Reaching Competence
Mathematics Programme

Ages 7 to 9

Fractions and Problem Solving

Book 14

Reach education

By Lucy Patston

Book 14 Learning Intention Sticker Chart

| Learning Intention	Date	Sticker
26. Understands sizes of fractions in relation to the whole		
27. Able to order unit fractions		
28. Able to find ½, ¼, ⅓ and ⅕ using additive strategies		
29. Understands division as sharing or grouping		
30. Able to use a calculator efficiently		
31. Able to select an appropriate operation to solve a problem		
32. Able to solve multi-step problems		
Review of Books 11, 12, 13 & 14		

practice practice practice

Learning Intention 28:

## Able to find ½, ¼, ⅓ and ⅕ using additive strategies

> This learning intention follows on from Book 10, where we first encountered these fractions. Now it's time for children to be able to think proportionally and understand the fractions of all numbers. Knowing their times tables is becoming more necessary as they move toward having a sound fractional knowledge.

Activities	✓

1. Reach Sheet 14.13: Colour the fractions in on the arrays. ☐

2. Reach Sheet 14.14: Solve the story problems. ☐

3. 🍎🟢 **Fractions – by Brainingcamp**. Go to *Introduction to Fractions* and then select *Lesson*. You are able to draw on the screen during the Lesson. When you've finished, have a play with *Manipulative*. Ask your child if they can make different fractions, like $\frac{4}{7}$, $\frac{2}{10}$, $\frac{3}{5}$, etc. Anything up to $\frac{20}{20}$ is possible. Then move on to *Challenge*, where children can create fractions in the same way and submit their answers for feedback. ☐
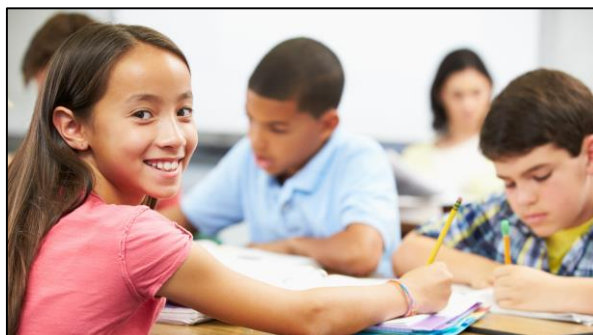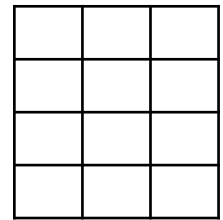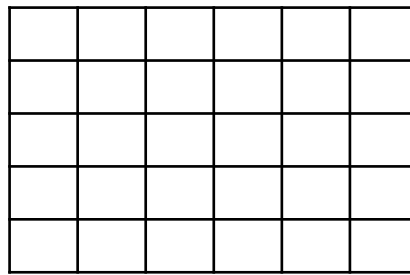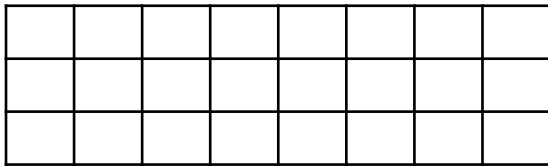
a| Colour $\frac{1}{4}$ of the arrays orange and another $\frac{1}{4}$ red.
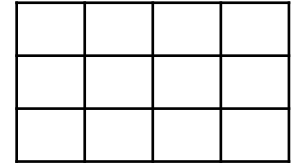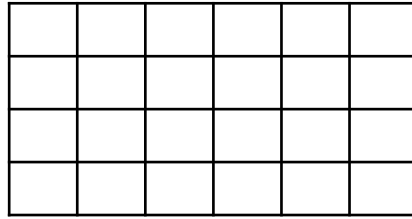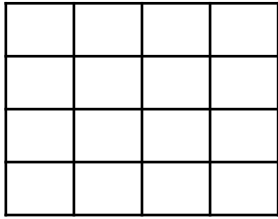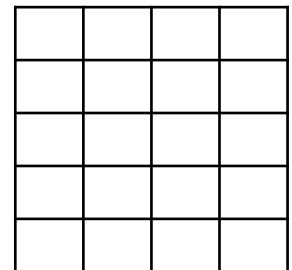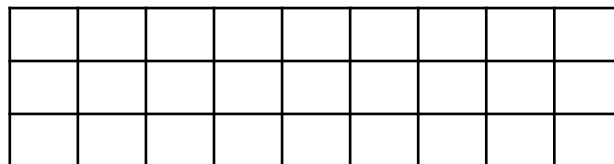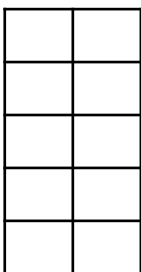
1| What fraction is left uncoloured?

