1. $2\pi^c = 360°$
$? \hat{=} 270°$

$$270° = \frac{2\pi \times 270}{360}$$
$$= \frac{3}{2}\pi$$

2 A. $\pi = 180°$
$\frac{5\pi}{3} \hat{=} ?$ $= \frac{5\cancel{\pi}}{3} \times 180° \times \frac{1}{\cancel{\pi}}$
$= 300°$

B. $-\frac{\pi}{3} = \frac{-180}{3} = -60°$

3 $\pi^c = 180°$
$2.5 \text{ radians} = 2.5 \times \frac{180}{\pi}$
$= 143.24°$

$1 \text{ radian} = (60 \times 180)/\pi$ minutes
$2.5 \text{ radians} = 2.5 \times \frac{60 \times 180}{\pi}$
$= 8594.367'$

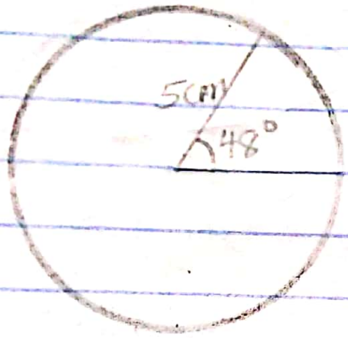
$1 \text{ radian} = (3600 \times 180)/\pi$ seconds.
$2.5 \text{ radians} = 2.5 \times \frac{3600 \times 180}{\pi}$
$= 515,662.016''$

4 $11^\circ + \frac{40}{60} + \frac{'22}{3600}$

$= 11^\circ + 0.6667^\circ + 0.0006^\circ$

$= 11.6673^\circ$

5



Arc length $= \frac{48}{360} \times \pi \times 2 \times 5$

$= 4.19\text{cm}$

Area $= \frac{48}{360} \times \pi \times 5^2$

$= 10.47\ \text{cm}^2$

6 $q = \frac{2r}{d}$ where, q = no. of radians

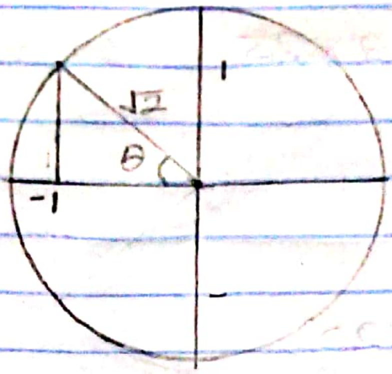
r = distance between sun and Earth

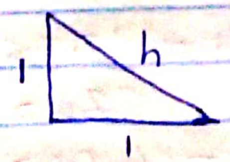
d = sun's diameter

$0.0236 = \frac{2 \times 6 \times 10^5}{d}$

$d = \left(\frac{12 \times 10^5}{0.0236}\right)$

$= 50.847 \times 10^6\ \text{km}$

7 



$h = \sqrt{1^2+1^2}$

$= \sqrt{2}$

$\sin\theta = \dfrac{1}{\sqrt{2}}$

$\cos\theta = \dfrac{1}{\sqrt{2}}$

8 $1 \text{ radian} = \dfrac{180°}{\pi}$

$0.5 \text{ radians} = \left(0.5 \times \dfrac{180}{\pi}\right) = 28.65°$

$\text{Arc length} = \dfrac{28.65}{360} \times \pi \times 2 \times 6$

$= 3\text{ cm}$

$\text{Area} = \dfrac{28.65}{360} \times \pi \times 6^2$

$= 9\text{ cm}^2$

9 Area $= 75\text{m}^2$, radius $= 25\text{m}$

Let the central angle be θ

$\dfrac{\theta}{360} \times \pi \times 25^2 = 75$

$\theta = \left(\dfrac{75 \times 360}{\pi \times 25^2}\right) = \dfrac{27000}{1963.4954}$

$= 13.75°$

$1 \text{ radian} = \dfrac{180°}{\pi}$

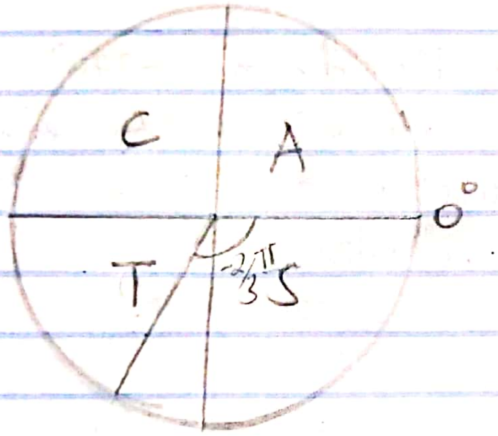
$13.75° = \left(13.75 \times \dfrac{\pi}{180}\right) = 0.2400 \text{ radians.}$

