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Regulars



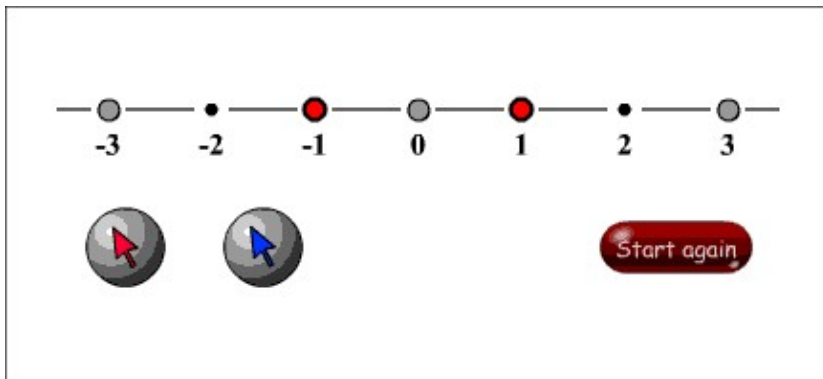
## Hint



Suppose we wanted to prove something similar but simpler, namely that any colouring must include three equally-spaced points in a line all the same colour. How would we go about it?

First, note that we can certainly find *two* points the same colour! Pick two, and draw a line through them, marking them as  $-1$  and  $1$ . This gives a scale on which you can label other points on the line, too. The points we are interested in are  $-3$ ,  $0$  and  $3$ .

It's easy to check that however you colour these three points, you will get three equally-spaced points of one colour. You can try it out yourself below.



You can see an interactive version of this picture by downloading [Flash Player 5](#) and ensuring that Javascript is enabled, and then reloading this page.

Incidentally, sharp readers might have noticed that the gizmo above is very similar to the one in this issue's [article on Ramsey theory](#).

## Hint

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*Plus* is part of the family of activities in the Millennium Mathematics Project, which also includes the NRICH and MOTIVATE sites.