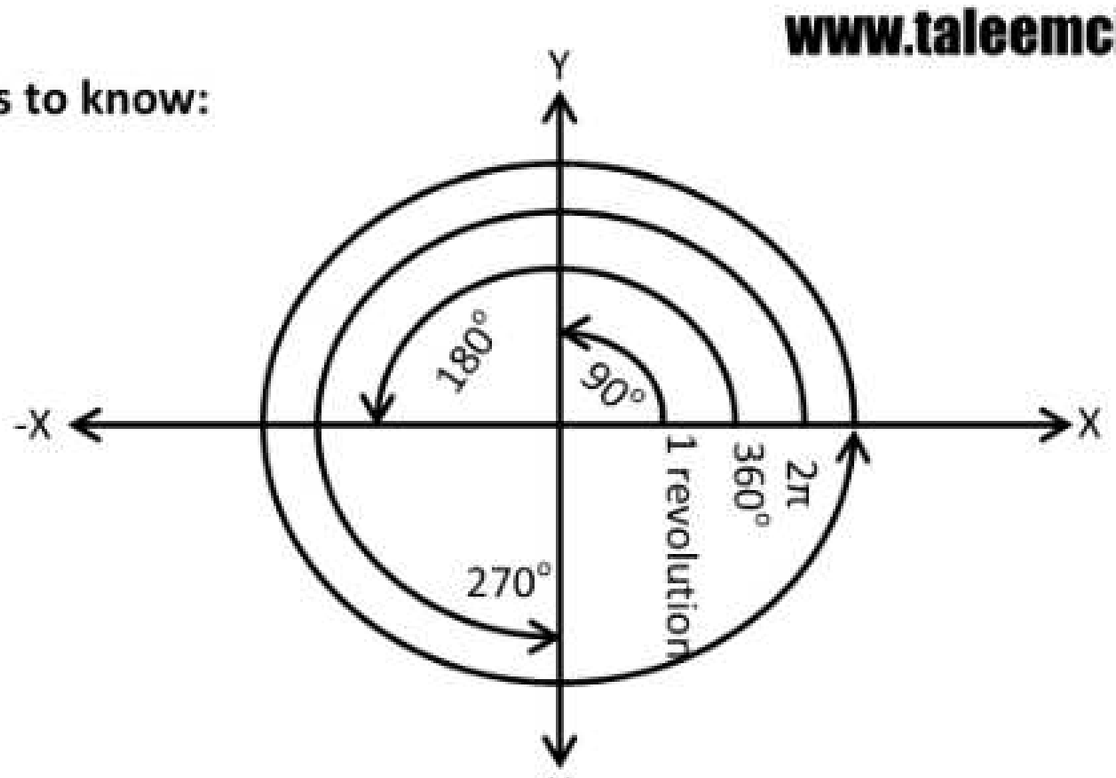
# Exercise 7.1



**Things to know:**




So,

1 revolution = 2π radian = 360°

and

2π radian = 360°

To get 1 radian divide by 2π

1 radian $= \frac{360^o}{2\pi}$

1 radian $= \frac{180^o}{\pi}$

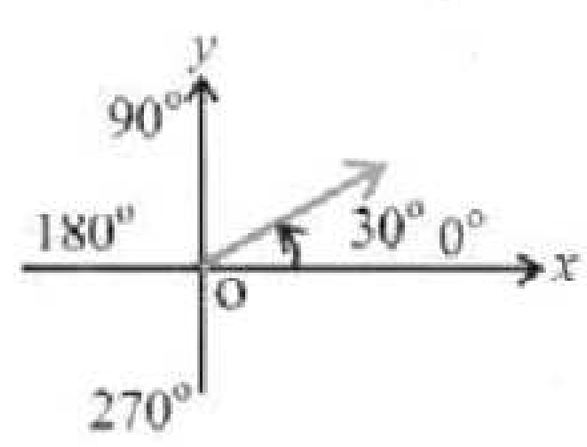
To get 1 degree divide by 360

$\frac{2\pi}{360}$ rad $= 1^o$

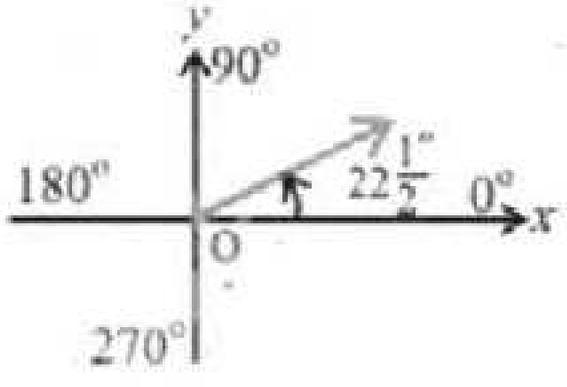
$1^o = \frac{\pi}{180}$ rad

**Q. 1: Locate the following angles:**

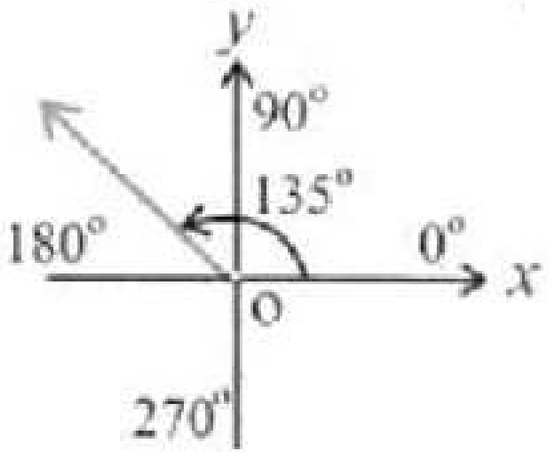
(i) $30^o$



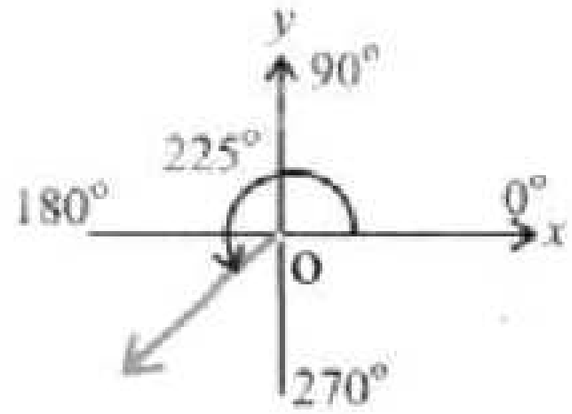

