

KS2 Maths

STUDY
SQUAD

SATs Practice Workbook

Ages 10-11

ARITHMETIC



Name: _____

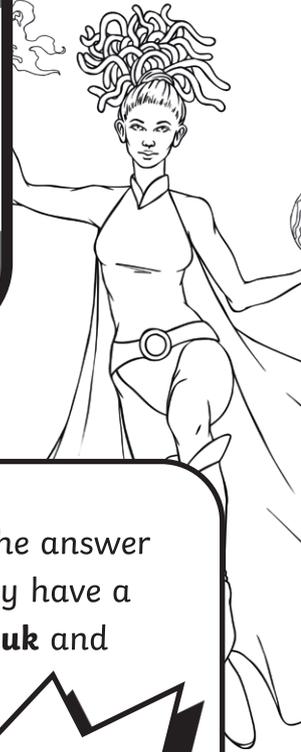


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STUDY SQUAD

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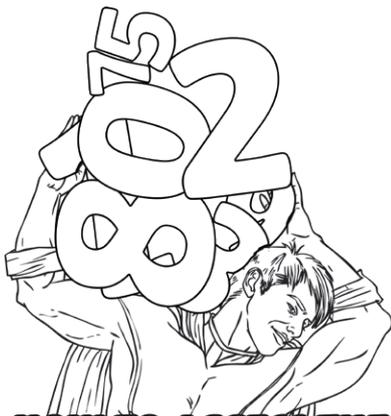
NEW RECRUIT



HOW TO ACCESS THE VIDEOS AND GAMES

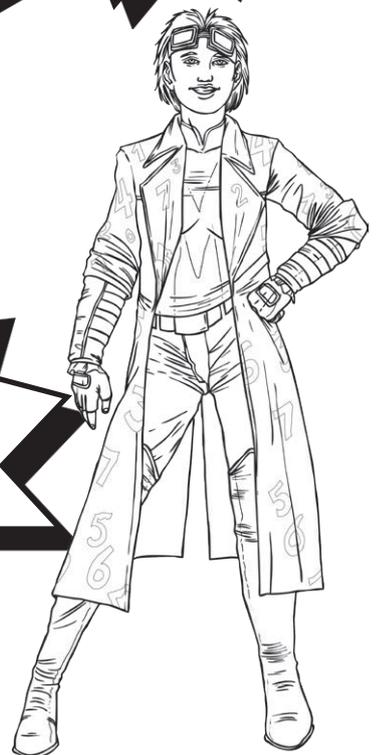
To view and access the concept revision videos, interactive Go! Games and the answer booklet, your adult will need a **Twinkl account**. If your adult doesn't already have a Twinkl account, they can create a **free account** by going to www.twinkl.co.uk and selecting '**Join**' in the top right-hand corner.

The QR codes throughout the workbook are a great way of accessing the interactive activities but you can also find them on the Study Squad page. Simply scan this QR code to explore the whole **Study Squad range**.



HOW TO ACCESS THE ANSWERS

To view and access the answer booklet, simply scan this QR code.



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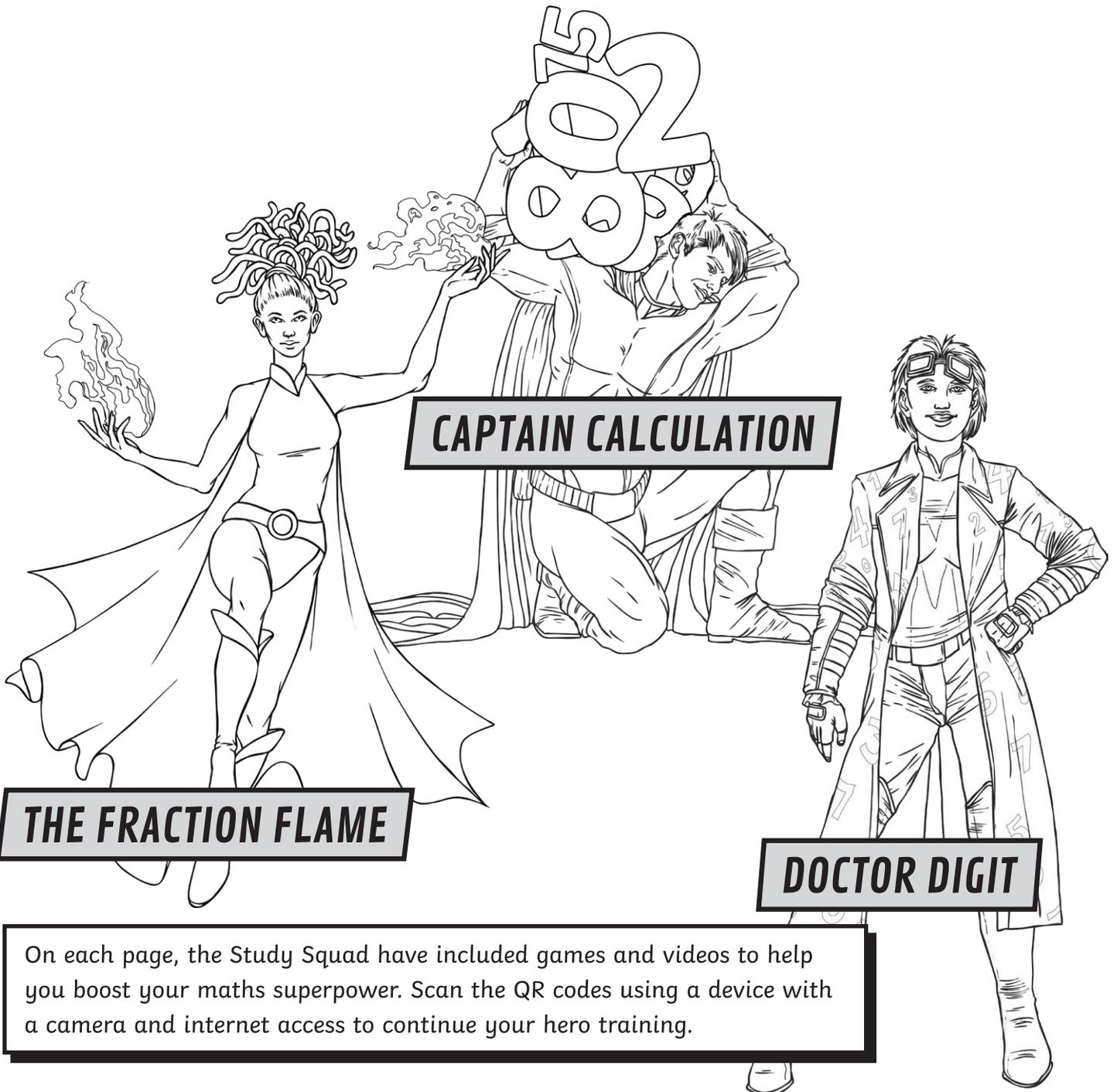
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MEET THE STUDY SQUAD

STUDY SQUAD

Each of the **Maths Heroes** has a superpower relating to a particular unit of maths. Together, they will guide you through the concepts in this workbook.

On each page, the Study Squad have included games and videos to help you boost your maths superpower. Scan the QR codes using a device with a camera and internet access to continue your hero training.



THE FRACTION FLAME

CAPTAIN CALCULATION

DOCTOR DIGIT

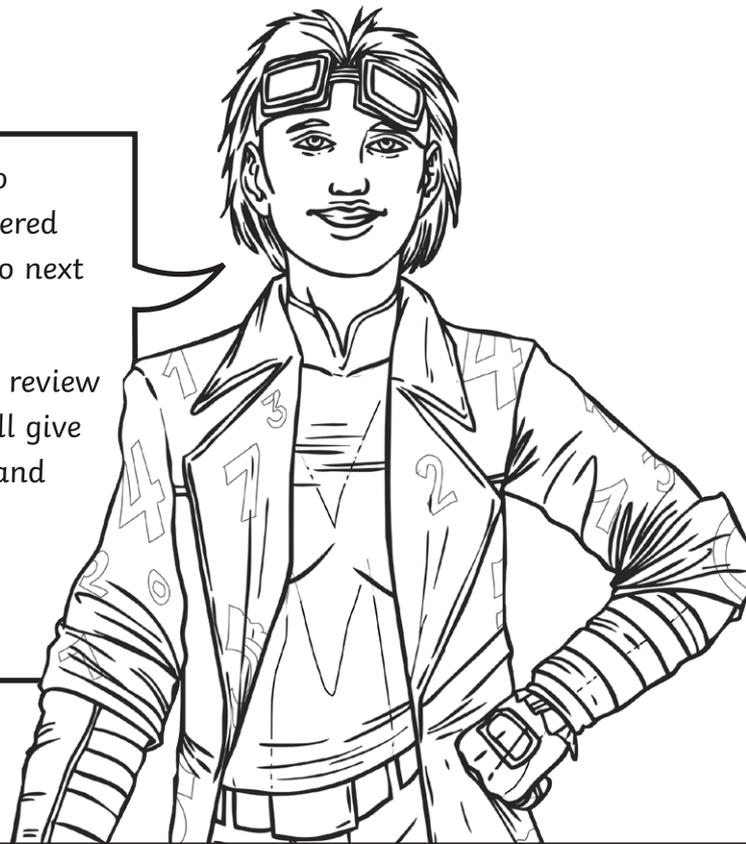
On each page, the Study Squad have included games and videos to help you boost your maths superpower. Scan the QR codes using a device with a camera and internet access to continue your hero training.

SELF-REFLECTION INSTRUCTIONS

After each concept, you will have the opportunity to reflect on your understanding. Once you have answered all of the questions, colour or shade in the superhero next to the statement that you most agree with.

At the end of each concept, use the self-reflection to review which areas you found trickier than others. This will give you an idea of which areas you need support with and which areas you are more confident with.

Ready for your first maths mission?



I DON'T UNDERSTAND THIS YET!

I found this tricky. I need support with this.



I MOSTLY UNDERSTAND THIS!

I can do this mostly but sometimes I need support.
I may need some more practice.



I COMPLETELY UNDERSTAND THIS!

I can do this by myself. I could explain how to solve these questions to someone else.

WRITTEN ADDITION

BOOST YOUR SUPERPOWERS

When adding large numbers, we can use a formal written method called **column addition**. It is called this because the numbers are lined up beneath each other according to the place value columns.

	Tth	Th	H	T	O
	3	2	2	9	4
+	3	4	5	1	5
					9

1) Place the numbers beneath each other, carefully **lining up the digits** in their correct place value column.