9 Arc length $= \frac{13.75}{360} \times \pi \times 2 \times 25$

$= 6.0000m$

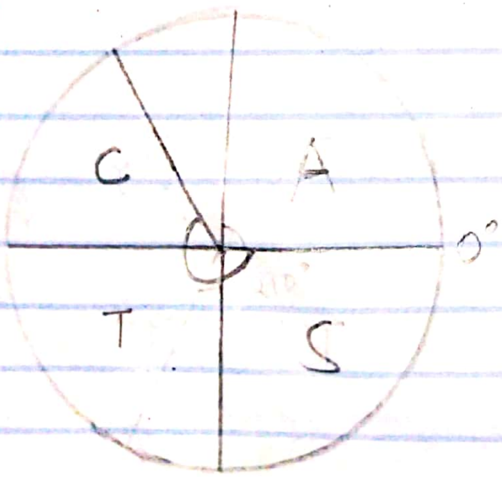
10 A. $\sin -\frac{2}{3}\pi$ is negative

$\cos -\frac{2}{3}\pi$ is negative



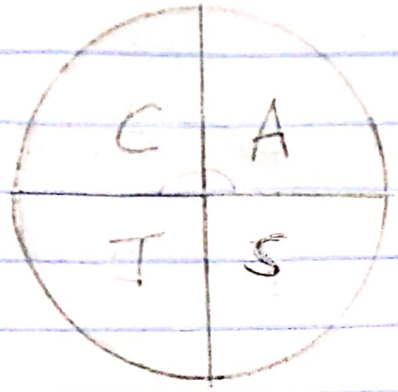
From the diagram $-\frac{2}{3}\pi$ lies in the third quadrant where both sine and cosine are all negative.

B. $\sin 150°$ is positive
$\cos 150°$ is negative.



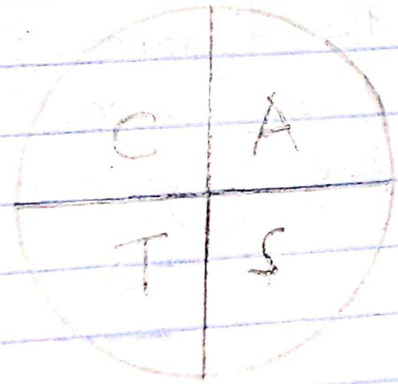
From the diagram $150°$ is equivalent to $-210°$ whose sine is positive and cosine negative

11 A. $\sin 180^\circ = 0$



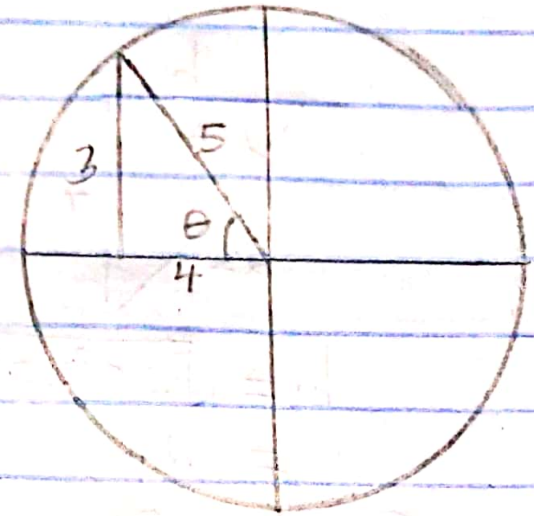
From the diagram 180° lies on the horizontal axis which has no inclination, therefore its sine is zero

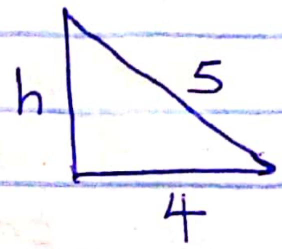
B. $\cos -270^\circ = 0$



From the diagram -270° lies on the vertical axis and hence it's the Cosine is zero, because there is no inclination.

