

Ages 7 - 12

Maths Games and Activities

Games and activities to
consolidate basic facts in number,
decimals and percentages.

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INTRODUCTION

MATHS GAMES AND ACTIVITIES is a compilation of mathematical activities developed for, and used with, students from school years two to seven over a period of forty years teaching. It has been designed to be that “teacher’s helper” to teach/reinforce the basic facts in number, place values, decimals and fractions which are important to students to gain confidence in tackling the “big sums”. For there is no such thing as a “big sum”. Nine times nine is the same answer no matter where one sees it.

These set of activities will make doing maths fun while at the same time committing students to repetitive practice which in the days of daily drill became boring. Although imposing recall of basic facts through drill may seem desirable, turning that recall into a game where repetitive recall becomes an incentive to achieve success is essential.

The games and activities included in this book are designed to be open ended, catering for the needs of children of lesser ability as well as those who are mathematically competent. Drilling becomes a challenge, children become challenged and it is through that challenge they achieve the recall necessary for the completion of greater tasks.

A summary of the activities included in this book is presented on Pages 4 and 5. This is followed by the activity sheets to be used by the students as well as the guidelines for conducting those activities. In the main the guidelines have been printed on the facing page to the activity/work sheet so that the two cannot be separated.

Some of the activities can be modified to suit the particular needs of the teacher when choosing which facts they wish to consolidate. For this purpose blank activity sheets have been included.

Preparation is simple, motivation is high. Use and enjoy.

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NOTES ON ACTIVITIES

SECTION 1: CONSOLIDATING BASIC FACTS IN ADDITION AND SUBTRACTION

The following games and activities have been created to consolidate basic addition and subtraction facts to 18. Each activity is graded so that the less able student will be able to achieve some success while at the same time extension is provided for students of higher ability.

All games and activities have been used with success by students working at school years 2 to 7 levels.

Following are summaries of the various games and how they could be played.

THE SORTING GAME

This activity was created for students in a year two group to help them develop an understanding of basic facts to ten. It was further used to discover basic facts to eighteen.

LET'S MAKE A SUM

This game allows students in years two and three to create their own number sentences by linking objects in set one with objects in set two. Alternatively it can be used to discover basic facts to a specified number, e.g. 10.

MAKE THE NUMBER

Make the Number allows students in years three to five to consolidate basic facts to 18. Students can choose their own sum or work to find facts for a more specific number as directed by you or the class.

FIND THE ANSWER 1 & 2

These are number sleuths designed to give students practice in adding three numbers whose sum is less than twenty. This helps to consolidate basic facts to 18.

You can use the basis of this game by providing different combinations to fit the answers.

This game is self correcting as children will discover when they have completed the grid.

CONNECT THREE

Connect Three is a great game which gets students involved in combining three numbers to make a designated number. After playing the game they will then be ready to play the sequel, **SECRET CONNECTIONS**. For this game students are required to find three adjacent numbers in the grid whose sum equals the number in the box adjacent to the grid.

SECRET CONNECTIONS (PLUS)

By using the rules in "CONNECT THREE" students create their own combinations and then challenge their partner to discover the secret connection. (Space is provided beneath the product for the challenger to write the connection.)

The blank grid provided allows you or the students to create a multitude of games based on OUTCOMES REQUIREMENTS.

NUMBER CHASE

This is a popular maths activity which caters for all levels of ability as well as allowing the teacher to consolidate any mathematical concept that is desired.

SECTION 2: CONSOLIDATING PRODUCTS

SPEED TESTS

When all basic products are considered there are only a total of 30 which could cause some difficulty to students. This premise is based on excluding zero, one and ten times tables. The activities provided aim to consolidate those facts.

SPEED TEST 1 introduces thirty five basic products to the pupil and provides the student with practice to increase their speed and accuracy over a four day period. The products are introduced in order of difficulty commencing with square numbers and extending to a difference of eight digits between multiplier and multiplicand, i.e. 2×9 .

SPEED TEST 2 uses the products introduced in Test 1 but utilises an open number sentence approach (e.g. $__ \times 4 = 16$) so as to improve the students understanding of the division process.

CONNECTING MULTIPLIERS

This activity for Years 5 to 7 is similar to CONNECT THREE but in this activity the students connect three adjacent numbers to create the product in the box adjacent to the grid.