b| Colour $\frac{1}{3}$ of the arrays green and another $\frac{1}{3}$ blue.

2| What fraction is left uncoloured?

c| Colour $\frac{1}{5}$ of the arrays pink and $\frac{2}{5}$ of the arrays purple.

3| What fraction is left uncoloured?

Reach Sheet 14.13

Reachingcompetence

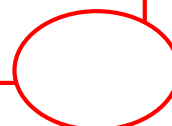Learning Intention: Able to find ½, ¼, ⅓ and ⅕ using additive strategies

1| There were 16 biscuits in the packet. Zara ate $\frac{1}{4}$ of them. How many did she eat?

2| The bucket was filled with 18 litres of water. Hana emptied $\frac{1}{3}$ of the water onto the lawn. How many litres were left in the bucket?

3| George had $50. He spent $\frac{1}{2}$ his money at the movies. How much did he spend?

4| Wiremu ruled a 20cm line in his book. The length of his thumb is $\frac{1}{4}$ of his line. How long is Wiremu's thumb?
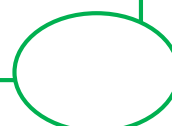
5| Jack wants to earn $30. He is $\frac{1}{3}$ of the way to this goal. How much money has Jack earned so far?

6| Marinda made a line of 25 pebbles on the beach but $\frac{1}{5}$ of them washed away. How many pebbles washed out to sea?

7| Donna had 16km to race in her wheelchair. She was $\frac{1}{4}$ of the way to the finish line. How far had she travelled?

Q?A

Reach Sheet 14.14

apply

Learning Intention 28:
Able to find ½, ¼, ⅓ and ⅕ using additive strategies

Activities	✓
1.　Reach Sheet 14.15: Reach Problem Solvers 34.	☐
2.　Reach Sheets 14.16 & 14.17: Reach Problem Solvers 35.	☐
3.　Reach Sheet 14.18: Reach Problem Solvers 36.	☐
4.　**Third Grade Splash Math**. Go to *Grade 3: Fractions and Decimals.* In the settings select *Level 1: Identify Fractions*. Then move on to *Level 2: Model Fractions*. Lastly select *Level 3: Equivalent Fractions using Models*. OR **Splash Math for PC**. Go to *Grade 3: Fractions and Decimals.* In the settings select *Level 1: Identify Fractions*. Then move on to *Level 2: Model Fractions*. Lastly select *Level 3: Equivalent Fractions using Models*.	☐

6

Learning Intention: Able to find ½, ¼, ⅓ and ⅕ using additive strategies

Mr Mi has been asked to count all his rings and provide his accountant with some facts. Mr Mi could use your help with his stocktake. Underline the rings in the key.

KEY

Silver ring

Gold ring

Ruby ring

Diamond ring

1| How many rings does Mr Mi have in stock altogether?

2| What fraction are silver rings?

3| What fraction are gold rings?

4| What fraction are ruby rings?

5| What fraction are diamond rings?

Mr Mi decides to make more stock. He makes 4 more gold rings, 2 more ruby rings and 2 more diamond rings.

6| How many rings does Mr Mi have altogether now?

