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????Line Chart??

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- ?????
- ?????
- ?????
- ???????

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??
??X
??????????????????????????Y????????????????

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```
[
{ year: '1991', value: 3 },
{ year: '1992', value: 4 },
{ year: '1993', value: 3.5 },
{ year: '1994', value: 5 },
{ year: '1995', value: 4.9 },
{ year: '1996', value: 6 },
{ year: '1997', value: 7 },
{ year: '1998', value: 9 },
{ year: '1999', value: 13 }
]
```

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```
40,20,50,50
```

- □□□ Scale

Year ???? X? ?

??	???
??	year
??	linear
????	1
??????	??

Value ???? Y? ?

??	???
??	value
??	linear
????	1
???	0
???	13
??????	??

- ? Geom

??? Line ?

??	???
??	year*value
??	??

??? point ?

??	???
??	year*value
??	??
??	circle
??	4
?? - ??	#ffffff
?? - ??	1

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```
[{
  "month": "Jan",
  "city": "Tokyo",
  "temperature": 7
}, {
  "month": "Jan",
  "city": "London",
  "temperature": 3.9
}, {
  "month": "Feb",
  "city": "Tokyo",
  "temperature": 6.9
}, {
  "month": "Feb",
  "city": "London",
  "temperature": 4.2
}, {
  "month": "Mar",
  "city": "Tokyo",
  "temperature": 9.5
}, {
```

"month": "Mar",
"city": "London",
"temperature": 5.7
}, {
"month": "Apr",
"city": "Tokyo",
"temperature": 14.5
}, {
"month": "Apr",
"city": "London",
"temperature": 8.5
}, {
"month": "May",
"city": "Tokyo",
"temperature": 18.4
}, {
"month": "May",
"city": "London",
"temperature": 11.9
}, {
"month": "Jun",
"city": "Tokyo",
"temperature": 21.5
}, {
"month": "Jun",
"city": "London",
"temperature": 15.2
}, {
"month": "Jul",
"city": "Tokyo",
"temperature": 25.2
}, {
"month": "Jul",
"city": "London",
"temperature": 17
}, {
"month": "Aug",
"city": "Tokyo",
"temperature": 26.5
}, {

```
  "month": "Aug",
  "city": "London",
  "temperature": 16.6
}, {
  "month": "Sep",
  "city": "Tokyo",
  "temperature": 23.3
}, {
  "month": "Sep",
  "city": "London",
  "temperature": 14.2
}, {
  "month": "Oct",
  "city": "Tokyo",
  "temperature": 18.3
}, {
  "month": "Oct",
  "city": "London",
  "temperature": 10.3
}, {
  "month": "Nov",
  "city": "Tokyo",
  "temperature": 13.9
}, {
  "month": "Nov",
  "city": "London",
  "temperature": 6.6
}, {
  "month": "Dec",
  "city": "Tokyo",
  "temperature": 9.6
}, {
  "month": "Dec",
  "city": "London",
  "temperature": 4.8
}]
```


- □□

```
40,20,50,50
```

• □□□ Scale

temperature ??? ? X? ?

??	???
??	temperature
??	linear
??????	??
???	0
?????	`function(val) { return val + '°C'; }`

• ? Geom

??? point ?

??	???
??	month*temperature
??	??
????	city
??	circle
??	4
?? - ??	#ffffff
?? - ??	1

??? Line ?

??	???
??	month*temperature
??	??
????	city

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```
[{
  "month": "Jan",
  "city": "Tokyo",
  "temperature": 7
}, {
  "month": "Jan",
  "city": "London",
  "temperature": 3.9
}, {
  "month": "Feb",
  "city": "Tokyo",
  "temperature": 6.9
}, {
  "month": "Feb",
  "city": "London",
  "temperature": 4.2
}, {
  "month": "Mar",
  "city": "Tokyo",
  "temperature": 9.5
}, {
```

