

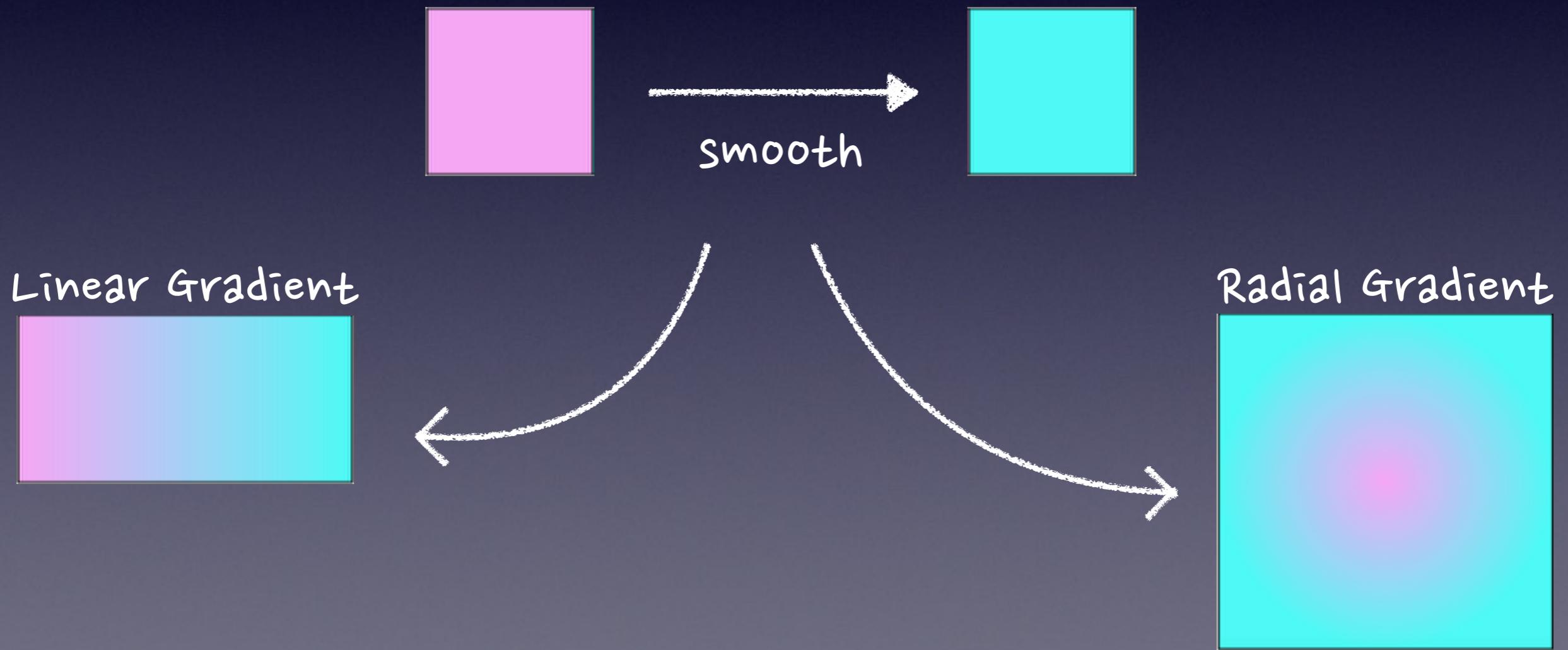
Gradient & Transformation

조정은

Gradient?



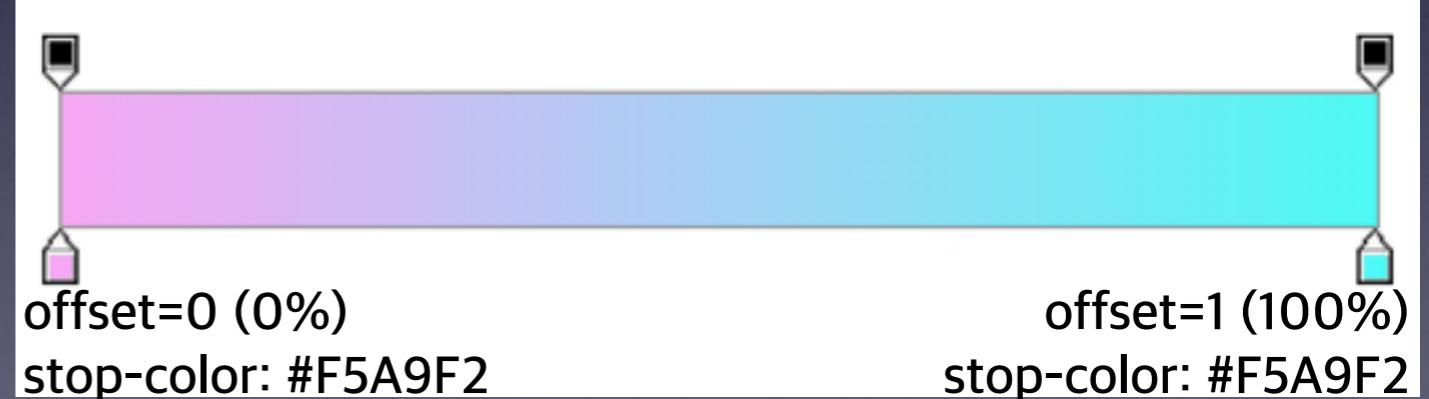
Gradient?



Linear Gradient

Use <stop>_1

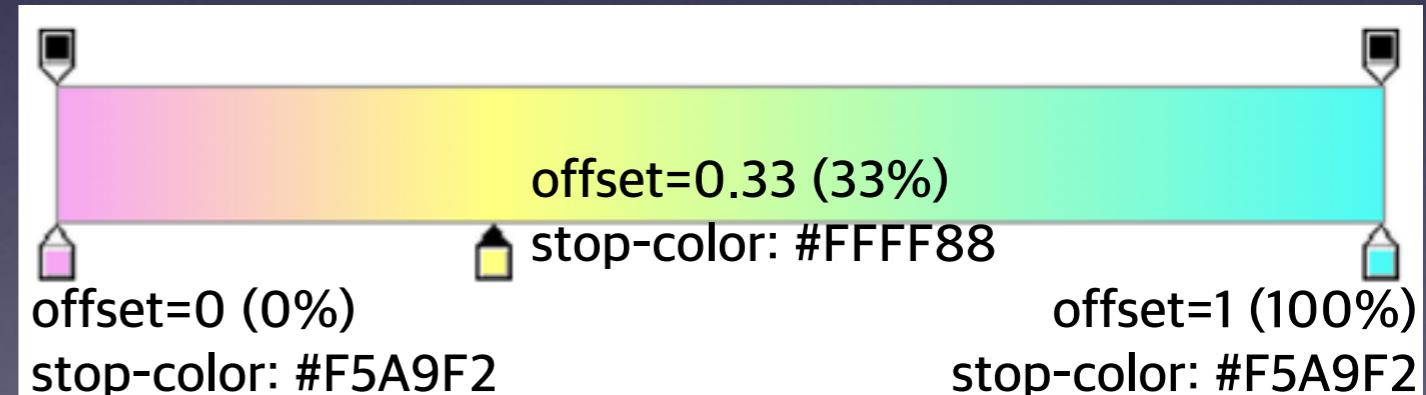
```
<defs>
  <linearGradient id="lg1">
    <stop offset="0" style="stop-color: #F5A9F2;"/>
    <stop offset="1" style="stop-color: #58FAF4;"/>
  </linearGradient>
</defs>
```



```
<rect x="10" y="120" width="200px" height="100px" style="fill: url(#lg1); stroke: black;"/>
```

Use <stop>_2

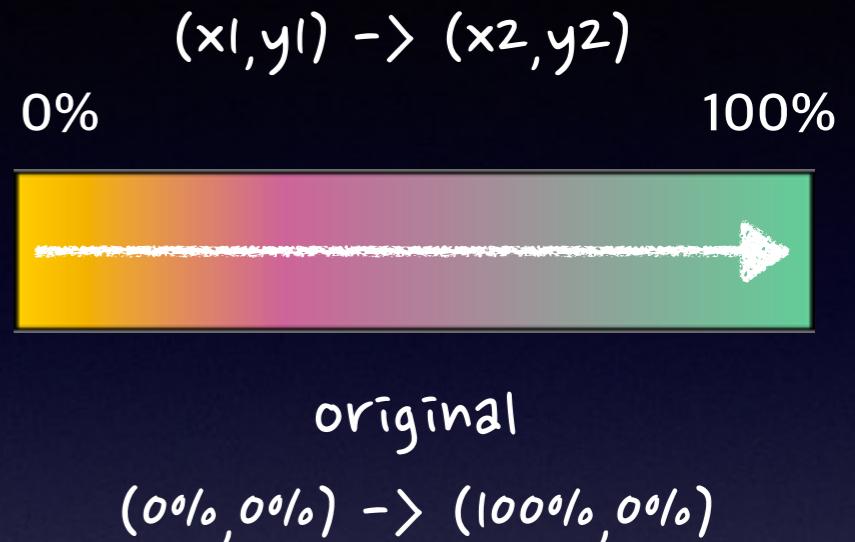
```
<defs>
  <linearGradient id="lg2">
    <stop offset="0%" style="stop-color: #F5A9F2;"/>
    <stop offset="33%" style="stop-color: #FFFF88;"/>
    <stop offset="100%" style="stop-color: #58FAF4;"/>
  </linearGradient>
</defs>
```