7| What fraction are silver rings?

8| What fraction are gold rings?

9| What fraction are ruby rings?

10| What fraction are diamond rings?

Q?A

Reach Sheet 14.15

Note, this activity is challenging.

PROBLEM solvers 35

Learning Intention: Able to find ½, ¼, ⅓ and ⅕ using additive strategies

Emiel, the carpenter, is building himself a new $96m^2$ house on his $288m^2$ (16 x 18 metre) property, but he's not sure the architect has followed his very specific wishes.

Using the plan of the house on the next page, mark what the architect has drawn up correctly ✓ and incorrectly ✗ on Emiel's wish list.
You will need to find the area of each room first, and then the area of the item in question, before deciding if the plan has been constructed correctly or not.

Emiel's Wish List

1| One quarter ($\frac{1}{4}$) of the kitchen should be a dining area. ☐

2| The bathroom should be half ($\frac{1}{2}$) the size of the garage. ☐

3| Bedroom 2 should be four fifths ($\frac{4}{5}$) the size of Bedroom 1. ☐

4| One fifth ($\frac{1}{5}$) of Bedroom 1 should be a wardrobe. ☐

5| One quarter ($\frac{1}{4}$) of the lounge should be set aside for a study area. ☐

6| One tenth ($\frac{1}{10}$) of the lounge should be for couches. ☐

7| One eighth ($\frac{1}{8}$) of the garage should be a workbench. ☐

8| One third ($\frac{1}{3}$) of the bathroom should be for the bath. ☐

9| One sixth ($\frac{1}{6}$) of the property should be planted with trees. ☐

10| One eighth ($\frac{1}{8}$) of the property should be a patio. ☐

Q?A

Reach Sheet 14.16
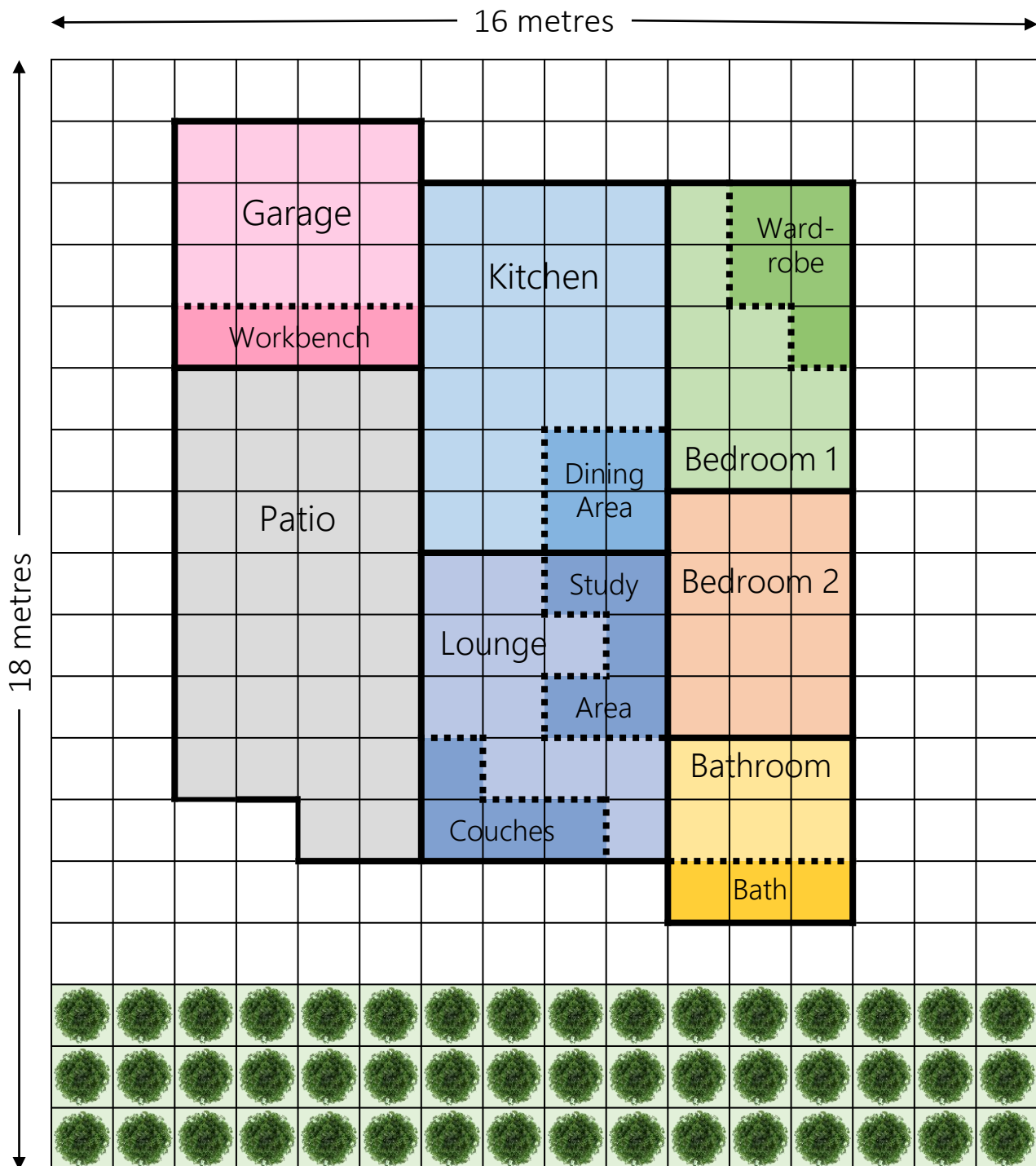
Learning Intention: Able to find ½, ¼, ⅓ and ⅕ using additive strategies