(ii) $22\frac{1^o}{2}$



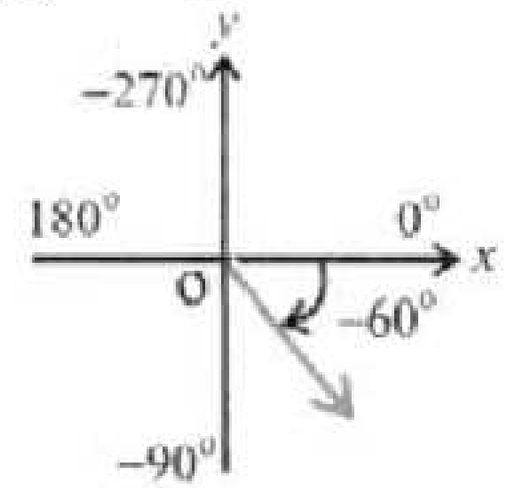
(iii) $22\frac{1^o}{2}$



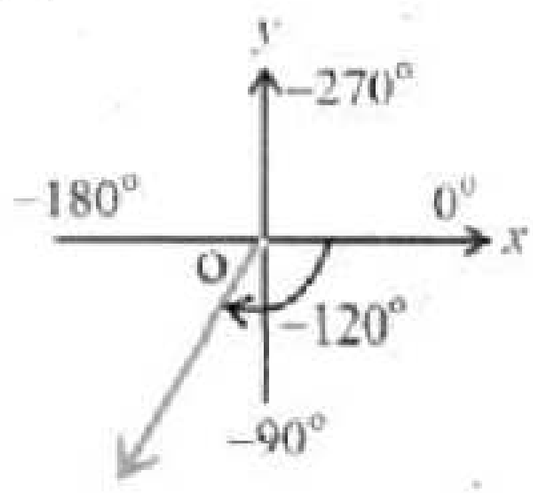

(iv) $225^o$



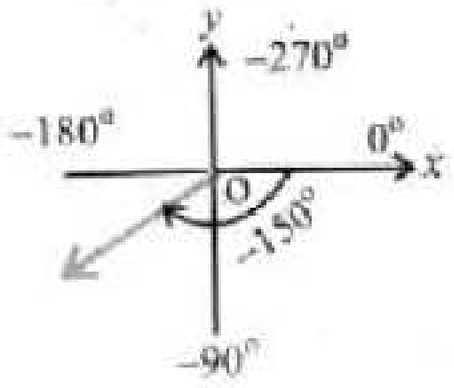

(v) $-60^o$



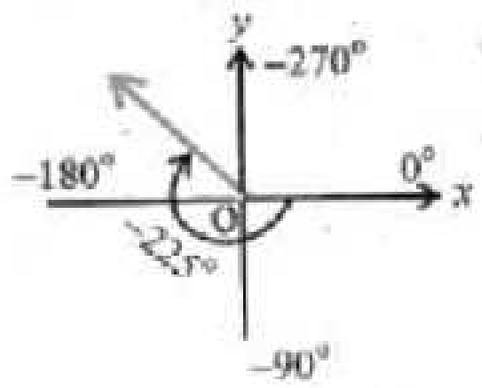

(vi) $-120^o$




(vii) $-150^o$




(viii) $-225^o$




**Q. 2: Express the following sexagesimal measures of angles in decimal form.**

(i) $45^o30'$ $= 45^o + \left(\frac{30}{60}\right)^o$

$= 45^o + 0.5$

$= 45.5^o$

(ii) $60^o30'30''$ $= 60^o + \left(\frac{30}{60}\right)^o + \left(\frac{30}{3600}\right)^o$