SECRET TIMES CONNECTION

Once again the students are challenged to make their own connections by finding the product of three adjacent numbers and then challenging their partner to discover the connection. For Years 5 to 7.

MATHS BINGO

This activity for years 3 to 7 can cater for the consolidation or revision of any basic facts that you desire. The activity complements the desired outcomes required from the SPEED TEST activities.

SECTION 3: GAMES USING CARDS

Card and dice games are not only an interesting way to develop understanding of mathematical facts but also enhance mathematical thinking and allow the student to participate in that part of the curriculum involving chance processes.

These games can be used by all students from years two to seven. They involve a minimum of preparation by the teacher but allow for the individual development of the pupil. Basically they involve the consolidation and recall of basic facts and products but can be used to develop an understanding of all processes in number, decimals, fractions and percentages.

Most of the card games mentioned go under the generic name of MAKE A NUMBER. This approach allows the teacher to dictate what skills, recall or understanding he/she wishes to develop.

NUMBERS TO 30

The initial game, (NUMBERS TO 30) is aimed at developing a recall of basic facts involving three addends. The success of the game involves the use of subtraction skills to achieve the required number.

NUMBERS TO 60

Having mastered **NUMBERS TO 30** students use five cards to achieve the required number. This game also involves the subtraction process to help the student reach the goal.

PLUS AND MINUS

Students are required to use these two processes to create a designated number.

NUMBERS TO 1 000 000

This game is designed to improve the pupils understanding of place values to 1 000 000.

NUMBERS TO 1000

The pupil develops an understanding of the place value of decimals and whole numbers to 1000.

SNAP

This game involves the use of either addition or multiplication facts or both. It is played similar to the card game of the same name and is a fun way to consolidate basic facts and products.

THREE CARD DRAW

The pupil uses one or two of the four processes to create a number displayed on the game sheet.

SECTION 1: GAMES USING DICE

NOUGHTS AND CROSSES 1

This game has been created for two players using two dice and is aimed at consolidating basic products to 81. It is similar to Magic Numbers but allows the students to claim the number they need.

NOUGHTS AND CROSSES 2

This game, similar to Magic Numbers, is designed for two to four players and challenges the players to connect three adjoining products either vertically, horizontally or diagonally using basic products.

MAGIC NUMBERS

This game is similar to Three Card Draw but is played by groups of no more than four students using three ten sided dice instead of cards.

THE PERCENTAGE GAME

This activity involves using three ten sided dice. Students working in groups each roll the dice. They combine two of the digits shown by the dice to make a number and then divide that number by the third digit to make a percentage.

LET'S MAKE A SUM

This activity allows students in years two and three to create their own number sentences by linking objects in set one with objects in set two with a line. When this has been done they write the number sentence next to the connection.

Alternatively, it can be used to discover basic facts to a specified number eg. 10. This would be done by linking 1 in set one with 9 in set two. The number sentence in row one would be $1+9=10$ while in the last row it would be $9+1=10$.

EXAMPLE ONE

SET ONE	SET TWO	NUMBER SENTENCE
○ _____	○	$1 + 1 = 2$
○○ _____	○○	$2 + 2 = 4$
○○○ _____	○○○	$3 + 3 = 6$
○○○○ _____	○○○○	

EXAMPLE TWO

SET ONE	SET TWO	NUMBER SENTENCE
○	○	$1 + 4 = 5$
○○	○○	$2 + 3 = 5$
○○○	○○○	$3 + 2 = 5$
○○○○	○○○○	$4 + 1 = 5$

LET'S MAKE A SUM

NAME

Make a sum by joining a set of objects in Set One with a set of objects in Set Two. Then write your number sentence.

SET ONE	SET TWO	NUMBER SENTENCE
○	○	
○○	○○	
○○○	○○○	
○○○○	○○○○	
○○○○○	○○○○○	
○○○○○○	○○○○○○	
○○○○○○○	○○○○○○○	
○○○○○○○○	○○○○○○○○	
○○○○○○○○○	○○○○○○○○○	
○○○○○○○○○ ○	○○○○○○○○○ ○	
○○○○○○○○○ ○○	○○○○○○○○○ ○○	

MAKE THE NUMBER

This activity allows students in school years three to five to consolidate basic facts to 18. Students can choose their own connections to create a number sentence or work to find facts for a specific number as directed by the teacher.

