



KiwiMaths  
Series



# Maths: Year 5

- ✓ number and algebra
- ✓ measurement and geometry
- ✓ statistics and probability

By Brenda Gurr

# Teachers' Notes

The activities in this book allow the students to both investigate and practise a range of mathematical concepts. Student-friendly explanations of relevant concepts are included on the majority of pages. Answers are provided at the back of the book.

This book is divided into three sections, which are detailed below.

## **Section 1: Number and Algebra**

The activities in this section cover important skills concerning division and multiplication, allowing the students to work with factors, multiples and a range of different multiplication methods. Activities involving fractions, decimals and money calculations are also included.

## **Section 2: Measurement and Geometry**

In this section, students will explore how to choose appropriate measurement units and will work with 12 and 24 hour time. They will also investigate concepts concerning 2D and 3D shapes, use a grid reference system, calculate perimeter and area, and construct and measure angles using protractors.

## **Section 3: Statistics and Probability**

This section allows students to investigate three different games of chance, develop an understanding of probability, and construct and interpret graphs and tables.

# Divisibility Rules

Find a partner to work with to answer these questions. Try to figure out some possible divisibility rules for each of the numbers below.

Hint: You can think about the divisibility rules given on page 10 to help you. You should also look for any patterns that you can see.

1. 15, 20, 105 and 200 are all divisible by 5. What might the divisibility rule for this number (5) be?



2. 9, 18, 27 and 900 are all divisible by 9. What might the divisibility rule for this number (9) be?



3. 10, 30, 60 and 2000 are all divisible by 10. What might the divisibility rule for this number (10) be?



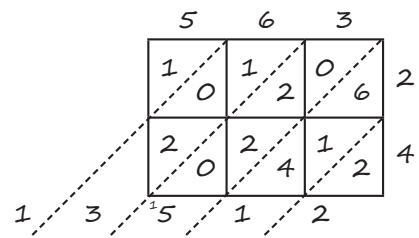
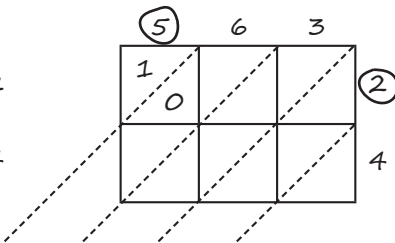
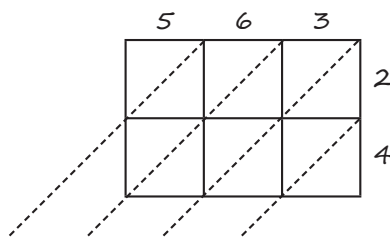
4. 12, 72, 120 and 600 are all divisible by 12. What might the divisibility rule for this number (12) be? (Hint: Figure out two other smaller numbers these numbers are also divisible by.)



# Multiplication Methods: Italian Lattice

Using the Italian lattice method to solve multiplication problems is a lot of fun and easy too! This method of multiplication uses boxes with diagonal lines. You can use it to solve multiplication problems that use large numbers. All you need to do is use basic times tables and add one-digit numbers together. Here is an example:

$$563 \times 24$$



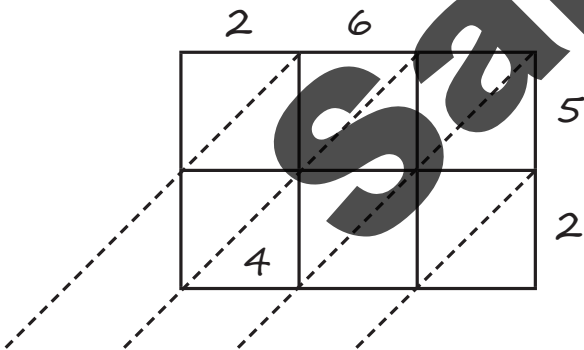
First do  $5 \times 2$ . Write your answer in the first square either side of the dotted diagonal line.

Then, keep multiplying. For example, work out:  $6 \times 2$ ,  $3 \times 2$ ,  $5 \times 4$ ,  $6 \times 4$ ,  $3 \times 4$ . Then add the numbers in each diagonal line. Start from the bottom right hand corner. You may need to carry numbers.

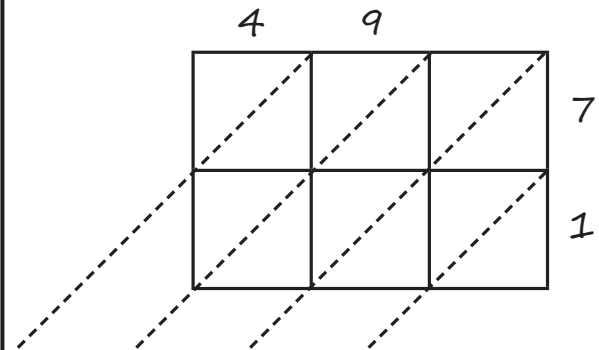
The answer is 13512.

