

**\* Preparing to teach  
the new GCSE  
Specification**

**July 2017**

Joan Ashley

[jashley59@sky.com](mailto:jashley59@sky.com)

# \*What is new?

- \* Changes to grading system
- \* Changes to assessment objectives
- \* Changes to content
- \* Changes to examination arrangements
- \* Changes to exam question style

# MATHEMATICS



# \* Latest GCSE Specs should enable students to..

- \* Develop fluent knowledge, skills and **understanding** of mathematical methods and concepts
- \* Acquire, **select and apply** mathematical techniques **to solve problems**
- \* **Reason** mathematically, make deductions and inferences and **draw conclusions**
- \* Comprehend, interpret and **communicate** mathematical information in a variety of forms appropriate to the information and context.

# \* Assessment objectives

\* Handout (page 11)

# \*Changes to content

- \* Handout - summary of changes (page 9)
- \* New topic areas in both tiers
- \* Refer to full specifications for detail
- \* Note that topics now in KS3 curriculum are assumed knowledge

# \*Changes to exams

- \* Four and a half hours of exams, usually three of 90 minutes
- \* Note Edquas two exams only
- \* More formulae must be memorised
- \* New content area (ratio and proportion)  
*(pages 8 and 10)*

# \* Changes to question style

\* AQA webinar on new GCSE exam questions

\* Weblink [bit.ly/2lySVGh](https://bit.ly/2lySVGh) (need to register free for webinar)

# \*Teachers will need to...

- \*Address any gaps in their subject knowledge
- \*Think about how to deal with the larger syllabus
- \*Think about how reasoning, communication and problem solving skills can be developed in their lessons.

# \* Learning for mastery

- \* No “rules”
- \* Teaching for understanding
- \* Work with practical equipment, draw the maths, then use abstract representation
  
- \* What is mastery?
- \* <https://www.ncetm.org.uk/resources/47230>
- \* Booklets  
<https://www.ncetm.org.uk/resources/46689>

# \* Fractions using paper folding

# \* Ratio and proportion

THINKING BLOCKS RATIOS...  
WORD PROBLEMS ARE EASY TO SOLVE WHEN YOU BUILD A MODEL FIRST!

## Thinking Blocks

Model and Solve Word Problems  
Ratio and Proportion Practice

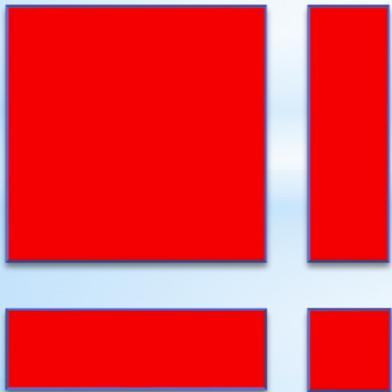
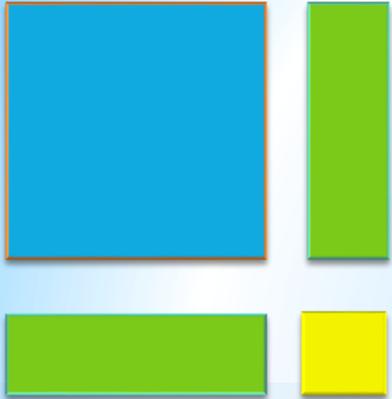
Models Find the Missing Quantity

Full Screen Mode OFF

Video Tutorials View Progress Start Modeling

[http://www.mathplayground.com/tb\\_ratios/thinking\\_blocks\\_ratios.html](http://www.mathplayground.com/tb_ratios/thinking_blocks_ratios.html)