2) Starting from the **ones column** on the right hand side, add both digits and write the answer beneath.

	Tth	Th	H	T	O
	3	2	2	9	4
+	3	4	5	1	5
				0	9
			1		

3) Add the **tens** digits together and write the answer underneath. In this example, the answer is greater than 9 so we must **regroup** the 1 and write it beneath the hundreds column.

4) Add the **hundreds** digits, including the 1 hundred that has been regrouped.

5) Add the **thousands** digits and write the answer beneath.

6) Add the **ten thousands** digits and write the answer underneath.

7) Check your answer.

	Tth	Th	H	T	O
	3	2	2	9	4
+	3	4	5	1	5
	6	6	8	0	9
			1		

INTERACTIVE GAME

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SCAN ME



MATHS MISSION

1 $83 + 479 =$

1 mark

5 $= 6782 + 2561$

1 mark

2 $= 2095 + 206$

1 mark

6 $2739 + 31\ 052 =$

1 mark

3 $5606 + 1656 =$

1 mark

7 $= 10\ 832 + 8580$

1 mark

4 $9782 + 789 =$

1 mark

8 $4127 + 362 + 518 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

WRITTEN SUBTRACTION

BOOST YOUR SUPERPOWERS

It is most efficient to use the **column method** to subtract large numbers. **303 863 - 45 472**

1) Write the **subtrahend** (number you are subtracting) below the **minuend** (number you are subtracting from), making sure to **line up the digits** in the correct **place value columns**.

	Hth	Tth	Th	H	T	O
	3	0	3	8	6	3
-		4	5	4	7	2
						1

2) Start from the **ones column** at the far right and subtract the bottom digit from the top digit (3 ones - 2 ones) and write the answer underneath.

	Hth	Tth	Th	H	T	O
	3	0	3	7 ¹	6	3
-		4	5	4	7	2
				3	9	1

3) Move to the next **greatest place value column** (6 tens - 7 tens). In this column, the top digit is **smaller in value** than the bottom digit so we must **exchange** 1 hundred for 10 tens.

4) Now, we have 7 hundred and 16 tens in the minuend and we can continue subtracting in each column.

5) Here, we need to exchange but there is nothing in the ten thousands column. So, we do another **exchange** from the next **greatest place value column first**.

	Hth	Tth	Th	H	T	O
	2 ¹	3 ⁹	0	3	7 ¹	6
-		4	5	4	7	2
				3	9	1

6) Now, we can exchange 1 ten thousand for 10 thousands and finish the calculation.

7) Finally, **check** your calculation using the **inverse**.

	Hth	Tth	Th	H	T	O
	2 ¹	3 ⁹	1 ¹	3	7 ¹	6
-		4	5	4	7	2
	2	5	8	3	9	1

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $70\ 000 - 70 =$

1 mark

5 $3033 - 2871 =$

1 mark

2 $6231 - 3408 =$

1 mark

6 = $8017 - 726$

1 mark

3 = $3935 - 686$

1 mark

7 $50\ 500 - 1632 =$

1 mark

4 = $10\ 000 - 10$

1 mark

8 = $32\ 628 - 839$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

MULTIPLYING BY 10, 100 AND 1000

BOOST YOUR SUPERPOWERS

When multiplying a number by 10, 100 or 1000, the value of each digit is **increased**.

Multiplying by 10

When multiplying a number by **10**, each digit moves one place to the **left**. As a number moves one place value column to the left, across the place value chart, each digit becomes **10** times the size.

	Th	H	T	O	t	h	th
×10				4	●	3	
			4	3	●		

Multiplying by 100

When multiplying a number by **100**, each digit moves two places to the **left**. The digit becomes **100** times the size.

	Th	H	T	O	t	h	th
×100			6	7	●		
	6	7	0	0	●		

Multiplying by 1000

When multiplying a number by **1000**, each digit moves three places to the **left**. The digit becomes **1000** times the size.

	Th	H	T	O	t	h	th
×1000				5	●	0	1 3
	5	0	1	3	●		

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $1101 \times 10 =$

1 mark

5 $4.08 \times 1000 =$

1 mark

2 $68.12 \times 10 =$

1 mark

6 $8097 \times 1000 =$

1 mark

3 $5002 \times 100 =$

1 mark

7 $128.9 \times 100 =$

1 mark

4 $100 \times 399 =$

1 mark

8 $100.093 \times 100 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

DIVIDING BY 10, 100 AND 1000

BOOST YOUR SUPERPOWERS

When dividing a number by 10, 100 or 1000, the value of each digit is **decreased**.

Dividing by 10

When dividing a number by **10**, each digit moves one place to the **right**. As a number moves one place value column to the right across the place value chart, each digit becomes **10** times smaller.

÷10

Th	H	T	O	t	h	th
4	3	5	0			
	4	3	5	0		

Dividing by 100

When dividing a number by **100**, each digit moves two places to the **right**. The digit becomes **100** times smaller.

÷100

Th	H	T	O	t	h	th
4	3	2				
		4	3	2		

Dividing by 1000

When dividing a number by **1000**, each digit moves three places to the **right**. The digit becomes **1000** times smaller.

÷1000

Th	H	T	O	t	h	th
6	2	0	1			
			6	2	0	1

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $20\ 000 \div 100 =$

1 mark

5 $455 \div 10 =$

1 mark

2 $15\ 470 \div 10 =$

1 mark

6 $16.37 \div 10 =$

1 mark

3 $340\ 000 \div 1000 =$

1 mark

7 $643\ 010 \div 1000 =$

1 mark

4 $6.7 \div 10 =$

1 mark

8 $3\ 090\ 482 \div 1000 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

BOOST YOUR SUPERPOWERS



A multiple is the **product** of two numbers multiplied together.

$$\text{number} \times \text{number} = \text{product}$$

Example: Find a multiple of 2

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

2, 4, 6, 8 and 10 are multiples of 2 however, there are many more.

$$2 \times 1 = 2$$

$$2 \times 2 = 4$$

$$2 \times 3 = 6$$

$$2 \times 4 = 8$$

$$2 \times 5 = 10$$

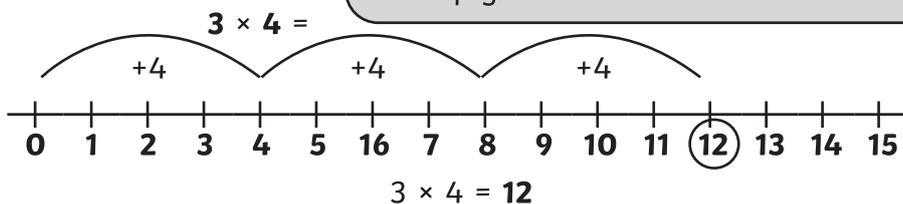
Sometimes, you will multiply **three** numbers together. You can use your knowledge of multiples to help you.

Choose **two** numbers to multiply together first and then multiply the answer by the **third** number.

Example: $3 \times 4 \times 6 =$

- 1) Pick two numbers to multiply together.

Tip: Use a mental strategy or your knowledge of your multiplication tables to help you.



- 2) Multiply the answer from step 1 with the third number.

$$12 \times 6 =$$

Tip: Use a written method to multiply larger numbers or your knowledge of numbers to help you.

	1	2
×		6
	7	2
	1	

$$12 \times 6 = 72$$

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $8 \times 7 =$

5 $6 \times 3 \times 3 =$

1 mark

1 mark

2 $= 11 \times 11$

6 $3 \times 2 \times 8 =$

1 mark

1 mark

3 $1 \times 1080 =$

7 $= 5 \times 4 \times 10$

1 mark

1 mark

4 $= 989 \times 0$

8 $6 \times 10 \times 11 =$

1 mark

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

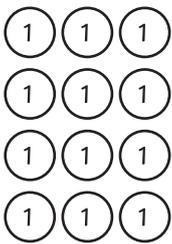
BOOST YOUR SUPERPOWERS



A **factor** is the number multiplied by another number to create a **product**.

$$\text{factor} \times \text{factor} = \text{product}$$

Example: $3 \times 4 = 12$



3 and 4 are both factors of 12 in fact, they are a **factor pair** as the two numbers multiply together to make 12.

To find another factor pair for 12, we can use our knowledge of our **multiplication tables** to help us.

$$1 \times 12 = 12$$

$$2 \times 6 = 12$$

$$12 \div 6 = 2$$

When we need to identify factors of a larger number, we can use our multiplication facts and **scaling** to help us.

Example: $450 \div 9 = \square$

We know that 450 is a multiple of 10 as there are zero ones. To help us, we can **scale this number** to make it **one tenth of its size**.

$$450 \div 10 = 45 \quad 45 \div 9 = \square$$

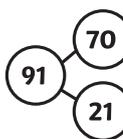
We can now use our multiplication tables to find the answer.

It is important to remember that because we scaled the number at the $45 \div 9 = 5$ beginning, we now need to **scale the number** $450 \div 9 = 50 \times 10$ back by multiplying by ten.

If scaling is not an appropriate method, we can partition instead.

Example: $91 \div 7 =$

Partition the **total** into **multiplication facts** that you know, before finding the total number of groups.



We know that $7 \times 10 = 70$

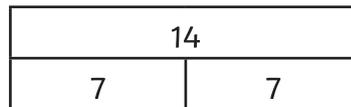
We know that $7 \times 3 = 21$

$$10 + 3 = 13$$



Example: $420 \div 14 =$

Partition the divisor into a **factor pair** before dividing the total by the **first** factor.



$$7 \times 2 = 14$$

$$210 \div 7 = 30$$

$$420 \div 2 = 210$$

Divide the answer by the **second** factor.

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $49 \div 7 =$

1 mark

5 $= 85 \div 5$

1 mark

2 $32 \div 8 =$

1 mark

6 $78 \div 6 =$

1 mark

3 $= 630 \div 9$

1 mark

7 $= 720 \div 18$

1 mark

4 $560 \div 7 =$

1 mark

8 $960 \div 16 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

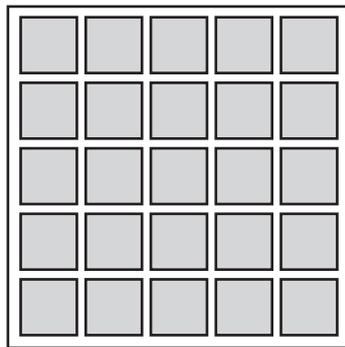
SQUARE AND CUBE NUMBERS

BOOST YOUR SUPERPOWERS

To find another factor pair for 12, we can use our knowledge of our multiplication tables to help us.

$$5^2 = 5 \times 5$$

$$5^2 = 25$$



When we multiply a number by itself, we can say that we have **squared it**.

