Practice

Curriculum & Standards

Key Stage 3
National Strategy

Year 9 booster kit:
mathematics supplement

Teachers of mathematics

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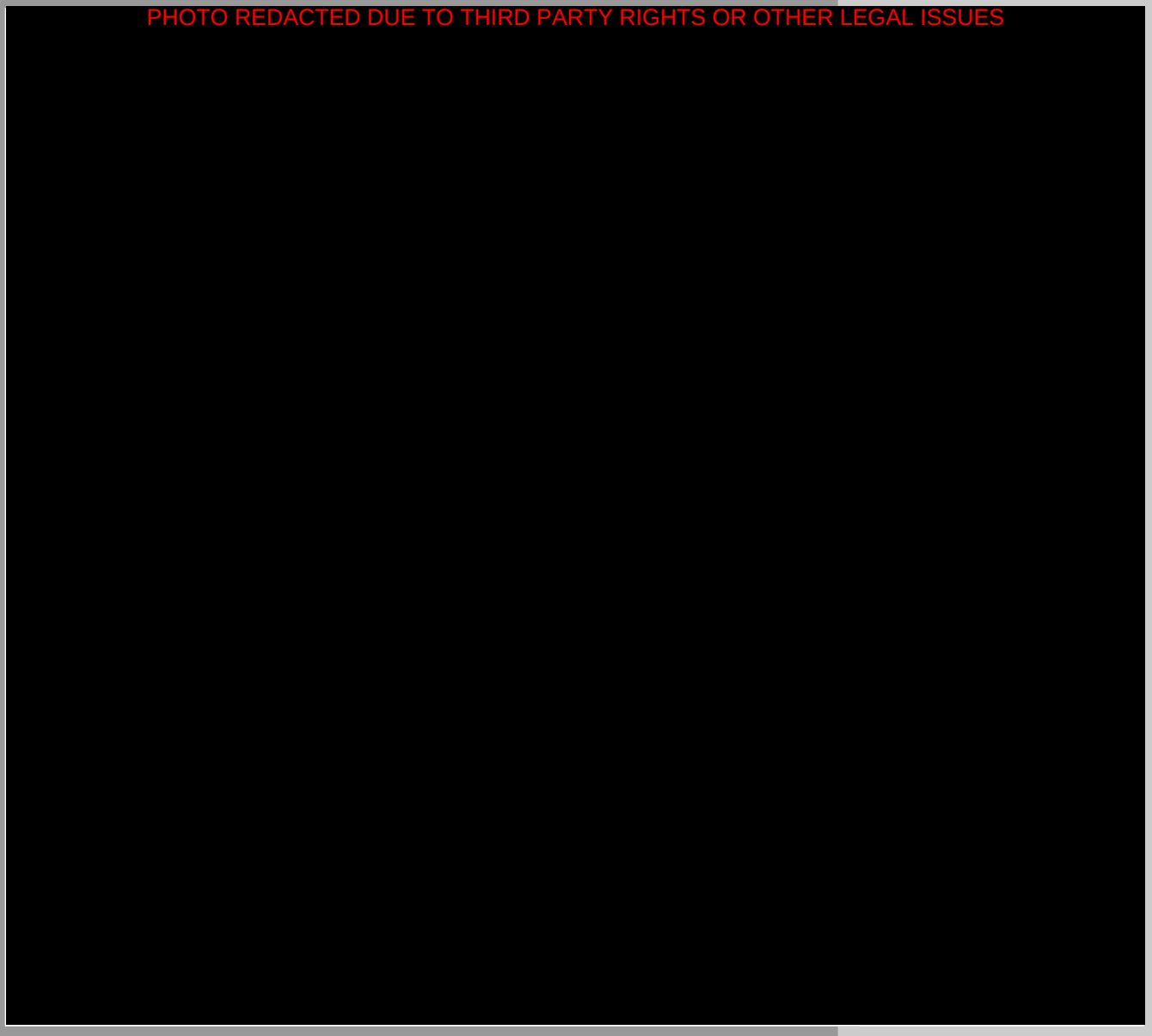


department for
education and skills
creating opportunity, releasing potential, achieving excellence

Year 9 booster kit: mathematics supplement 2002/03

This pack contains:

- brief additional guidance (these notes);
- four mathematics booster lessons, each one hour long;
- an updated version of the leaflet for parents and guardians.

The pack supplements the *Year 9 booster kit*: *mathematics* issued 01/02 reference 0015/2002.

In the original kit, section 1, 'Focusing teaching to improve pupil performance', contains advice and information to guide you in preparing your programme to support Year 9 pupils. You should read it alongside these notes before deciding how best to use the materials. The introduction also refers to the Testbase CD-ROM which can generate suitable questions and also gives access to the standards report to identify common errors and misconceptions. These should be used to inform teaching strategies.

The *Framework for teaching mathematics*: *Years 7, 8 and 9* includes guidance on teaching and learning throughout Key Stage 3. New learning often depends on previous knowledge and skills. Effective revision needs to be a continuous process and not merely pre-test cramming. The Framework advice on planning includes revisiting and reviewing prior learning. The yearly teaching programmes identify key objectives which underpin many of the booster lessons.

You should use this additional material alongside the original mathematics booster kit. Everything in that kit, apart from the leaflet for parents and guardians, remains valid and useful in preparing pupils to do as well as they can in the Year 9 national tests.

Additional booster material has also been produced for science and, because of some significant changes in the structure of the English tests, the English booster kit has been fully revised. A copy of the leaflet for parents and guardians that covers all three subjects is included in these 2002 materials.