12

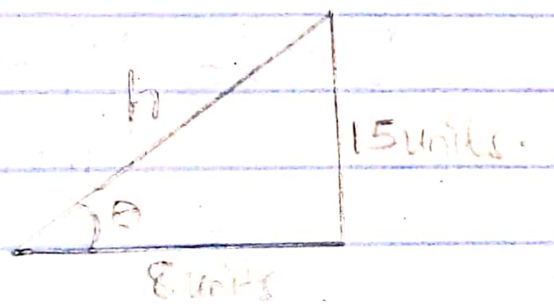




$$h = \sqrt{5^2 - 4^2}$$
$$= 3$$

$$\sin\theta = 3/5$$

13

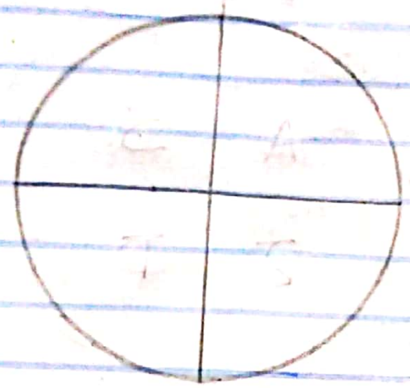


$$\sin\theta = \frac{15}{17}$$

$$\cos\theta = \frac{8}{17}$$

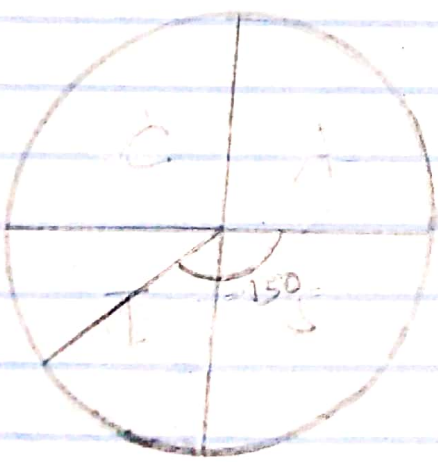
$$h = \sqrt{8^2 + 15^2}$$
$$= 17 \text{ units}$$

14 A. sin 3π is zero
Cos 3π is negative



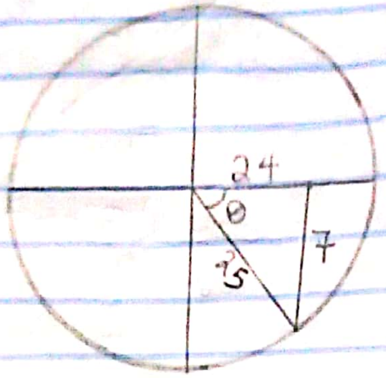
$3\pi = 3 \times 180 = 540°$
From the diagram $540°$ is equivalent to $-180°$ whose sine is zero and Cosine negative.

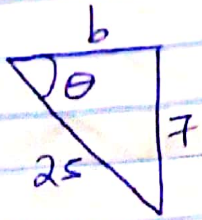
B. sin 210 is negative
Cos 210 is negative.



From the diagram $210°$ is equivalent to $-150°$ which lies in the third quadrant where both sine and Cosine are negative.

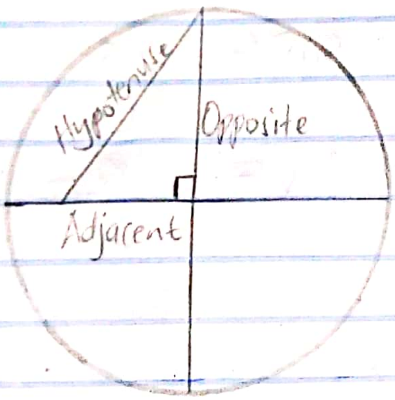
15





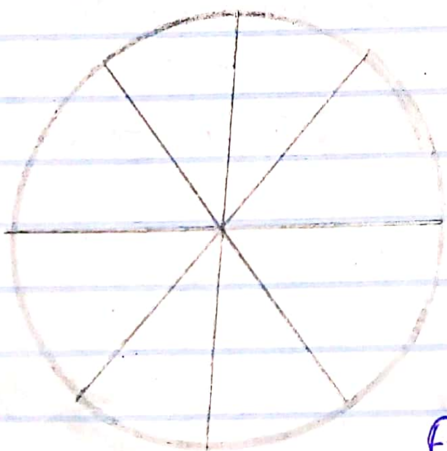
$$b = \sqrt{25^2 - 7^2}$$
$$= 24$$
$$\cos\theta = -\frac{24}{25}$$

16



$$\cos 90^\circ = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$
$$= \frac{0}{\text{Hypotenuse}}$$
$$= 0$$

17



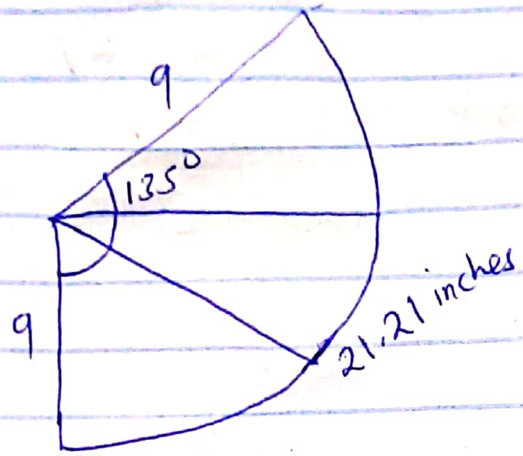
Let the central angle be θ

Circumference $= \pi D$
$= \pi \times 18 = 18\pi$ inches

Arc length of a slice $= \frac{18\pi}{8}$
$= 7.0686$

$$\frac{\theta}{360} \times \pi \times 18 = 7.0686$$

$$\theta = \frac{7.0686 \times 360}{\pi \times 18}$$
$$= 45^\circ$$



Amound of souce

$= \frac{135}{360} \times \pi \times 9^2$

$= 95.43$ square inches of souce.

Amound of source for the 8slices $= \frac{8}{3} \times 95.43$

$= 254.48$ square inches.

Amound of source for 2 trays $= 2 \times 254.48$

$= 508.96$ square inches.

Cans of source needed to cover 2 trays of pizza

$= \frac{508.96}{101} = 5.039 \simeq 5$ cans of souce.