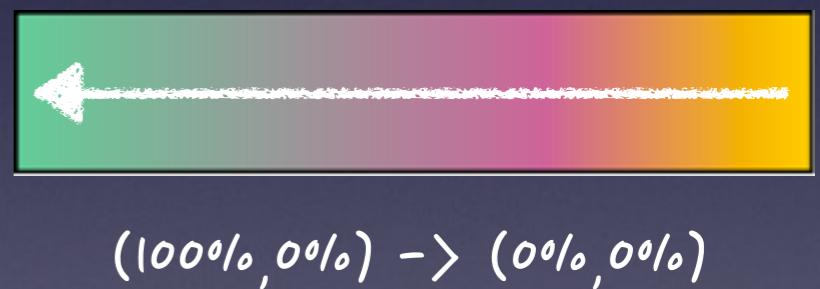
```
<rect x="10" y="120" width="200px" height="100px" style="fill: url(#lg2); stroke: black;"/>
```

Direction_1

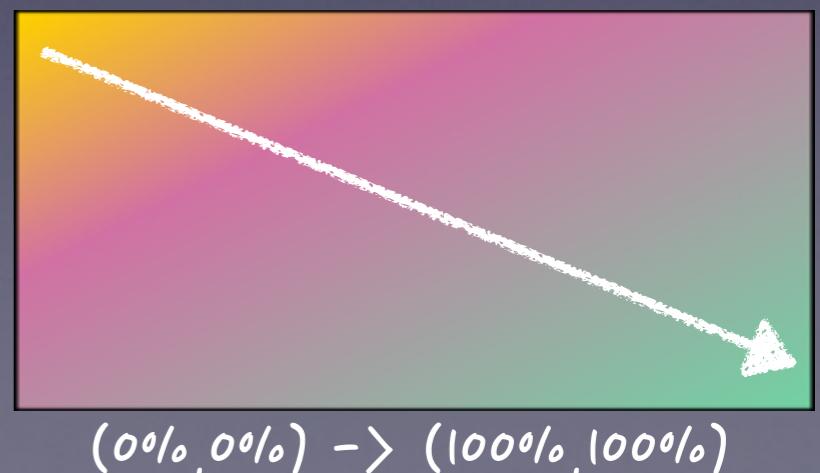
```
<linearGradient id="three_stops">  
  <stop offset="0%" style="stop-color: #ffcc00;"/>  
  <stop offset="33.3%" style="stop-color: #cc6699;"/>  
  <stop offset="100%" style="stop-color: #66cc99;"/>  
</linearGradient>
```



```
<linearGradient id="right_to_left"  
  xlink:href="#three_stops"  
    x1="100%" y1="0%" x2="0%" y2="0%"/>
```



```
<linearGradient id="diagonal"  
  xlink:href="#three_stops"  
    x1="100%" y1="0%" x2="0%" y2="100%"/>
```



Direction_2



original

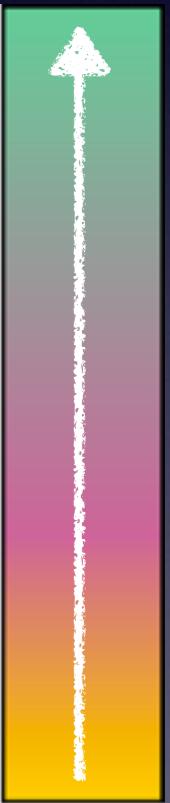
```
<linearGradient id="down" xlink:href="#three_stops"  
x1="0%" y1="0%" x2="0%" y2="100%"/>
```

$(0\%, 0\%) \rightarrow (0\%, 100\%)$

```
<linearGradient id="up" xlink:href="#three_stops"  
x1="0%" y1="100%" x2="0%" y2="0%"/>
```

$(0\%, 100\%) \rightarrow (0\%, 0\%)$

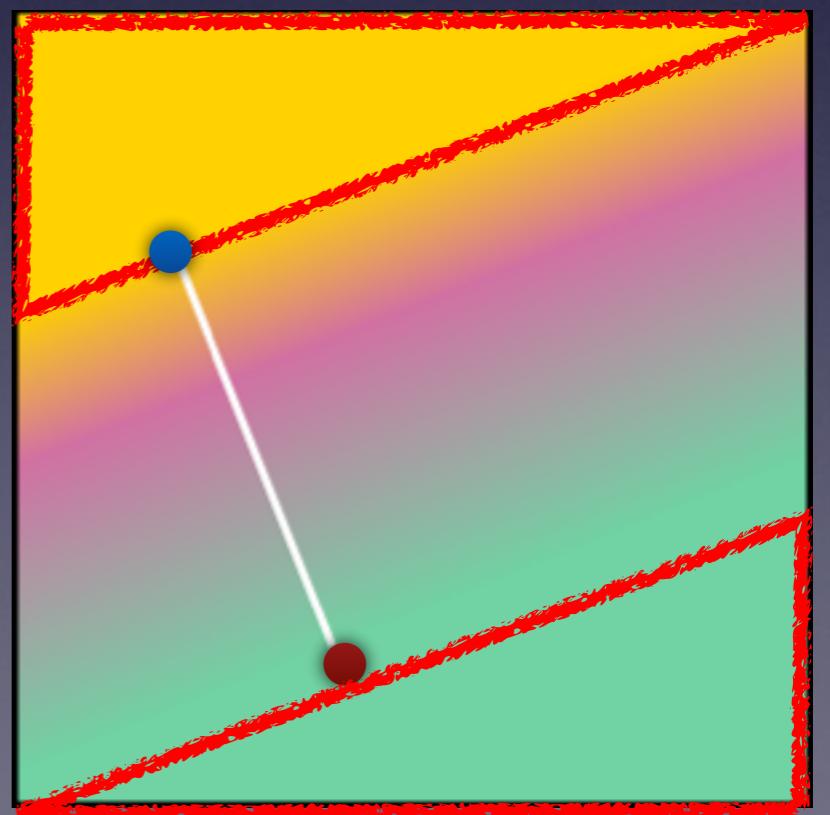
$(x1, y1) \rightarrow (x2, y2)$



Spread Method

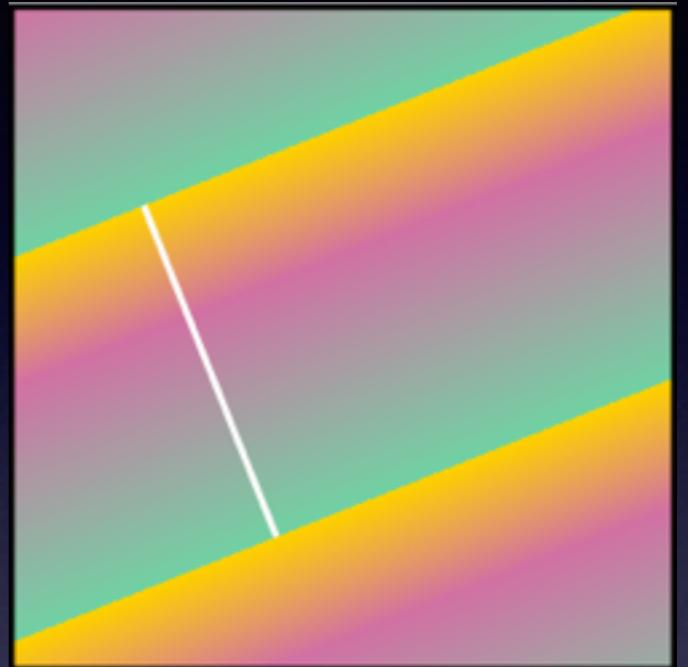
```
<linearGradient id="partial" x1="20%" y1="30%" x2="40%" y2="80%>  
  <stop offset="0%" style="stop-color: #ffcc00;" />  
  <stop offset="33.3%" style="stop-color: #cc6699;" />  
  <stop offset="100%" style="stop-color: #66cc99;" />  
</linearGradient>
```

```
<linearGradient id="padder" xlink:href="#partial"  
  spreadMethod="pad"/>
```



Spread Method

```
<linearGradient id="repeated" xlink:href="#partial"  
spreadMethod="repeat"/>
```