# Modelling factorising quadratic equations with algebra tiles



# \* Connecting the learning

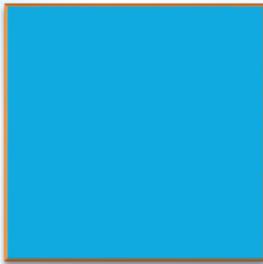
$$168 \div 12$$

$$\text{Factorise } x^2 + 5x + 6$$

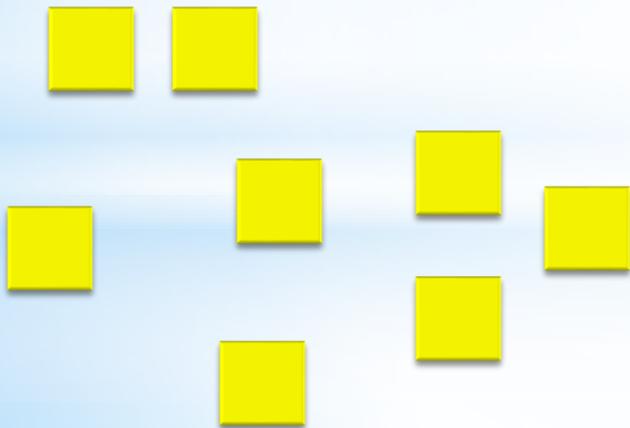
$$\text{Factorise } 2x^2 + 5x + 2$$

Write  $x^2 + 4x + 3$  in completed square form

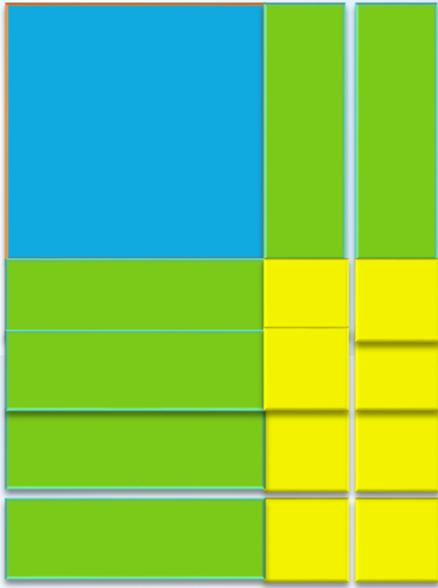
$$\text{Divide } (2x^2 + 5x + 3) \text{ by } (x + 1)$$

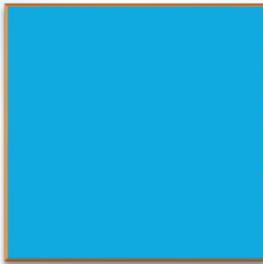


$$168 \div 12$$

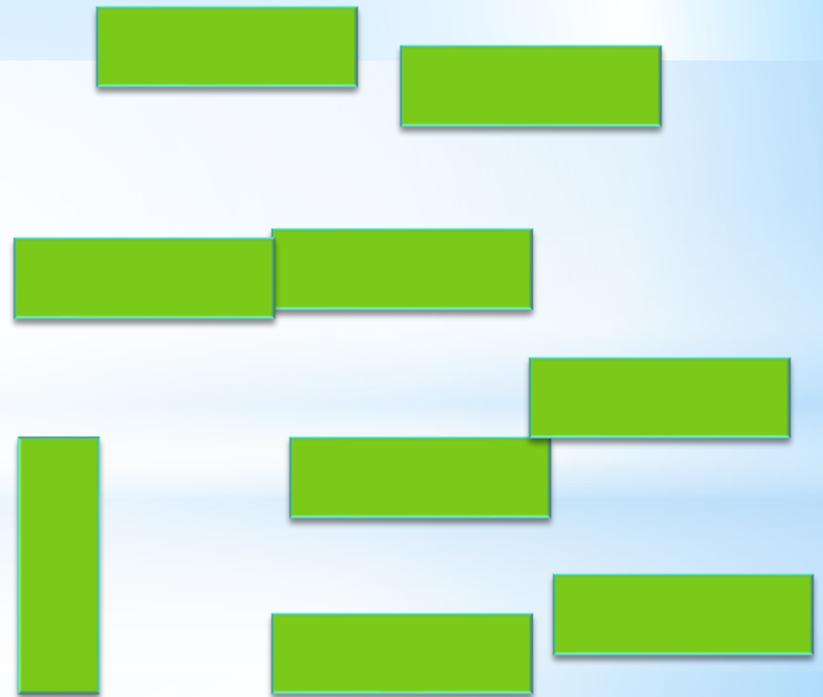
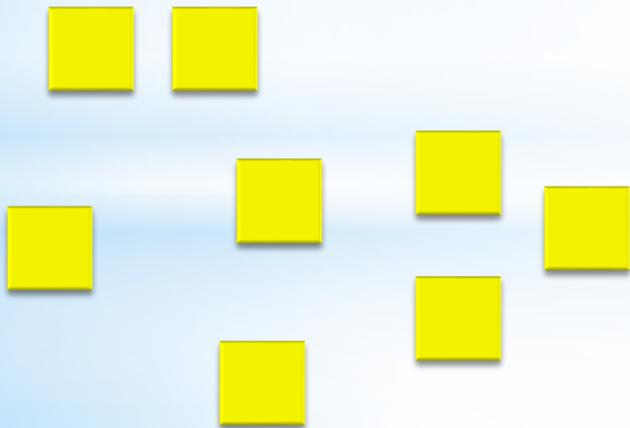