EXAMPLE

Make the number 12.

COLUMN ONE	COLUMN TWO	NUMBER SENTENCE
1	1	$1 + 11 = 12$
2	3	$2 + 10 = 12$
3	5	$3 + 9 = 12$
4	7	
5	9	$9 + 3 = 12$
6	11	$11 + 1 = 12$
7	13	
8	15	
9	17	
10	2	
11	4	
12	6	
13	8	
14	10	$10 + 2 = 12$
15	12	
16	14	
17	16	

MAKE THE NUMBER

NAME

Draw a line to connect a number in Column One with a number in Column Two to make the given number, then write the number sentence about that connection.

COLUMN ONE	COLUMN TWO	NUMBER SENTENCE
1	1	
2	3	
3	5	
4	7	
5	9	
6	11	
7	13	
8	15	
9	17	
10	2	
11	4	
12	6	
13	8	
14	10	
15	12	
16	14	
17	16	

CONNECT THREE

CONNECT THREE is a great game which gets students involved in combining three numbers to make a designated number. I developed the game for a year 2/3 grouping of mixed ability and the students displayed great enthusiasm over it. Year four and five students also enjoyed playing it.

After playing this game students will then be ready to play the sequel, **SECRET CONNECTIONS**.

PLAYING THE GAME

For this game students are required to join three adjacent numbers in each grid whose sum equals the number in the box adjacent to the grid. This is done by drawing a line from one addend to another. The simpler sums have only one solution but as the value of the answer increases so do the number of allowable solutions thus providing other challenges for the students.

It is recommended that for students of limited ability a calculator be allowed to be used.

EXAMPLE ONE

1	2	3	6
4	5	6	
7	8	9	

1	2	3	7
4	5	6	
7	8	9	

1	2	3	8
4	5	6	
7	8	9	

EXAMPLE TWO

1	2	3	15
4	5	6	
7	8	9	

1	2	3	15
4	5	6	
7	8	9	

1	2	3	15
4	5	6	
7	8	9	

EXTENSION

Have students find as many connections for each answer as they can with points being allocated for every correct connection.

What answers provide the greatest number of connections?

CONNECT THREE

NAME

By adding three adjoining numbers in the grid make the number shown in the box.

1	2	3	6
4	5	6	
7	8	9	

1	2	3	7
4	5	6	
7	8	9	

1	2	3	8
4	5	6	
7	8	9	

1	2	3	9
4	5	6	
7	8	9	

1	2	3	10
4	5	6	
7	8	9	

1	2	3	11
4	5	6	
7	8	9	

1	2	3	12
4	5	6	
7	8	9	

1	2	3	13
4	5	6	
7	8	9	

1	2	3	14
4	5	6	
7	8	9	

1	2	3	15
4	5	6	
7	8	9	

1	2	3	16
4	5	6	
7	8	9	

1	2	3	17
4	5	6	
7	8	9	

1	2	3	18
4	5	6	
7	8	9	

1	2	3	19
4	5	6	
7	8	9	

1	2	3	20
4	5	6	
7	8	9	

SPEED TEST 1

BASIC PRODUCTS PRACTICE

SPEED TEST 1 provides the student with practice in basic products excluding the zero, one and ten times tables,

AIM

To improve automatic recall of basic products.

This activity is best conducted on a daily basis. However benefits have also been derived by using it in a four weekly cycle, thus allowing students to learn to recall products of which they were uncertain.

TIMING

It is recommended that a maximum of only three minutes be allowed for the student to complete a column of the sheet. This gives an automatic response time of ten seconds per combination.

USING THE SHEET

DAY ONE: Before students complete Practice 1, tell them of the timing restrictions and instruct them not to waste time recalling a fact they don't know. The aim is to find out what products they know so that they can concentrate their time on learning the ones that they need to know. (Best practice is for them to write the first answer that comes into their head.) As a student completes the practice column she/he calls "finished" and you call out the time taken for that student to complete the work. The student records that time in seconds in the box below the practice set.

After the allocated time has been completed, call the answers allowing the students to mark their own work and write the correct answer if it was wrong.

When work has been marked, students record the number correct in the box below the set and circle those products which caused some difficulty to a maximum of five. These become the facts on which the student will concentrate in the next three days.