"month": "Mar",
"city": "London",
"temperature": 5.7
}, {
"month": "Apr",
"city": "Tokyo",
"temperature": 14.5
}, {
"month": "Apr",
"city": "London",
"temperature": 8.5
}, {
"month": "May",
"city": "Tokyo",
"temperature": 18.4
}, {
"month": "May",
"city": "London",
"temperature": 11.9
}, {
"month": "Jun",
"city": "Tokyo",
"temperature": 21.5
}, {
"month": "Jun",
"city": "London",
"temperature": 15.2
}, {
"month": "Jul",
"city": "Tokyo",
"temperature": 25.2
}, {
"month": "Jul",
"city": "London",
"temperature": 17
}, {
"month": "Aug",
"city": "Tokyo",
"temperature": 26.5
}, {

```
  "month": "Aug",
  "city": "London",
  "temperature": 16.6
}, {
  "month": "Sep",
  "city": "Tokyo",
  "temperature": 23.3
}, {
  "month": "Sep",
  "city": "London",
  "temperature": 14.2
}, {
  "month": "Oct",
  "city": "Tokyo",
  "temperature": 18.3
}, {
  "month": "Oct",
  "city": "London",
  "temperature": 10.3
}, {
  "month": "Nov",
  "city": "Tokyo",
  "temperature": 13.9
}, {
  "month": "Nov",
  "city": "London",
  "temperature": 6.6
}, {
  "month": "Dec",
  "city": "Tokyo",
  "temperature": 9.6
}, {
  "month": "Dec",
  "city": "London",
  "temperature": 4.8
}]
```


- □□

```
40,20,50,50
```

- □□□ Scale

temperature ???? X? ?

??	???
??	temperature
??	linear
??????	??
???	0
?????	function (val) { return val + '°C'; }

- ? Geom

??? Line ?

??	???
??	month*temperature
??	??
????	city
??	smooth

??? point ?

??	???
??	month*temperature
??	??
????	city

??	circle
??	4
?? - ??	#ffffff
?? - ??	1

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```
[{
  month: 'Jan',
  value: 51
}, {
  month: 'Feb',
  value: 91
}, {
  month: 'Mar',
  value: 34
}, {
  month: 'Apr',
  value: 47
}, {
  month: 'May',
  value: 63
}, {
  month: 'June',
  value: 58
}, {
  month: 'July',
  value: 56
```

```
}, {
  month: 'Aug',
  value: 77
}, {
  month: 'Sep',
  value: 99
}, {
  month: 'Oct',
  value: 106
}, {
  month: 'Nov',
  value: 88
}, {
  month: 'Dec',
  value: 56
}];
```

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```
40,40,60,60
```

- □□□ Scale

month ??? ? X? ?

??	???
??	month
??	cat
??????	??

value ??? ? Y? ?

??	???
??	value

??	linear
????	10
??????	??
???	30
???	110

- ? Geom

??? point ?

??	???
??	month*value
??	??
??	circle
?? - ??	#ffffff
?? - ??	1

??? Line ?

??	???
??	month*value
??	??
??	hv

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```
[{
  "month": "Jan",
  "key": "series1",
  "value": 125
}, {
  "month": "Jan",
  "key": "series2",
  "value": 51
}, {
  "month": "Feb",
  "key": "series1",
  "value": 132
}, {
  "month": "Feb",
  "key": "series2",
  "value": 91
}, {
  "month": "Mar",
  "key": "series1",
  "value": 141
}, {
```

```
  "month": "Mar",
  "key": "series2",
  "value": 34
}, {
  "month": "Apr",
  "key": "series1",
  "value": 158
}, {
  "month": "Apr",
  "key": "series2",
  "value": 47
}, {
  "month": "May",
  "key": "series1",
  "value": 133
}, {
  "month": "May",
  "key": "series2",
  "value": 63
}, {
  "month": "June",
  "key": "series1",
  "value": 143
}, {
  "month": "June",
  "key": "series2",
  "value": 58
}, {
  "month": "July",
  "key": "series1",
  "value": 176
}, {
  "month": "July",
  "key": "series2",
  "value": 56
}, {
  "month": "Aug",
  "key": "series1",
  "value": 194
}, {
```

```
  "month": "Aug",
  "key": "series2",
  "value": 77
}, {
  "month": "Sep",
  "key": "series1",
  "value": 115
}, {
  "month": "Sep",
  "key": "series2",
  "value": 99
}, {
  "month": "Oct",
  "key": "series1",
  "value": 134
}, {
  "month": "Oct",
  "key": "series2",
  "value": 106
}, {
  "month": "Nov",
  "key": "series1",
  "value": 110
}, {
  "month": "Nov",
  "key": "series2",
  "value": 88
}, {
  "month": "Dec",
  "key": "series1",
  "value": 91
}, {
  "month": "Dec",
  "key": "series2",
  "value": 56
}]
```


- □□

```
40,40,60,60
```

- ? Geom

□□□ Line □

??	???
??	month*value
??	??
????	key
??	hv