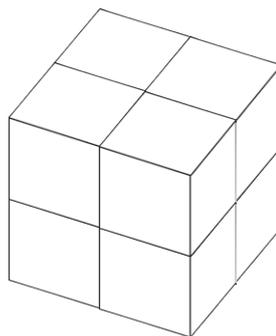
$$4 \times 4 = 4^2$$

This mathematical symbol indicates that 4 has been squared.

Cube numbers are the product of a number multiplied by itself three times.

$$2^3 = 2 \times 2 \times 2$$

$$2^3 = 8$$



$$4 \times 4 \times 4 = 4^3$$

When we multiply a number by itself and then multiply it again by the same number, we can say that we have **cubed it**.



This mathematical symbol indicates that 4 has been cubed.

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $3^3 =$

1 mark

5 $7^2 + 3^3 =$

1 mark

2 $4^3 =$

1 mark

6 $5^3 - 2^3 =$

1 mark

3 $8^2 + 1^3 =$

1 mark

7 $6^2 + 1^2 + 3^2 =$

1 mark

4 $9^2 - 24 =$

1 mark

8 $1^3 + 12^2 + 2^3 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

SHORT MULTIPLICATION

BOOST YOUR SUPERPOWERS

When multiplying 2-, 3- and 4-digit numbers by a 1-digit number, we use the column method of short multiplication. Let's look at the example 1632×3

Tth	Th	H	T	O
	1	6	3	2
×				3
				6

1) Write the number **1632** in the top row in the correct place value columns. Place the multiplier, **3**, in the ones column underneath.

3) Next, multiply the **3** in the **tens** column by the **3** ones. As this is **3 tens** \times **3**, which is **90** or **9 tens**, write this as **9** in the tens column.

2) Starting with the ones column, multiply **2 ones** \times **3 ones**, giving a total of **6 ones**. Write this in the ones column of the answer.

4) Next, multiply the **6** in the **hundreds** column by the **3**. As this is **600** or **6 hundreds** \times **3**, which is **1800**, we write **8** in the hundreds column of the answer and **regroup** the 1. Write this underneath the thousands column.

Tth	Th	H	T	O
	1	6	3	2
×				3
				6
		8	9	
			1	

5) Now, multiply the **1** in the thousands column by the **3**. We must also add the **regrouped 1** in the thousands column, which will be **4** thousands altogether. Write **4** in the thousands column of the answer.

6) Check your answer.

Tth	Th	H	T	O
	1	6	3	2
×				3
				6
		8	9	
			1	
				4

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $92 \times 5 =$

1 mark

5 $8 \times 3078 =$

1 mark

2 $6 \times 34 =$

1 mark

6 $= 481 \times 7$

1 mark

3 $907 \times 6 =$

1 mark

7 $2034 \times 9 =$

1 mark

4 $1093 \times 6 =$

1 mark

8 $= 5876 \times 9$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

LONG MULTIPLICATION

BOOST YOUR SUPERPOWERS

To multiply by a two-digit number, first multiply by the ones, then multiply by the tens and then find the total.

Tth	Th	H	T	O
	1	3	4	2
x			5	2
	2	6	8	4
6	7 ²	1 ¹	0	0
6	9	7	8	4

1) When using column multiplication, it is important to line the numbers up correctly according to their **place value** such as in the example below:

2) We start by multiplying the 1342 by the **ones** digit which is 2 in this example. We multiply each digit in the number 1342 by 2, one place value at a time starting from the right. **$1342 \times 2 = 2684$**

3) Next, we multiply 1342 by the 5 tens.

4) We place a **zero** in the ones column because we are going to be multiplying by a **power of ten**. This will show that the answer is going to be ten times the size.

5) Now we can multiply 1342 by 5 tens one place value at a time starting from the right.

Tth	Th	H	T	O
	1	3	4	2
x			5	2
	2	6	8	4
6	7 ²	1 ¹	0	0
6	9	7	8	4

Tth	Th	H	T	O
	1	3	4	2
x			5	2
	2	6	8	4
6	7 ²	1 ¹	0	0
6	9	7	8	4

6) In this example, when we multiply 5 tens by 2 ones the product is 10 tens which we need to **regroup** into the next column. We write a small 1 in the next column to show this.

7) Once the number has been multiplied by the ones and the tens, we **add the two products** together ensuring we have added the regroupings.

INTERACTIVE GAME

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SCAN ME



MATHS MISSION

1 $709 \times 17 =$

2 marks

4 $1920 \times 12 =$

2 marks

2 $362 \times 58 =$

2 marks

5 $1143 \times 34 =$

2 marks

3 $1886 \times 17 =$

2 marks

6 $2190 \times 69 =$

2 marks

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

SHORT DIVISION WITHOUT REMAINDERS

BOOST YOUR SUPERPOWERS

When dividing a number by a single digit, we lay out the working out like this example:

			9	9	7
5	4	⁴ 9	⁴ 8	³ 5	

Labels: **divisor** (points to 5), **quotient** (points to 997), **dividend** (points to 4985)

Example: $3516 \div 3$

	1			
3	3	5	1	6

First, we divide each digit of the dividend by the divisor, starting with the digit with the **greatest** value. In this example, the dividend is a 4-digit number. The digit 3 is in the thousands column so this

is the digit with the greatest value. We place the answer above the horizontal line.

Now we divide the hundreds. We can share 3 hundred equally but we are left with 2 hundreds. This needs to be **exchanged**. We write a 2 in the next column which is this example in the tens column. There are now 21 tens.

	1	1		
3	3	5	1 ²	6

	1	1	7	
3	3	5	² 1	6

Next, we divide the 21 tens by 3 which gives us 7 as an answer. As before, we place the answer above the horizontal line.

Lastly, we divide the ones by the divisor and write the answer above the horizontal line. In this example, there are no remainders.

	1	1	7	2
3	3	5	² 1	6

The answer (quotient) to $3516 \div 3$ is 1172

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $434 \div 7 =$

1 mark

5 $= 320 \div 8$

1 mark

2 $= 456 \div 4$

1 mark

6 $1256 \div 8 =$

1 mark

3 $744 \div 3 =$

1 mark

7 $1076 \div 4 =$

1 mark

4 $630 \div 9 =$

1 mark

8 $= 6072 \div 8$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

SHORT DIVISION WITH REMAINDERS

BOOST YOUR SUPERPOWERS

When dividing a number by a single digit, we lay out the working out like this example:

$$1291 \div 6$$

6	1	2	9	1

divisor **dividend**

6	1	2	9	1

First, we divide each digit of the dividend by the divisor, starting with the digit with the greatest value. In this example, the dividend is a 4-digit number. The first digit 1 is in the thousands column so this is the digit with the greatest value.

We only have 1 thousand which cannot be divided into equal groups. Therefore, we need to exchange the 1 thousand for 10 hundreds. We don't need to put a zero above the line because we don't have leading zeros at the start of whole numbers.

Next, we divide the hundreds. We have 12 hundreds which can be divided equally. When we reach the tens, we need to exchange again. We cannot divide 9 tens into equal groups so we exchange the remaining 3 tens for 30 ones.

Lastly, we divide the 31 ones. We have one left over which we write as a remainder (r).

		2	1	
6	1	2	9	1

		2	1	5	r1
6	1	2	9	1	

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



MATHS MISSION

1 $4593 \div 8 =$

1 mark

5 $8900 \div 6 =$

1 mark

2 $8288 \div 3 =$

1 mark

6 $3901 \div 5 =$

1 mark

3 $2210 \div 9 =$

1 mark

7 $8302 \div 5 =$

1 mark

4 $7774 \div 5 =$

1 mark

8 $3230 \div 9 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

LONG DIVISION WITHOUT REMAINDERS

BOOST YOUR SUPERPOWERS

Long division is best suited for dividing a number by a 2-digit (or more) **divisor**. When we divide by a 2-digit number, it is a good idea to list the first **multiples** of our divisor first, so we have these facts to hand. 12 is the divisor in this example so we can use our times tables facts to support us.

Multiples of 12:
12, 24, 36, 48, 60, 72, 84,
96, 108, 120

			5	6	3
1	2	6	7	5	6
	-	0	↓	↓	↓
		6	7		
	-	6	0	↓	
			7	5	
		-	7	2	↓
				3	6
			-	3	6
				0	0

When we divide, we start with the **largest value digit**. In this 4-digit number, that is the thousands digit. 6 thousands divided by 12 is 0 with 6 thousands **remaining**. We subtract the 0 thousands we have already divided from the 6 thousands we started with, which leaves us with 6 thousands. These 6 thousands are **exchanged** for 60 hundreds and are added to the 7 hundreds we started with, giving us 67 hundreds.

Next we divide the 67 hundreds by 12 which gives us 5 hundreds. This can be written above the horizontal line. We have a remainder of 7 hundreds. This can be exchanged for 70 tens which when added with the previous 5 tens give us 75 tens.

Now we divide the 75 tens by 12 which gives us 6 tens with a remainder of 3 tens. The 3 tens will be exchanged for 30 ones which when added with the previous 6 ones, gives us 36 ones. We can divide the 36 ones by 12 to get an answer of 3. The final **quotient** (the answer) is 563.

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $798 \div 14 =$

2 marks

4 $6576 \div 16 =$

2 marks

2 $702 \div 18 =$

2 marks

5 $4173 \div 13 =$

2 marks

3 $6734 \div 14 =$

2 marks

6 $4465 \div 19 =$

2 marks

MISSION COMPLETE!

How confident do you feel?



/12

TOTAL

LONG DIVISION WITH REMAINDERS

BOOST YOUR SUPERPOWERS

Long division with remainders follows the same process as long division without remainders. We start by setting out the calculation using a formal written method as shown below. It is helpful to write the first few **multiples** of the **divisor**, which is 14 in this example. We can double the 7 times tables to help us quickly find the first five multiples.

Multiples of 14:
14, 28, 42, 56, 70

			1	5	5	
1	4	2	1	7	9	
	-	0	↓	↓	↓	
		2	1			
	-	1	4	↓		
			7	7		
		-	7	0	↓	
				7	9	
			-	7	0	
					9	

r9

When we divide, we start with the **largest value digit**. In this 4-digit number, that is the **thousands** digit. 2 thousands divided by 14 is 0 with 2 thousands **remaining**. We subtract the 0 thousands we have already divided from the 2 thousands we started with, which leaves us with 2 thousands. These 2 thousands are **exchanged** for 20 hundreds and are added to the 1 hundred we started with, giving us 21 hundreds.

