Chapter 28: 2D Transforms

Function/Parameter	Details
rotate(x)	Defines a transformation that moves the element around a fixed point on the Z axis
translate(x,y)	Moves the position of the element on the X and Y axis
translateX(x)	Moves the position of the element on the X axis
translateY(y)	Moves the position of the element on the Y axis
scale(x,y)	Modifies the size of the element on the X and Y axis
scaleX(x)	Modifies the size of the element on the X axis
scaleY(y)	Modifies the size of the element on the Y axis
skew(x,y)	Shear mapping, or transvection, distorting each point of an element by a certain angle in each direction
skewX(x)	Horizontal shear mapping distorting each point of an element by a certain angle in the horizontal direction
skewY(y)	Vertical shear mapping distorting each point of an element by a certain angle in the vertical direction
matrix()	Defines a 2D transformation in the form of a transformation matrix.
angle	The angle by which the element should be rotated or skewed (depending on the function with which it is used). Angle can be provided in degrees (deg), gradians (grad), radians (rad) or turns (turn). In skew() function, the second angle is optional. If not provided, there will be no (0) skew in Y-axis.
length-or-percentage	The distance expressed as a length or a percentage by which the element should be translated. In translate() function, the second length-or-percentage is optional. If not provided, then there would be no (0) translation in Y-axis.
scale-factor	A number which defines how many times the element should be scaled in the specified axis. In scale() function, the second scale-factor is optional. If not provided, the first scale-factor will be applied for Y-axis also.

Section 28.1: Rotate

HTML

```
<div class="rotate"></div>
```

CSS

```
.rotate {
    width: 100px;
    height: 100px;
    background: teal;
    transform: rotate(45deg);
}
```

This example will rotate the div by 45 degrees clockwise. The center of rotation is in the center of the div, 50% from left and 50% from top. You can change the center of rotation by setting the transform-origin property.

```
transform-origin: 100% 50%;
```

The above example will set the center of rotation to the middle of the right side end.

Section 28.2: Scale

HTML

```
<div class="scale"></div>
```

CSS

```
.scale {
    width: 100px;
    height: 100px;
    background: teal;
    transform: scale(0.5, 1.3);
}
```

This example will scale the div to `100px * 0.5 = 50px` on the X axis and to `100px * 1.3 = 130px` on the Y axis. The center of the transform is in the center of the div, `50%` from left and `50%` from top.

Section 28.3: Skew

HTML

```
<div class="skew"></div>
```

CSS

```
.skew {
    width: 100px;
    height: 100px;
    background: teal;
    transform: skew(20deg, -30deg);
}
```

This example will skew the div by 20 degrees on the X axis and by - 30 degrees on the Y axis.
The center of the transform is in the center of the div, `50%` from left and `50%` from top.

See the result here.