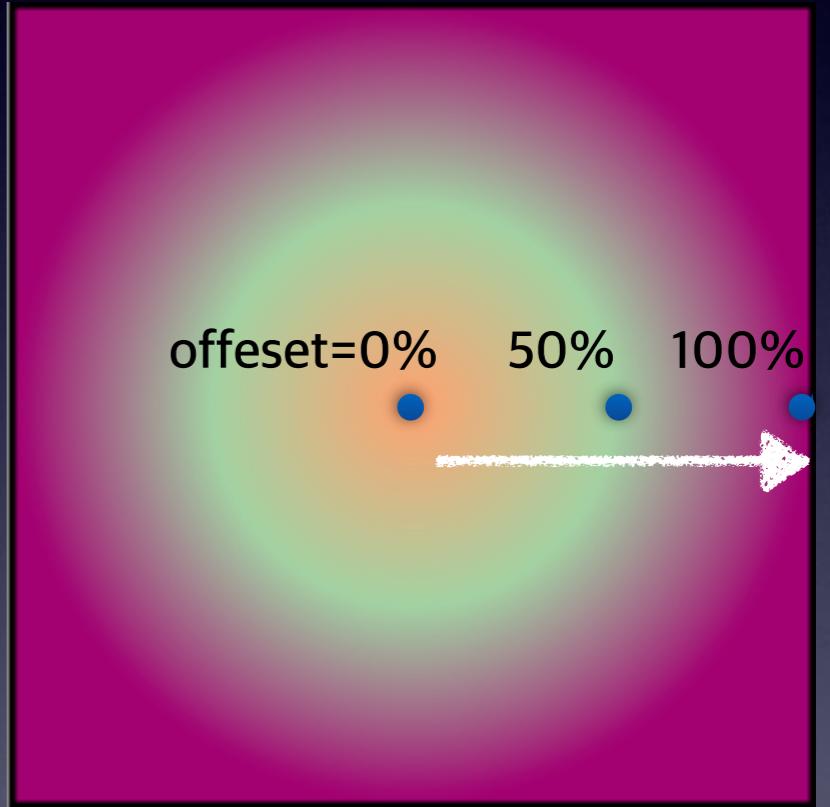
```
<linearGradient id="reflected" xlink:href="#partial"  
spreadMethod="reflect"/>
```



Radial Gradient

Use_1

```
<radialGradient id="original">  
  <stop offset="0%" style="stop-color: #f96;"/>  
  <stop offset="50%" style="stop-color: #9c9;"/>  
  <stop offset="100%" style="stop-color: #906;"/>  
</radialGradient>
```

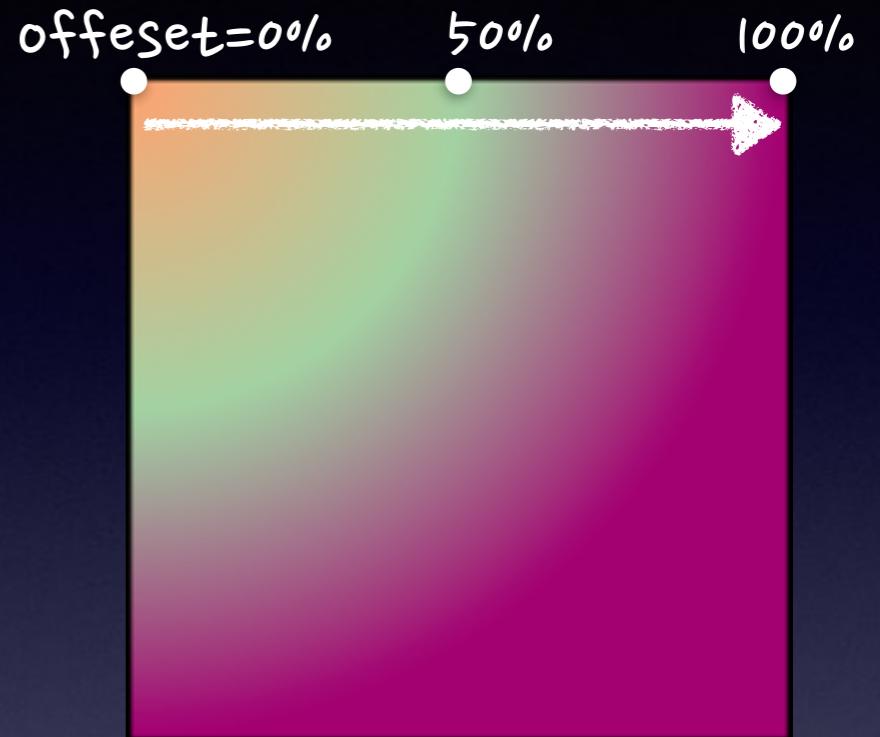


default: cx="50%" cy="50%" r="50%

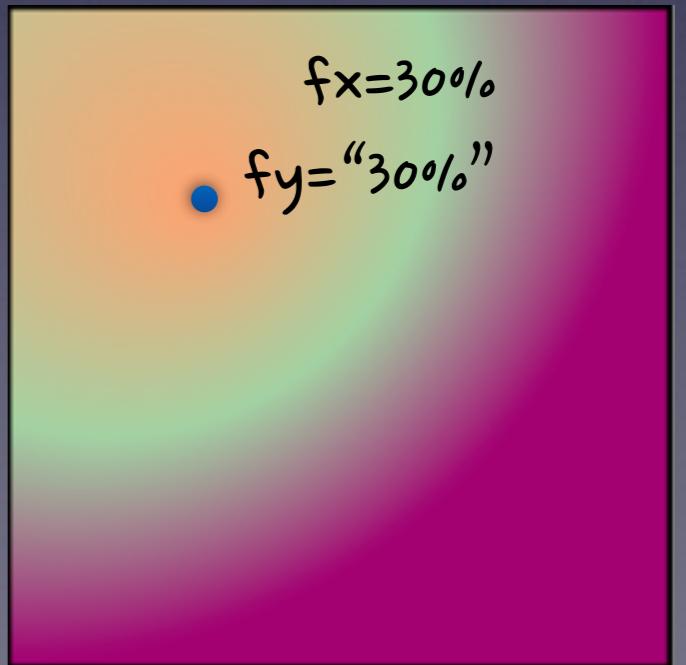
```
<rect x="20" y="20" width="100px" height="100px" style="fill: url(#original); stroke: black;"/>
```

Direction_1

```
<radialGradient id="zero_base" cx="0" cy="0" r="100%">  
  <stop offset="0%" style="stop-color: #f96;"/>  
  <stop offset="50%" style="stop-color: #9c9;"/>  
  <stop offset="100%" style="stop-color: #906;"/>  
</radialGradient>
```



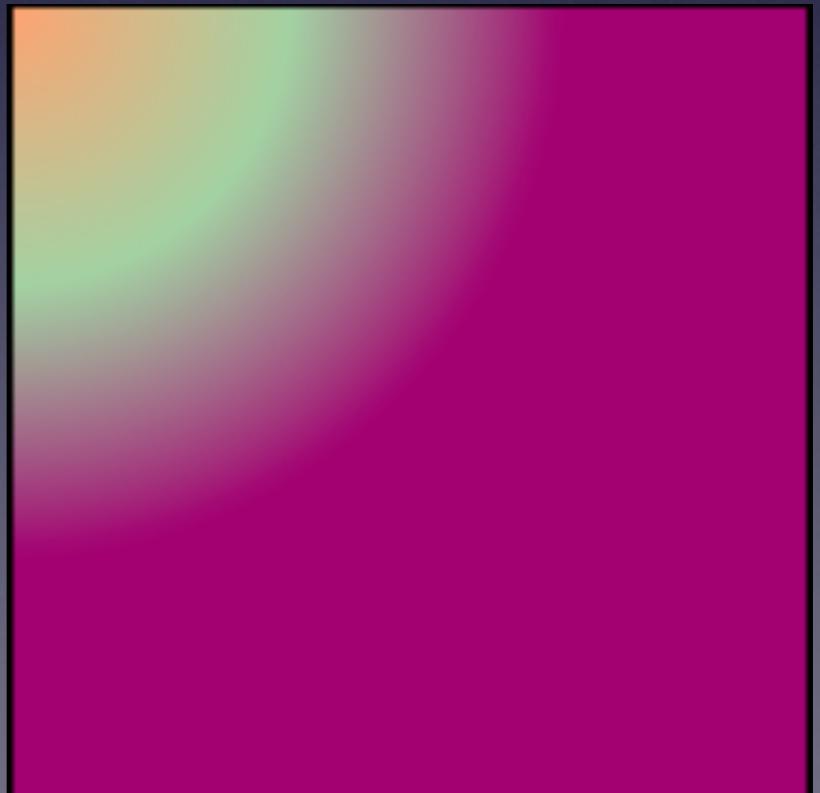
```
<radialGradient id="focal_set"  
  cx="0" cy="0" r="100%" fx="30%" fy="30%">  
  <stop offset="0%" style="stop-color: #f96;"/>  
  <stop offset="50%" style="stop-color: #9c9;"/>  
  <stop offset="100%" style="stop-color: #906;"/>  
</radialGradient>
```



