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MyMaths for Key Stage 3

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MyMaths for KS3 has an increased focus on reasoning and problem-solving, making it the perfect course to prepare your students for the 2015 GCSEs. A wealth of practice and assessment will help your students develop the skills they’ll need for success in the more demanding GCSE exams.

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MyMaths for KS3
Course Structure

**Phase 1**
- Student Book 1A: 978 019 830447 0
- Student Book 1B: 978 019 830448 7
- Student Book 1C: 978 019 830449 4

**Phase 2**
- Student Book 2A: 978 019 830456 2
- Student Book 2B: 978 019 830457 9
- Student Book 2C: 978 019 830458 6

**Phase 3**
- Student Book 3A: 978 019 830465 4
- Student Book 3B: 978 019 830466 1
- Student Book 3C: 978 019 830467 8

**Teacher Companions**
- Teacher Companion 1A: 978 019 830450 0
- Teacher Companion 1B: 978 019 830451 7
- Teacher Companion 1C: 978 019 830452 4

**Homework Books**
- Homework Book 1A: 978 019 830439 6
- Homework Book 1B: 978 019 830434 3
- Homework Book 1C: 978 019 830435 6

**Workbooks**
- Workbook 1: 978 019 830441 8
- Workbook 2: 978 019 830442 5
- Workbook 3: 978 019 830443 2

**Online Student Books**
- Online Student Book Phase 1*: 978 019 830769 4
- Online Student Book Phase 2*: 978 019 830763 1
- Online Student Book Phase 3*: 978 019 830764 8

**Online Testbank**
- Online Testbank: 978 019 830733 4

*‘A’ books are designed especially for lower ability, ‘B’ books for middle ability, and ‘C’ books for higher ability students.

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Direct links to MyMaths resources
Providing an unrivalled combination of on-screen and written maths practice for blended lessons and homeworks

See back cover or www.mymaths.co.uk

Print and digital Student Books
All 9 Student Books available on paper or on screen

See pages 5-6
See page 10
The area of a shape is the amount of surface it covers.

2f Area of a rectangle
Area = ___ cm²

2f Perimeter = ___ cm

Each

Find

▲ 6

The Games Room

The Toilets

The Music Room

much does it cost to clean:

The Lobby

Music

2 m

7 m

5 m

The Corridor

Lobby

See this page!
15 Ratio and proportion

Introduction
The idea of creating things which are in proportion is vital to art and architecture. However there is one number, called the ‘Golden Proportion’, which is supposed to be the most pleasing to the eye. The Golden Proportion relates to a rectangle whose ratio of length to width is 1.6180339887 : 1. There is evidence that the ancient Greeks and Egyptians used this proportion in the design of many of their buildings, and Renaissance artists used it commonly in their paintings.

What’s the point?
The Golden Proportion occurs widely in nature, so it is unsurprising that artists and architects throughout history have chosen to integrate this mathematical dimension into their work.

Objectives
By the end of this chapter, you will have learned how to ...
- Simplify and use ratios.
- Solve problems involving direct proportion.
- Calculate a percentage of an amount.
- Calculate a percentage increase or decrease.
- Use fractions, decimals and percentages to compare simple proportions and solve problems.

Check in
1. Calculate these percentages using a mental or informal written method.
   a 15% of 80
   b 20% of 140
   c 40% of 180

2. Copy and complete this table using a calculator where appropriate.

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Decimal</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75</td>
<td></td>
<td>75%</td>
</tr>
<tr>
<td>0.5</td>
<td></td>
<td>50%</td>
</tr>
</tbody>
</table>

Example
Esme has £1.25. Brian has 75p, and the same number. You can solve ratio problems by multiplying both parts by the same units (pence).

A map has a scale of 1 : 200. What distance does 8 cm on the map represent in real life?

15 : 3000
1 : 200 = 8 cm : x cm
x = 15 × 3000
15 × 15 = 15 × 200
(x) = 3000

A model of a space shuttle is built to a scale of 1 : 24. The length of the real shuttle is 36 m. How long is the model of the shuttle?

4 : 1
1 × 36 = 24
1 × 4 = 1
1 × 3 = 1
1 : 24
24 cm

Rukshana and Rowshanara get older. Investigate what happens to the ratio of their ages as they grow older.

Example
There are 1100 students in Years 7 to 11 and 250 students in the sixth form. What is the ratio of sixth form students to Y7 to Y11 students?

