Reasoning and Problem Solving
Multiplication and Division Consolidation – Year 5

National Curriculum Objectives

Mathematics Year 5: Multiply and divide numbers mentally drawing upon known facts
Mathematics Year 5: Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
Mathematics Year 5: Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
Mathematics Year 5: Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)
Mathematics Year 5: Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes
Mathematics Year 5: Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
Mathematics Year 5: Establish whether a number up to 100 is prime and recall prime numbers up to 19

About This Resource

This resource is aimed at Year 5 Expected and has been designed to give children the opportunity to consolidate the skills they have learned in Autumn Block 4 – Number: Multiplication and Division.

The questions are based on a selection of the same 'small steps' that are addressed in the block, but are presented in a different way so children can work through the pack independently and demonstrate their understanding and skills.

Small Steps

Factors
Prime Numbers
Square Numbers
Cube numbers
Multiply by 10, 100, 1000
Divide by 10,100,1000

More Year 5 Multiplication and Division resources.

Did you like this resource? Don't forget to review it on our website.

Black Rock Island

Dazed and confused, Paulo opened his eyes wide and shook his head. The storm had been intense and his ship was wrecked.
He had walked for miles into the thick forest, hoping to find help, before falling into an exhausted and deep sleep. He awoke now and sensed immediate danger. Quickly, he got up and looked around the dense forest.

How would he know which way to go?

He remembered the scroll of paper his Uncle Deadeye had given him before he left home. He told him it might save his life. He quickly unfolded the paper.

Look around and be aware for clues and riddles are everywhere!

He searched all around and realised there was a plan of the forest pinned to a tree. It had a riddle on it. But danger was close by – he must work quickly.

1. If you want to escape from Black Rock, you must solve all our puzzles. The X shows your position. But time is ticking; we are coming!

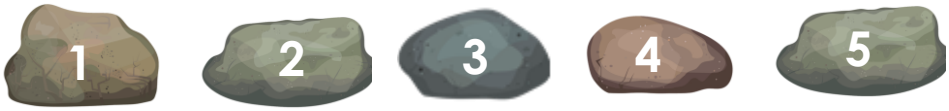
Puzzle 1

Only circle the prime numbers which end in a 3, 7 or 9.

Follow the correct path and you survive. You may only move horizontally or vertically.

			83	39	57	17	67	53	47	
			33			73				
					69	43	61	29	27	
				97	13	29			79	11
			33	59		63				
	51	45	X	37	81					
			21		9	83				
			49			99	91	35		

Paulo reached the edge of the forest and ran. He knew danger was closing in. Suddenly, an arrow flew past his head and he dived into a cave for safety. Pressing his back against the wall, he held his breath – his heart thudding, but before he knew it, the huge rock at the doorway rolled across and his exit was blocked. Trapped... or was he? He remembered Uncle Deadeye's note. He looked all around and by the cave door spotted some rocks with numbers carved in them. A code!



Puzzle 2

The code is made up of two 3-digit numbers.
When I multiply the numbers by 100, the ten-thousands in the first number and the thousands digits in the second number are the same.
The sum of the digits is 5.
Which two numbers could they be? Numbers can be re-used.
Press the correct number rocks and the door will open.

2. Which cave number rocks should he press?

Got it! The rock rolled away and Paulo was free. Tentatively, he stepped from the cave. Silence. His steps turned from walking, to jogging, to sprinting. Still he knew danger was just around the corner.

Up ahead, he saw a pyramid. The searing heat was intense, so he stepped inside for shade. The walls were enormous and Paulo, mesmerized, wandered deeper into the cave, but before he knew it he was lost!

3. A maze - and now he couldn't find the way back out. He searched around for the puzzle. The walls appeared to have numbers carved into them but which numbers should he follow?

Puzzle 3

Find the missing factor pairs. Follow those numbers through the maze to escape through the dashed, green exit on the bottom row.

You are positioned at X.

1	48
2	
6	

15	X	18	20
9	48	1	16
35	4	3	12
45	1	16	8
7	42	24	6

The heat hit him again as he exited the maze, but he was surrounded. The tribe had found him! What next? Was it the end for Paulo? The tribe marched him to their chief.

4. The chief had one last riddle for him.

Find the ages of my family members and I will let you go. Here are my clues. Write their ages in the sand.

Puzzle 4

Brother - has an age that is a squared number. It is an odd number below 30 but above 10.

Mother - has an age that is a cubed number. It is an even number over 60 but below 90.

Two daughters – one has an age that is a cubed number. She is half her sister's age, which is a squared number. They are both between 5 and 20.

