Turtles | identify patterns

The following code creates a turtle of color ‘red’ and shape ‘turtle’. The turtle will create a line while moving.

```
import turtle
tim = turtle.Turtle()
tim.color('red')
tim.shape('turtle')
tim.pendown()
```

The next code will create a square:

```
for x in range(4):
    tim.forward(100)
    tim.right(90)
```

And the next code will create a triangle:

```
for x in range(3):
    tim.forward(100)
    tim.right(120)
```

➢ Can you figure out how many degrees the turtle must turn in order to create a pentagon and a hexagon?

Pentagon:

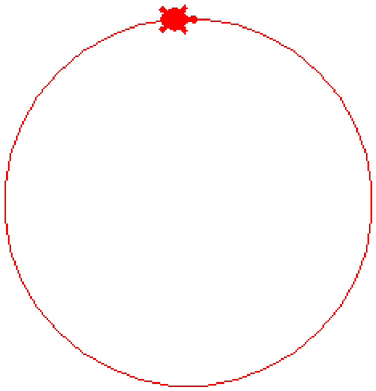
```
for x in range(5):
    tim.forward(100)
    tim.right(    )
```

Hexagon:

```
for x in range(6):
    tim.forward(100)
    tim.right(    )
```

The following code will create a polygon of 36 sides which look like a circle:

```
for x in range(36):
     tim.forward(20)
     tim.right(10)
```

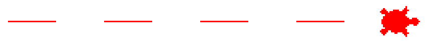


Can you recognize the rule you should follow to create any polygon?

To create a full closed shape, we must turn a full circle (360 degrees). To figure out how many degrees we need to turn in every shape, we must divide 360 by the number of the turns taken (that is the number of the angles/sides of our shape).

➢ Open Python IDE (Thonny) and create your own shapes.

Can you fill in the blanks (1, 2, 3) of the code below to create the following shape? You should use the penup() and pendown() commands.



```
for x in range(…1…):
    …2…
    tim.forward(30)
    …3…
    tim.forward(30)
```

1:

2:

3:

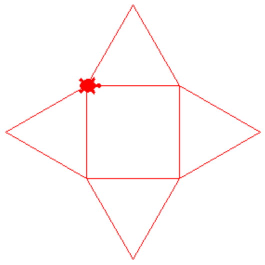
Can you guess what the following code might do?

```
for x in range(4):
    tim.forward(100)
    tim.right(90)
    for y in range(4):
        tim.forward(50)
        tim.left(90)
```

Write your answer:

Execute the code in Thonny and see the result.

Write the code which generates the following shape:



Execute the code in Thonny and see the result.