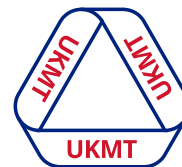# Primary Team Maths Resources 2018 Guidelines

United Kingdom Mathematics Trust

The UKMT Primary Team Maths Resources (PTMR) have been produced with the aim to facilitate secondary schools in running maths events for feeder schools. Schools may choose to use the materials in other ways and the UKMT does not seek to restrict their use. For example, a primary school may use the materials to run a competition for their own 10 and 11-year old pupils, or a secondary school may use the materials as an end of term activity for their 11 to 13 year-old pupils.

The PTMR are freely available from UKMT. Therefore, it is possible that students from a particular school may use the materials and then come across them again at a later date, for example, at a regional event run by another school.

A set of sample material and historic materials can be downloaded from the UKMT website at https://www.ukmt.org.uk/team-challenges/primary-team-maths-resources/. These resources are available at no cost to schools and are accessed electronically for printing in school. The UKMT must always be referenced and acknowledged as authors of the materials.

Teachers are free to use and copy publicly available UKMT material for teaching purposes within their classroom. We give permission for schools or any other bodies to publish up to three questions and solutions from any PTMR round, in print or on the internet, provided UKMT is credited and acknowledged as the source, with a link to our website www.ukmt.org.uk.

Our material must not be used for ventures involving any commercial gain.

How to use the materials

We recommend that a team comprises four pupils in Year 6 (England and Wales), P7 (Scotland), or Year 7 (Northern Ireland). One supervisor is normally needed per team. This supervisor need not be a mathematician at all as all answers are provided. Indeed, the supervisor need not be a teacher, and could, for example, be a Sixth Form student.

We are providing more materials than would be needed for any one competition, so we leave it to the organiser to select what is most appropriate.

Some of the rounds, notably the Group Round, Logic, Make a Number, and Speed Test, would work well with one teacher and a whole class. The other rounds, the Crossnumber, Relay and Shuttle, ideally need one supervising teacher per team.

Suggested timings and mark scheme are given in the explanation of the rounds, but please feel free to adjust these to suit your own needs. ***No calculators are allowed!***

Getting Involved

We would be interested in hearing feedback about these resources, including what materials you enjoyed the most, the difficulty level of the materials, how you have used the materials (e.g. during activity days; in the classroom; transition days etc) and if you have any suggestions for new rounds. We would also like to hear from you if you would be interested in getting involved in writing, typesetting and checking the materials for the future. Please contact us by email enquiry@ukmt.org.uk.

Explanation of the rounds

Group Round

Time allowed: 45 minutes.

Scoring: 4 marks per correct question. A question is marked either correct or incorrect, and no partial marks are awarded. There are 15 questions in total.

The contestants are given a set of 15 questions, which they should divide up among themselves so they can answer as many as possible in the allotted time. They are expected to work as a team and how they organise themselves to answer the questions is up to them.

A team captain should be made responsible for the completion of the answer grid to be handed in for marking at the end of the round. Answers should be in their simplest form where appropriate.

Crossnumber

Time allowed: 20 minutes.

Scoring: 1 mark is given for each correct digit at the first time of being presented to the supervising teacher. If a digit is incorrect, no marks are given and it is replaced with the correct digit.

The team answer as many questions as possible using the practice grid, and write their final answer on the answer grid. They can show this answer grid to the supervising teacher at any time, who will then either confirm or correct the answer.

The clues are connected but there are some that can be answered without reference to any other clues.

Students are expected to understand the relationship between fractions and division, and will be expected to multiply 2 or 3 digit numbers by other 2 or 3 digit numbers. They may also be asked to work with numbers that have up to 4 digits and to divide a number with up to 4 digits by a single digit number.

Shuttle

Time allowed: 4 rounds of 8 minutes each.

Scoring: 3 points per answer correct on the first attempt or else 1 point if correct on a subsequent attempt. In addition, a bonus of 3 points is awarded if there is a correct set of answers after 6 minutes. Each team is divided into two pairs, with the supervising teacher sitting between them. Pair A are given questions 1 and 3 (along with the record sheet on which to write the answers) and Pair B given questions 2 and 4. Alternate pairs start each round, so on the second round Pair B are given questions 1 and 3 and Pair A receive questions 2 and 4.