The leaflet and all booster lessons are available on the Key Stage 3 National Strategy website so that you can download and customise them for your school and pupils: www.standards.dfes.gov.uk/keystage3

Why have the additional lessons been produced?

Following the positive response from schools to the original booster lessons, the opportunity has been taken to add four more lessons covering some new topics. They also highlight the applications and understanding of mathematical ideas. The format and style of lesson have been retained.

In June 2002 QCA wrote to all schools indicating changes to the national tests from 2003. So that tests reflect the breadth of the Key Stage 3 programme of study, one change has been specified:

> *More questions that require pupils to use their skills in using and applying mathematics (Ma1)*

This is not a big change as questions addressing these skills have always been included in the tests. Questions testing problem solving may be similar to those seen in previous years but may be less structured. In some questions pupils will be expected to give the units of measurement.

The objectives addressed in the new lessons are listed below.

13 Algebraic equations

- Use letter symbols to represent unknown numbers or variables (Y7)
- Construct and solve linear equations with integer coefficients using appropriate methods (Y7, 8, 9)
- Solve more demanding problems, compare and evaluate solutions (Y8)
- Check a result (Y7, 8, 9)

14 Handling data

- Find the mode, median and range (Y7)
- Calculate the mean (Y7)
- Interpret tables, graphs and diagrams for both discrete and continuous data, and draw inferences that relate to the problem being discussed; relate summarised data to the questions being explored (Y8)
- Compare two distributions using the range and one or more of the mode, median and mean (Y8)

15 Ratio and proportion 2

- Use ratio notation (Y7)
- Consolidate understanding of proportion (Y8)
- Begin to use graphs to solve simple problems involving direct proportion (Y8)

16 Problem solving

- Solve problems and investigate in a range of contexts (Y7, 8, 9)
- Explain and justify methods and conclusions (Y7)
- Identify exceptional cases or counter-examples (Y8)

Lesson 16 in particular supports using and applying mathematics, with an emphasis on reasoning and communicating.

You need to note that the lessons are revision lessons – pupils will have met the topics before. You may however choose to integrate some of them into ongoing work during the year. If you use the lessons as the basis of new teaching and learning then a single lesson, with suitable additional examples, discussion and practice, may spread over two or

three sessions. Quick revision is no substitute for sound teaching throughout the year.

It is also important that pupils' mental mathematics skills not only are maintained but continue to develop. The starters in many of the lessons address this but mental skills need to be used throughout lessons.

Using and applying mathematics

Good practice within schools has always supported pupils in using and applying mathematics and this now needs to be developed consistently across the school. Pupils need to be taught how to tackle problems where they have to think for themselves and make choices. Teaching approaches and strategies which support this include the following.

Problem solving

- When solving problems, focus on both answers and methods, getting pupils to analyse problems, extract and organise the data, discussing similarities and differences in mathematical structure, content and methods.
- In whole-class sessions, pupils might compare ideas and approaches in preparation for later independent or group work on a problem.
- Regularly use non-routine problems, or those with limited structure, as a starting point, encouraging pupils to explore alternative approaches, offering prompts or supplementary questions as appropriate.
- Encourage pupils to estimate, check, review and redraft their work, so that they become systematic in monitoring its progress.
- Vary the approach by getting pupils to make up problems, to plan the steps that need to be taken to reach a solution, to complete part solutions or to correct solutions which contain errors.
- Develop fluency in calculation and skills in algebra (e.g. by making good use of oral and mental starters), so that pupils can use these confidently on non-routine aspects of problems which require more thought.

Communicating and reasoning

- Involve all pupils in oral work and discussion, where conjectures and arguments are regularly rehearsed and refined, in pairs or small groups, before sharing with the class.
- Help pupils to acquire the mathematical language needed to reason and solve problems and to appreciate the links across the subject, including alternative representations and equivalent symbolic forms.
- Explore common misconceptions and make them a teaching point for discussion and resolution.
- Develop **written** argument and explanation, including opportunities for redrafting.
- Encourage pupils to reflect on what they have learned and how they have learnt it, assess progress and make links with other work in plenary sessions, but also at other times in the lesson.

- Explore with pupils ways of attacking problems, including the meaning of words and phrases in written problems.
- Encourage pupils to interpret data to develop, explore and refine hypotheses.
- Help pupils to explain reasoning to convince others as a basis for work on proof.

Changes in national performance in mathematics tests

In 2002, 67% of Year 9 pupils gained level 5 and above in mathematics while 45% gained level 6 and above. In 1999, 68% of pupils in this same cohort gained level 4 at Key Stage 2 in mathematics tests.

In 2001, 66% of Year 9 pupils gained level 5 and above in mathematics while 43% gained level 6 and above. In 1998, 58% of pupils in this same cohort gained level 4 at Key Stage 2 in mathematics tests.

In 2000, 65% of Year 9 pupils gained level 5 and above in mathematics while 39% gained level 6 and above. In 1997, 62% of pupils in this same cohort gained level 4 at Key Stage 2 in mathematics tests.

Preparing pupils for the tests

Making use of the booster lessons is one way of helping to build on the improved performance at Key Stage 2.

You can offer pupils further support by teaching them revision techniques such as writing down what they know about a topic, using practice questions and being familiar with the layout of the question papers. Direct pupils towards other sources of help such as commercially produced revision booklets, or the BBC ‘Bitesize’ website.

Keep a balance in what you do with and for pupils. We all want them to be as successful as they can but revision or booster work must not be an undue burden or demotivating. Make learning fun, allow pupils to explore their own understanding and correct any misunderstandings that this reveals. You need to be ambitious for their success and share your ambitions with them. In this way pupils will not just do as well as possible in the Key Stage 3 tests but will approach mathematics in Key Stage 4 with enthusiasm and commitment.

