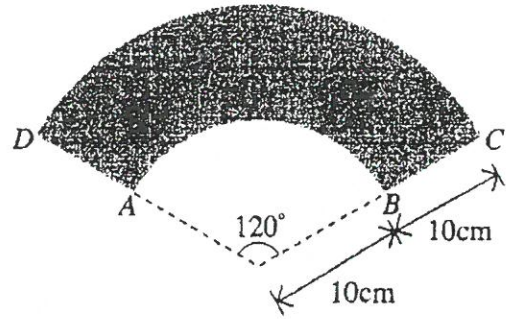


F. 綜合題

1. 根據右圖， $\pi = 3.14$ .

a. 求陰影部分面積。(答案準確至三位有效數字)

$$\begin{aligned} & \pi(20)^2 \times \frac{120^\circ}{360^\circ} - \pi(10)^2 \times \frac{120^\circ}{360^\circ} \\ &= \frac{\pi}{3} (400 - 100) \\ &= 314 \text{ cm}^2 \end{aligned}$$

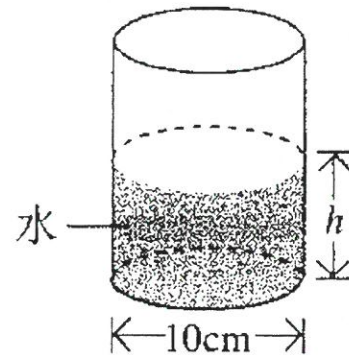


(b). 若圍着陰影部分加上一條花邊，求花邊的長度。(答案準確至三位有效數字)

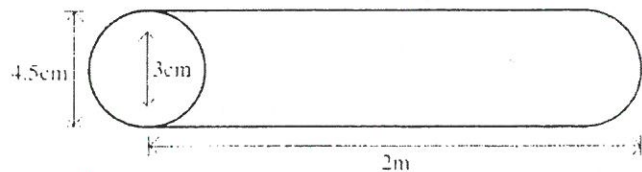
$$\begin{aligned} & 2\pi(20) \times \frac{120^\circ}{360^\circ} + 2\pi(10) \times \frac{120^\circ}{360^\circ} + 10 \times 2 \\ &= \frac{2\pi}{3} (20 + 10) + 20 \\ &= 82.8 \text{ cm} \end{aligned}$$

2. 右圖的圓柱形容器盛有  $150\pi \text{ cm}^3$  的水，求  $h$  的值。

$$\begin{aligned} \pi \left(\frac{10}{2}\right)^2 \times h &= 150\pi \\ 25h &= 150 \\ h &= 6 \text{ cm} \end{aligned}$$



3. 圖中的金屬喉管的外直徑是 4.5 cm，內直徑是 3 cm。如果它的長度是 2 m，求製造該金屬喉管的體積。(答案準確至最接近的  $\text{cm}^3$ )



$$\begin{aligned} & \pi \left(\frac{4.5}{2}\right)^2 \times 200 - \pi \left(\frac{3}{2}\right)^2 \times 200 \\ &= 200\pi (5.0625 - 2.25) \\ &= 2.8125\pi \\ &= 176.6 \text{ cm}^3 \end{aligned}$$