Spread Method

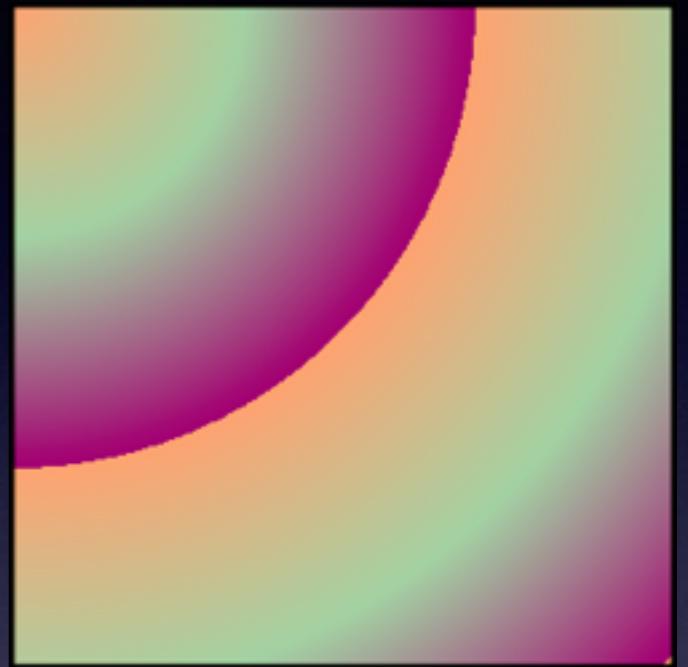
```
<radialGradient id="three_stop_r70" cx="0%" cy="0%" r="70%>
  <stop offset="0%" style="stop-color: #f96;"/>
  <stop offset="33.3%" style="stop-color: #9c9;"/>
  <stop offset="100%" style="stop-color: ##906;"/>
</radialGradient>
```

```
<radialGradient id="padded"
  xlink:href="#three_stop_r70" spreadMethod="pad"/>
```

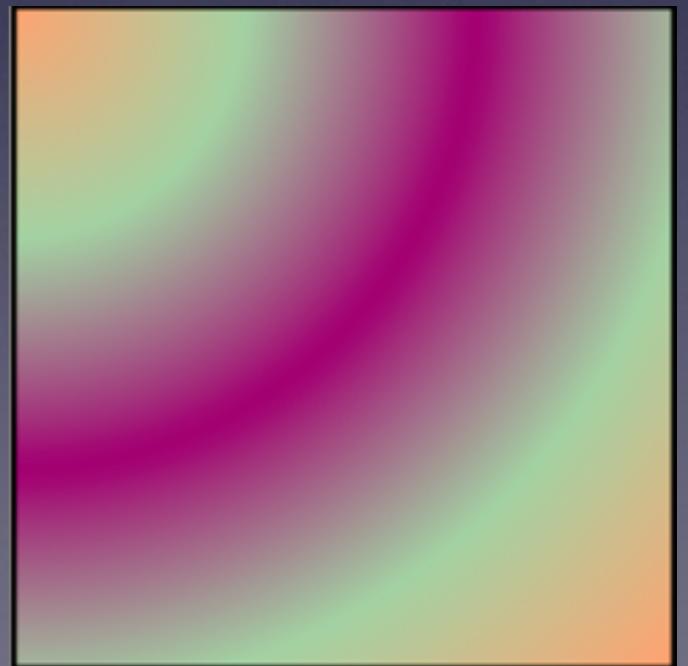


Spread Method

```
<radialGradient id="repeated"  
xlink:href="#three_stop_r70" spreadMethod="repeat"/>
```



```
<linearGradient id="reflected"  
xlink:href="#three_stop_r70"  
spreadMethod="reflect"/>
```



Gradient Summary

- fill : smooth transition of colors
- <stop> element : 'stop-color', 'offset' Attribute
- <linearGradient> : 'x1', 'y1' Attribute
(starting point, 0% stop color)
'x2', 'y2' Attribute (ending point, 100% stop color)
- <radialGradient> : 'fx', 'fy' Attribute
(focal point, 0% stop color)
'cx', 'cy', 'r' Attribute (center x, center y, radius)
- 'gradientUnits' Attribute : 'userSpaceOnUse' 이면 좌표계를 사용
(Default %)
- 'spreadMethod' Attribute : 'pad(default)', 'repeat', 'reflect'

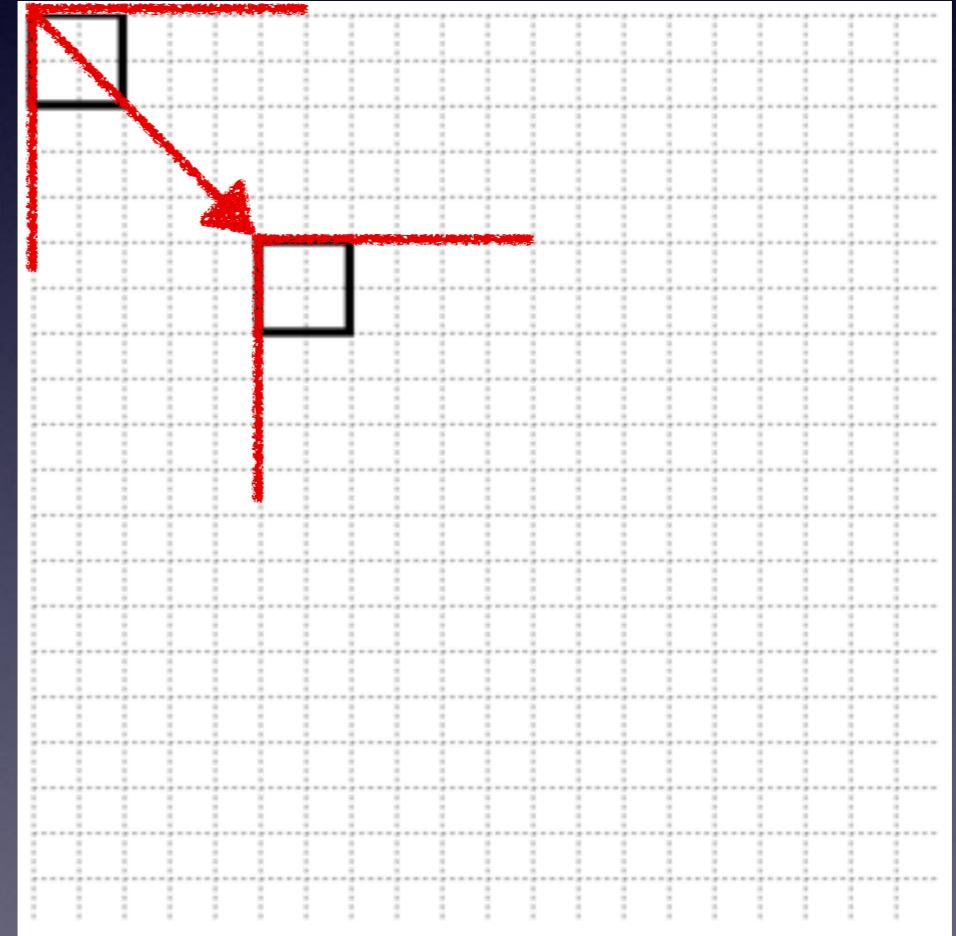
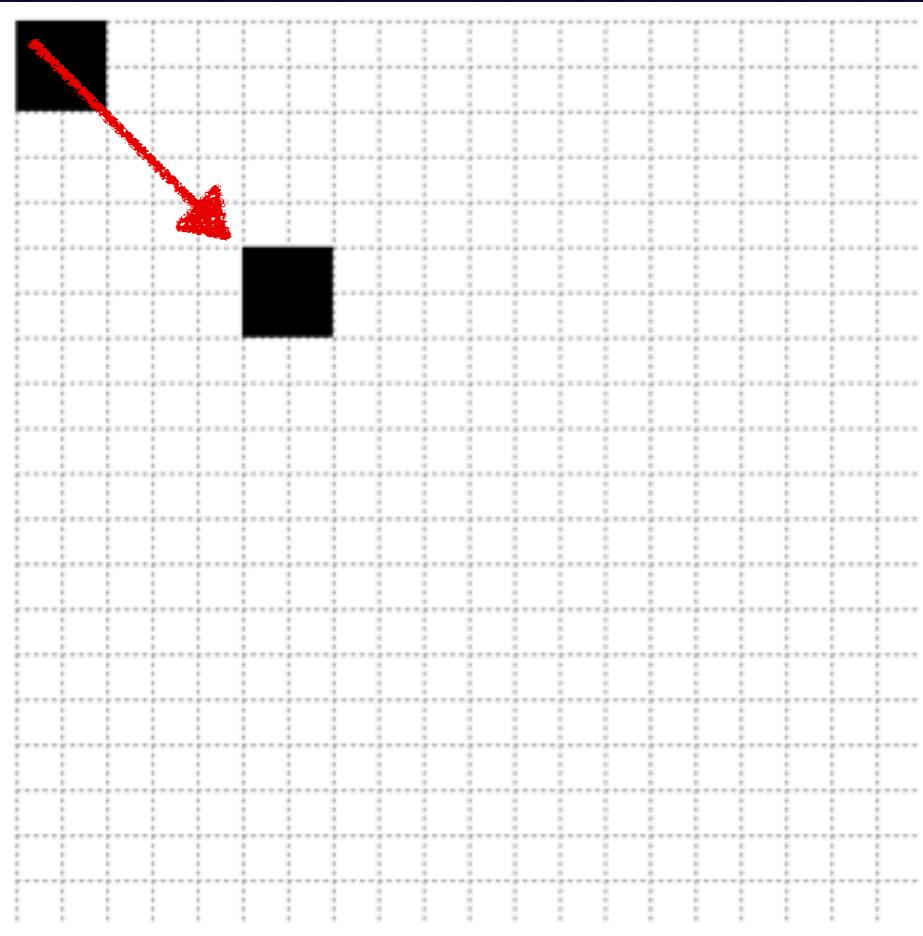
Transformation