Lesson 13 Algebraic equations

Oral and mental starter 10 minutes

Objectives

Use letter symbols to represent unknown numbers or variables (Y7)

Vocabulary

equation, expression

Resources

Whiteboards (if available)

Give pupils the statements:

John is y years old. Jane is x years old. John is 8 years older than Jane.

Q Can you write this as an algebraic equation?

Take suggestions and focus on $y = x + 8$.

Through questioning, bring out that y represents John's age in years. Emphasise that the letters represent numbers, not people.

Explain that, when you give them an instruction, you want pupils to write a new equation based on the original. Illustrate with 'add 1 to both sides' and establish that the result is $y + 1 = x + 9$.

Ask pupils to explain what this new equation means. Starting with this new equation, continue the process, checking and discussing at each stage: 'add 3 to both sides', 'subtract 8 from both sides'.

Next say John is also twice the age of Jane; ask pupils to write this as an equation.

You may want to repeat the process with another example.

Main teaching 40 minutes

Objectives

Construct and solve linear equations with integer coefficients using appropriate methods (Y7, 8, 9)

Solve more demanding problems, compare and evaluate solutions (Y8)

Check a result (Y7, 8, 9)

Vocabulary

balancing, negative

Resources

OHT of M13.1

Whiteboards for plenary (if available)

Explain to pupils that you will give them a set of equations to solve and then you will look at a problem that leads to an equation.

Point out that for some equations, such as $2x + 6 = 10$, pupils may be able to solve it informally – they can spot the answer – but that for others, such as $7x = 17$, they may need to use a more formal method, for example transforming both sides, using inverse operations.

OHT M13.1 has three sets of questions. You need to choose the set(s) most appropriate to the needs of your pupils. Pupils targeting level 5 need to be confident with sets 1 and 2. Set 3 extends the work to level 6. You will find similar examples on page 123 of the Framework supplement of examples.

With pupils working in pairs, allow about 15 minutes for them to tackle a set of equations. Use mini-plenaries to clarify pupils' understanding, check results and discuss methods.

Emphasise the need to check solutions – most pupils will use substitution. You may want to highlight examples where different methods of solution might act as a check.

Introduce the problem (adapted from a Key Stage 3 test question):

Multiplying my number by 4 and then subtracting 5 gives the same answer as multiplying my number by 2 and then adding 1.

Discuss setting up this problem as an equation and its subsequent solution.

More problems are to be found in the Framework supplement on pages 123 and 125.

Plenary 10 minutes

By the end of the lesson

pupils should be able to:

- construct simple linear equations
- solve simple linear equations
- check solutions by substituting

Framework supplement of examples pages 122–125

Levels 5 and 6

Introduce this number puzzle:

Two numbers multiply together to make 24. They add together to make 11.

Ask pupils to write answers on whiteboards and display them.

Q How did you work it out? What did you start with?

Q How do you check the answer? (Encourage pupils to check both conditions.)

Use similar examples, restricting answers to positive solutions.

For level 6 extend to include negative numbers:

Two numbers multiply together to make $^{-}15$. They add together to make 2.

Two numbers multiply together to make $^{-}15$. They add together to make $^{-}2$.

Two numbers multiply together to make 8. They add together to make $^{-}6$.

Set 1

1.1 $3x = 13$

1.2 $6c + 8 = 80$

1.3 $18 = 7p - 24$

1.4 $2(n + 4) = 72$

1.5 $4(d - 1) + 3(d + 4) = 57$

Set 2

2.1 $9x = 43$

2.2 $7 = \frac{56}{a}$

2.3 $3x + 6 = 2x + 13$

2.4 $3(x + 2) = 4(x - 1)$

2.5 $\frac{x + 8}{2} = x - 2$

Set 3

3.1 $7x = {}^{-}37$

3.2 $3(s - 1) - 2(s - 2) = 0$

3.3 $2(t + 1) - 5(t + 2) = 0$

3.4 $7(h + 3) = 11$

3.5 $\frac{7}{x + 2} = \frac{11}{x + 5}$

Lesson 14 Handling data

Oral and mental starter 15 minutes

Objectives

Find the mode, median and range (Y7)

Calculate the mean (Y7)

Vocabulary

mode, median, mean, range

Resources

Blank OHT if required

Individual whiteboards (if available)

First ask pupils to explain what is meant by the *mode*, *median*, *range*, *mean*.

Next, list a set of numbers on an OHT or board, for example: 5, 9, 11, 7, 9.

Q What is the mode (median, range, mean) of this set of numbers?

You may want pupils to display answers on whiteboards.

Repeat for 15, 19, 21, 17, 19.

Q How did you work out these answers?

Repeat for a different set of numbers. Then say:

Q Sam has six cards, each of which has a positive whole number printed on it. Four of the cards have the number 10. Without knowing the numbers on the other two cards can you give the value of the median, mode and range? Explain your reasoning.

Q The six cards have a mean of 10. What can the numbers on the other two cards be? Discuss possible answers. Which answer would give the greatest range? Why?

Extend the discussion to include fraction and decimal values. Then say:

Q The six cards have a mean of 10 and a range of 6. How many answers can you now find?

Q Can you find the values of the other two cards if the six have a mode of 6, a mean of 10 and a range of 6? Justify your answer.

Main teaching 35 minutes

Objectives

Interpret tables, graphs and diagrams for both discrete and continuous data, and draw inferences that relate to the problem being discussed; relate summarised data to the questions being explored (Y8)

Compare two distributions using the range and one or more of the mode, median and mean (Y8)

Vocabulary

compare, greater, less, slightly, significantly

Resources

OHTs of M14.1 and M14.2

OHT of M14.3 for plenary

Introduce the chart on **OHT M14.1** of the lengths of 100 words in two newspapers. Ask pupils, in pairs, to describe what the chart shows. Allow a few minutes for them to consider and discuss their answers. Note how pupils' comments may clarify the context of the chart. Organise their statements into factual points extracted from the chart and those points that involve a comparison.