Next, we divide the 21 hundreds by 14, which gives us 1 hundred. We write this in the hundreds column above

the horizontal line. We have a remainder of 7 hundreds. This can be exchanged for 70 tens which we add to the previous 7 tens, giving us 77 tens.

Now, we can divide the 77 tens by 14 which gives us 5 tens. This has a remainder of 7 tens which can be exchanged for 70 ones. When added to the previous 9 ones, we have 79 ones.

Dividing the 79 ones gives us 5 ones and 9 ones as a **remainder**. We write the remainder next to the **quotient** (the answer) above the horizontal line.

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $396 \div 17 =$

2 marks

4 $4464 \div 19 =$

2 marks

2 $367 \div 15 =$

2 marks

5 $9531 \div 31 =$

2 marks

3 $1415 \div 12 =$

2 marks

6 $4895 \div 46 =$

2 marks

MISSION COMPLETE!

How confident do you feel?



/12

TOTAL

INVERSE OPERATIONS

BOOST YOUR SUPERPOWERS

Inverse means the **opposite** or **reverse** of.

Addition and subtraction are inverse operations and multiplication and division are inverse operations.

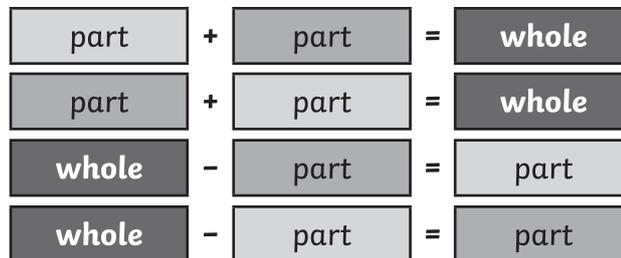
Inverse Operations

$$+ \leftrightarrow -$$

$$\times \leftrightarrow \div$$

We can use inverse operations to help us check our answers to calculations or to find missing values.

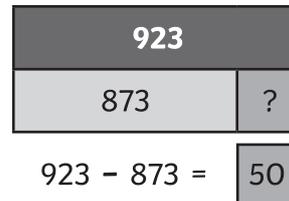
Addition and Subtraction



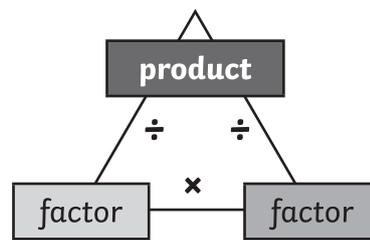
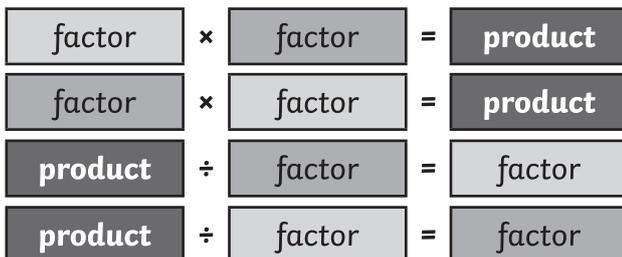
For example,

$$873 + \square = 923$$

The inverse of addition is subtraction so we need to subtract the given part from the whole to find the value of the missing part.



Multiplication and Division



When we multiply factors together, we create a product. When we divide a product by a whole number, the answer is a factor.

The inverse of multiplication is division so we need to divide the product by the factor to find the missing factor.



For example, $\square \times 4 = 280$ $280 \div 4 = 70$

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $120 \times \square = 840$

1 mark

5 $405 - \square = 397$

1 mark

2 $\square - 20 = 285$

1 mark

6 $\square \div 9 = 70$

1 mark

3 $\square + 40 = 728$

1 mark

7 $491 + \square = 521$

1 mark

4 $560 \div \square = 8$

1 mark

8 $\square \times 5 = 400$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

ORDER OF OPERATIONS (BIDMAS)

BOOST YOUR SUPERPOWERS

What is BIDMAS?

BIDMAS is a **mnemonic** to help us remember the order in which we should carry out the **operations** in a calculation. BIDMAS is also **the same as BODMAS**.

What is a mnemonic?

A mnemonic is a method to help us **remember** something, e.g. a pattern of letters such as BIDMAS.

What is an operation?

An operation is a **rule** that connects two numbers to produce a third. Addition, subtraction, multiplication and division are all operations.

Steps on how to use BIDMAS:

1) Write BIDMAS down. Look at your calculation and circle the letters of BIDMAS that have been used. Cross out the letters that have not been used.

$6 + 2^2 \div (7 - 5) =$

B	6	+	2 ²	÷	(7	-	5)	=
I	6	+	2 ²	÷	2			
D	6	+	4	÷	2			
M								
A	6	+	2	=	8			
S								

2) Starting with the first letter that has been circled, complete this part of the calculation.

3) Rewrite the calculation with the answer you got from step 2.

4) Repeat steps 2 and 3 until you have completed all letters that have been circled.

B	Brackets
$10 \times (4 + 2) = 10 \times 6 = 60$	
I	Indices
$5 + 2^2 = 5 + 4 = 9$	
D	Division
$10 + 6 \div 2 = 10 + 3 = 13$	
M	Multiplication
$10 - 4 \times 2 = 10 - 8 = 2$	
A	Addition
$10 \times 4 + 7 = 40 + 7 = 47$	
S	Subtraction
$10 \div 2 - 3 = 5 - 3 = 2$	

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



BIDMAS (or BODMAS) is **important** because it makes sure everyone follows the **same order of operations** to reach the **same answer**. Imagine what maths would be like if we all got different answers to the same question!

MATHS MISSION

1

$7 \times (10 - 7) =$

1 mark

5

$= 6^2 - 45 \div 9$

1 mark

2

$= 8 + 12 \div 3$

1 mark

6

$50 \div (30 - 25) =$

1 mark

3

$11 + 4 \times 6 =$

1 mark

7

$= (10 + 2) \div 2^2$

1 mark

4

$= 16 \div 4 \times 3^2$

1 mark

8

$2 + 3 \times 4 - 5 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

CALCULATING WITH WHOLE NUMBERS MIXED PRACTICE

1 + 70 = 439



1 mark

4 6077 ÷ 8 =



1 mark

2 505 000 ÷ 100 =



1 mark

5 6 + 12 ÷ 2² =



1 mark

3 = 7028 - 2751



1 mark

6 Find the lowest common multiple of 6 and 10



1 mark

7 $4709 + 6553 =$

1 mark

10 Find the highest common factor of 8 and 12

1 mark

8 $= 7 \times 392$

1 mark

11 $9545 \div 23 =$

1 mark

9 $100 \times 803 =$

1 mark

12 $6937 \times 48 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



TOTAL

PROGRESS TRACKER

Write your scores from each concept in this unit to track your progress.

Written Addition	/8	Short Division without Remainders	/8
Written Subtraction	/8	Short Division with Remainders	/8
Multiplying Integers by 10, 100 and 1000	/8	Long Division without Remainders	/12
Dividing Integers by 10, 100 and 1000	/8	Long Divisions with Remainders	/12
Multiples	/8	Inverse Operations	/8
Factors	/8	Order of Operations (BIDMAS)	/8
Square and Cube Numbers	/8	Calculating with Whole Numbers Mixed Practice	/12
Short Multiplication	/8	TOTAL	/144
Long Multiplication	/12		

SELF-REFLECTION



What went well:



My target to improve:

RECHARGE

Identify the properties of the numbers in the grid to reveal a hidden picture. Each answer has a colour. Use the key to colour each square the correct colour.

Hint: a multiple includes a times table fact.

yellow

prime numbers
to 100

red

even
square numbers

blue

odd
square numbers

black

numbers with
only 4 factors



If a number does not fit any of the categories, do not colour it in.

12	52	24	13	3	5	7	18	24	32
32	11	13	17	19	23	29	31	7	42
37	41	43	47	53	59	61	67	97	71
73	6	15	8	79	83	14	21	22	89
4	36	97	7	29	23	5	2	25	4
64	100	3	41	73	37	89	59	9	64
61	67	12	42	24	52	32	12	49	53
43	79	2	52	32	20	12	3	7	5
60	83	73	19	42	52	23	71	67	60
12	32	18	61	41	59	3	42	52	42

ADDING DECIMALS

BOOST YOUR SUPERPOWERS

When adding decimal numbers, we can use column addition to help us. Remember the place value of a number tells you the value each digit has in a number. Let's look at adding **6.3** and **2.8** using a place value chart.

T	O	t
	6	3
+	2	8
		1

1) Make sure to **line up** the digits in the correct place value columns.

2) Starting with the lowest value column (the tenths, in this case) add the 2 digits and write the answer underneath.

T	O	t
	6	3
+	2	8
	9	1
	1	

3) If the answer is greater than 9, regroup the 1 and write it beneath the ones column.

4) Add the ones digits including the 1 that has been regrouped.

Let's look at adding **4.3** and **1.172**. Because 4.3 has no digit in its hundredths or thousandths column, we can use a zero as a **place holder** in these columns.

T	O	t	h	th
	4	3	0	0
+	1	1	7	2
	5	4	7	2

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $1.23 + 6.39 =$

1 mark

5 $34.29 + 6.809 =$

1 mark

2 $63.18 + 56.77 =$

1 mark

6 $892.3 + 40.865 =$

1 mark

3 $2.98 + 6.4 =$

1 mark

7 $1.8 + 16.037 =$

1 mark

4 $6.6 + 1.023 =$

1 mark

8 $36.01 + 284.643 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

SUBTRACTING DECIMALS

BOOST YOUR SUPERPOWERS

When subtracting decimal numbers, we can use column subtraction to help us. Remember the place value of a number tells you the value each digit has in a number. Let's look at subtracting **4.32** from **6.5** using a place value chart.

T	O	h	h
	6	●	5
-	4	●	3

1) Make sure to line up the digits in the correct place value columns, ensuring the greater number, **6.5** in this case, is placed first.

T	O	h	h
	6	●	5
-	4	●	3
		●	

2) Because **6.5** doesn't have a digit in the hundredths column, we use **0** as a **place holder** in this column.

