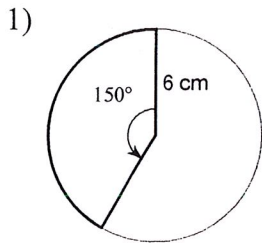
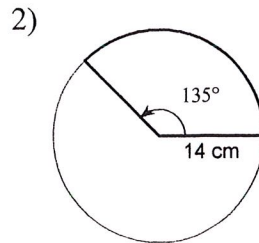


Area

Find the exact area of each sector and the bold arc length.



$$AL = \pi (12) \left(\frac{150}{360}\right) = 5\pi \text{ cm}$$

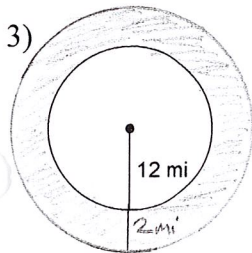


$$AL = \pi d \left(\frac{\theta}{360}\right)$$

$$A_{\text{sector}} = \pi r^2 \left(\frac{\theta}{360}\right)$$

$$AL = 28\pi \left(\frac{135}{360}\right) = \frac{21\pi}{2} \text{ cm}$$

Find the shaded area. Answers should be exact. In terms of π .



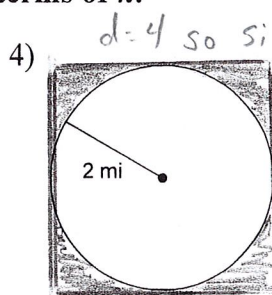
$$A_{\text{big}} = 14^2 \pi = 196\pi$$

$$A_{\text{small}} = 12^2 \pi = 144\pi$$

$$A_{\text{sh}} = 196\pi - 144\pi = 52\pi \text{ mi}^2$$

$$r_{\text{big}} = 14$$

$$r_{\text{small}} = 12$$

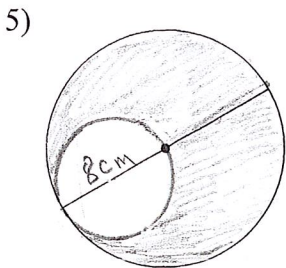


$d = 4$ so side length = 4

$$A_{\text{big}} = 16$$

$$A_{\text{small}} = \pi (2)^2 = 4\pi$$

$$A_{\text{sh}} = 16 - 4\pi \text{ mi}^2$$



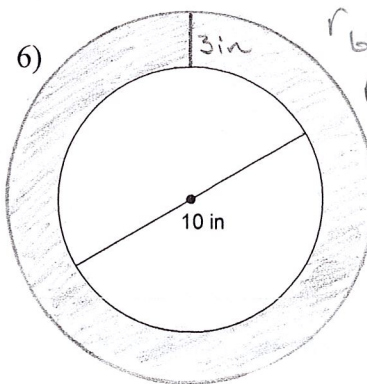
$$A_{\text{big}} = 8^2 \pi = 64\pi$$

$$A_{\text{small}} = 4^2 \pi = 16\pi$$

$$A_{\text{sh}} = 64\pi - 16\pi = 48\pi \text{ cm}^2$$

$$r_{\text{big}} = 8$$

$$r_{\text{small}} = 4$$



$$r_{\text{big}} = 5 + 3 = 8 \text{ in}$$

$$r_{\text{small}} = 5 \text{ in}$$

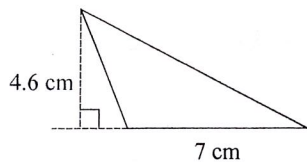
$$A_{\text{big}} = 8^2 \pi = 64\pi$$

$$A_{\text{small}} = 5^2 \pi = 25\pi$$

$$A_{\text{sh}} = 64\pi - 25\pi = 39\pi \text{ in}^2$$

Find the area of each triangle.

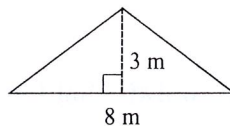
7)



$$\frac{1}{2}bh = \frac{1}{2}(7)(4.6)$$

$$= 16.1 \text{ cm}^2$$

8)



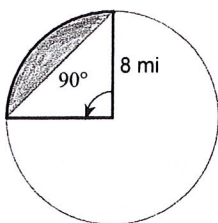
$$A_{\Delta} = \frac{1}{2}bh$$

$$A = \frac{1}{2}bh = \frac{1}{2}(8)(3)$$

$$= 12 \text{ m}^2$$

Find the area of the segment of each circle (the shaded part).

9)



$$A_{\text{sector}} = 8^2 \pi \left(\frac{90}{360}\right)$$

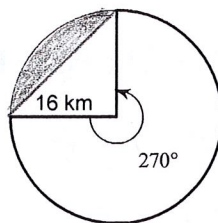
$$= 16\pi$$

$$A_{\Delta} = \frac{1}{2}(8)(8)$$

$$= 32$$

$$A_{\text{segm}} = 16\pi - 32 \text{ mi}^2$$

10)



$$A_{\text{sect}} = 16^2 \pi \left(\frac{90}{360}\right)$$

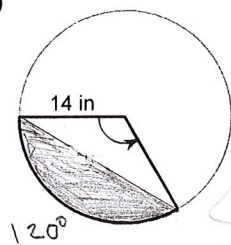
$$= 64\pi$$

$$A_{\Delta} = \frac{1}{2}(16)(16)$$

$$= 128$$

$$A_{\text{sh}} = 64\pi - 128 \text{ km}^2$$

11)



$$A_{\text{sect}} = 14^2 \pi \left(\frac{120}{360}\right)$$

$$= \frac{196\pi}{3}$$

$$A_{\Delta} = \frac{1}{2}ab \sin(120)$$

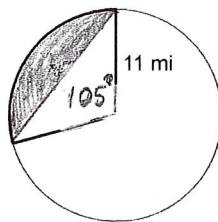
$$= \frac{1}{2}(14)(14) \sin(120)$$

$$= 49\sqrt{3} \approx 84.9$$

$$A_{\text{sh}} \approx \frac{196\pi}{3} - 49\sqrt{3}$$

$$\approx 120.4 \text{ in}^2$$

12)



$$A_{\text{sect}} = 121\pi \left(\frac{105}{360}\right)$$

$$= \frac{847\pi}{24} \approx 110.87$$

$$A_{\Delta} = \frac{1}{2}(11)(11) \sin(105)$$

$$\approx 58.44$$

$$A_{\text{segm}} \approx 110.87 - 58.44$$

$$\approx 52.43 \text{ mi}^2$$