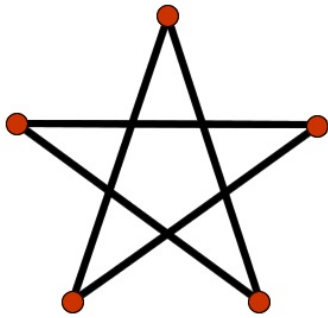


## PATH TO THE STARS

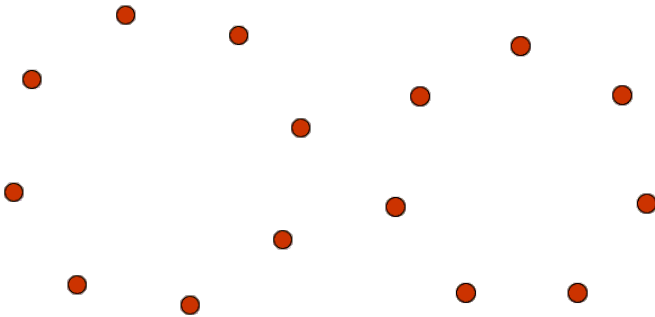


Is it possible to draw a 5-pointed star without taking your pencil off the paper?

Is it possible to draw a 6-pointed star in the same way without taking your pencil off the paper? Remember that you shouldn't join points that are right next to each other and you can't go over the same line twice. Your lines must run straight from one point of the star to another. Try it!

What about 7-pointed and 8-pointed stars?

What about a 4-pointed star? Have a go:



Do you think you'll be able to draw a 9-pointed star without taking your pencil off? Why?

What happens with more points?

## HELP

Use the dotted circles on page 2 and draw some more circles of your own.

Start with circles that have 7 dots. Number the dots 0, 1, 2, 3, 4, 5 and 6.

Join every point to the point next to it until you get back to the starting point.

Join 0 to 2 continue joining every alternate point until you get back to the start.

Join 0 to 3 continue joining every third point until you get back to the starting point

Join 0 to 4 continue joining every fourth point until you get back to the starting point

Join 0 to 5 continue joining every fifth point until you get back to the starting point

Join 0 to 6 continue joining every sixth point until you get back to the starting point

What do you notice? Describe your patterns.

## NEXT

**Part 1:** Clocks, days of the week and seasons of the year all occur in repeating cycles. Investigate the connections between these cycles and the star patterns formed by joining dots on a circle.

**Part 2:** Use the sheet on page 3, shade squares containing multiples of 2, 3, 4, 5 etc on the number grids and investigate the patterns.

**Part 3:** Shade the grid shown here as follows:

- Put a circle around the number 2.
- Cross out all the other multiples of 2.
- Put a circle around the number 3.
- Cross out all the other multiples of 3.
- Put a circle around the number 5.
- Cross out all the other multiples of 5.
- Put a circle around the number 7.
- Cross out all the other multiples of 7.
- Now make a list of all the numbers that are NOT crossed out except the number 1.
- What do you notice about the numbers on your list?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