16 metres

18 metres

Garage

Workbench

Kitchen

Ward-robe

Patio

Dining Area

Bedroom 1

Study

Bedroom 2

Lounge

Area

Bathroom

Couches

Bath

Reach Sheet 14.17

Learning Intention: Able to find ½, ¼, ⅓ and ⅕ using additive strategies

1| How many insects are in my garden altogether?

2| What fraction are butterflies?

3| What fraction are bees?

4| What fraction are grasshoppers?

5| What fraction are spiders?

6| If I caught $\frac{1}{2}$ the bees, what fraction of the insects would I have?

7| If I released the bees, and caught all the spiders and all the ladybirds, what fraction would I have?

8| If I caught the grasshoppers as well, what fraction of the insects would I have?
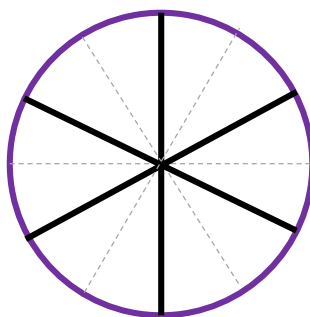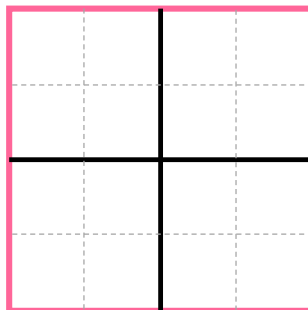
ANSWERS

to Book 14

Reach Sheet 14.01

1| Red. Two of the red rods would be the same length of the dark blue rod.

2| Purple. Two of the purple rods would be the same length of the orange rod.

3| Because the starting rods are different lengths.

4| Brown. Three of the brown rods would be the same length as the orange rod.

5| Purple. Three of the purple rods would be the same length as the light blue rod.

6| Brown. Four of the brown rods would be the same length as the green rod.

7| 2. Half of 4 is 2.

8| 9. One third of 9 is 3.

9| 2. One quarter of 8 is 2.

10| 2. One fifth of 10 is 2.

