# English Light Orchestra

## a module on patterns and expressions

Pupil task

**CORNERSTONE MATHS**

About the cover

Once upon a time, a design collective came upon the idea of creating art installations made of lights and developed the English Light Orchestra campaign.

The stories in this work are fictional. All characters and events appearing in this work are fictitious. Any resemblance to real persons, living or dead, is purely coincidental.

*English Light Orchestra - A module on patterns and expressions*
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# Designing a lighting pattern
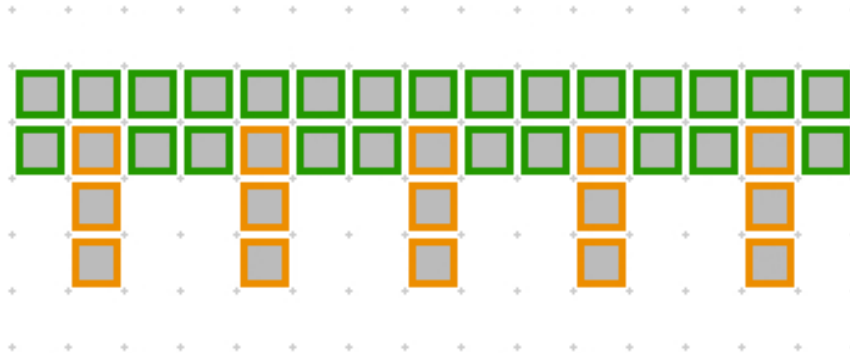


It is great to have you as part of our English Light Orchestra Campaign Team. As a lighting designer, you need to understand the structure of patterns that you will be making in lighting displays.

Open the Demo Activity Patterns and Expressions.
The Pattern Player window shows a lighting design that is playing in a random order. Someone has begun to create the pattern in the Designer's Grid - they need your help to complete this task.
You will need to build an expression for the total number of lights needed to make any figure in the pattern.
If you are successful, the original pattern will light up brightly.

1) Watch the pattern playing in the Pattern Player. Describe the pattern.

2) Describe the pattern that has already been started in the Designer's Grid.

In the Expression Builder, select the name 'tops' and drag the slider that appears.

3) Describe what happens.

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4) Sketch the building block for the 'tops' below.

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5) Think about the building Block that you will need to create using orange lights in order to complete the whole pattern. Sketch this below.

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Drag the orange lights and use the Block and Pattern buttons to recreate the whole pattern.

 i) Use one colour to create the building block for the orange light pattern.

 ii) Use the **Block** and **Pattern** buttons to recreate the pattern.

 iii) You should now see something in the **Expression Builder** that relates to your pattern.

 iv) Edit your expression so that it gives you the total number of lights for your particular figure in the Pattern Player.

 v) Drag the icon for your block to the **Expression for Total** row.

6) Record your **Expression for Total** and **Check**: Did your expression colour in the pattern you made in the Designer's Grid? If not, why not? Modify your expression to ensure that the pattern colours properly.

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7) **Explain** how the numbers and variables in your expression are related to the lights in the pattern.

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