Q What does *comparing* mean?

Collect ideas and ensure that ideas of what is similar *and* what is different are included. Explain that when quantities differ they may be greater or less and the difference may be slight or significant.

Look back at some of the statements and develop them so that they are more explicit. For example:

Broadsheet newspapers have significantly more longer words, i.e. of 7 and 8 letters, than tabloid newspapers.

Broadsheet and tabloid newspapers have similar numbers of shorter words, i.e. of 1 or 2 letters.

The modal length of word for both types of newspaper is 3.

Explain that it is important to draw inferences from the data.

Q Why do tabloid newspapers choose to use shorter words?

Q Why do you think the modal length of word is 3 for both types of newspaper?

Introduce the bar chart on **OHT M14.2**. Ask pupils, initially working individually, to interpret the data in the chart. Pupils should write statements, making sure that they:

- include a comparison;
- draw on specific values from the data;
- indicate greater, more or less;
- indicate whether the difference is slight or significant;
- give a possible reason for the finding.

Pupils should then exchange statements, explain them orally to one another and then offer one another suggestions for improvement. Encourage pupils to summarise their findings. Take feedback.

Pages 261–270 of the Framework supplement provide further examples on interpreting graphs, as do Key Stage 3 test questions.

Plenary 10 minutes

By the end of the lesson

pupils should:

- be able to make a statement that compares two sets of data;
- use key words in a comparison statement;
- refer to values in the data;
- give possible reasons.

Framework supplement of examples, pages 268–271

Levels 5 and 6

Show **OHT M14.3,** 'Teachers', taken from the 2000 Key Stage 3 test.

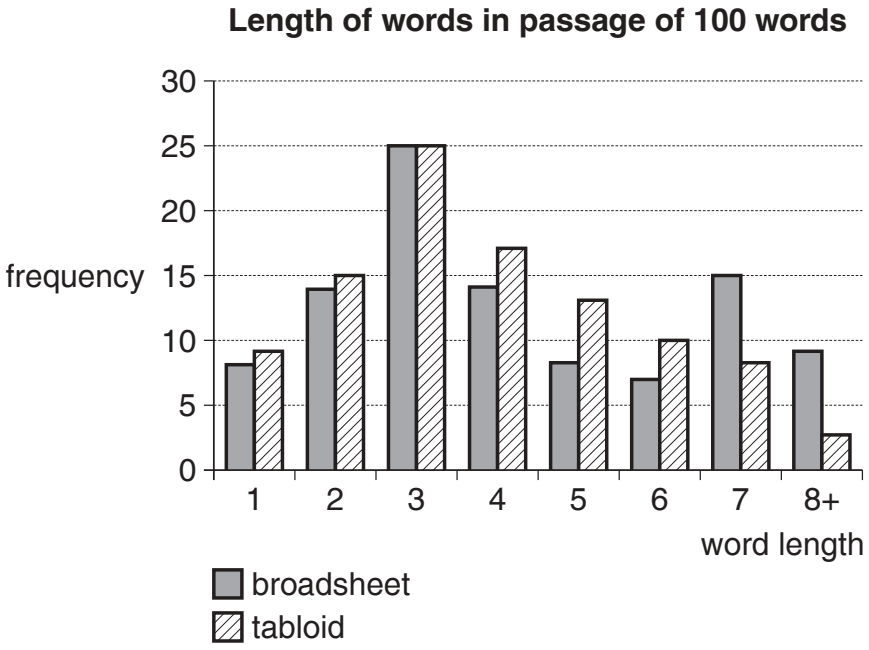
You may choose to use the question as set or by removing some of the structure you can develop pupils' skills in using and applying mathematics.

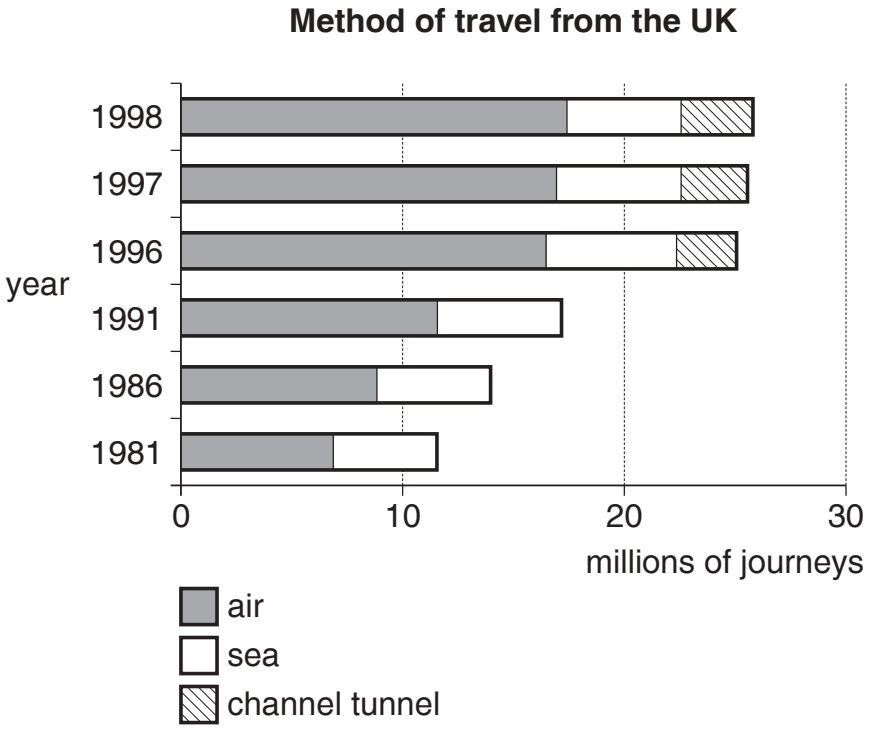
Q Compare the charts for male and female teachers. What do you deduce?

