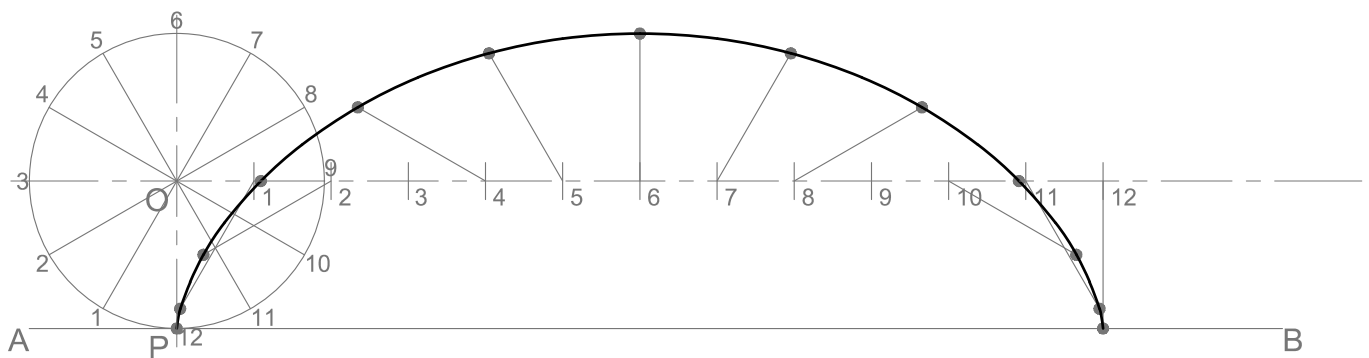


## Cycloid exercises.

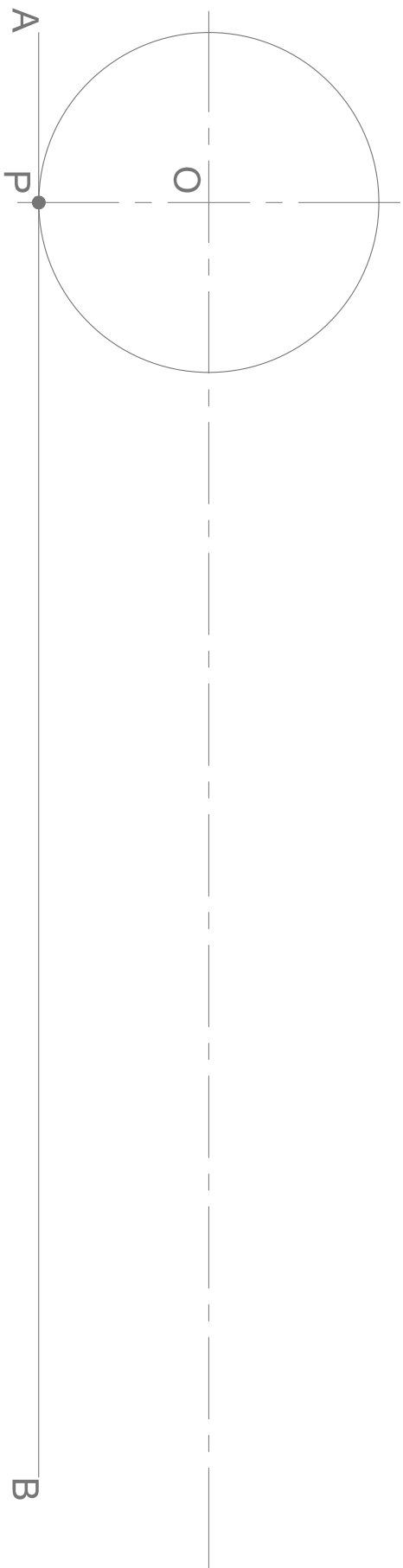
These exercises we will draw a set of cycloids given different instructions.



You can visit: <https://youtu.be/wFACJ9FXT8I> for a step by step video of the construction method.