$$168 \div 12$$

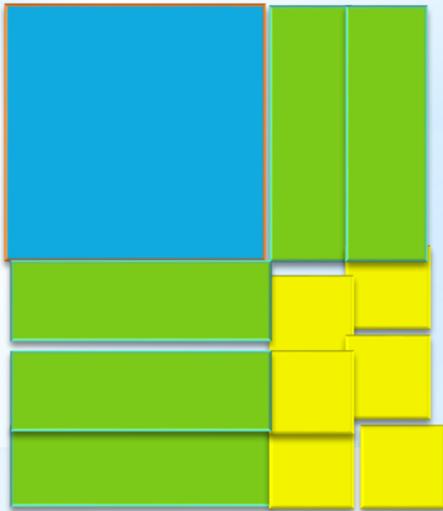




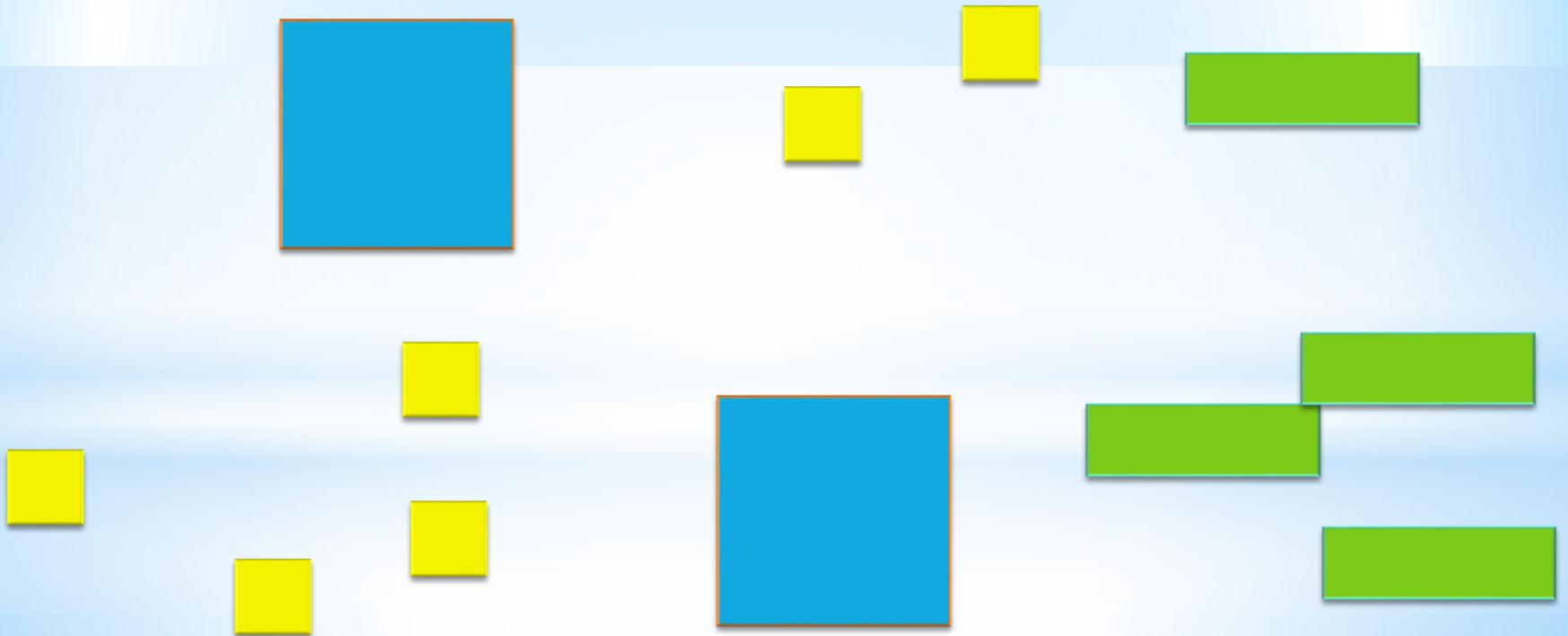
$$x^2 + 5x + 6$$



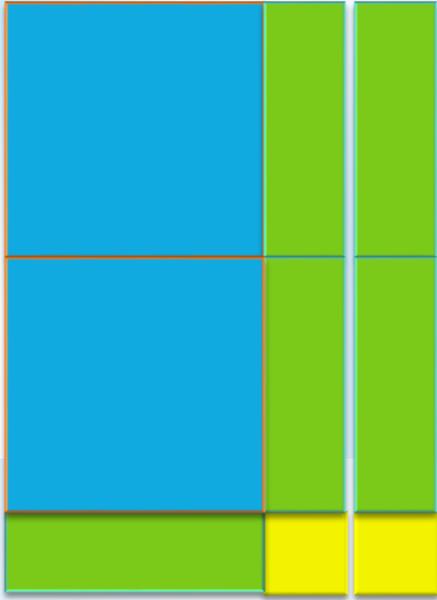
Factorise  $x^2 + 5x + 6$



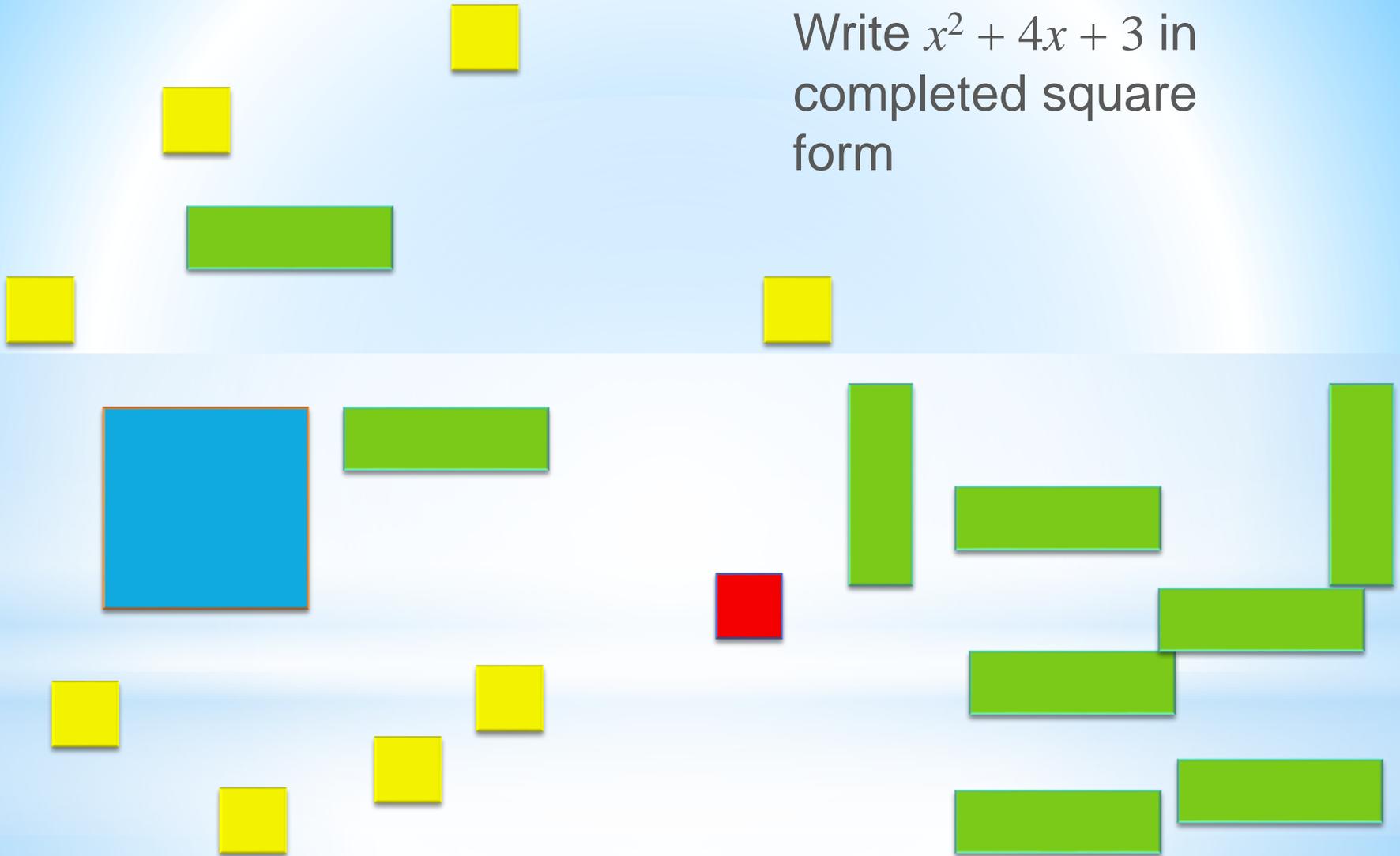
Factorise  $2x^2 + 5x + 2$

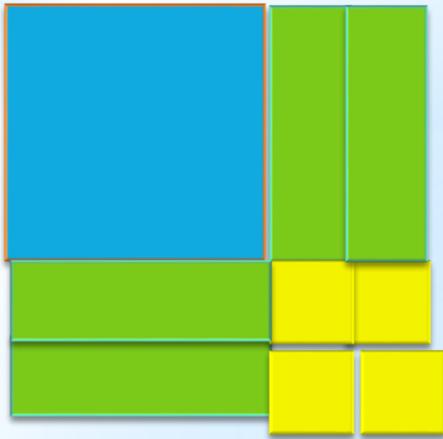


Factorise  $2x^2 + 5x + 2$



Write  $x^2 + 4x + 3$  in completed square form

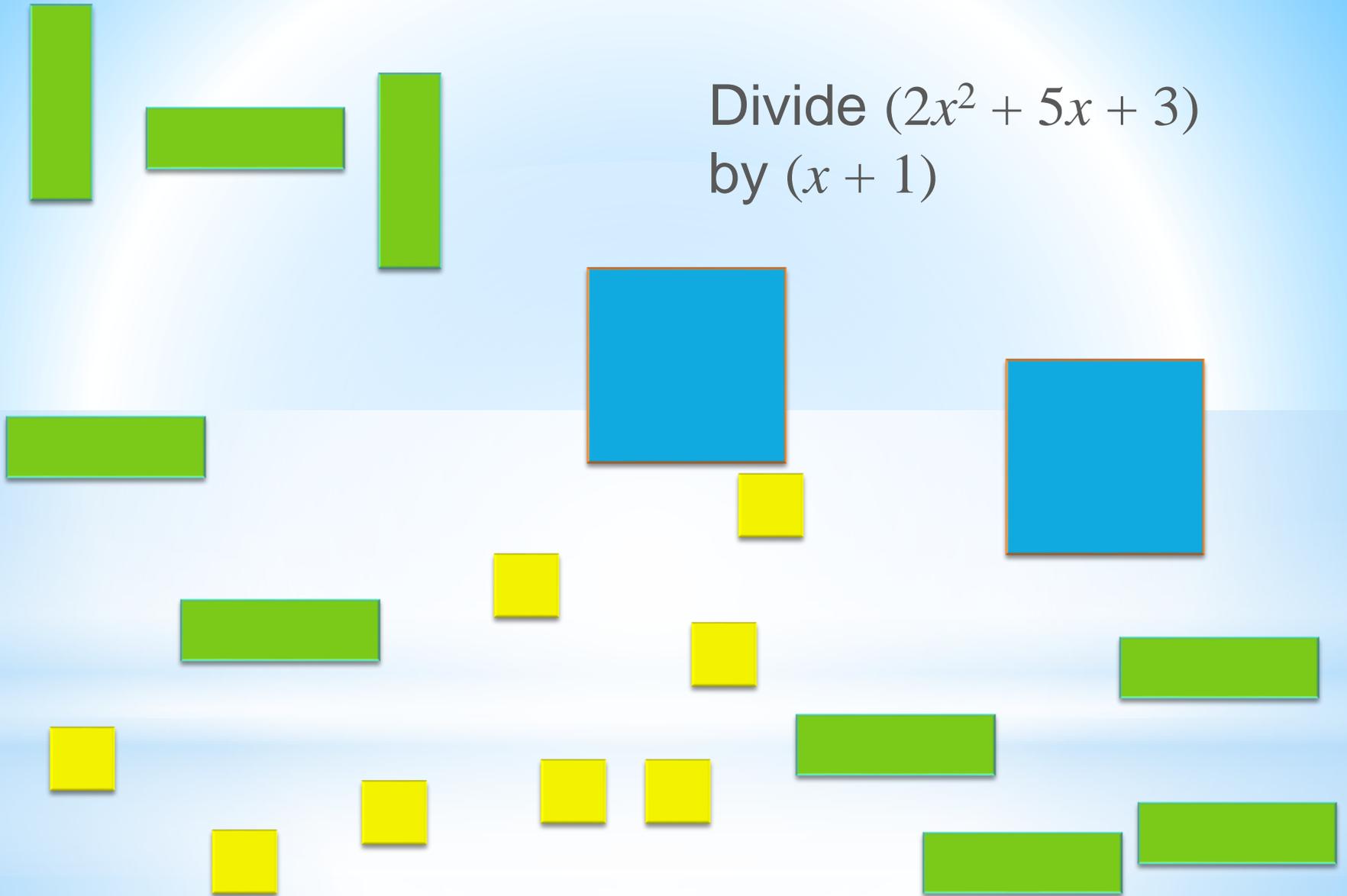