You might make a link to the lesson starter.

Q What is the modal class for female teachers?

This chart shows the lengths of 100 words in two different newspaper passages. Compare the two distributions.

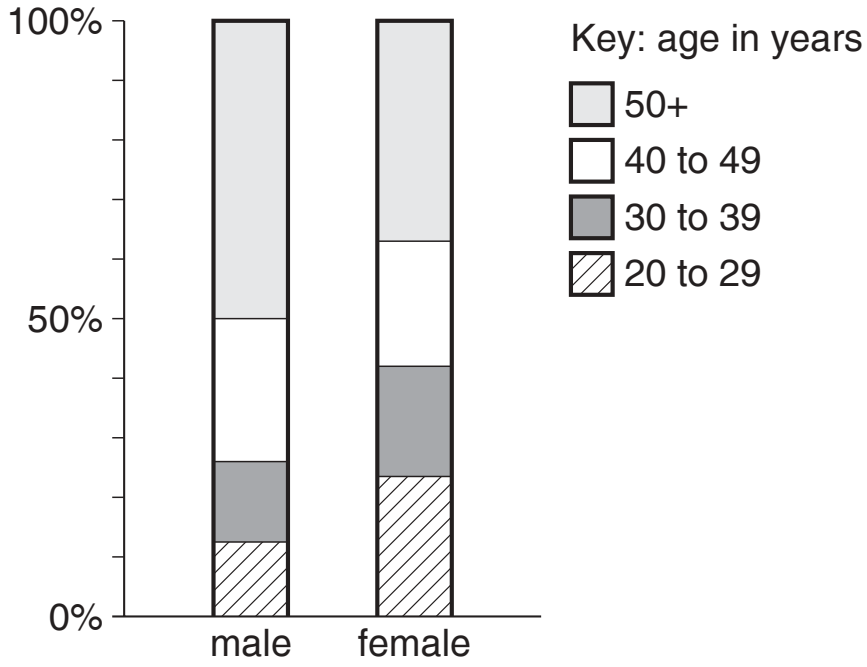




Handling data: 'Teachers' M14.3

A newspaper predicts what the ages of secondary-school teachers will be in six years' time.

They print this chart.



(a) The chart shows **24%** of male teachers will be aged 40 to 49.

About what percentage of female teachers will be aged 40 to 49?

(b) About what percentage of **female** teachers will be aged **50+**?

(c) The newspaper predicts there will be about **20 000** male teachers aged 40 to 49.

Estimate the number of male teachers that will be aged 50+.

(d) Assume the total number of male teachers will be about the same as the total number of female teachers.

Use the chart to decide which of these statements is correct.

- ☐ Generally, male teachers will tend to be younger than female teachers.

- ☐ Generally, female teachers will tend to be younger than male teachers.

Explain how you used the chart to decide.

Lesson 15 Ratio and proportion 2

Oral and mental starter 15 minutes

Objectives

Use ratio notation (Y7)

Vocabulary

multiply, proportion, ratio, scale

Resources

OHTs of M15.1 and M15.2

Show **OHT M15.1** and write 6 : 12 in the centre. Ask pupils to give ratios equivalent to the central ratio. Through a series of questions lead pupils to the idea of a multiplier. For example:

Q How do you get from 6 to 12?

Q How do you get from 6 to 12 using multiplication? Is it the same for all of the pairs of numbers in the diagram?

Repeat with the ratio 10 : 15 in the centre.

Q How do you get from 10 to 15 using only multiplication and division?

Q How do you get from 10 to 15 using multiplication?

Q Is it the same for all of the ratios in the diagram?

Q What is meant by sets of numbers being in proportion? Give me some examples.

Show **OHT M15.2**. Pupils should decide which sets of numbers are in proportion and explain their reasoning. *Pupils need to grasp the idea of a constant ratio and a constant multiplier from one to the other.*

Establish pupils' understanding of a set of numbers being in proportion.

Main teaching 35 minutes

Objectives

Consolidate understanding of proportion (Y8)

Begin to use graphs to solve simple problems involving direct proportion (Y8)

Vocabulary

conversion graph

Resources

Graph paper

Calculator for plenary

OHTs of M15.3 and M15.4

Tell pupils that 50 miles is equivalent to 80 kilometres. Ask them for the equivalence of 100 miles, 20 miles, 100 kilometres, etc.

Show **OHT M15.3** and ask pupils to look at the values and decide whether the pairs of numbers are in proportion. Ask them to plot the values on a graph, join up the points and describe the graph.

Show **OHT M15.4** and ask pupils to look at the values in their table and decide whether the pairs of numbers are in proportion. Ask them to plot these values on a graph, join up the points and describe the graph.

Ask pupils to compare the two graphs that they have drawn: both are straight lines; M15.3 passes through (0, 0) and so is proportional; M15.4 does not pass through (0, 0) and so is not proportional.

Extension:

Q What is the original length of the spring?

Q If you plot a graph of extension against weight, what do you notice?

Similar examples can be developed from the graphs on pages 172 and 173 of the Framework supplement.