Question 1 can be solved independently of the others, but the answer to each of the subsequent questions is dependent on the previous answer, referred to as T in questions 2, 3 and 4 (e.g. *"T is the number that you will receive."*)

Once they have calculated the solution to question 1 and written it on the record sheet, Pair A pass the sheet to Pair B. This continues with Pair B passing the answer to Question 2 back to Pair A and so on. Apart from passing the record sheet back and forth, no communication is allowed between the two pairs.

Pairs will be able to do some preparation while they are waiting for the answer to the previous question to be passed to them.

If a pair know that the answer they have received must be wrong (e.g. if they were expecting a square number), they can pass it back to the other pair. If a pair realise before the record sheet is handed to the teacher that they may have passed on an incorrect answer, they can ask the teacher to retrieve the record sheet from the other pair.

Only when question 4 is answered or time is up is the record sheet passed to the supervising teacher for marking.

The supervising teacher marks starting at question 1. Each correct answer at the first time of marking is worth 3 points. A question which is correct on the second or subsequent attempt will receive 1 mark. If all answers are correct the team has successfully completed the round. If all answers are correct (either at the first or subsequent attempts) within six minutes, the team is also awarded the bonus 3 marks for that round.

At the first incorrect answer, the teacher stops marking and passes the record sheet back to the relevant pair to reattempt the question. The team can now only score 1 mark on this particular question.

Relay

Time allowed: 40 minutes.

Scoring: 2 marks per correct question. There is no penalty for giving a correct answer on the second attempt. A question is marked either correct or incorrect, and no partial marks are awarded.

The aim here is to have a speed competition with teams working in pairs to answer alternate questions. Each team is divided into two pairs, Pair A and Pair B, with each pair seated at a different desk away from the other pair and the supervising teacher.

There are 15 A questions and 15 B questions.

One member of Pair A collects question A1 from their supervising teacher and returns to his/her partner to answer the question together.

When the pair are certain that they have answered the question, the runner returns to the front to submit their answer to the teacher. If it is correct, the runner receives question B1 to give to the other pair (Pair B) from their team. If it is incorrect, Pair A then have another go at answering the question, then the runner returns to the front to resubmit their answer and receive question B1 to deliver to Pair B. (Pair A can only have one extra attempt.)

The runner then returns, empty handed, to his/her partner.

Pair B answer question B1 and a runner from this pair brings the answer to the front, as above, then takes question A2 to Pair A. Pair A answer question A2, return it to the front, collect question B2 for the other pair, and so on until all the questions are answered or time runs out. Thus the A pairs answer only A questions and the B pairs answer only B questions.

Only one pair from a team should be working on a question at any time and each pair must work independently of the other.

The questions are roughly placed in order of difficulty for both A and B.

Speed Test

Time allowed: 20 minutes.

Scoring: 3 marks are awarded per correct answer written on the answer grid (units can be ignored). An answer is marked either correct or incorrect so no partial marks are given. Marks are not awarded for correct answers that have not been written on the answer grid.

There are 20 questions to answer within the time. The team is given one copy of the questions (you may prefer to print out more copies) and one answer grid. The team can organise themselves to answer the questions however they want within the allotted time. Answers must be written on the answer grid within the allotted time in order for them to be marked.

Logic

Time allowed: 20 minutes.

Scoring: 2 marks for each correct answer.

The team is given one logic puzzle requiring 25 answers, and they are required to solve the question in the time allowed and write their answers on the sheet provided. You may prefer to print out more than one copy of the Logic Round clues. The team is expected to work as a team and how they organise themselves to answer the question is up to them.

Make a Number Round

Time allowed: 2 minutes per question.

Scoring: 3 marks for each correct answer. In addition, a bonus of 1 mark is awarded if the challenge number is obtained within one minute.

The team works together and is asked to make a target challenge number using some or all of six given numbers. They may use some or all of the given numbers to make the challenge number using any of the symbols ( ) $+-\times\div$. The symbols can be used any number of times, but each number can only be used at most once. The team do not have to use all the numbers.

For further maths resources for Primary School pupils, see the Primary Mathematics Challenge organised by the Mathematical Association (www.m-a.org.uk) or online enrichment materials at NRICH (http://nrich.maths.org/public/).