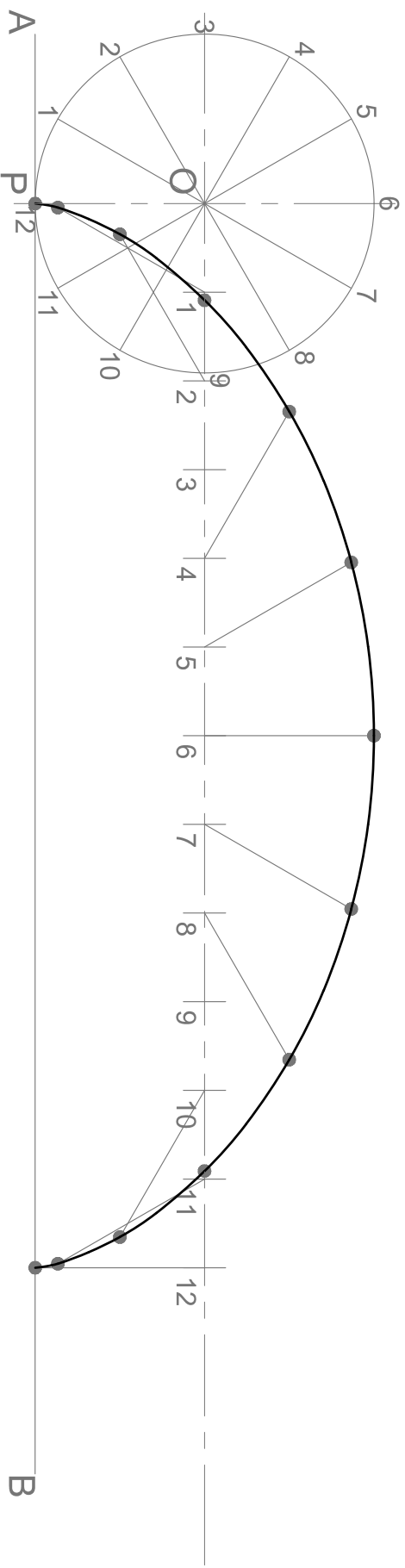
## Cycloids Exercise 1

Construct the cycloid formed by point 'P' as circle centre 'O' rolls on line 'AB' for one revolution.



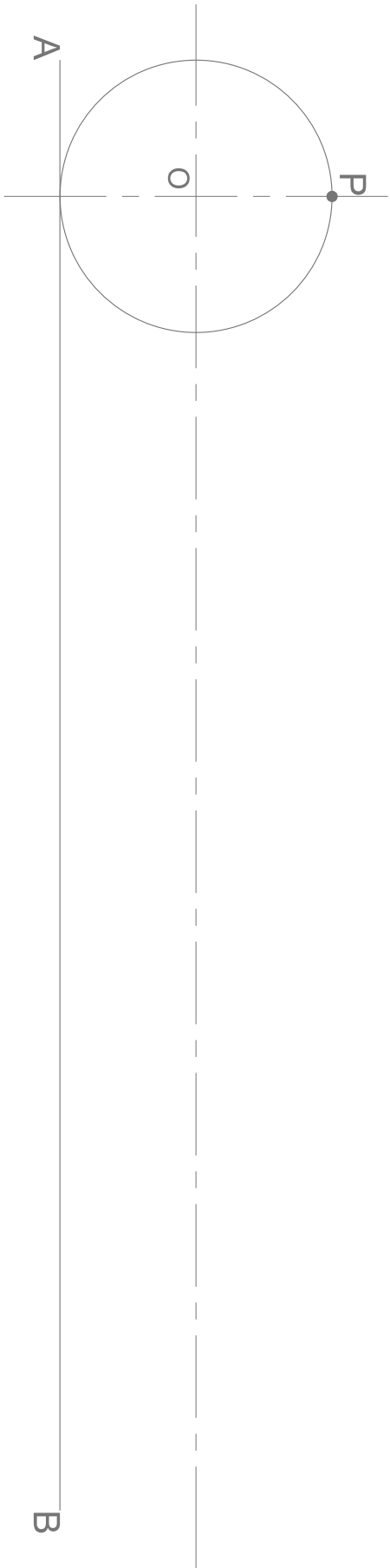
## Cycloids Exercise 1 - ANSWER

Construct the cycloid formed by point 'P' as circle centre 'O' rolls on line 'AB' for one revolution.