Plenary 10 minutes

By the end of the lesson

pupils should:

- understand direct proportion;
- recognise sets of numbers that are in proportion;
- recognise graphs that represent direct proportion and those that don't.

Framework supplement of examples pages 78–81 and 172–173

Levels 5 and 6

Discuss these two adverts to exchange currency:

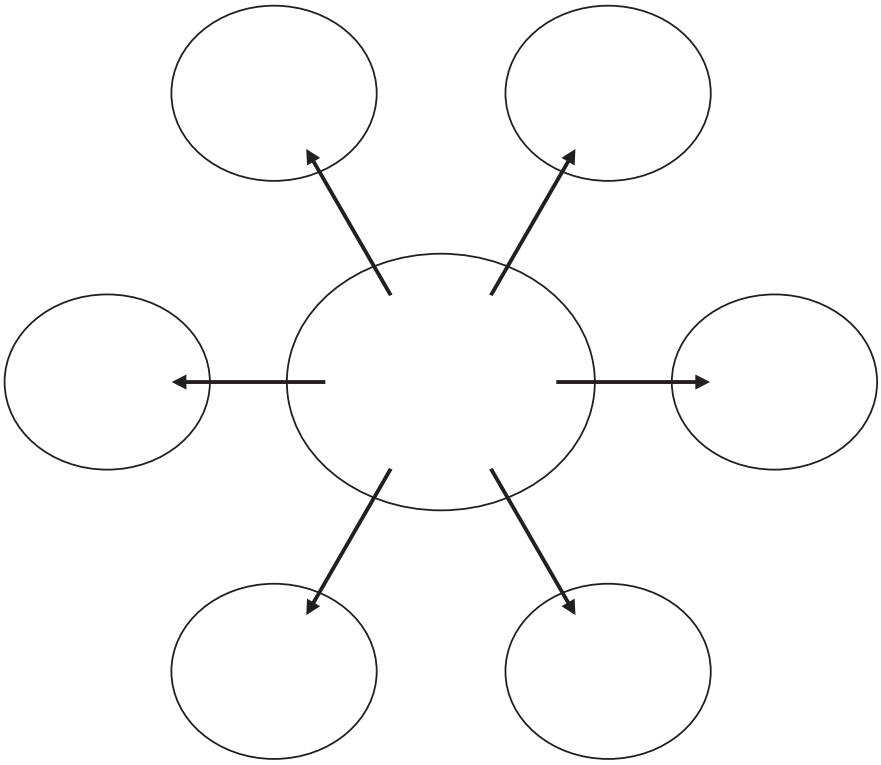
Travel agent	Commission free, 1.50 euros for each £1
Bank	£2 charge then 1.60 euros for each £1

Q Which is the best deal if I have £100?

Q Which deal represents direct proportion?

Extension: Clara changed some money at the travel agent and received 90 euros. How much would she have received if she had gone to the bank? Show your working.

Equivalent ratios M15.1



Which sets of numbers are in proportion?

Set A	3	6
	4	8
	12	24
Set B	3	9
	4	10
	12	18
Set C	10	5
	12	6
Set D	12	18
	4	6

Pounds and dollars M15.3

Is this set in proportion?

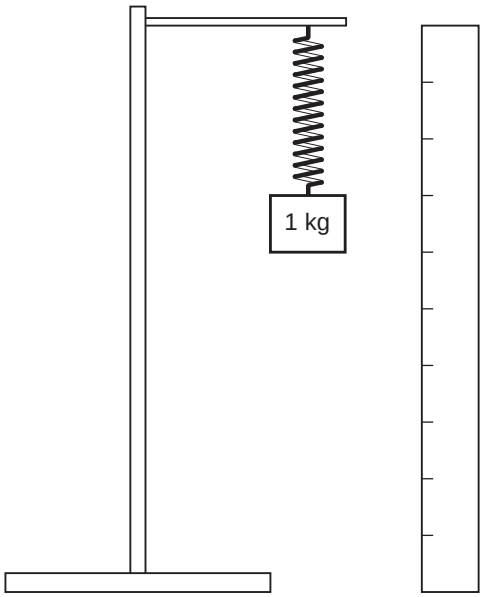
£	$
60	100
3	5
21	35

Length of spring M15.4

In an experiment different weights are attached to the end of a spring and the total length of the spring is measured.

When a 1 kg weight is attached, the spring is 30 cm long.

For each additional 1 kg weight, the spring extends a further 5 cm.



How long is the spring when 2 kg is attached?
How long is the spring when 3 kg is attached?

Complete this table showing the length of the spring for different weights.

Weight (kg)	1	2	3	4
Total length (cm)				

Lesson 16 Problem solving

Oral and mental starter 10 minutes

Objectives

Explain and justify methods and conclusions (Y7)

Vocabulary

explain, reasons

Write on the board the single digits 6, 5 and 2. Say:

Rashida has three cards, each with a single digit written on it. None of the numbers are the same.

Q How many different three-digit numbers can she make using each card once only?

Q How do you know you have all of the numbers?

Q Can any of them be square numbers?

Q Can any of them be prime numbers?

Q Can any of them be a multiple of 3?

Pupils must give reasons for their answers.

Take responses. Make sure reasons are full and clearly explained. Point out that for some answers particular values are sufficient but for others a full explanation is needed.

(If time is not available in this lesson, revisit the task in the next lesson with the following starter: Ask pupils if they could give the value of three different odd-numbered single-digit cards so that it is not possible to make up a prime number. Ask them to explain their answer.)