Brother's age:	
Mother's age:	
Daughter 1's age:	
Daughter 2's age:	

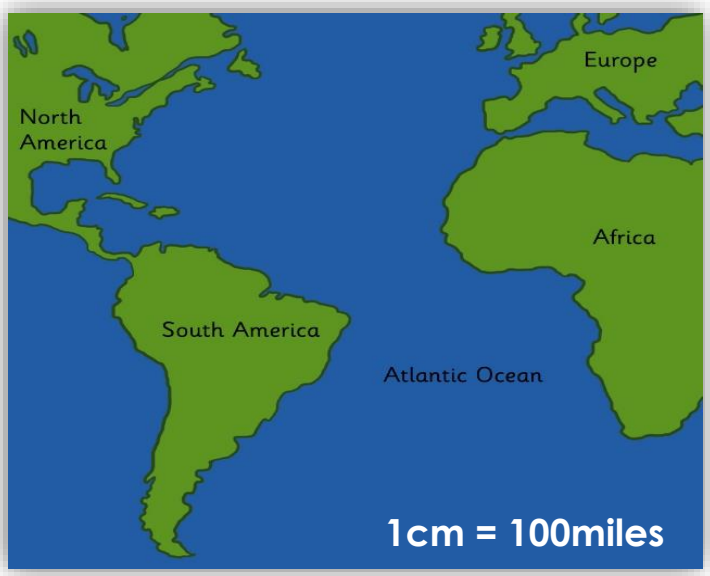
The chief was impressed by Paulo's mathematical skills. He could tell Paulo was no threat to the tribe. The chief handed him some wood and told Paulo to head to the shore and there he would find forty-one metre square planks and rope. He could build himself a raft. He gave Paulo some great survival tips, but one stayed in his mind: *The raft must be a square to float and be the biggest you can make*. However, Paulo was tired and exhausted and was about to make a mistake which could cost him his life.

Paulo

$6m^2$ is equal to 12m. I only need 12 planks to make my square raft.

5. Explain his mistake to him before it's too late. Work out how many planks he really needs.

Paulo set sail. He wondered how far it would be until he reached home. Suddenly, he remembered Uncle Deadeye had also given him a map. He took the map from his pocket.



He measured the map and thought carefully about how to calculate the distance home. But he was still exhausted.

Paulo

I've measured 12cm on the map. So I think I've got 12,000 miles to get home because 12,000 ÷ 100 = 12cm But then if I do the inverse 12 x 100 = 1,200! So do I have 1,200 or 12,000 miles to get home? I'm so tired and confused!

6. Explain to Paulo how far it is to reach home and where he went wrong.

After a long journey, he reached home and ran into Uncle Deadeye's arms. But Paulo was intrigued!
"How did you know all about the island?" he asked his uncle.
"Well, maybe one day you will find out Paulo. But for now at least you're home safe and well." replied Uncle Deadeye, as he pulled down his eyepatch.

1. The numbers to follow are 37, 59, 97, 13, 29, 43, 73, 17, 67, 53 and 47.

If you want to escape from Black Rock, you must solve all our puzzles. The X shows your position. But time is ticking; we are coming!

Puzzle 1
Only circle the prime numbers which end in a 3, 7 or 9.

Follow the correct path and you survive. One wrong move and you may not be alive!

			83	39	57	17	67	53	47	
			33			73				
					69	43	61	29	27	
				97	13	29			79	11
			33	59		63				
	51	45	X	37	81					
			21		9	83				
			49			99	91	35		

2. Various answers. Two numbers Paulo could press are:

1	3	1

2	1	2

A = 13,100 and B = 21,200
The sum of both three-digit numbers is 5 (1 + 3 + 1 = 5; 2 + 1 + 2 = 5).

3.

1	48
2	24
3	16
4	12
6	8

15	X	18	20
9	48	1	16
35	4	3	12
45	1	16	8
7	42	24	6

4. Various answers. Brother = 25 (5^2); Mother = 64 (4^3); Daughter 1 = 8 (2^3) and Daughter 2 = 16 (4^2). 8 is half of 16.

5. Paulo has multiplied 6 by 2 instead of calculating 6^2 which equals 36. He needs 36 planks which is also the biggest raft he can make as 7 x 7 = 49 and he only has 40 planks.

6. Paulo has 1,200 miles to reach home. He calculated 12 x 100 incorrectly as 12,000 to begin with. This then made his division incorrect. 1,200 ÷ 100 = 12cm so he has 1,200 miles to reach home.