11| 5. One fifth of 5 is 1.
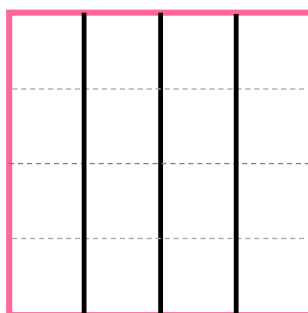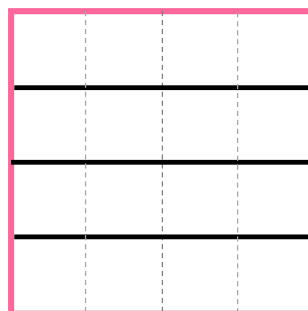
12| 6. One third of 6 is 2.

Reach Sheet 14.02

1|

2|
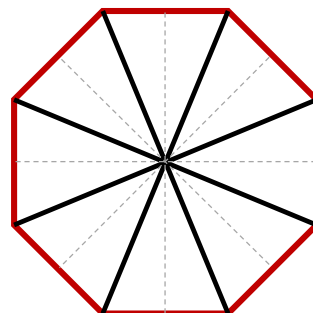
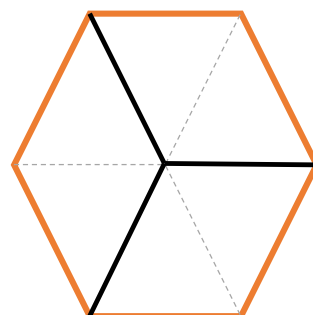

OR

OR

11

Reach Sheet 14.02 continued…
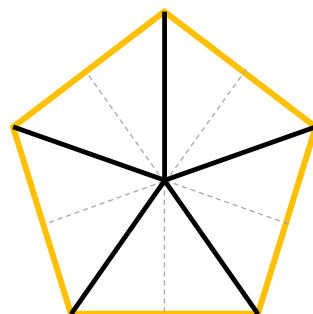
3|

4|

5|
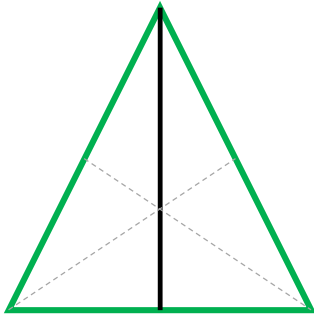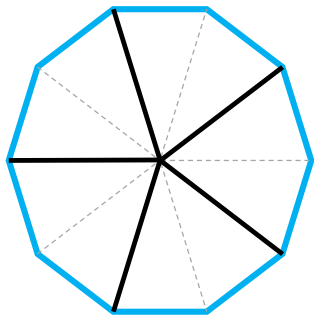
Reach Sheet 14.02 continued…

6|

7|

Reach Sheet 14.03

1| Octagon. 8 segments should be coloured.

2| Triangle. 2 segments should be coloured.

3| Pentagon. 4 segments should be coloured.

4| Hexagon. 2 segments should be coloured.

5| Triangle. 1 segment should be coloured.

6| Rectangle. 6 segments should be coloured.

7| Unequal. Top or bottom should be coloured. Not right or left.

8| Equal. 6 segments should be coloured.

9| Equal. 6 segments should be coloured.

10| Equal. 4 segments should be coloured.

Reach Sheet 14.03 continued…

11| Unequal. Right or left should be coloured.

12| Equal. 2 segments should be coloured.

Reach Sheet 14.04

There are 9 animals altogether: 6 sheep and 3 cows.

1| Cross. False. Half of 9 is 4.5 (!)

2| Tick. True. 6 is two thirds of 9.

3| Tick. True. 6 is twice 2. There are insects altogether: 6 butterflies and 2 caterpillars.

4| Tick. True. 2 is one quarter of 8.

5| Tick. True.

6| Cross. False. Two quarters (or half) of 8 is 4. There are 6 butterflies.
There are 12 jellybeans altogether. 6 red, 4 orange and 2 green.