(Those students having all correct may have some which caused them to falter.)

DAYS TWO AND THREE: Allow the students to recall those examples which caused difficulty. Instruct them to complete the column allowing them the prescribed three minutes. Time and the number correct are recorded as before.

DAY FOUR: Students work to complete the TEST column in the allocated time. When marking, it is recommended that they change papers as some form of check on accuracy. It is on this day you may like to record the number correct and the time taken to complete the test.

Over a period of time the record of results should show an improvement in either speed or accuracy or both.

If this activity is used over a four week period, it is suggested that students keep an error pad in which they write any product which caused them difficulty. These entries could be recalled daily just as they do with their spelling journal.

SPEED TEST 1

BASIC PRODUCTS PRACTICE

Practice 1	Practice 2	Practice 3	TEST
$3 \times 3 =$	$4 \times 7 =$	$6 \times 7 =$	$3 \times 3 =$
$4 \times 4 =$	$5 \times 8 =$	$7 \times 8 =$	$4 \times 7 =$
$5 \times 5 =$	$6 \times 9 =$	$8 \times 9 =$	$6 \times 7 =$
$6 \times 6 =$	$3 \times 7 =$	$3 \times 5 =$	$4 \times 4 =$
$7 \times 7 =$	$4 \times 8 =$	$4 \times 6 =$	$5 \times 8 =$
$8 \times 8 =$	$5 \times 9 =$	$5 \times 7 =$	$7 \times 8 =$
$9 \times 9 =$	$3 \times 8 =$	$6 \times 8 =$	$5 \times 5 =$
$3 \times 4 =$	$4 \times 9 =$	$7 \times 9 =$	$6 \times 9 =$
$4 \times 5 =$	$2 \times 8 =$	$3 \times 6 =$	$8 \times 9 =$
$5 \times 6 =$	$3 \times 9 =$	$4 \times 7 =$	$6 \times 6 =$
$6 \times 7 =$	$2 \times 9 =$	$5 \times 8 =$	$3 \times 7 =$
$7 \times 8 =$	$3 \times 3 =$	$6 \times 9 =$	$3 \times 5 =$
$8 \times 9 =$	$4 \times 4 =$	$3 \times 7 =$	$7 \times 7 =$
$3 \times 5 =$	$5 \times 5 =$	$4 \times 8 =$	$8 \times 4 =$
$4 \times 6 =$	$6 \times 6 =$	$5 \times 9 =$	$4 \times 6 =$
$5 \times 7 =$	$7 \times 7 =$	$3 \times 8 =$	$8 \times 8 =$
$6 \times 8 =$	$8 \times 8 =$	$4 \times 9 =$	$5 \times 9 =$
$9 \times 7 =$	$8 \times 8 =$	$2 \times 8 =$	$5 \times 7 =$
$3 \times 6 =$	$3 \times 4 =$	$3 \times 9 =$	$9 \times 9 =$
$4 \times 7 =$	$4 \times 5 =$	$2 \times 9 =$	$3 \times 8 =$
$5 \times 8 =$	$5 \times 6 =$	$3 \times 3 =$	$6 \times 8 =$
$6 \times 9 =$	$6 \times 7 =$	$4 \times 4 =$	$3 \times 4 =$
$3 \times 7 =$	$7 \times 8 =$	$5 \times 5 =$	$4 \times 9 =$
$4 \times 8 =$	$8 \times 9 =$	$6 \times 6 =$	$7 \times 9 =$
$5 \times 9 =$	$7 \times 5 =$	$7 \times 7 =$	$4 \times 5 =$
$3 \times 8 =$	$4 \times 6 =$	$8 \times 8 =$	$2 \times 8 =$
$4 \times 9 =$	$5 \times 7 =$	$9 \times 9 =$	$3 \times 6 =$
$2 \times 8 =$	$6 \times 8 =$	$3 \times 4 =$	$5 \times 6 =$
$3 \times 9 =$	$7 \times 9 =$	$4 \times 5 =$	$3 \times 9 =$
$2 \times 9 =$	$3 \times 6 =$	$5 \times 6 =$	$2 \times 9 =$

No. correct	No. correct	No. correct	No. correct
Time taken	Time taken	Time taken	Time taken