Transformation?

- Translate
- Scale
- Rotate
- Skew

Translate

```
<g id="square">  
  <rect x="0" y="0" width="20" height="20" style="fill: black; stroke-width: 2;"/>  
</g>
```



```
<use xlink:href="#square"  
  x="50" y="50"/>
```

```
<use xlink:href="#square"  
  transform="translate(50,50)"/>
```

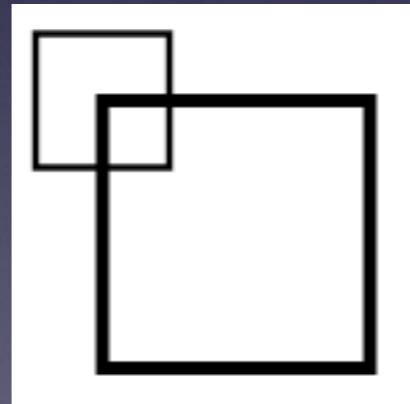
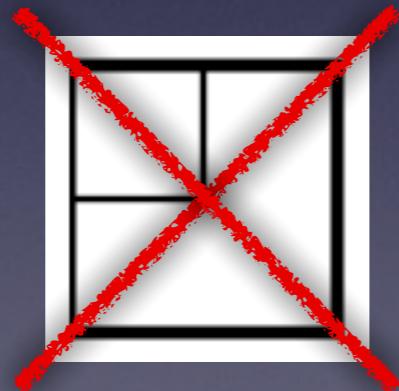


Transformation => 짧은 주제

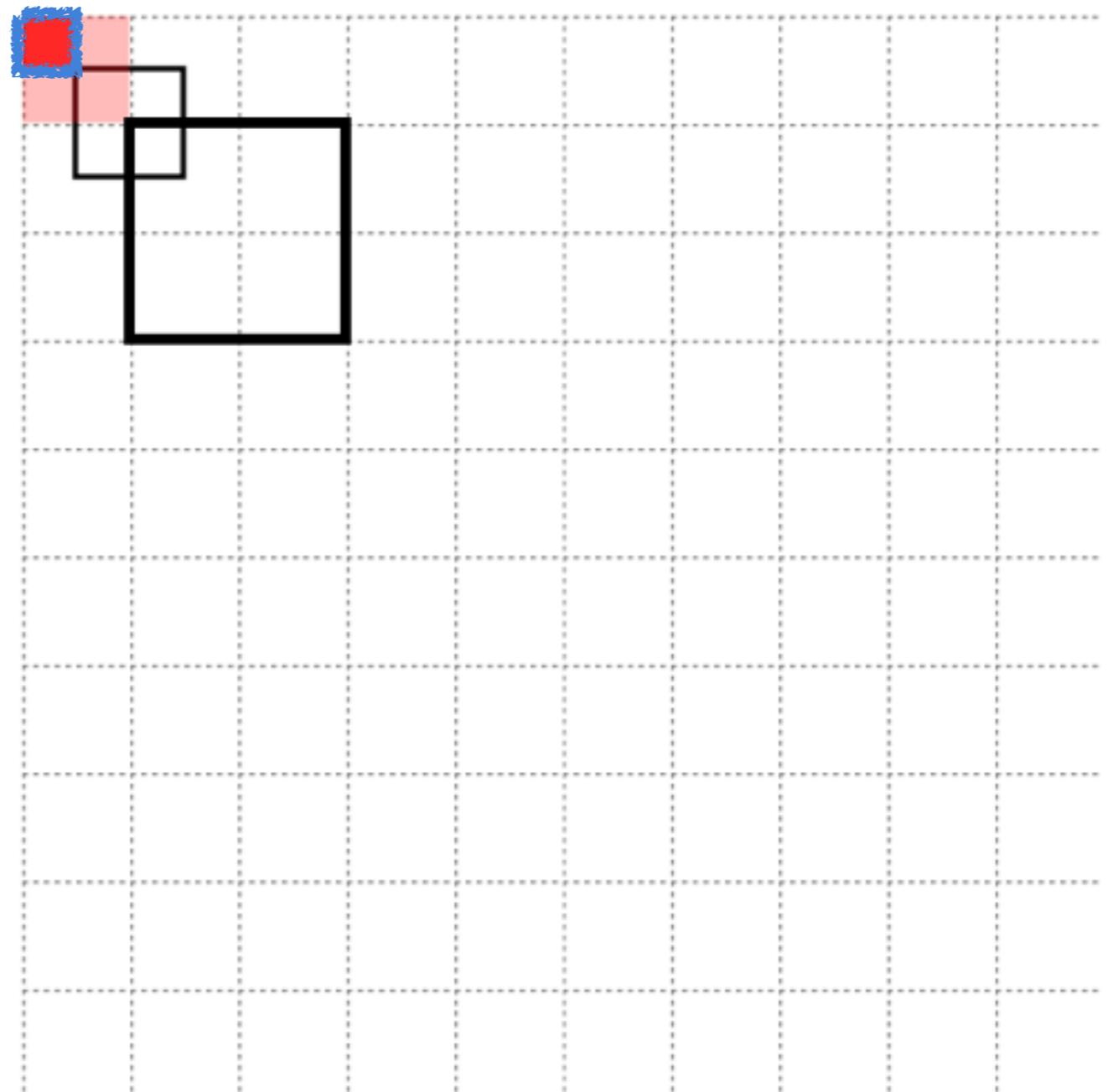
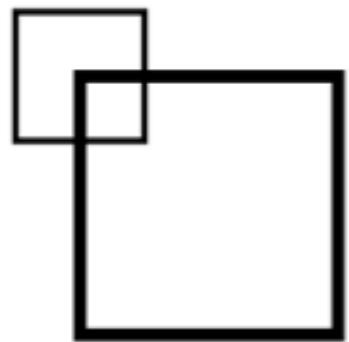
Scale

```
<g id="square">  
  <rect x="10" y="10" width="20" height="20" style="fill: none; stroke: black"/>  
</g>
```