7| Cross. False. Three quarters of 12 is 9. There are 4 orange jellybeans.

8| Tick. True.

9| Tick. True. Half of 12 is 6.

Reach Sheet 14.05

1| This is a copying exercise to help children further their visuospatial ability for dividing circles into segments.

2| 2

3| $1\frac{1}{6}$

Reach Sheet 14.06

4| Chocolate:
W: $1\frac{1}{2}$
Th: 1
F: $1\frac{1}{3}$
Berry:
W: $1\frac{7}{8}$
Th: 2
F: $1\frac{5}{8}$
Lemon:
W: $1\frac{3}{10}$
Th: 2
F: $1\frac{7}{10}$

Reach Sheet 14.07

1| Yes

2| Smaller

3| Smaller, bigger

4| Because the whole is being divided into more and more pieces (or something similar)

5| Bigger

6| Smaller

Reaching Competence
Mathematics Programme

Explore the mathematics curriculum with your child at your own pace with this guided, interactive programme. This booklet includes learning intentions 26 through to 32 (of 32) for this level.
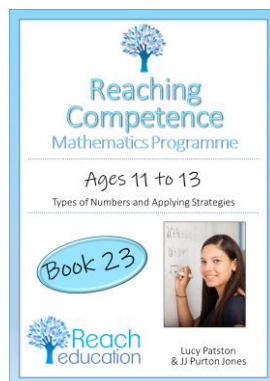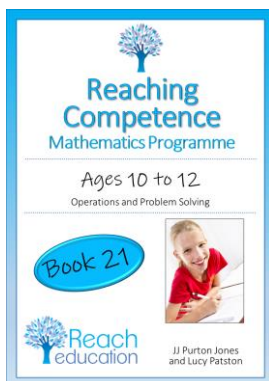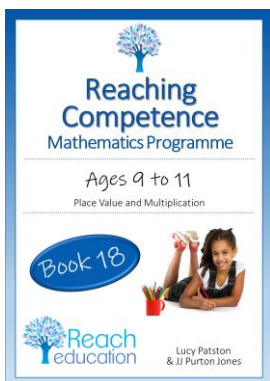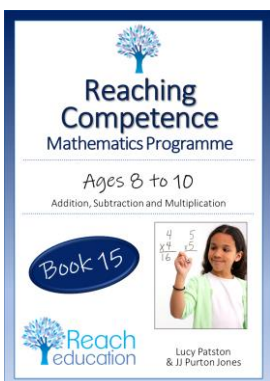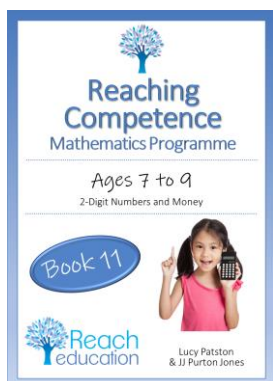
Includes information about the curriculum for parents and caregivers, learning intention checklist and sticker chart, suggested Apple and Android applications, worksheets, activities, board games, certificates and other print-and-cut resources.

The learning intentions covered in Book 14 are:

- Understands sizes of fractions in relation to the whole
- Able to order unit fractions
- Able to find ½, ¼, ⅓, and ⅕ using additive strategies
- Understands division as sharing or grouping
- Able to select an appropriate strategy
- Able to use a calculator efficiently
- Able to select an appropriate operation to solve a problem
- Able to solve multi-step problems

Look out for our other maths curriculum programmes (Books 1 to 24 available)

Reaching Competence
Mathematics Programme

Ages 7 to 9
2-Digit Numbers and Money

Book 11

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Mathematics Programme

Ages 8 to 10
Addition, Subtraction and Multiplication

Book 15

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Mathematics Programme

Ages 9 to 11
Place Value and Multiplication

Book 18

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Mathematics Programme

Ages 10 to 12
Operations and Problem Solving

Book 21

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Reaching Competence
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Ages 11 to 13
Types of Numbers and Applying Strategies

Book 23

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