T	O	h	h
	6	●	⁴ 5
-	4	●	3
	2	●	1
			8

3) Starting with the lowest value column (the hundredths in this case) we need to subtract the 2 digits. As 2 is greater than 0, we need to exchange 1 tenth for 10 hundredths.

4) Subtract the digits in each column, writing your answer underneath to complete the calculation.

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $6.8 - 1.4 =$

1 mark

5 $7 - 1.26 =$

1 mark

2 $7.5 - 2.19 =$

1 mark

6 $630.1 - 88.527 =$

1 mark

3 $8 - 1.3 =$

1 mark

7 $12 - 4.281 =$

1 mark

4 $49.2 - 18.67 =$

1 mark

8 $33 - 16.062 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

MULTIPLYING WITH DECIMALS

BOOST YOUR SUPERPOWERS

When multiplying decimals by integers we can use known facts or formal written methods.

Using known facts

$$0.25 \times 20$$

Partition 20 into 2 and 10.

$$0.25 \times 2 = 0.5$$

$$0.5 \times 10 = 5$$

$$0.5 \times 8$$

Convert decimals into known fractions.

$$0.5 = \frac{1}{2}$$

$$\frac{1}{2} \times 8 = 4$$

Using formal written methods

First, we write the numbers in the correct place value columns and correctly position the decimal point in the answer space.

Starting from the right-hand side which in this example is the hundredths column, we multiply 6 hundredths by 3. As the answer is 18 hundredths, we write the 8 hundredths in the hundredths column. We regroup the 1 into the tenths column and write it below the horizontal line.

	O	t	h
	4	• 7	6
×			3
		•	8
		1	

	O	t	h
	4	• 7	6
×			3
		• 2	8
	2	1	

Next, we multiply the 7 tenths by 3 giving us an answer of 21 tenths. We must remember to add the 1 tenth that has been regrouped. In total we have 22 tenths. We write 2 tenths in the tenths column and regroup the 2 ones into the ones column.

Lastly, we multiply the 4 ones by 3 and add it to the 2 ones that have been regrouped. We have an answer of 14.28.

	O	t	h
	4	• 7	6
×			3
1	4	• 2	8
	2	1	

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



MATHS MISSION

1 $0.5 \times 8 =$

1 mark

5 $12 \times 8.1 =$

1 mark

2 $0.4 \times 200 =$

1 mark

6 $12.58 \times 4 =$

1 mark

3 $0.09 \times 3 =$

1 mark

7 $28 \times 0.7 =$

1 mark

4 $3.6 \times 30 =$

1 mark

8 $60.3 \times 9 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

CALCULATING WITH DECIMALS

MIXED PRACTICE

1 $9.7 + 72.89 =$

1 mark

2 $7.52 + 11.908 =$

1 mark

3 $9 - 0.578 =$

1 mark

4 $17.105 - 15.029 =$

1 mark

5 $4.1 \times 1000 =$

1 mark

6 $98.070 \times \square = 980.7$

1 mark

7 $51.1 \div 100 =$

1 mark

10 $5 \times 3.9 =$

1 mark

8 $906.6 \div 10 =$

1 mark

11 $2.98 \times 15 =$

1 mark

9 $10.7 \div \square = 0.107$

1 mark

12 $6.421 \times 6 =$

1 mark

MISSION COMPLETE!

How confident do you feel?

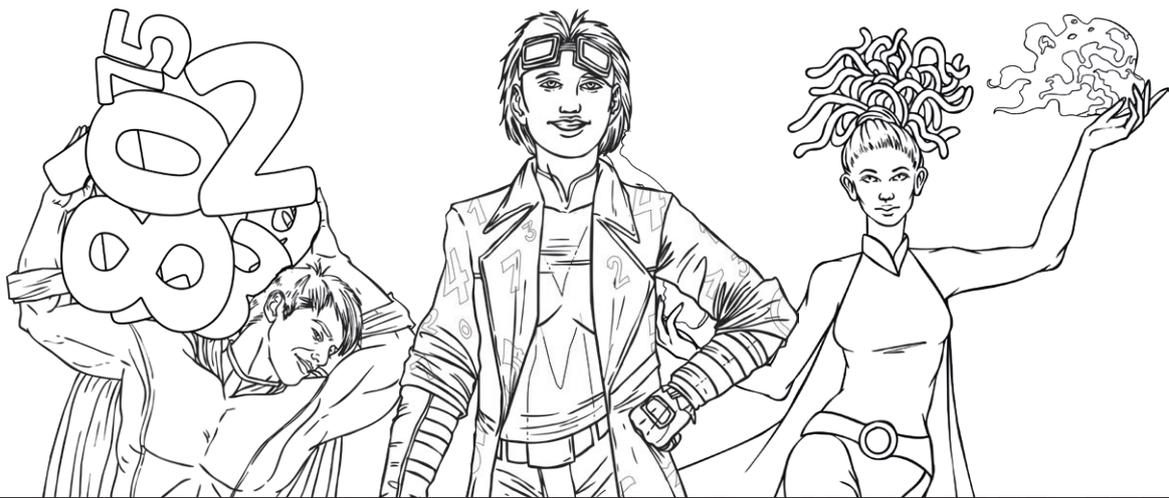


TOTAL

PROGRESS TRACKER

Write your scores from each concept in this unit to track your progress.

Adding Decimals	/8
Subtracting Decimals	/8
Multiplying with Decimals	/8
Calculating with Decimals Mixed Practice	/12
TOTAL	/36



SELF-REFLECTION



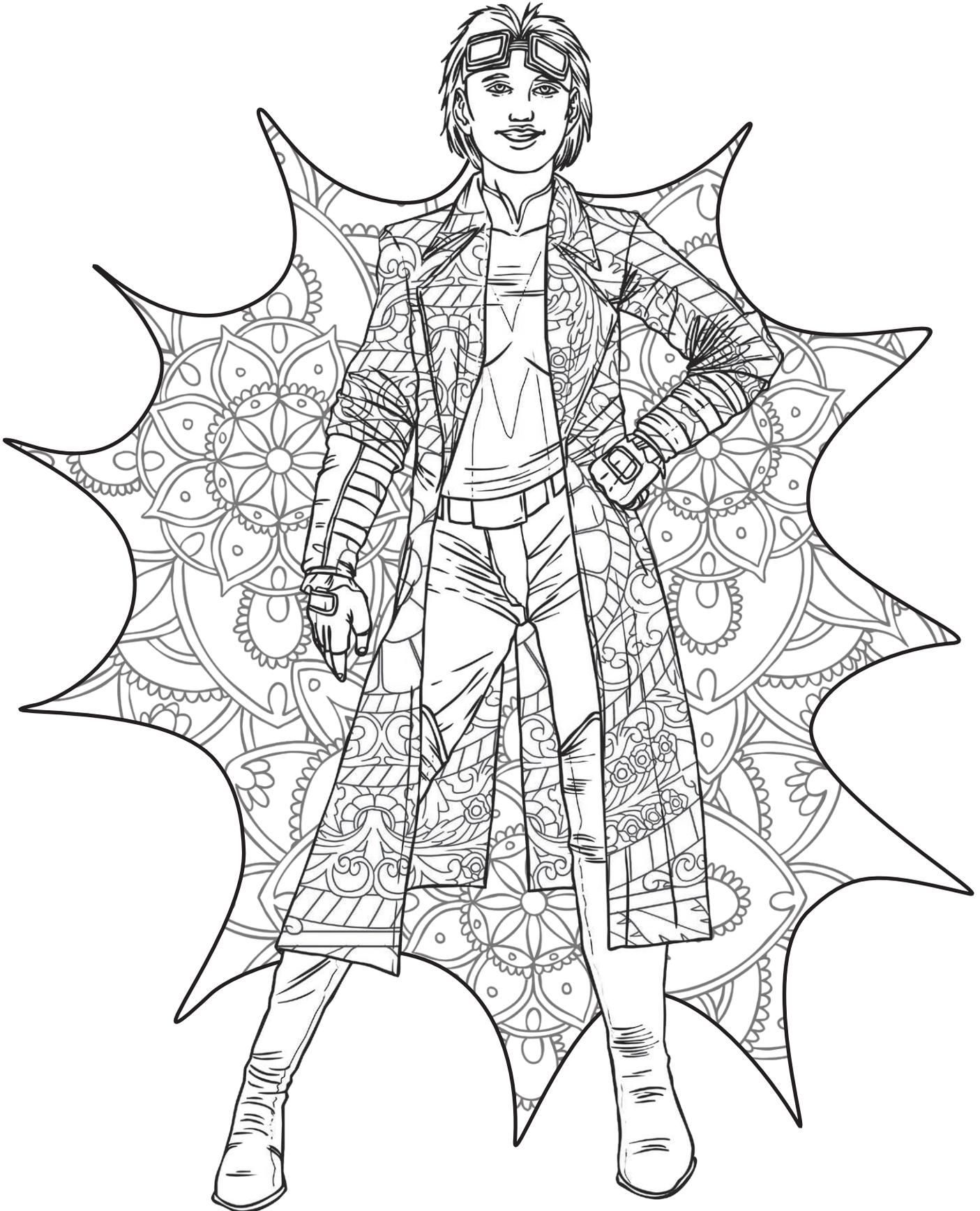
What went well:



My target to improve:

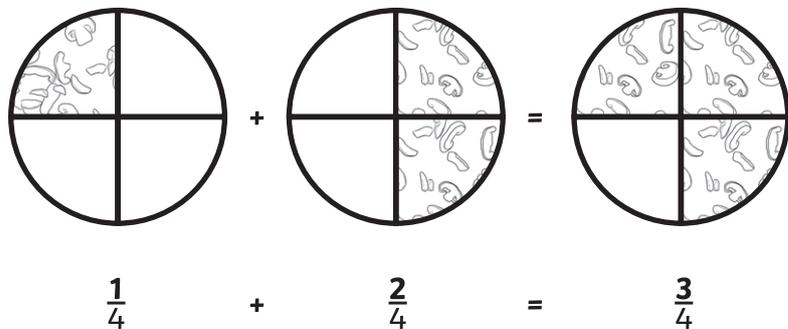
RECHARGE

It's time to recharge ready for the next unit, with this mindfulness colouring page.