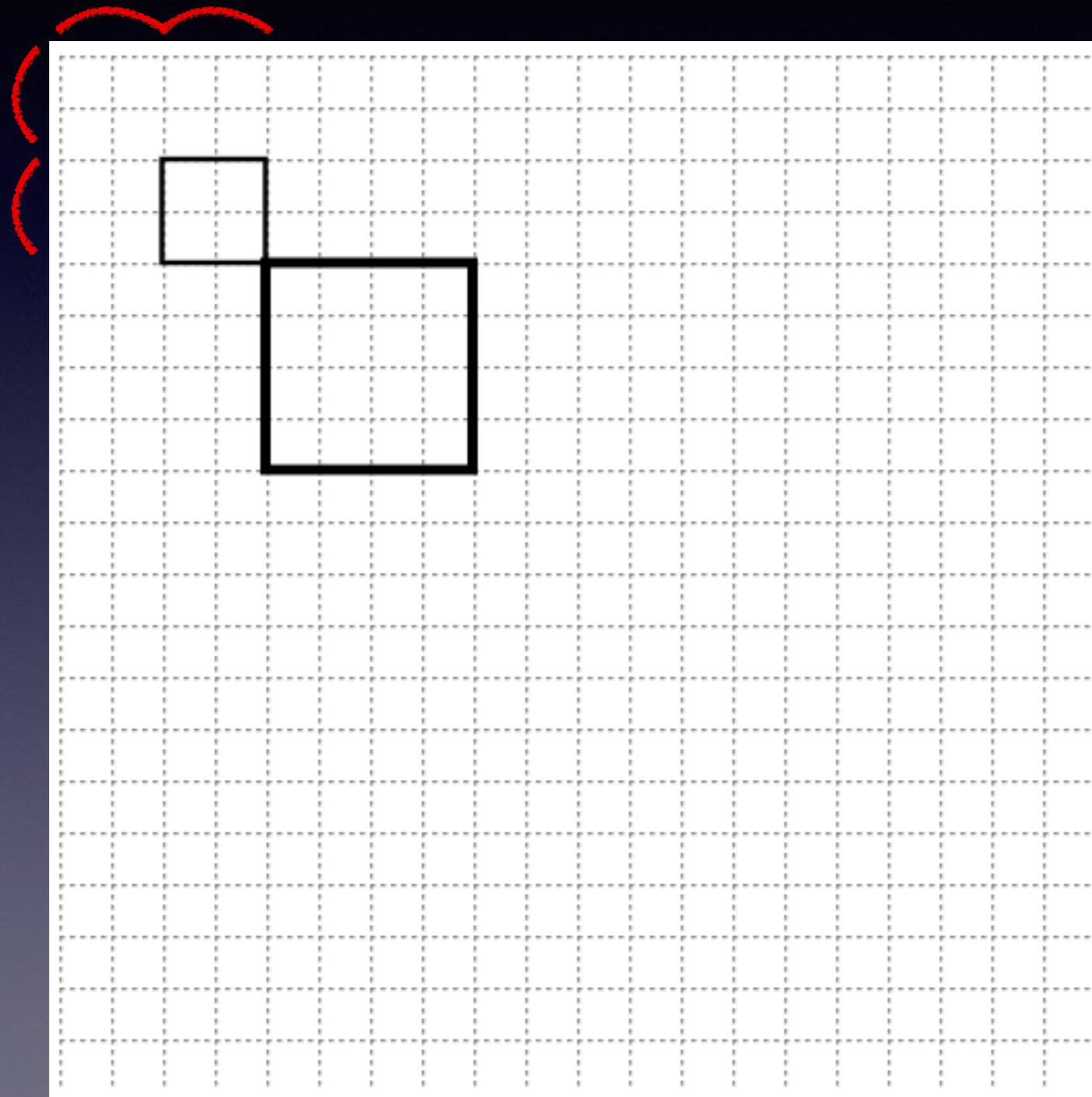
transform="scale(2)" $x \frac{1}{2}$ 21d11, $y \frac{1}{2}$ 21d11!



Scale

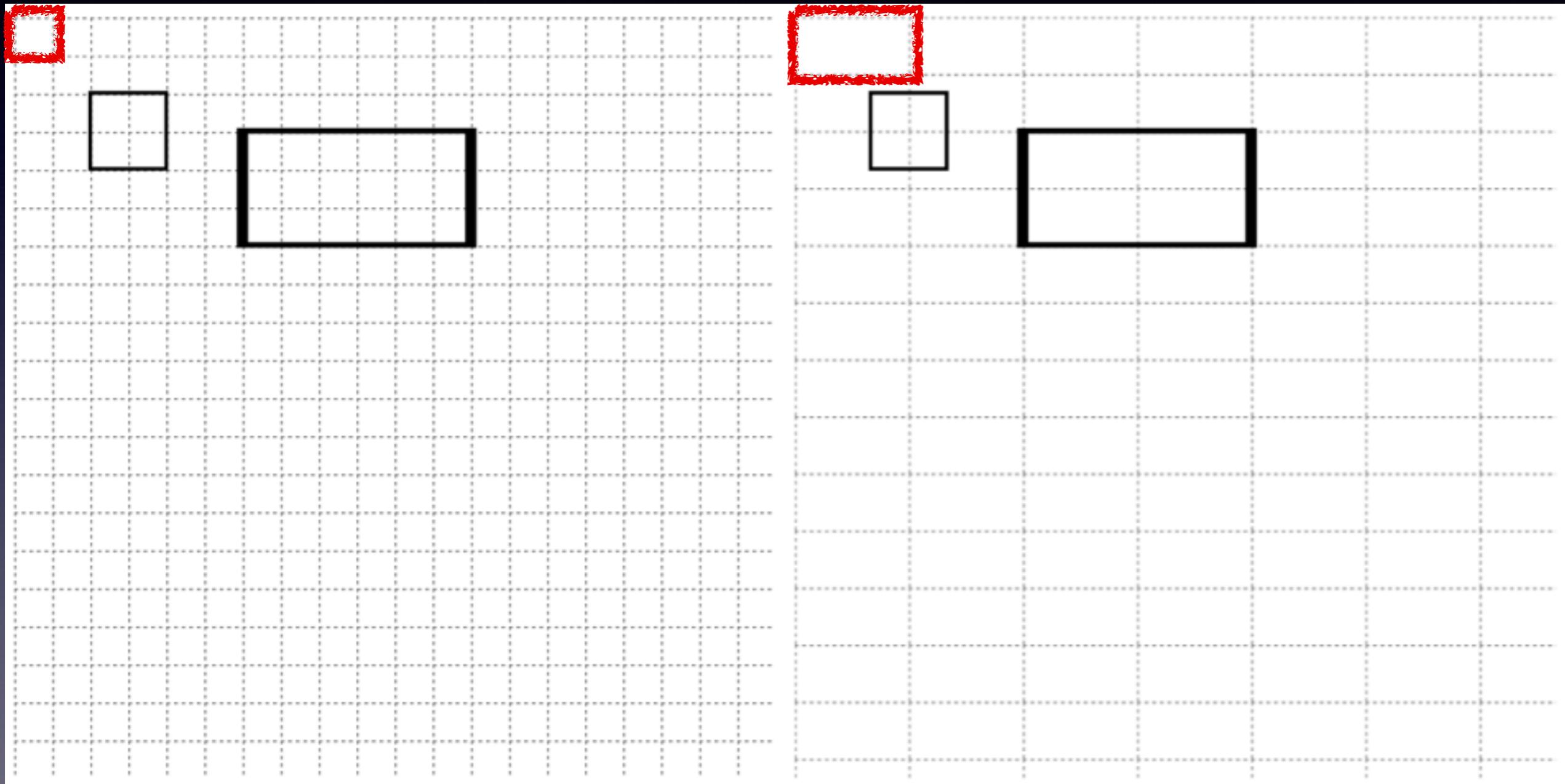


```
<g id="square">  
  <rect x="20" y="20" width="20" height="20" style="fill: none; stroke: black"/>  
</g>
```



transform="scale(2)"

```
<g id="square">  
  <rect x="20" y="20" width="20" height="20" style="fill: none; stroke: black"/>  
</g>
```

