```
ont;
loadFont("Ziggurat-12.vlw");
t(font);
, 0, 50, 100);
;
gn(LEFT);
eft", 50, 20);
gn(RIGHT);
ight", 50, 40);
gn(CENTER);
enter", 50, 80);
```

13-10

ion calculates and returns the pixel width of any character
er is calculated from the current font and size as defined by
xtSize() functions. Because the letters of every font are a
within many fonts have different widths, this function is the
vide a string or character is when displayed on screen. For this
Width() to position elements relative to text, rather than
our program.

```
ont;
loadFont("Ziggurat-32.vlw");
t(font);
;
= 'U';
w = textWidth(c);
 22, 40);
, 42, cw, 5);
s = "UC";
w = textWidth(s);
 22, 76);
, 78, sw, 5);
```

13-11

aces in Processing. Draw your favorite word to the display
e typeface.
ext to the display window. Carefully select the composition.
aces to display the dialog between two characters.

Type: A Critical Guide for Designers, Writers, Editors, & Students
s, 2004), p. 29.

Math 3: Trigonometry

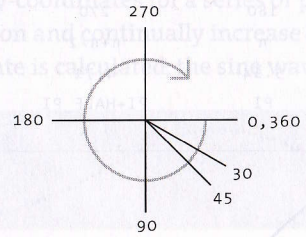
This unit introduces the basics of trigonometry and how to utilize it for generating form.

Syntax introduced:
`PI, QUARTER_PI, HALF_PI, TWO_PI, radians(), degrees()`
`sin(), cos(), arc()`

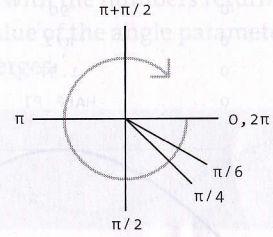
Trigonometry defines the relationships between the sides and angles of triangles. The trigonometric functions sine and cosine generate repeating numbers that can be used to draw waves, circles, arcs, and spirals.

Angles, Waves

Degrees are a common way to measure angles. A right angle is 90°, halfway around a circle is 180°, and the full circle is 360°. In working with trigonometry, angles are measured in units called radians. Using radians, the angle values are expressed in relation to the mathematical value π, written in Latin characters as "pi" and pronounced "pie." In terms of radians, a right angle is π/2, halfway around a circle is simply π, and the full circle is 2π.



Degree values



Radian values

The numerical value of π is a constant thought to be be infinitely long and without a repeating pattern. It is the ratio of the circumference of a circle to its diameter. When writing Processing code, use the mathematical constant `PI` to represent this number. Other commonly used values of π are expressed with the constants `QUARTER_PI`, `HALF_PI`, and `TWO_PI`. Run the following line of code to see the value of π to 8 significant digits.

```
println(PI);  // Prints the value of PI to the text area
```

14-01

In casual use, the numerical value of π is 3.14, and 2π is 6.28. Angles can be converted from degrees to radians with the `radians()` function, or vice versa using `degrees()`.