ADDING FRACTIONS WITH THE SAME DENOMINATOR

BOOST YOUR SUPERPOWERS



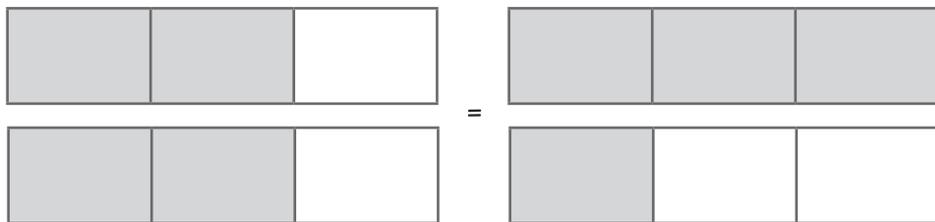
We have added **one** quarter and **two** quarters together.
This equals **three** quarters.

We have only **added** the **numerators** together. The **denominator** stays the **same**.

The **denominator** stays the **same** because we are adding the **same proportions** together. In the example above, we have added **quarters**.

$$\frac{2}{3} + \frac{2}{3} =$$

If the **answer** has a numerator larger than the denominator, then we write it in its **simplest form**.



$$\frac{4}{3} \longrightarrow 4 \div 3 = 1r1 \longrightarrow 1\frac{1}{3}$$

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $\frac{3}{8} + \frac{2}{8} =$

1 mark

5 $\square = \frac{3}{4} + \frac{1}{4}$

1 mark

2 $\square = \frac{1}{9} + \frac{6}{9}$

1 mark

6 $\frac{5}{6} + \frac{4}{6} =$

1 mark

3 $\frac{3}{10} + \frac{5}{10} =$

1 mark

7 $\square = \frac{5}{12} + \frac{10}{12}$

1 mark

4 $\square = \frac{4}{5} + \frac{4}{5}$

1 mark

8 $\frac{11}{8} + \frac{5}{8} =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

ADDING FRACTIONS WITH DIFFERENT DENOMINATORS

BOOST YOUR SUPERPOWERS

We **cannot** add fractions together if they have **different denominators**.

$$\frac{2}{3} + \frac{3}{4}$$

Fractions must have the **same denominator** before we can add them.

To do this we find the **lowest common multiple** of **both** denominators.

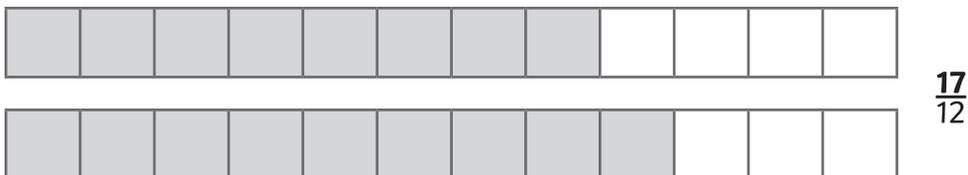
In the example above, the lowest common multiple of **3** and **4** is **12**.

To convert **two thirds** into **twelfths**, we multiply **both** the denominator and numerator by **4**.

$$\begin{array}{c} \boxed{\times 4} \quad \frac{2}{3} + \frac{3}{4} \quad \boxed{\times 3} \\ \downarrow \qquad \qquad \qquad \downarrow \\ \frac{8}{12} + \frac{9}{12} \end{array}$$

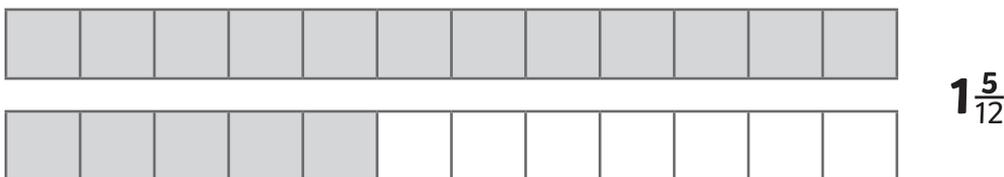
To convert **three quarters** into **twelfths**, we multiply **both** the denominator and numerator by **3**.

The fractions now have the **same denominator** so we can **add** them.



We need to write the answer in its **simplest form**.

$$17 \div 12 = 1\text{r}5$$



INTERACTIVE GAME

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SCAN ME



MATHS MISSION

1 $\frac{3}{10} + \frac{2}{5} =$

1 mark

5 $\square = \frac{1}{4} + \frac{2}{3}$

1 mark

2 $\square = \frac{1}{6} + \frac{7}{12}$

1 mark

6 $\frac{2}{3} + \frac{3}{5} =$

1 mark

3 $\frac{1}{3} + \frac{1}{5} =$

1 mark

7 $\square = \frac{4}{5} + \frac{3}{4}$

1 mark

4 $\square = \frac{2}{9} + \frac{1}{3}$

1 mark

8 $\frac{5}{6} + \frac{7}{8} =$

1 mark

MISSION COMPLETE!

How confident do you feel?

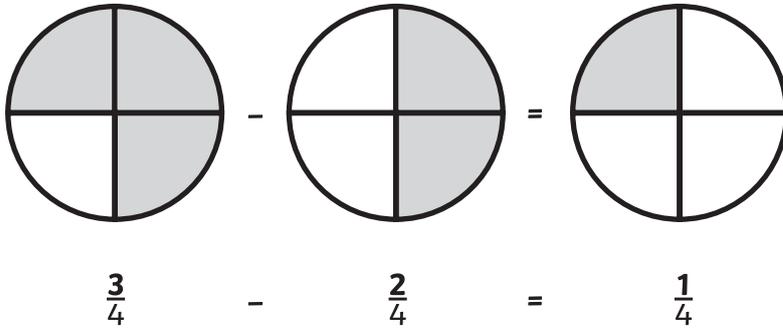


/8

TOTAL

SUBTRACTING FRACTIONS WITH THE SAME DENOMINATOR

BOOST YOUR SUPERPOWERS



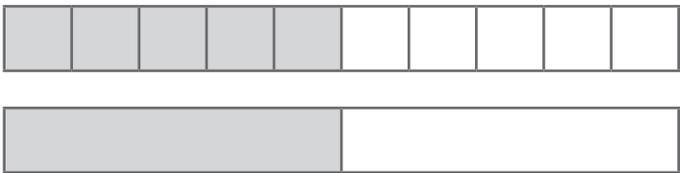
We have subtracted **two** quarters from **three** quarters. This equals **one** quarter.

We have only **subtracted** the **numerators** from each other. The **denominator** stays the **same**.

The **denominator** stays the **same** because we are subtracting the **same proportions** from each other. In the example above, we have subtracted **quarters**.

$$\frac{9}{10} - \frac{4}{10} =$$

If the **answer** has a numerator and a denominator that have a **common factor**, we write it in its **simplest form**.



$$\frac{5}{10} = \frac{1}{2}$$

↘

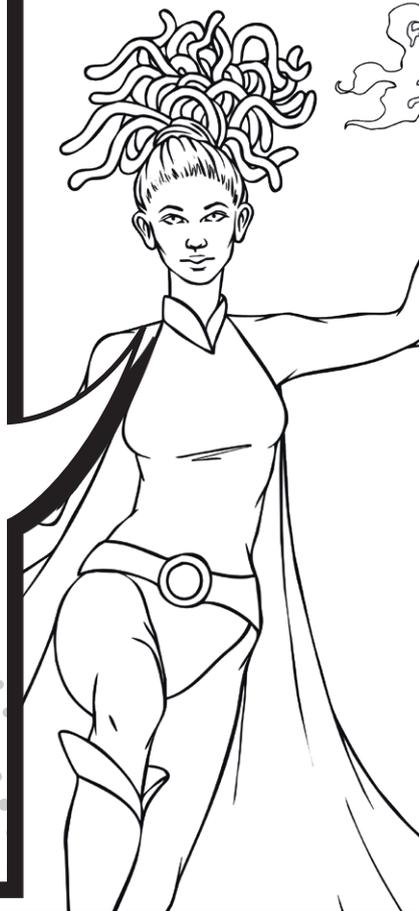
÷5

To do this, we divide both the numerator and denominator by their **highest common factor**, which is 5. Five tenths is **equivalent** to one half in its **simplest form**.



INTERACTIVE GAME

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MATHS MISSION

1 = $\frac{7}{10} - \frac{4}{10}$

1 mark

5 $\frac{19}{20} - \frac{11}{20} =$

1 mark

2 $\frac{8}{11} - \frac{3}{11} =$

1 mark

6 = $\frac{13}{16} - \frac{5}{16}$

1 mark

3 = $\frac{17}{20} - \frac{2}{20}$

1 mark

7 $\frac{17}{10} - \frac{7}{10} =$

1 mark

4 $\frac{14}{15} - \frac{4}{15} =$

1 mark

8 = $\frac{15}{6} - \frac{3}{6}$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

SUBTRACTING FRACTIONS WITH DIFFERENT DENOMINATORS

BOOST YOUR SUPERPOWERS

We **cannot** subtract fractions from each other if they have **different denominators**.

$$\frac{5}{6} - \frac{2}{15}$$

Fractions must have the **same denominator** before we can subtract.

To do this we find the **lowest common multiple** of **both** denominators.

In the example above, the lowest common multiple of **6** and **15** is **30**.

To convert **five sixths** into **thirtieths**, we multiply **both** the denominator and numerator by **5**.

$$\begin{array}{ccc} \boxed{\times 5} & \frac{5}{6} - \frac{2}{15} & \boxed{\times 2} \\ \downarrow & & \downarrow \\ \frac{25}{30} - \frac{4}{30} & & \end{array}$$

To convert **two fifteenths** into **thirtieths**, we multiply **both** the denominator and numerator by **2**.

The fractions now have the **same denominator** so we can **subtract** them from each other.



$\frac{21}{30}$

We need to write the answer in its **simplest form**. We divide the numerator and denominator by the **highest common factor**, which is **3**.

$$\begin{array}{ccc} \frac{21}{30} = \frac{7}{10} \\ \downarrow \boxed{\div 3} \end{array}$$



INTERACTIVE GAME

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SCAN ME



MATHS MISSION

1 = $\frac{7}{10} - \frac{2}{5}$

1 mark

5 $\frac{4}{5} - \frac{1}{2} =$

1 mark

2 $\frac{5}{6} - \frac{1}{3} =$

1 mark

6 = $\frac{3}{4} - \frac{1}{3}$

1 mark

3 = $\frac{11}{12} - \frac{5}{6}$

1 mark

7 $\frac{7}{8} - \frac{1}{4} =$

1 mark

4 $\frac{4}{5} - \frac{1}{3} =$

1 mark

8 = $\frac{3}{4} - \frac{1}{10}$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

ADDING AND SUBTRACTING MIXED NUMBERS

BOOST YOUR SUPERPOWERS

A **mixed number** includes an **integer** and a **fraction**.