$= 60^o + 0.5 + 0.0083$

$= 60.5083^o$

(iii) $125^o22'50''$ $= 125^o + \left(\frac{22}{60}\right)^o + \left(\frac{50}{3600}\right)^o$

$= 125^o + 0.3667 + 0.0139$

$= 125.3806^o$

**Q. 3: Express the following into $D^o$ M′ S″ form.**

(i) $47.36^o$ $= 47^o + (.36 \times 60)'$

$= 47^o + 21.6'$

$= 47^o + 21' + (.6 \times 60)''$

$= 47^o + 21' + 36''$

$= 47^o21'36''$

(ii) $125.45^o$ $= 47^o + (.45 \times 60)'$

$= 47^o + 27'$

$= 47^o27'$

(iii) $-22.5^o$ $= -22^o - (.5 \times 60)'$

$= -22^o - 30'$

$= -22^o30'$

(iv) $-67.58^o$ $= -67^o - (.58 \times 60)'$

$= -67^o - 34.8'$

$= -67^o - 34' - (.8 \times 60)''$

$= -67^o - 34' - 48''$

$= -67^o34'48''$

(v) $315.18^o$ $= 315^o + (.18 \times 60)'$

$= 315^o + 10.8'$

$= 315^o + 10' + (.8 \times 60)''$

$= 315^o + 10' + 48''$

$= 315^o10'48''$

**Q. 4: Express the following angles into radians.**

(i) $30^o$ $= 30\left(\frac{\pi}{180}\right)$

$= \frac{\pi}{6}$

(ii) $60^o$ $= 60\left(\frac{\pi}{180}\right)$

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

(iii) $135^o$ $= 135\left(\frac{\pi}{180}\right)$

$= 3\left(\frac{\pi}{4}\right)$

$= \frac{3\pi}{4}$

(iv) $225^o$ $= 225\left(\frac{\pi}{180}\right)$

$= 5\left(\frac{\pi}{4}\right)$

$= \frac{5\pi}{4}$

(v) $-150^o$ $= -150\left(\frac{\pi}{180}\right)$

$= -5\left(\frac{\pi}{6}\right)$

$= -\frac{5\pi}{6}$

(vi) $-225^o$ $= -225\left(\frac{\pi}{180}\right)$

$= -5\left(\frac{\pi}{4}\right)$

$= -\frac{5\pi}{4}$

(vii) $300^o$ $= 300\left(\frac{\pi}{180}\right)$

$= 5\left(\frac{\pi}{3}\right)$

$= \frac{5\pi}{3}$

(viii) $315^o$ $= 315\left(\frac{\pi}{180}\right)$

$= 7\left(\frac{\pi}{4}\right)$

$= \frac{7\pi}{4}$

**Q. 5: Convert each of following to degrees.**

(i) $\frac{3\pi}{4}$ $= \frac{3\pi}{4}\left(\frac{180}{\pi}\right)$

$= 3(45)$

$= 135^o$

(ii) $\frac{5\pi}{6}$ $= \frac{5\pi}{6}\left(\frac{180}{\pi}\right)$

$= 5(30)$

$= 150^o$

(iii) $\frac{7\pi}{8}$ $= \frac{7\pi}{8}\left(\frac{180}{\pi}\right)$

$= \frac{7}{2}(45)$

$= 157.5^o$

(iv) $\frac{13\pi}{16}$ $= \frac{13\pi}{16}\left(\frac{180}{\pi}\right)$

$= \frac{13}{4}(45)$

$= 146.25^o$

(v) 3 $= 3\left(\frac{180}{\pi}\right)$

$= 171.8869^o$

(vi) 4.5 $= 4.5\left(\frac{180}{\pi}\right)$

$= 257.83^o$

(vii) $\frac{-7\pi}{8}$ $= \frac{-7\pi}{8}\left(\frac{180}{\pi}\right)$

$= \frac{-7}{2}(45)$

$= 157.5^o$

(viii) $-\frac{13\pi}{16}$ $= -\frac{13\pi}{16}\left(\frac{180}{\pi}\right)$

$= -\frac{13}{4}(45)$

$= -146.25^o$