4-7-17

Aim: SWBAT do their best on the quiz.

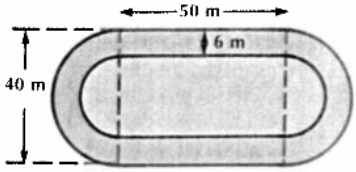
Do Now: Check hw

HW: None

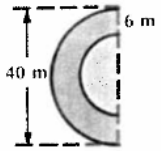
Using Mathematics

Area

The members of a track club want to resurface their track. They must determine the area of the track in order to know how much resurfacing material is needed. They have measured parts of the track as shown at the right. The curved ends are semicircles.



Point out that the track can be divided into circles and rectangles, for which area formulas are known.



Area of large semicircle

$A = \frac{1}{2}(\pi \cdot 20^2)$

$A = \frac{1}{2}(3.14 \cdot 400)$

$A = 628 \text{ m}^2$

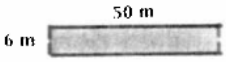
Area of small semicircle

$A = \frac{1}{2}(\pi \cdot 14^2)$ $40 - 2(6) = 40 - 12 = 28$

$A = \frac{1}{2}(3.14 \cdot 196)$

$A = 308$ *(to the nearest whole number)*

Area of each end section $= 628 - 308 = 320$

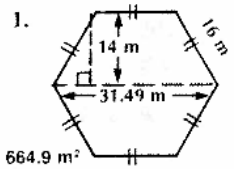


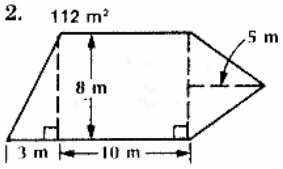
Area of each straight section $= 50 \cdot 6 = 300$

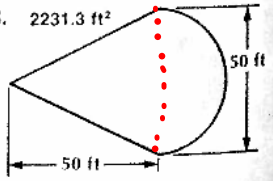
Area of track $= \underbrace{320 + 320}_{\text{2 end sections}} + \underbrace{300 + 300}_{\text{2 straight sections}} = 1240$

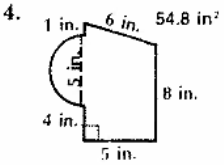
The area of the track is about 1240 m^2.

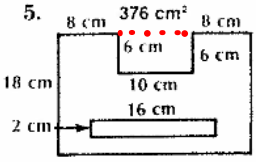
Find the areas of the following. Round your answers to the nearest tenth.

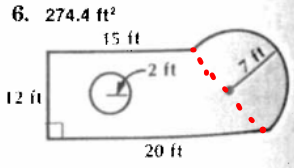
1. 

2. 

3. 

4. 

5. 

6. 

① $2\left(\frac{1}{2}(b_1+b_2)h\right)$

$2\left(\frac{1}{2}(16+31.49)14\right)$

$2\left(\frac{1}{2}(47.49)14\right)$

$664.86\ m^2$

$\approx 664.9\ m^2$

② $\frac{3(8)}{2} + 8(10) + 8\left(\frac{5}{2}\right)$

$12 + 80 + 20$

$112\ m^2$

③ $\frac{50(50)}{2} + \frac{\pi(25)^2}{2}$

$1250 + \frac{625\pi}{2}$

$1250 + 312.5\pi$

$1250 + 312.5(3.14)$

$1250 + 981.25$

2231.25

$\approx 2231.3\ ft^2$

④ $\frac{1}{2}(8+10)(5) + \frac{\pi(2.5)^2}{2}$

$45 + \frac{6.25\pi}{2}$

$45 + \frac{6.25(3.14)}{2}$

$45 + 9.8125$

54.8125

$\approx 54.8\ in.^2$

⑤ $2(6)(8) + 12(26) - 2(16)$

$96 + 312 - 32$

$376\ cm^2$

⑥ $\frac{1}{2}(15+20)(12) + \frac{\pi(7)^2}{2} - \pi(2)^2$

$210 + \frac{49\pi}{2} - 4\pi$

$210 + \frac{49(3.14)}{2} - 4(3.14)$

$210 + 76.93 - 12.56$

274.37

$\approx 274.4\ ft^2$