Use the Italian lattice method to work out these multiplication questions. Look at the example above to help you.

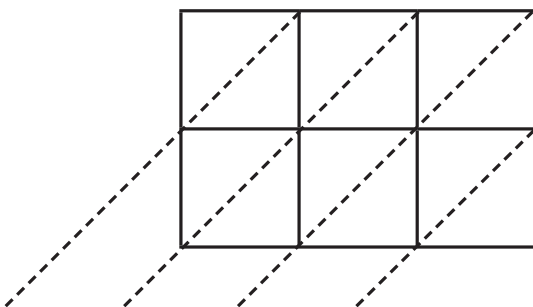
**1.**  $26 \times 52$



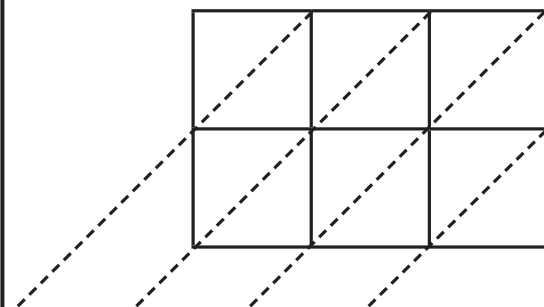
**2.**  $49 \times 71$



**3.**  $37 \times 19$






**4.**  $866 \times 22$



# Creating A Budget

Imagine that your class has been asked to host a breakfast for 30 parents to raise money for your school. You need to raise \$300 and you have been given a maximum budget of \$150 to spend on food and drinks. Look at the Food and Drink List. Write out a menu below, being as specific as you can (e.g. croissants with butter) and calculate what it will cost to buy what you need for 30 people.

Food and Drink List			
			
			
			
1 serve of fruit salad	\$1.50	1 large jar of coffee	\$12.00
5 croissants	\$4.00	1 loaf of bread (20 slices)	\$4.00
1 block of butter	\$5.00	1 large jar of honey	\$8.50
1 container of milk (2 litres)	\$5.00	1 dozen eggs	\$6.50
10 tea bags	\$2.00	(these could be boiled or scrambled with a little milk and butter)	

Menu Item	Cost
<b>Questions</b>	<b>Total Cost:</b>

1. How much did you spend on the food in total?  
\_\_\_\_\_
  
2. Now use your answer to question 1 to work out how much you need to charge each parent to come to the breakfast to make \$300 in profit—that is, on top of what you have already spent. (Hint: You will need to use division.)  
\_\_\_\_\_  
\_\_\_\_\_

# 12 And 24 Hour Time – 2

Imagine that you go on an overseas holiday. You arrive at your resort and pick up a brochure that tells you about possible activities on Monday. You also have a friend, Jo, who you would like to meet on Monday and you have scribbled down some times to meet her.

Welcome to the Castle Hotel!

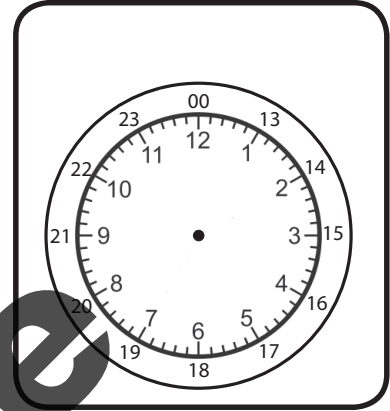
OUR LIST OF ACTIVITIES FOR MONDAY IS BELOW.

0800-0930	Yoga
1030-1100	Local history walk
1200-1300	Photography session
1335-1415	Scavenger hunt
1445-1515	Local wildlife lecture
1600-1730	Board games: meet a new friend!
1830-2100	Monday night's movie
2115-2215	Ghost tour

NOTES:

Jo can meet at hotel at 8.15 am, 10.45 am or 12.30 pm.

Might also do dinner in town at 7pm.



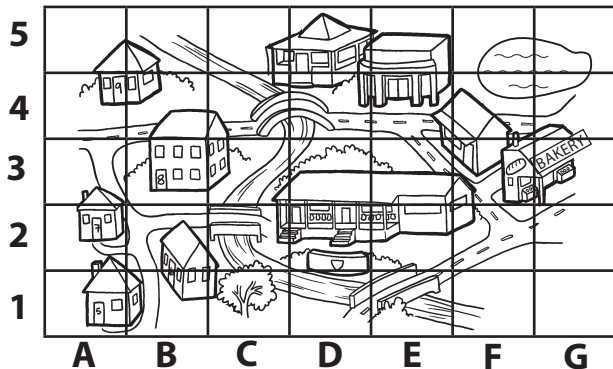
Answer the questions using the material above. You can use the clock face picture to help you to convert from 12 to 24 hour time if you need to.