Solve each of these problems.

a 4 : 14
b 15 : 25
c 40 : 25

Problem solving
3. Write these ratios in their simplest form.
   a 4 : 14
   b 15 : 25
   c 40 : 25
   d 64 : 40
   e 121 : 77
   f 27 : 81
   g 1004 : 40
   h 56000 : 16000
   i 3 : 5
   j 35 : 56
   k 74 : 222
   l 4 : 14
   m 9 : 5

Exercise 15a
1. Write each of these ratios in its simplest form.
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   d 64 : 40
   e 121 : 77
   f 27 : 81
   g 1004 : 40
   h 56000 : 16000
   i 3 : 5
   j 35 : 56
   k 74 : 222
   l 4 : 14
   m 9 : 5

2. Write each of these ratios in its simplest form.
   a 40 cm : 1 m
   b 25 mm : 4 cm
   c 4 km : 2500 m
   d 4 km : 2500 m
   e 1 hour : 6 hours
   f 40 mins : 1 day
   g 15% of 80
   h 30 cm : 1 metre
   i 15% of 60
   j 15% of 80

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Starter problem
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A single sheet of A4 paper is 29.7 cm by 21.0 cm. A0 paper is 16 times larger.

In a recent test Sarah scored 17 out of 24. In Chemistry.

To divide 0.2 in the ratio 2 : 3 a share is 0.25 and a share is 0.16. 2 shares are 0.5 and 3 shares are 0.48.

To divide £28.50 by 8%. £3 : 84p. 84p is 0.084.

The diameter of a racing bicycle wheel is 70 cm. In a local cycle race distances are measured in miles (km). A house bought ten years ago for £275 000 has increased in value by 4%.

What is the perimeter of a square which has a side length of 10 cm? The Devonshire Dome in Buxton is the second largest circular dome in the UK with a diameter of 44.2 m. Work out the circumference of this dome.

The number of people joining a gymnasium increased from 128 to 165.

The force of an object that is moving in a circle is given by $F = rac{m \times v^2}{r}$.

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Companion assessment and Relevant lesson plan for A suggested pages from Teacher Companion 2B

Chapter 4. Students learn to: simplify ratios, divide a given quantity in two parts in a given part : part or part : whole ratio; express the quantity involving percentage change, including increase, decrease and relationships and problems in subjects in financial mathematics.

Exercise commentary

Example: Students are told to put a ratio number in order to recognize what is being measured. Each group has a different ratio number and then they are told that the ratio number is always the smallest.

Question 3: Students think of relatively small numbers, the answer will be relatively small. Using a ratio number helps to simplify the fraction.

Question 4: Students should work together to understand the ratio number for each fraction, then work together to find a mixtures, two placemats make a place, two sandals make a pair of.

Question 5: Students have shown their understanding arithmetic calculation, and just an answer.

Annexure

Chapter 3. Students are learning to subtract a negative number is the same as adding a positive number. 

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Progression of topics is clearly illustrated

Clear guidance on how each topic is differentiated between books A, B and C

Relevant MyMaths and assessment resources are listed
1b Multiplying and dividing integers

Example

Calculate $9 \times -3$

$9 \times -3 = -27$ because different signs give a negative answer.

$-28 \div -7 = 4$ because same signs give a positive answer.

1 Calculate

a $8 \times -6$

b $-6 \times 5$

c $-9 \times -7$

2 Calculate

a $20 \div -4$

b $-65 \div 5$

c $-36 \div -9$

3 Copy and complete these calculations.

a $7 \times \boxed{} = -21$

b $\boxed{} \times -7 = -56$

c $\boxed{} \times -30 = 90$

4 Copy and complete these calculations.

a $50 \div \boxed{} = -10$

b $\boxed{} \div -6 = -10$

c $\boxed{} \div -5 = 10$

1c Multiples and factors

Example

a Does 783 divide by 97?

b Does 891 divide by 117?

a Yes, because $7 + 8 + 3 = 18$ and 18 is a multiple of 9 ($783 \div 9 = 87$).

b Yes, because $8 + 1 = 9$ and if the sum of the first and third digits gives the second digit, then the three digit number does divide by 11 ($891 \div 11 = 81$).

1 Write the first three multiples of

a 6

b 8

c 12

d 15

e 20

2 Write all the factors of

a 8

b 6

c 10

d 15

e 30

3 Use a divisibility test to answer these questions.

a Which of these will divide by 3?

b Which of these will divide by 6?

c Which of these will divide by 9?

d Which of these will divide by 11?

4 A large bakery has 792 loaves of bread to despatch. The manager says that he can pack the loaves in equal numbers on to trays which hold 11, 9, 8 or 6 loaves. Is he correct? If he is, how many trays would be required for each case?
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