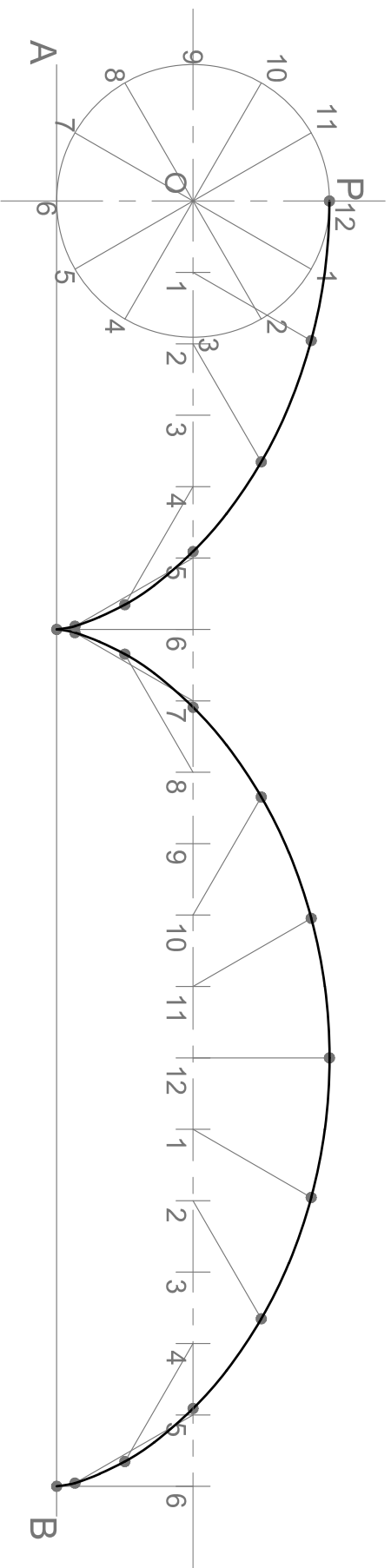
## Cycloids Exercise 2

Construct the cycloid formed by point 'P' as circle centre 'O' rolls on line 'AB' for  $1\frac{1}{2}$  revolutions.



## Cycloids Exercise 2 - ANSWER

Construct the cycloid formed by point 'P' as circle centre 'O' rolls on line 'AB' for  $1\frac{1}{2}$  revolutions.

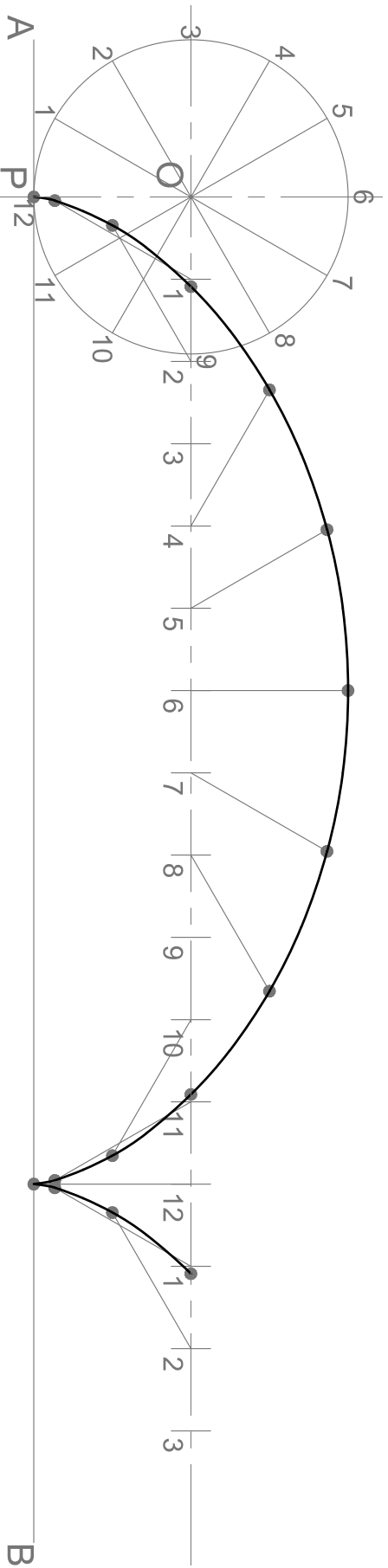


### **Cycloids Exercise 3**

Construct  $1\frac{1}{4}$  revolutions of the cycloid formed by a point 'P' fixed on a  $\varnothing$  48mm circle that is rolling on a line. Start the cycloid with point 'P' at the bottom of the circle.