1. If you want to do yoga, can you meet Jo at 8.15 am?  
\_\_\_\_\_
2. You decide to meet Jo for dinner. This means that you will miss one of the activities. Which one is it?  
\_\_\_\_\_
3. Jo is interested in going on the ghost tour with you. She suggests meeting up 15 minutes beforehand. What time would this be? (Use 12 hour time.)  
\_\_\_\_\_
4. Do any of Jo's suggested meeting times clash with the wildlife lecture?  
\_\_\_\_\_
5. How long does the scavenger hunt take? Is it in the morning or afternoon?  
\_\_\_\_\_
6. If you did the local history walk, could you meet Jo at the hotel afterwards at any of her suggested times? If so, which one/ones?  
\_\_\_\_\_  
\_\_\_\_\_

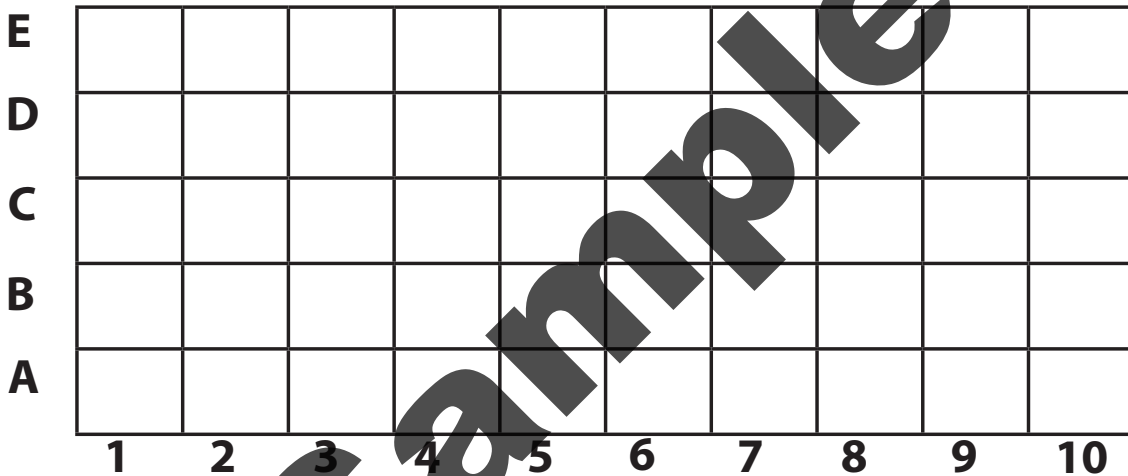
# Using A Grid Reference System

A grid reference system can be used to locate objects and describe routes or pathways on a map. When we describe a location, we use the number or letter on the horizontal or x axis first. An example is to the right. On this map, the tree can be found at C1. To get from the straight bridge to the bakery, you would need to take the following path:

D1 – E1 – F2 – F3.



**On the grid below, draw a map of your classroom. You should include furniture and other important objects. Use simple sketches for these objects as in the example above. Then answer the questions below.**



1. Write the grid reference for your desk. \_\_\_\_\_
2. Write the route from a friend's desk to your desk. \_\_\_\_\_
3. Write two sets of directions to get from one important object to another.

To get from \_\_\_\_\_ to \_\_\_\_\_, you would need to take the following route: \_\_\_\_\_.

To get from \_\_\_\_\_ to \_\_\_\_\_, you would need to take the following route: \_\_\_\_\_.

4. Choose three other objects in your classroom. List them below. Ask a friend to write the grid reference for each. Are they correct?

OBJECT	GRID REFERENCE	CHECK



# Games Of Chance – 3


Imagine that you visit a fête. You stop at a stall where you can play a game involving a jar of small toys. The stallholder says:

“Would you like to play this game? It costs \$5 to play. Close your eyes and put your hand in the jar. If you get a bird, you win nothing. If you get a cat, you win \$1. If you get a mouse, you win \$5. If you get a dog, you win \$10. If you get a horse, you win \$50! There are 24 toys in the jar. 12 are birds, 6 are cats, 3 are mice, 2 are dogs and 1 is a horse. Can't be fairer than that!”

Before you decide whether to play, you work out the chance of choosing each type of toy.



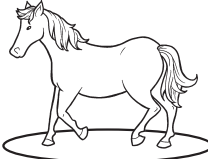
1. What is the chance (for example, 1 in 4) that you will pick each of the toys below?

Chance: 

Chance: 

Chance: 

Chance: 

Chance: 

2. If you play, which toy are you most likely to pick? \_\_\_\_\_

3. If you play, which toy are you least likely to pick? \_\_\_\_\_

4. If you play are you more or less likely to make some money? (Remember that the game costs \$5 to play.)

\_\_\_\_\_  
\_\_\_\_\_

5. How could this game be made fairer?

\_\_\_\_\_  
\_\_\_\_\_