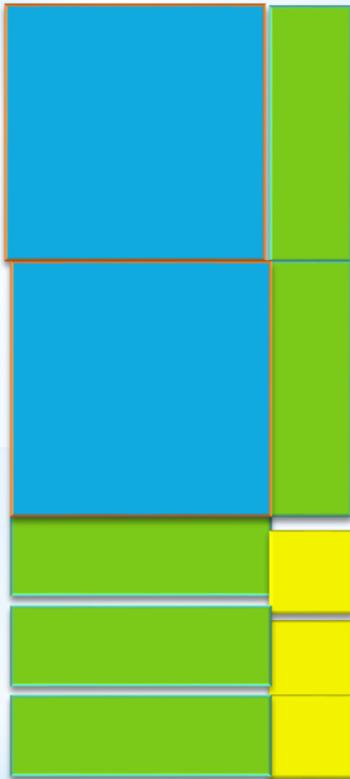
Write  $x^2 + 4x + 3$  in completed square form



Divide  $(2x^2 + 5x + 3)$   
by  $(x + 1)$



Divide  $(2x^2 + 5x + 3)$   
by  $(x + 1)$



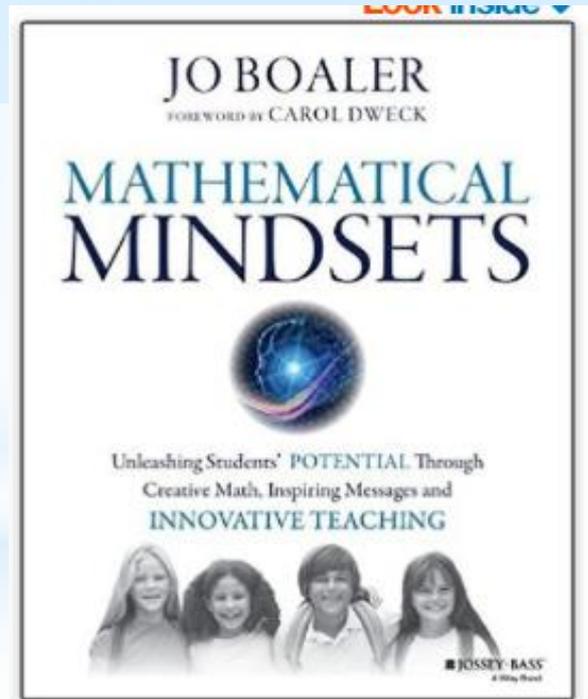


# 1 TED talk

The image is a screenshot of a YouTube video player. At the top, the browser's address bar shows the URL <https://www.youtube.com/watch?v=3icoSeGqQtY>. Below the address bar is the YouTube interface, including the search bar and the YouTube logo. The main content area features a circular profile picture of Jo Boaler, a woman with dark hair wearing a purple shirt. To the right of the profile picture, the name "Jo Boaler" is displayed in white text. Below the profile picture and name is a video player with a progress bar showing 0:10 / 12:57. The video player includes standard controls like play, next, and volume. In the bottom right corner of the video player, the "TEDxStanford 2016" logo is visible, along with a Creative Commons license icon. Below the video player, the video title "How you can be good at math, and other surprising facts about learning | Jo Boaler | TEDxStanford" is displayed.

<https://www.youtube.com/watch?v=3icoSeGqQtY>

\* Pub Jan 2016, £11.30 to £15.99)



\*Next steps...