### Cycloids Exercise 3 - ANSWER

Construct  $1\frac{1}{4}$  revolutions of the cycloid formed by a point 'P' fixed on a  $\varnothing$  48mm circle that is rolling on a line. Start the cycloid with point 'P' at the bottom of the circle.



Note: Since the circle is divided into 12 equal parts, one fourth of a revolution is equal to three parts (not four), i.e. numbers 12(0) to 3. The other fourths are made up from numbers 3 to 6, 6 to 9 and 9 to 12.

One fourth ( $\frac{1}{4}$ ) of a revolution ( $360^\circ$ ) is equal to  $90^\circ$ .

$$\frac{1}{4} \times 360^\circ = 90^\circ \quad \text{or} \quad 360^\circ / 4 = 90^\circ$$

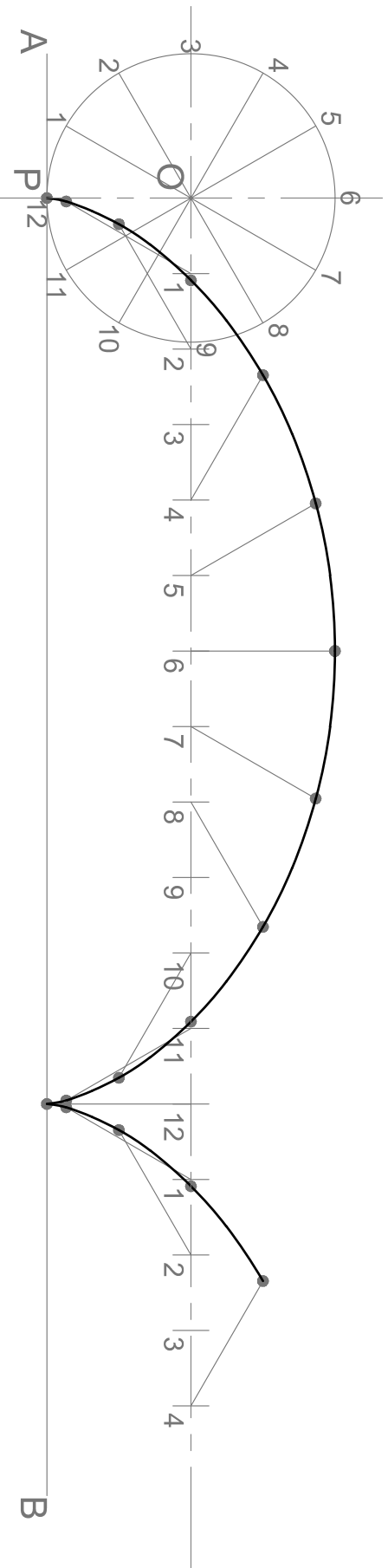
#### **Cycloids Exercise 4**

Construct  $1\frac{1}{3}$  revolutions of the cycloid formed by a point 'P' fixed on a  $\varnothing$  44mm circle that is rolling on a line. Start the cycloid with point 'P' at the bottom of the circle.



### Cycloids Exercise 4 - ANSWER

Construct  $1\frac{1}{3}$  revolutions of the cycloid formed by a point 'P' fixed on a  $\varnothing$  44mm circle that is rolling on a line. Start the cycloid with point 'P' at the bottom of the circle.



Note: Since the circle is divided into 12 equal parts, one third of a revolution is equal to four parts (not three), i.e. numbers 12(0) to 4. The other thirds are made up from numbers 4 to 8 and 8 to 12.

One third ( $\frac{1}{3}$ ) of a revolution ( $360^\circ$ ) is equal to  $120^\circ$ .

$\frac{1}{3} \times 360^\circ = 120^\circ$  **or**  $360^\circ/3 = 120^\circ$