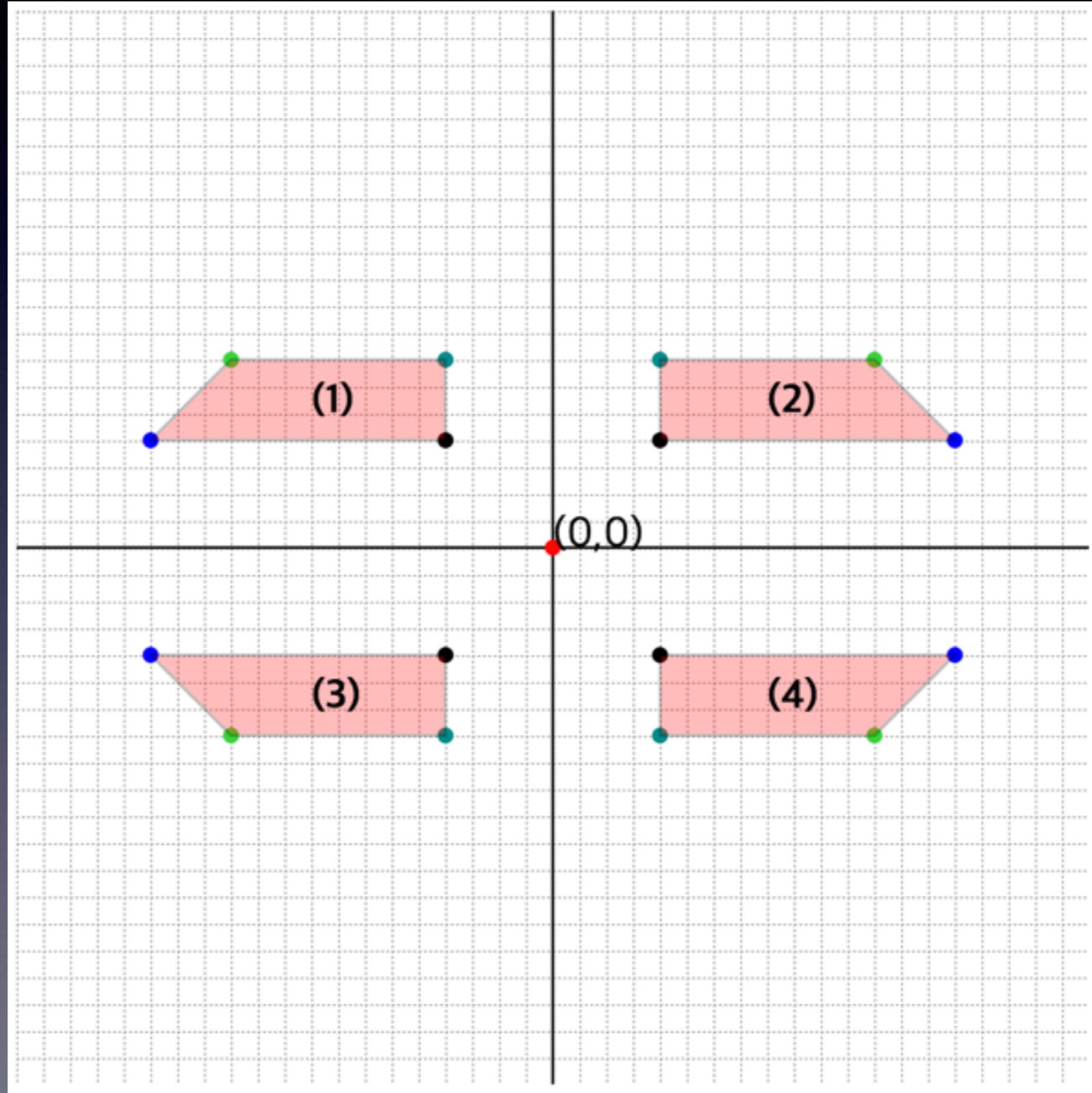


transform="scale(3, 1.5)"

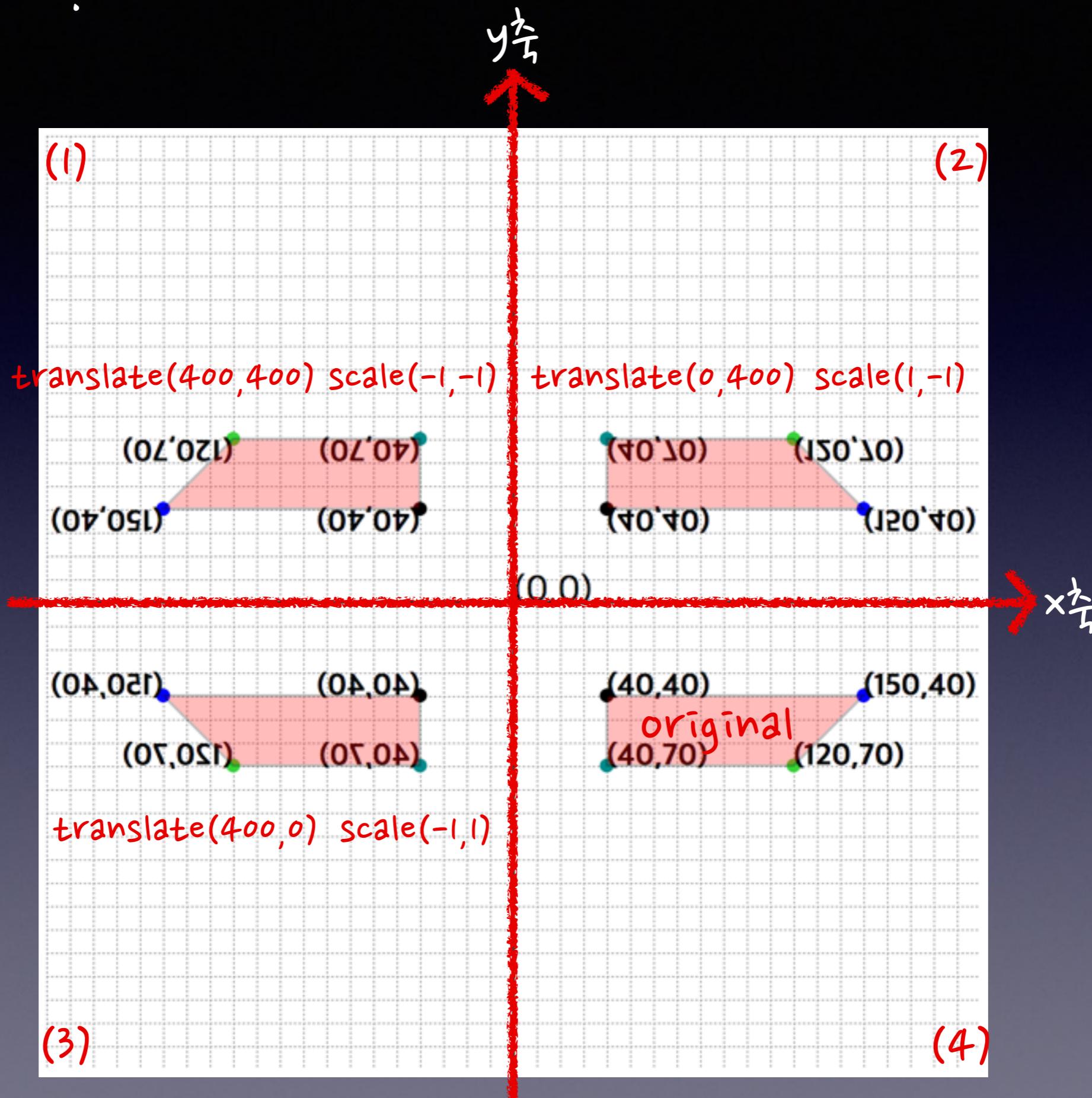
x $\frac{1}{3}$ 3181, y $\frac{1}{3}$ 1.5181!

Original?

```
<polygon points="40 40, 150 40, 120 70, 40 70" style="fill: #foo; stroke: black; opacity:0.3" />
```



transform = ?



Rotate

transform="rotate(r)"

r만큼 기울여라!

transform="rotate(r, cx , cy)"

중심좌표를 cx, cy로 이동하고 r만큼 기울여라!

transform="rotate(45)"

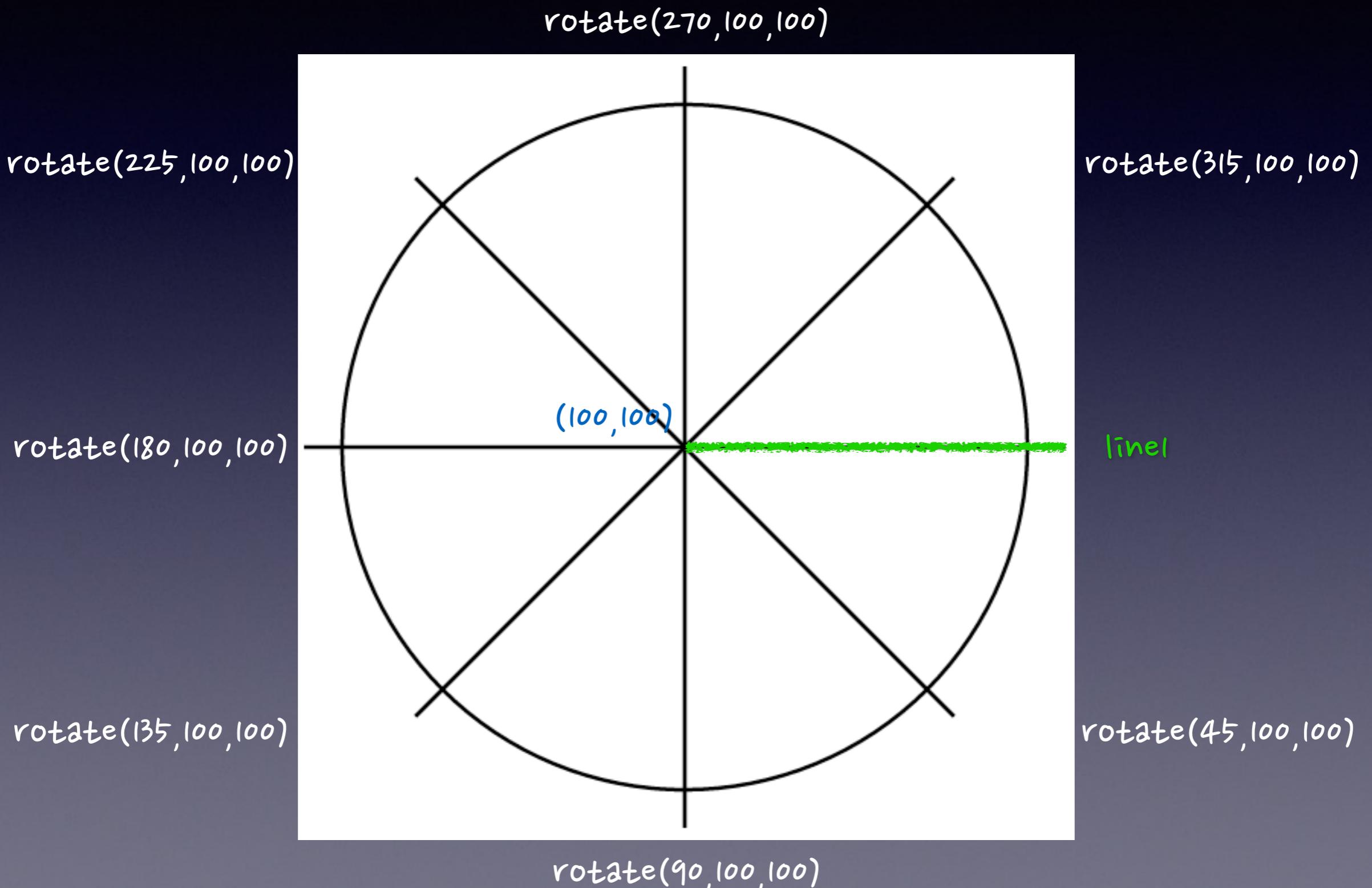
45도 기울여라!