When adding **mixed numbers** with the **same** denominator, you add the **integers** and then the **fractions**. You do the same when you subtract.

$$2\frac{1}{9} + 1\frac{4}{9} = 3\frac{5}{9}$$

$$2\frac{6}{7} - 1\frac{2}{7} = 1\frac{4}{7}$$

We cannot add or subtract **mixed numbers** if they have **different** denominators. To make the denominators the **same**, we find their **equivalences**.

$$3\frac{1}{2} + 1\frac{1}{3}$$

The **lowest common multiple** of 2 and 3 is 6.

$$2\frac{3}{6} - 1\frac{2}{6} = 4\frac{5}{6}$$

We cannot subtract **mixed numbers** with the **same** denominator, if the **first** fraction is **smaller** than the **second**. We need to **convert** both mixed numbers into **improper fractions**.

$$2\frac{1}{10} + 1\frac{2}{10}$$

$$(2 \times 10) + 1 = 21$$

$$(1 \times 10) + 2 = 12$$

$$\frac{21}{10} - \frac{12}{10} = \frac{9}{10}$$

To **convert** a **mixed number** into an **improper fraction**, we multiply the **integer** by the **denominator**, and add the **numerator**. The answer is written as a **fraction** with the **same** denominator.

To subtract a **fraction** from an **integer**, we can **convert** it into an **improper fraction**.

$$4 - \frac{3}{4}$$

$$\frac{4}{1} - \frac{3}{4}$$

$$\frac{16}{4} - \frac{3}{4} = \frac{13}{4}$$

$$\frac{13}{4} = 3\frac{1}{4}$$

We need to write the answer in its **simplest form**.

INTERACTIVE GAME

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SCAN ME



MATHS MISSION

1 $2\frac{3}{10} + 1\frac{2}{10} =$

1 mark

5 = $3\frac{6}{8} - 1\frac{2}{6}$

1 mark

2 = $2\frac{1}{4} + \frac{3}{4}$

1 mark

6 $2\frac{2}{15} - 1\frac{2}{5} =$

1 mark

3 $3\frac{2}{3} + 1\frac{4}{5} =$

1 mark

7 = $1\frac{4}{7} - \frac{6}{7}$

1 mark

4 = $4\frac{3}{4} + \frac{1}{3}$

1 mark

8 $8 - 3\frac{7}{8} =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

MULTIPLYING FRACTIONS

BOOST YOUR SUPERPOWERS

$\frac{1}{2} \times 5 =$

When we **multiply** a fraction by an **integer**, it is the same as **repeatedly adding** the fraction.

$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{5}{2} = 2\frac{1}{2}$

We have **added** one-half 5 times. To **convert** an **improper fraction** to a **mixed number**, we can **divide** the numerator by the denominator. This is putting the fraction in its **simplest form**.

$\frac{1}{2}$ of $\frac{1}{4} =$

One-half **of** one-quarter is **one-eighth**.

By multiplying the **numerators** together and multiplying the **denominators** together, it will give us the same answer.

$$\frac{1 \times 1}{2 \times 4} = \frac{1}{8}$$

A top tip to remember is that **multiply** also means 'of'.

$$\frac{1}{2} \times \frac{1}{4} =$$

$$\frac{1}{2} \text{ of } \frac{1}{4} =$$

Another top tip to remember is that an **integer** is a **whole number** and can be written as a fraction with a **denominator** of one.

$$\frac{1}{2} \times 5 =$$

$$\frac{1}{2} \text{ of } \frac{5}{1} =$$

This method can also be used when multiplying a **mixed number** by an integer.

$$2 \times 1\frac{2}{3} =$$

- 1) Multiply the **integers** together. $\frac{2}{1} \times \frac{2}{3} = \frac{4}{3}$
- 2) Multiply the integer by the **fraction**.
- 3) **Add** the answers to step 1 and 2. $= 2\frac{4}{3}$

It is important to check that the answer is in its **simplest form**. If the answer includes an **improper fraction**, remember to **convert** it to a **mixed number** and **add** it to the **integers**.

$$2 + 1\frac{1}{3} = 3\frac{1}{3}$$

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



REVISION VIDEO

SCAN ME

MATHS MISSION

1 $\frac{1}{2} \times \frac{2}{3} =$

1 mark

5 $1\frac{2}{3} \times 7 =$

1 mark

2 $\frac{1}{4} \times 5 =$

1 mark

6 $\frac{4}{5} \times \frac{3}{4} =$

1 mark

3 $\frac{1}{3} \times \frac{3}{4} =$

1 mark

7 $10 \times 3\frac{7}{10} =$

1 mark

4 $4 \times \frac{2}{5} =$

1 mark

8 $\frac{3}{5} \times \frac{6}{10} =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

DIVIDING FRACTIONS

BOOST YOUR SUPERPOWERS

To **divide** a fraction by an integer we use the **inverse operation** of **multiplication**.

$$\frac{1}{3} \div 5 =$$

- 1) Convert the **integer** into a fraction. Remember that an **integer** is a **whole number** so the **denominator** needs to show the total number of parts as **one**.

$$\frac{1}{3} \div \frac{5}{1} =$$

- 2) **Change** the operation from division to **multiplication**. We have used the **inverse**.

$$\frac{1}{3} \times \frac{5}{1} =$$

- 3) **Flip** (invert) the **second fraction** so that the numerator is now the denominator and the denominator is now the numerator.

$$\frac{1}{3} \times \frac{1}{5} =$$

- 4) We can now use our knowledge of **multiplying fractions** to answer the question. Remember to multiply the numerators together and multiply the denominators together.

$$1 \times 1$$

$$\frac{1}{3} \times \frac{1}{5} = \frac{1}{15}$$

$$3 \times 5$$

Sometimes we may need to write the answer in its **simplest form**. We can do this by dividing the numerator and denominator by their **greatest common factor** to find its equivalence.

To find the greatest common factor we can use our knowledge of **multiplication tables** to help us.

What is the **largest number** that both the **numerator** and **denominator** can be **divided** by, without leaving any remainders?

$$\begin{array}{c} \div 4 \\ \hline \frac{8}{12} = \frac{2}{3} \\ \hline \div 4 \end{array}$$

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $\frac{2}{3} \div 3 =$

1 mark

5 $\frac{3}{5} \div 8 =$

1 mark

2 $\frac{3}{4} \div 5 =$

1 mark

6 $\frac{7}{6} \div 6 =$

1 mark

3 $\frac{4}{5} \div 4 =$

1 mark

7 $\frac{6}{10} \div 6 =$

1 mark

4 $\frac{3}{8} \div 2 =$

1 mark

8 $\frac{3}{9} \div 9 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

PERCENTAGES

BOOST YOUR SUPERPOWERS

To find a percentage of an amount, we can use two different methods. **35% of 1200 =**

Method 1: Use your knowledge of numbers.

1) **Partition** 35% into smaller amounts.

$$35\% = 10\% + 10\% + 10\% + 5\%$$

35%			
10%	10%	10%	5%

2) To find 10%, we **divide** the amount by 10. We know that 10×10 is 100, which must mean 10 groups of 10% makes 100%. This is **equivalent** to a whole.

$$1200 \div 10 = 120 \leftarrow \boxed{10\%}$$

3) To find 5%, we **halve** the answer we got for 10%. We know that 5×2 is 10 and therefore $\div 2$ is the same as finding a half.

$$120 \div 2 = 60 \leftarrow \boxed{5\%}$$

4) Using what we know, we can find 35% by adding all of the values together.

35%			
120	120	120	60

$$35\% = 10\% + 10\% + 10\% + 5\%$$

$$35\% \text{ of } 1200 = 420$$

Method 2: Use a formal written method.

1) We find 1% by **dividing** by 100. You can use your knowledge of dividing by 10, 100 and 1000 to help you.

$$\boxed{100\%} \rightarrow 1200 \div 100 = 12$$

2) Now that we know the value of 1%, we **multiply** this answer by the percentage that we want to find out.

$$35 \times 12 =$$

$$35\% \text{ of } 1200 = 420$$

Tip: 'of' is another way of saying 'multiply.'

	H	T	O
	1	2	0
	1	2	0
	1	2	0
+		6	0
	4	2	0
	1		

	H	T	O
		3	5
×		1	2
		7	0
+	3	5	0
	4	2	0
	1		

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 30% of 1800 =

1 mark

5 2% of 4000 =

1 mark

2 = 60% of 1300

1 mark

6 99% of 500 =

1 mark

3 15% of 460 =

1 mark

7 51% x 7500 =

1 mark

4 45% of 600 =

1 mark

8 28% x 850 =

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

FRACTIONS OF AMOUNTS

BOOST YOUR SUPERPOWERS

To find a **non-unit fraction** of an amount (a fraction with a numerator greater than 1), we must first find the **unit fraction** of that amount (a fraction with a numerator of 1). For example,

$$\frac{2}{3} \text{ of } 12 = \begin{array}{c} \textcircled{\bullet \bullet} \\ \textcircled{\bullet \bullet} \end{array} \quad \begin{array}{c} \textcircled{\bullet \bullet} \\ \textcircled{\bullet \bullet} \end{array} \quad \begin{array}{c} \textcircled{\bullet} \textcircled{\bullet} \\ \textcircled{\bullet} \textcircled{\bullet} \end{array}$$

$$2 \text{ groups of } \frac{1}{3} \text{ of } 12 = \frac{1}{3} \text{ of } 12 \times 2 = 4 \times 2 = 8$$

This means that we **divide** the amount by the **denominator** and **multiply** the answer by the **numerator**.

$$\text{e.g. } \frac{2}{3} \text{ of } 12 \quad 12 \div 3 = 4 \quad 4 \times 2 = 8$$

Remember, sometimes fractions of amounts can be written with a multiplication sign (\times), which means 'groups of'. When finding fractions of amounts, \times means the same as 'of'.

$$\frac{2}{3} \text{ of } 12 = \frac{2}{3} \times 12$$

To calculate $\frac{7}{8} \times 560$, we first need to calculate **$560 \div 8$** .

We know that $56 \div 8 = 7$ from our knowledge of times tables. Now, we can scale by a multiple of 10 to work out that **$560 \div 8 = 70$** .

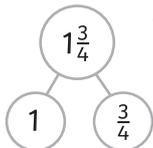
560							
70	70	70	70	70	70	70	70

Now, we calculate **7×70** .

