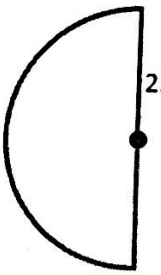
Name: KEY

Area, Perimeter, Circumference Practice Part 2: Challenge Problems

10) Find the area and perimeter of this semicircle. The radius is 2.5 in.



Area = $\frac{\text{Circle}}{2}$

$A = \frac{\pi r^2}{2}$

$A = \frac{\pi \cdot 2.5^2}{2}$

$A \approx \frac{19.6}{2}$

$A \approx 9.8\ in^2$

Perimeter = C + 1

$P = \frac{\text{circumference}}{2} + \text{diameter}$

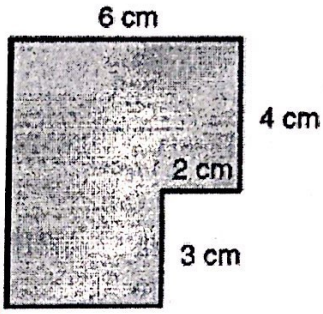
$P = \frac{2\pi \cdot 2.5}{2} + 5$

$P \approx \frac{15.7}{2} + 5$

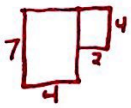
$P \approx 7.9 + 5$

$P \approx 12.9\ in$

11) Find the area of the figure TWO different ways.



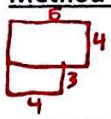
Method 1



$7 \cdot 4 + 2 \cdot 4$

$28 + 8 = 36\ cm^2$

Method 2



$6 \cdot 4 + 4 \cdot 3$

$24 + 12$

$36\ cm^2$

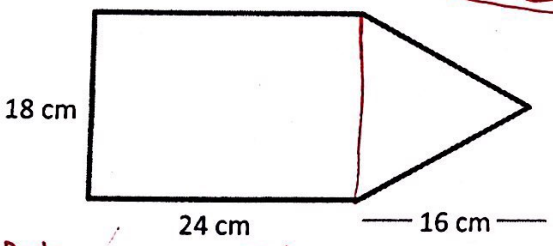
Method 3

$6 \cdot 7 - 3 \cdot 2$

$42 - 6$

$36\ cm^2$

12) Find the area.



Rect

$A = 18 \cdot 24$

$A = 432$

Tri

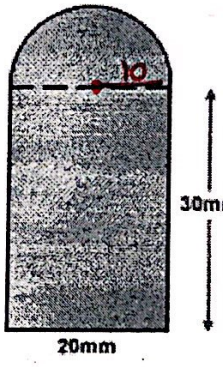
$A = \frac{18 \cdot 16}{2}$

$A = 144$

$A = 432 + 144$

$A = 576\ cm^2$

13) Find the area AND perimeter of the figure. Assume the top section is a perfect semicircle (half-circle).



Area

Rect

$A = 20 \cdot 30$

$A = 600$

Semicircle

$A = \frac{\pi r^2}{2}$

$A = \frac{\pi \cdot 10^2}{2}$

$A = \frac{100\pi}{2}$

$A = 50\pi$

$600 + 50\pi$

$A \approx 757.1\ mm^2$

Perimeter

Round part: $\frac{\text{circum.}}{2}$

$= \frac{20\pi}{2}$

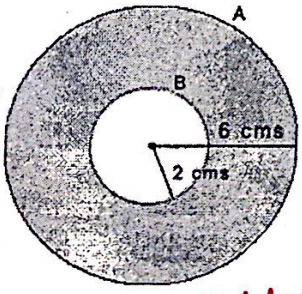
$= 10\pi$

≈ 31.4

$P \approx 30 + 20 + 30 + 31.4$

$P \approx 111.4\ mm$

14) Find the area of the shaded section.



Big circle

$A = \pi \cdot 6^2$

$A = 36\pi$

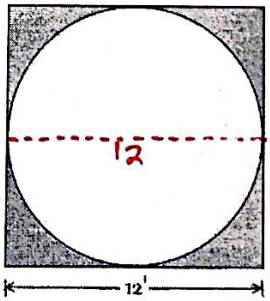
Small Circle

$A = \pi \cdot 2^2$

$A = 4\pi$

Shaded: $36\pi - 4\pi = 32\pi$ or $100.5\ cm^2$

15) Find the area of the shaded section.



Square − Circle

Square: $A = 12 \cdot 12$

$A = 144$

Circle: $A = \pi r^2$

$A = \pi \cdot 6^2$

$A = 36\pi$

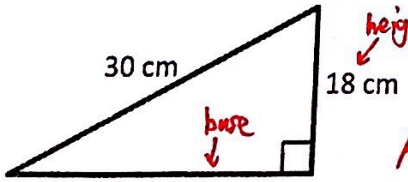
Shaded

$A = 144 - 36\pi$

$A \approx 30.9\ ft^2$

*Diameter is the same up + down too!

16) Find the area and perimeter.



$b^2 + 18^2 = 30^2$

⋮

$b = 24$

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

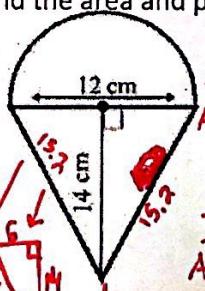
$A = \frac{24 \cdot 18}{2}$

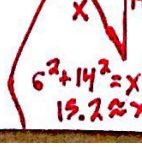
$A = 216\ cm^2$

$P = 24 + 18 + 30$

$P = 72\ cm$

17) Find the area and perimeter. Round to the nearest tenth.





$6^2 + 14^2 = x^2$

$15.2 \approx x$

AREA

semicircle

$A = \frac{\pi r^2}{2} = \frac{\pi \cdot 6^2}{2} \approx \frac{113.1}{2}$

$A \approx 56.5$

Triangle

$A = \frac{12 \cdot 14}{2} = \frac{168}{2} = 84$

Total Area: $56.5 + 84$

$A \approx 140.5\ cm^2$

PERIMETER

Curved part: $\frac{12\pi}{2}$

$= 6\pi$

≈ 18.8

$18.8 + 15.2 + 15.2$

$P \approx 49.3\ cm$

Scanned with CamScanner