transform="scale(45, 100, 100)"

(100,100) 중심좌표를 이동한 후 45도 기울여라

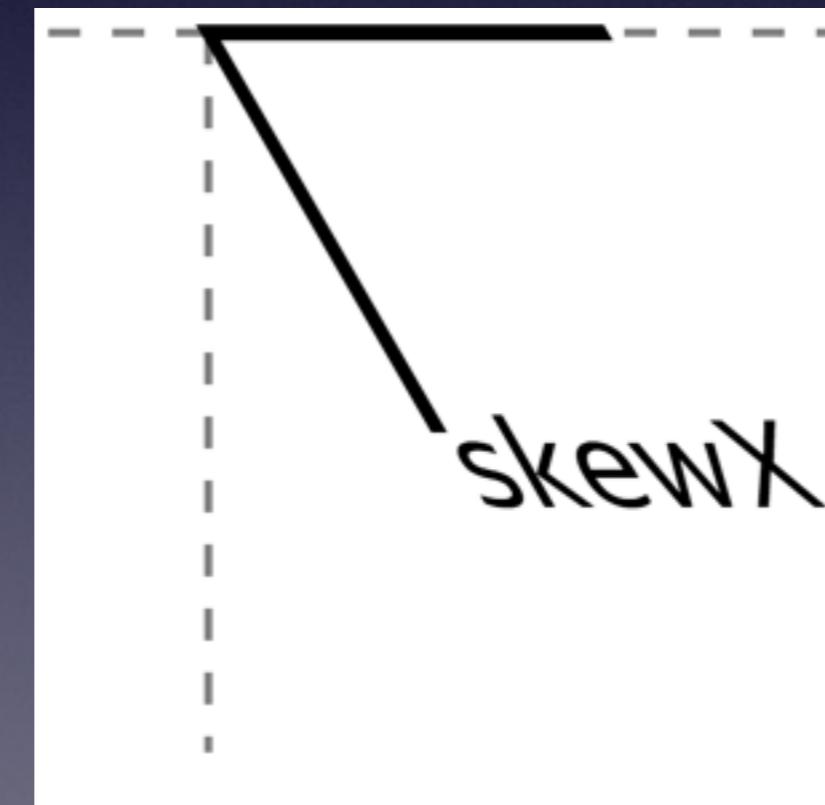
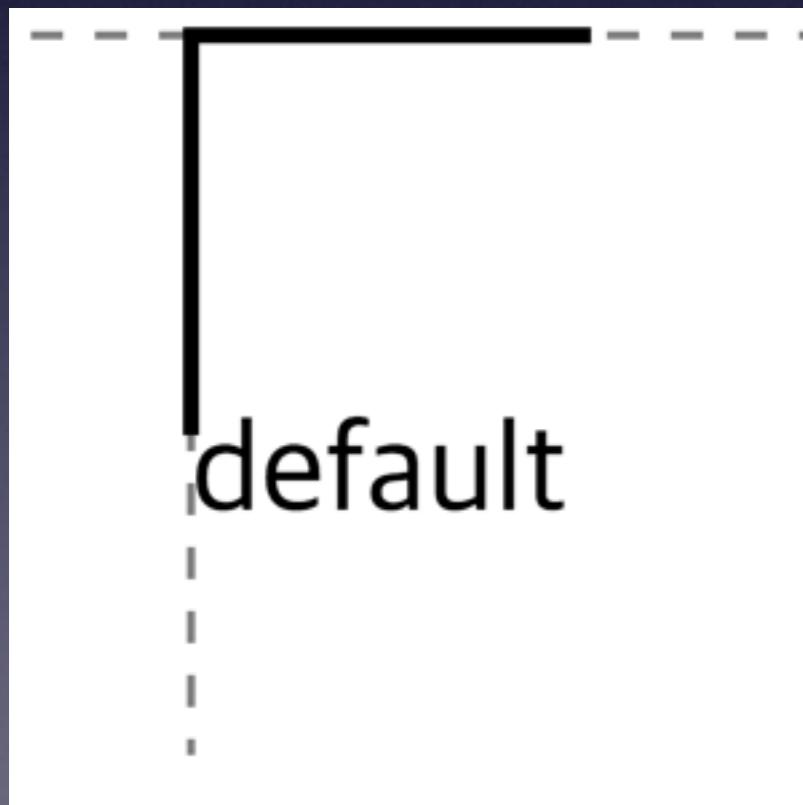
transform = ?

```
<circle cx="100" cy="100" r="90" fill="none" stroke="black"/>  
<line id="line1" x1="100" y1="100" x2="200" y2="100" style="stroke: black;"/>
```

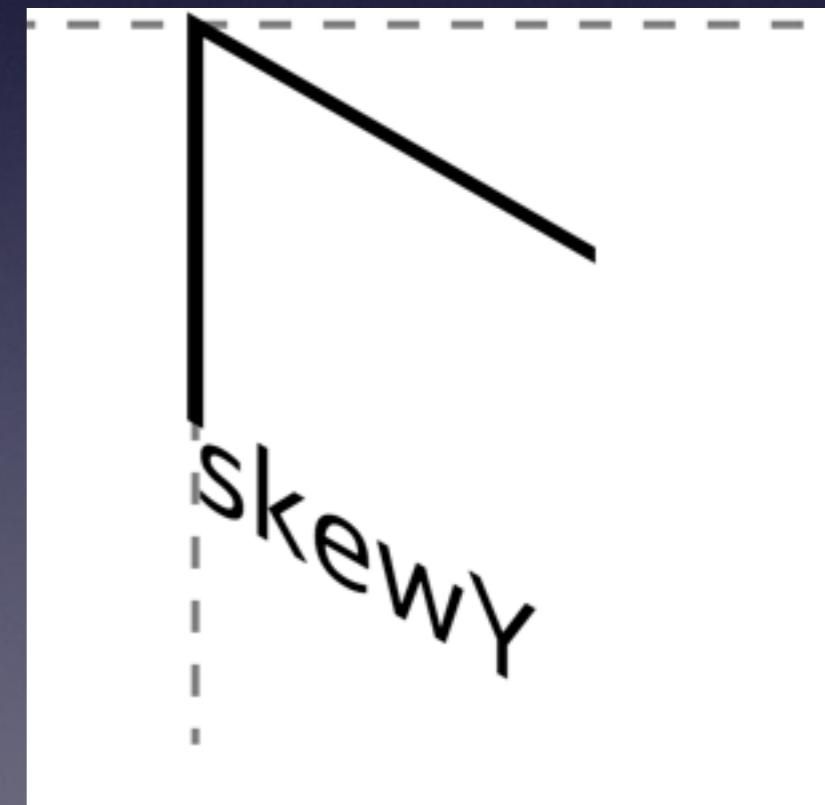


Skew

```
<g>
  <polyline points="50 0, 0 0, 0 50" style="fill: none; stroke: black; stroke-width: 2;"/>
  <text x="0" y="60">default</text>
</g>
```



transform="skewX(30)"



transform="skewY(30)"

Transformation Summary

transform	description
translate(x,y)	전체 좌표계를 x축으로 'x'만큼, y축으로 'y'만큼 이동해라.
scale(xFactor,yFactor)	전체 좌표계를 x축으로 'xFactor'배 만큼, y축으로 'yFactor'배 만큼 확대해라.
scale(factor)	전체 좌표계를 x축, y축으로 'factor'배 만큼 확대해라.
rotate(angle)	전체 좌표계를 (0,0)기준으로 'angle'도 만큼 회전해라.
rotate(angle,centerX,centerY)	전체 좌표계를 'centerX', 'centerY'로 이동시킨 다음 'angle'도 만큼 회전해라.
skewX(angle)	x축을 기준으로 'angle'도 만큼 좌표면을 기울여라.
skewY(angle)	y축을 기준으로 'angle'도 만큼 좌표면을 기울여라.