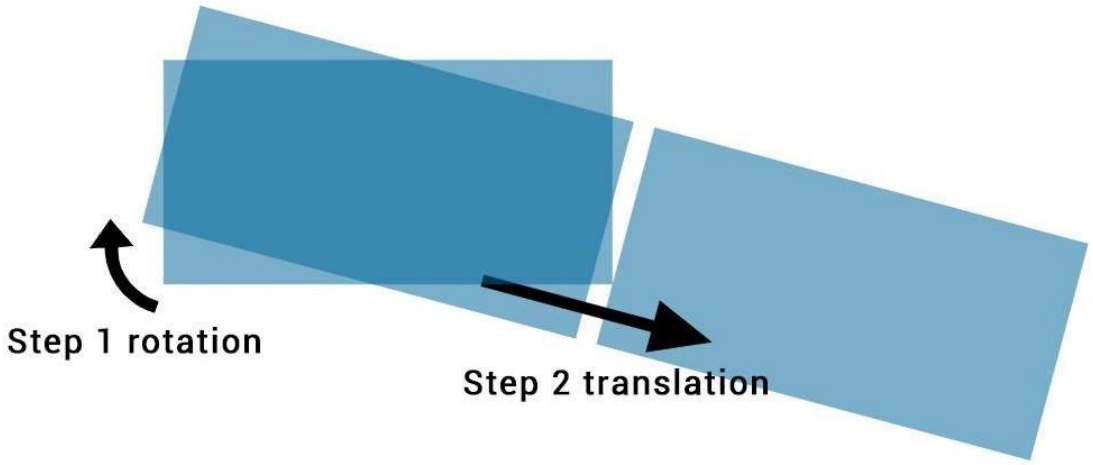
Section 28.4: Multiple transforms

Multiple transforms can be applied to an element in one property like this:

```
transform: rotate(15deg) translateX(200px);
```

This will rotate the element 15 degrees clockwise and then translate it 200px to the right.

In chained transforms, **the coordinate system moves with the element**. This means that the translation won't be horizontal but on an axis rotate 15 degrees clockwise as shown in the following image:



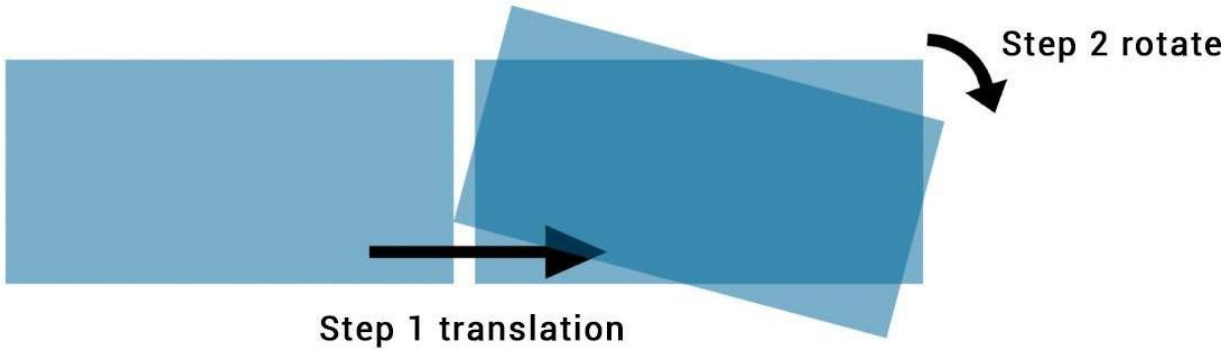
Changing the order of the transforms will change the output. The first example will be different to

```
transform: translateX(200px) rotate(15deg);
```

```
<div class="transform"></div>
```

```
.transform {
  transform: rotate(15deg) translateX(200px);
}
```

As shown in this image:



Section 28.5: Translate

HTML

```
<div class="translate"></div>
```

CSS

```
.translate {
    width: 100px;
    height: 100px;
    background: teal;
    transform: translate(200px, 50%);
```

```
}
```

This example will move the div by 200px on the X axis and by `100px * 50% = 50px` on the Y axis.

You can also specify translations on a single axis.

On the X axis:

```
.translate {
    transform: translateX(200px);
}
```

On the Y axis:

```
.translate {
    transform: translateY(50%);
}
```

Section 28.6: Transform Origin

Transformations are done with respect to a point which is defined by the `transform-origin` property. The

property takes 2 values : `transform-origin: X Y;`

In the following example the first div (`.tl`) is rotate around the top left corner with `transform-origin: 0 0;` and the second (`.tr`)is transformed around it's top right corner with `transform-origin: 100% 0`. The rotation is applied **on hover** :

HTML:

```
<div class="transform originl"></div>
<div class="transform origin2"></div>
```

CSS:

```
.transform {
    display: inline-block;
    width: 200px;
    height: 100px;
    background: teal;
    transition: transform 1s;
}

.origin1 {
    transform-origin: 0 0;
}

.origin2 {
    transform-origin: 100% 0;
}

.transform:hover {
    transform: rotate(30deg);
}
```

The default value for the transform-origin property is `50% 50%` which is the center of the element.