Main teaching 45 minutes

Objectives

Solve problems and investigate in a range of contexts (Y7, 8, 9)

Explain and justify methods and conclusions (Y7)

Identify exceptional cases or counter-examples (Y8)

Vocabulary

explain, reasons (plus vocabulary related to mathematical context)

Resources

OHT of M16.1

Handouts of M16.2

Show **OHT M16.1**. Invite pupils' responses. You may need to structure questions to help pupils develop their explanations.

Q What is the last digit of a number whose square ends in a 6?

Q Could a number which ends in a 6 or a 4 be a prime number?

Q Could the square root of this number be prime?

Explain that because the given number is even, its square root must also be even. The only even prime number is 2. However, because the given number is six digits long and greater than 100 000, its square root cannot be 2. Ask pupils to write an explanation as to why the answer must be 'No' using this information.

Tell pupils that you are going to give them a set of problems to solve. Use individual questions or a selection of problems from **handout M16.2**.

Emphasise that all answers need to be supported by clear, written explanations. Point out that explanations should be easily understood and that pupils may use examples to help.

Ask pupils to work individually on a problem (or problems) and to write down their explanations and answers.

After appropriate time, group pupils and ask them to discuss in their groups their explanations. Ask if the written answers are as clear and full as the oral explanations. Encourage pupils to decide on the best answer for each question.

By the end of the lesson

pupils should be able to:

- give full written explanations when solving problems;
- use counter-examples to disprove a statement.

Framework supplement of examples pages 2–35

Levels 5 and 6

Take feedback from groups to ensure they have given a complete explanation. Repeat the process with other questions.

More problems can be found on pages 30 and 31 of the Framework supplement of examples.

Plenary 5 minutes

Use small plenary sessions throughout the main teaching session.

Explain the use of a counter-example when disproving a statement.

Six-digit squares M16.1

I am thinking of a six-digit square number with a units digit of 6.

__ __ __ __ __ 6

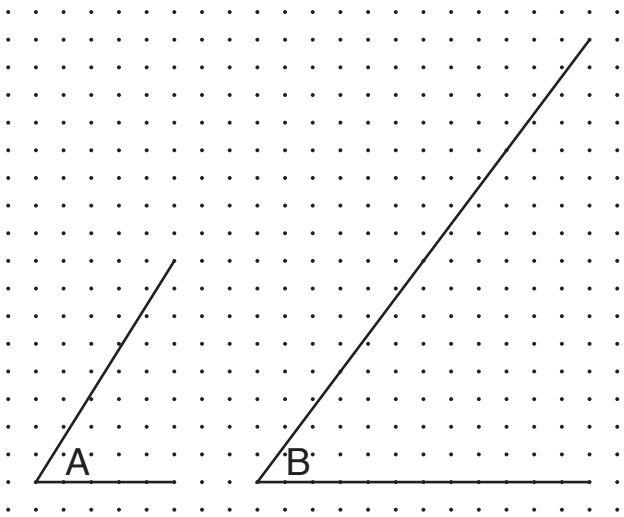
Could its square root be a prime number?

Explain your answer.

Problems M16.2

1 Are angles A and B the same size?

Explain your answer.



2 What is the largest number of obtuse angles you can have in a triangle? Explain your answer.

3 Find the factors of 6, 9, 12 and 25.
Explain why only square numbers have an odd number of factors.

4 Screenwash is used to clean car windows.
To use screenwash you mix it with water:

Mix 1 part screenwash
with 4 parts water.

Is the statement '25% of the mixture is screenwash' correct? Explain your answer.

5 The number 715 is the product of three whole numbers, all greater than 1.
Find the three numbers and say if this is the only possible answer.
Explain your answer.

6 Graham asked 29 pupils how many times they are late getting to school in a term.
The results are shown in the table below.
Unfortunately a blot covers part of the table.

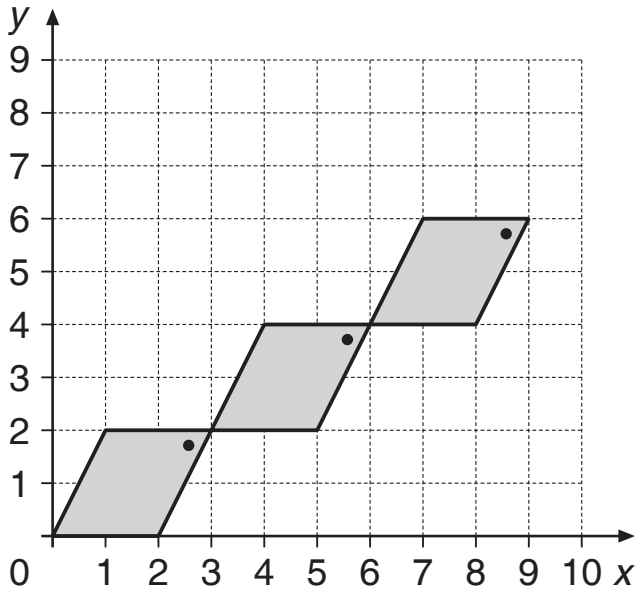
Number of days late	Frequency
0	3
1	10
2	9
3	
4	
5	1

Calculate, if possible, the mode, median, mean and range for the data.

Explain how you can calculate some values and why you are unable to calculate others.

7 Anne has a 5-litre jug and a 3-litre jug.
There is a large container of water.
Explain how she can end up with 4 litres of water in the 5-litre jug.

8 Lucy has some tiles, each with a marked corner.
She sets them out as shown.



Lucy carries on laying tiles. She says: '(21, 17) will be the coordinates of one of the marked corners.'
Do you think Lucy is right? Explain your answer.

Assim says: 'One of the marked corners is at (9, 6). If the pattern were big enough, (90, 60) would also be the coordinates of a marked corner.'
Is he right? Explain your answer.

