Examples 0 in Basic Geometry

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Examples 0

Put the angles below in radians.

0. 30°
1. 45°
2. 60°
3. 90°
4. 120°
5. 180°
6. 270°
7. 360°
8. 405^{o}
9. 775^{o}

Suggestions or Solutions
To the Problems in the Examples 0

To begin with, by definition, we have $180^o = \pi$ rad.

And normally, rad is omitted, so in short, we just set $180^o = \pi$.

And we know 180 degrees is 180 of 1 degrees, that is, 180^o is 180 of 1^os.

In other words, we have $180 \cdot 1^o = \pi$.

So next, putting 1^o in radian, we get $1^o = \frac{\pi}{180}$.

And next, we can put an angle $\boldsymbol{A}^o$ this way: $\boldsymbol{A} \cdot 1^o$.

And we know $1^o = \frac{\pi}{180}$.

So we can get $\boldsymbol{A^o} = \boldsymbol{A} \cdot \boldsymbol{1^o} = \boldsymbol{A} \cdot \frac{\pi}{180} = \frac{\boldsymbol{A}}{180}\boldsymbol{\pi}$, which is in radians.

That is to say that we get $\boldsymbol{A^o} = \frac{\boldsymbol{A}}{180}\boldsymbol{\pi}$.

Thus, we get these:

0. $30° = (30/180)\pi = (1/6)\pi = \pi/6$.

1. $45° = (45/180)\pi = (1/4)\pi = \pi/4$.

2. $60° = (60/180)\pi = (1/3)\pi = \pi/3$.

3. $90° = (90/180)\pi = (1/2)\pi = \pi/2$.

4. $120° = 2 \cdot 60° = 2(\pi/3) = 2\pi/3$.

5. $180° = (180/180)\pi = \pi$.

6. $270° = 3 \cdot 90^o = 3 \cdot \pi/2 = 3\pi/2$.

7. $360° = (360/180)\pi = 2\pi$.

8. $405^o = 360^o + 45^o = 2\pi + \pi/4 = 9\pi/4$.

9. $775^o = (775/180)\pi = (155/36)\pi = 155\pi/36$, which equals $4\pi + 11\pi/36$.