Fred says: 'Look at the unmarked corner at (1, 2). If you continue the pattern, (100, 200) will be a corresponding corner.'
Is he right? Explain your answer.

School contacts

Please do not hesitate to get in touch with the school if you would like more help or advice to prepare your child for their Year 9 National Curriculum tests.

_____ School

_____

_____

Postcode _____

Listed below are the names of staff who are responsible for the different subjects.

English _____

Mathematics _____

Science _____

Please telephone the school on _____ if you would like to talk to any of the staff about the Year 9 tests.

Other materials

Look at useful websites. The school and libraries have access to the Internet.

Try BBC 'Bitesize':
www.bbc.co.uk/education/revision

Have a look at the materials in bookshops – there are some useful tests, quizzes and revision guides on sale.

During the spring term

Get your child to check that they have all the notes and texts they need for revision.

Encourage them to read through their notes.

Work with them on some mathematics questions and encourage them to ask for help at school on any aspects they do not understand.

Just before the tests begin

Help them to make a home study plan. This should:

- be made up of 30-minute sessions;
- ensure that each session starts by tackling the most difficult bits;
- revisit topics nearer to the tests;
- be displayed to help them to keep to it.

During the test period

Suggest that they adapt the study plan so that:

- it covers topics for tomorrow's tests;
- it gives time to prepare for later tests.

You can also help by:

- encouraging the rest of the family to be supportive;
- suggesting your child invites a friend round for some revision sessions – talking about work can help;
- securing a quiet place for study, where their work can be safely kept;
- encouraging relaxation time (too much study is not helpful);
- praising hard work;
- emphasising the need for plenty of sleep;
- helping them to forget about each test as it is finished;
- reminding them that it will soon be over!

Making a difference

Helping your child to prepare for the 2003 Year 9 tests

Year 9 booster programme

Advice for parents and guardians

Test dates

Make a note of the dates and times of the tests. Please make sure that holidays are not booked to clash.

Science

Paper 1 – Tuesday, 6th May, morning

Paper 2 – Tuesday, 6th May, afternoon

Mathematics

Paper 1 – Wednesday, 7th May, morning

Paper 2 – Wednesday, 7th May, afternoon

Mental mathematics test – Wednesday, 7th May, morning, or Thursday, 8th May, morning

English

Reading paper – Thursday, 8th May, morning

Writing paper – Thursday, 8th May, afternoon

Shakespeare paper – Friday, 9th May, morning

Pupils who do their best in the tests work hard all through Year 9 rather than relying on last-minute revision.

What's in the English tests?

In the **reading paper**, your child will be asked to read three short texts and answer a range of questions, some requiring short answers, some a longer response.

In the **writing paper**, your child will choose a writing task that requires them to write a continuous piece of fiction or non-fiction.

In the **Shakespeare paper**, there is a reading task which tests your child's ability to understand and write in detail about printed extracts from two scenes from the Shakespeare play they have studied. There is also a short writing task, linked to ideas or themes in the play, which tests the ability to write precisely and concisely.

To get level 5 or above in English, your child should be able to:

- use commas, speech marks and apostrophes accurately;
- use paragraphs;
- spell some difficult words correctly;
- use some complex (longer and more detailed/descriptive) sentences;
- use a wide range of vocabulary;
- give reasons and explanations, backed up by evidence, in their answers.

What you can do to help your child with English:

- Rent the film of the Shakespeare play.
- Help with key spellings: rhythm, rhyme, scene, playwright, author, character, soliloquy, theatre, simile, onomatopoeia.
- Read through their folder/exercise book and check their personal targets: if they have still not achieved all of them, help them to work on them.
- Find out what they always forget (for example, there/their/they're, or using paragraphs) and help them to remember.

What's in the mathematics tests?

Each of the papers tests the whole mathematics curriculum: number, algebra, shape, space and measures, and handling data.

In the **mental mathematics test** your child needs to be able to recall and use number facts.

Paper 1 is a non-calculator examination, so your child needs reliable methods for mental and written calculations.

Pupils can use a calculator on **paper 2**.

To get level 5 or above in mathematics, your child should be able to:

- complete calculations correctly, clearly showing appropriate working;
- give reasons and explanations to back up their answers;
- use units correctly;
- use correct mathematical notation when setting out their work.

What you can do to help your child with mathematics:

- Show enthusiasm for mathematics as well as pointing out its importance.
- Help to reinforce the learning that has taken place in school – for example, learning multiplication tables, remembering formulae such as those for a circle, circumference $C = 2\pi r$ and area $A = \pi r^2$.
- Look at their exercise books and discuss what and how to improve.
- Find out where they make silly errors and help them to correct them.
- Make sure that your child knows what is needed and has the equipment for each test – pens, pencil and rubber, ruler, protractor and, for paper 2, a calculator.
- A watch is useful in planning how to use time in the test.

What's in the science tests?

There are two very similar test papers. Both include a range of questions and cover similar subject material. The two papers allow a full range of science topics to be covered.

To get level 5 or above in science, your child should be able to:

- describe how to use equipment accurately and safely;
- accurately read results from pictures or graphs, and use units, such as g or cm, correctly;
- draw reasonable conclusions from data or evidence, and give sensible explanations for them;
- remember a range of scientific ideas and apply them to unfamiliar situations – for example, to interpret a food web, to identify an unfamiliar chemical, or to recognise forces in a different situation.

What you can do to help your child with science:

- Read through their folder/exercise book and get them to talk about the science they have done.
- Talk about things they find difficult and encourage them to explain their difficulties to you. Together you can work out how to ask the teacher for help.
- Watch science television programmes such as those on health, wildlife and the environment, and talk with your child about the science involved.