We know that $7 \times 7 = 49$ so **$7 \times 70 = 490$** .

To multiply a mixed number by an amount, e.g. $1\frac{3}{4} \times 18$, we can use either of these methods:

Partitioning



$$1 \times 18 = 18$$

$$\frac{3}{4} \times 18 = (18 \div 4) \times 3 = 4\frac{1}{2} \times 3 = 13\frac{1}{2}$$

$$18 + 13\frac{1}{2} = 31\frac{1}{2}$$

Converting to an Improper Fraction

$$1\frac{3}{4} = \frac{4}{4} + \frac{3}{4} = \frac{7}{4}$$

$$\frac{7}{4} \times 18 = (18 \div 4) \times 7 = 4\frac{1}{2} \times 7 = 31\frac{1}{2}$$

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

SCAN ME



MATHS MISSION

1 $\frac{3}{10}$ of 80 =

1 mark

5 $\frac{4}{7}$ of 840 =

1 mark

2 $\frac{2}{5}$ of 45 =

1 mark

6 $1\frac{1}{2} \times 70 =$

1 mark

3 $\frac{5}{6} \times 480 =$

1 mark

7 $1\frac{2}{3} \times 90 =$

1 mark

4 $\frac{3}{4}$ of 600 =

1 mark

8 $1\frac{3}{4} \times 50 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/8

TOTAL

FRACTIONS MIXED PRACTICE

1 $\frac{3}{8} \times \frac{2}{5} =$

1 mark

4 $\frac{11}{15} + \frac{7}{15} =$

1 mark

2 $= \frac{3}{4} - \frac{3}{10}$

1 mark

5 $3\frac{1}{8} - 1\frac{1}{3} =$

1 mark

3 $= 28\% \text{ of } 600$

1 mark

6 $= 1\frac{3}{5} \times \frac{1}{3}$

1 mark

7 = $\frac{1}{10} \div 3$

1 mark

10 = $\frac{17}{20} - \frac{15}{20}$

1 mark

8 = $\frac{3}{7} + \frac{3}{5}$

1 mark

11 $2\frac{2}{3} + 1\frac{4}{9} =$

1 mark

9 $\frac{3}{5}$ of 385

1 mark

12 $1\frac{1}{5} \div 4 =$

1 mark

MISSION COMPLETE!

How confident do you feel?



/12

TOTAL

PROGRESS TRACKER

Write your scores from each concept in this unit to track your progress.

Adding Fractions with the Same Denominator	/8
Adding Fractions with Different Denominators	/8
Subtracting Fractions with the Same Denominator	/8
Subtracting Fractions with Different Denominators	/8
Adding and Subtracting Mixed Numbers	/8
Multiplying Fractions	/8
Dividing Fractions	/8
Percentages	/8
Fractions of Amounts	/8
Fractions Mixed Practice	/12
TOTAL	/84

SELF-REFLECTION



What went well:



My target to improve:

MIXED ARITHMETIC CHALLENGE 1

1 = 0×872

1 mark

6 $12 +$ = 507

1 mark

2 $3600 \div 2 =$

1 mark

7 = $4.77 + 9.3$

1 mark

3 = $420 \div 6$

1 mark

8 $7548 - 3276 =$

1 mark

4 $1201 \times 10 =$

1 mark

9 $\frac{5}{9} + \frac{1}{3} =$

1 mark

5 $\frac{4}{10}$ of 50 =

1 mark

10 2% of 4000 =

1 mark

/10

TOTAL

MIXED ARITHMETIC CHALLENGE 2

1 $24 + \square = 604$

1 mark

6 $6219 + 105 + 582 =$

1 mark

2 $4800 \div 2 =$

1 mark

7 5% of 3000 =

1 mark

3 $\square = 540 \div 6$

1 mark

8 $\square = 870 \div 5$

1 mark

4 $2109 \times 10 =$

1 mark

9 $7.46 \div 10 =$

1 mark

5 $\frac{6}{10}$ of 50 =

1 mark

10 $\square = \frac{2}{8} \div 2$

1 mark

/10

TOTAL

MIXED ARITHMETIC CHALLENGE 3

1 $3843 + 143 + 598 =$

1 mark

2 $\square + 60 = 926$

1 mark

3 $\square = 830 \div 5$

1 mark

4 $16.32 + 10 =$

1 mark

5 $\square = \frac{1}{9} \div 2$

1 mark

6 $18 + \square = 806$

1 mark

7 $5.67 + 4.8 =$

1 mark

8 $7981 - 4276 =$

1 mark

9 $\square = \frac{5}{12} + \frac{1}{4}$

1 mark

10 $6\% \text{ of } 300 =$

1 mark

/10

TOTAL

MIXED ARITHMETIC CHALLENGE 4

1 $0 \times 6258 =$

1 mark

6 $\square = 4279 + 168 + 374$

1 mark

2 $81\ 000 \div 2 =$

1 mark

7 $\square + 82 = 761$

1 mark

3 $\square = 4000 \div 8$

1 mark

8 $\square 725 \div 5 =$

1 mark

4 $8742.34 \times 10 =$

1 mark

9 $2710.5 \div 100 =$

1 mark

5 $\frac{2}{3}$ of 60 =

1 mark

10 $\square = \frac{1}{4} \div 3$

1 mark

/10

TOTAL

MIXED ARITHMETIC CHALLENGE 5

1 $0 \times 82\,092 =$

1 mark

2 $56\,000 \div 2 =$

1 mark

3 $\square = 3600 \div 6$

1 mark

4 $\square \times 10 = 93\,992.2$

1 mark

5 $\frac{7}{5}$ of 75 =

1 mark

6 $14 + \square = 1057$

1 mark

7 $22.04 + 11.8 =$

1 mark

8 $99\,047 - 2098 =$

1 mark

9 $\frac{1}{4} + \frac{7}{8} =$

1 mark

10 $\square = 27\% \text{ of } 200$

1 mark

/10

TOTAL

ARITHMETIC FULL TEST

1 $901 + 100 =$



1 mark

2 $77 \times 7 =$



1 mark

3 $5.7 + 0.6 =$



1 mark

4

$= 5489 + 443$



1 mark

5

$24 \times 4 =$



1 mark

6

$144 \div 12 =$



1 mark

7 $319 - 40 =$



1 mark

8 $2.5 + 0.004 =$



1 mark

9 $456 \times 0 =$



1 mark

10 $\frac{8}{15} - \frac{4}{15} =$



1 mark

11 = 9^2



1 mark

12 $66.43 \div 10 =$



1 mark

13 $572 - 89.9 =$



1 mark

14 $\div 7 = 500$



1 mark

15 $7291 + 6304 =$



1 mark

16 $\frac{3}{5} + \frac{4}{10} =$



1 mark

17 $2.15 \times 7 =$



1 mark

18 30% of 2400



1 mark

19

$$= 100 \times 1000$$



1 mark

20

$$\frac{3}{8} \text{ of } 72 =$$



1 mark

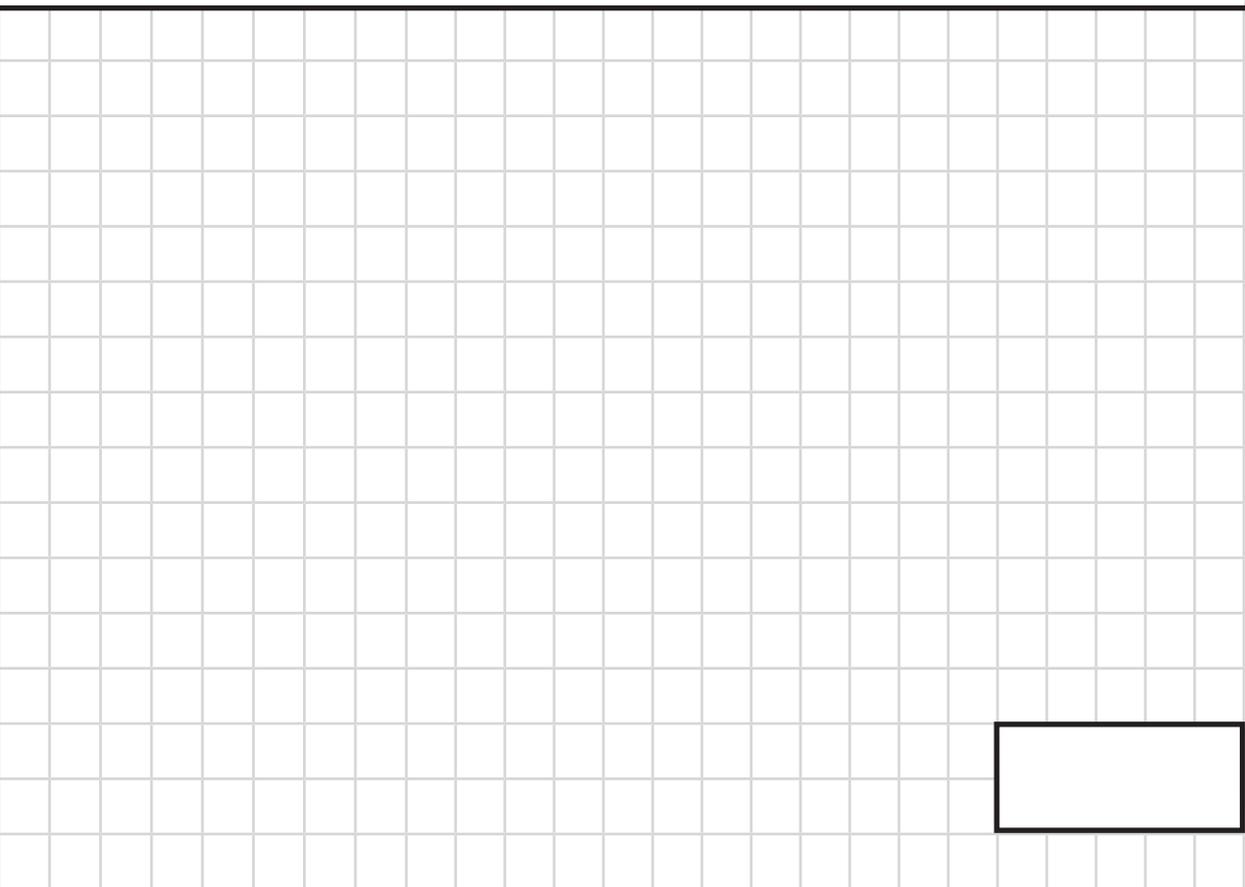
21

$$9352 \div 5 =$$



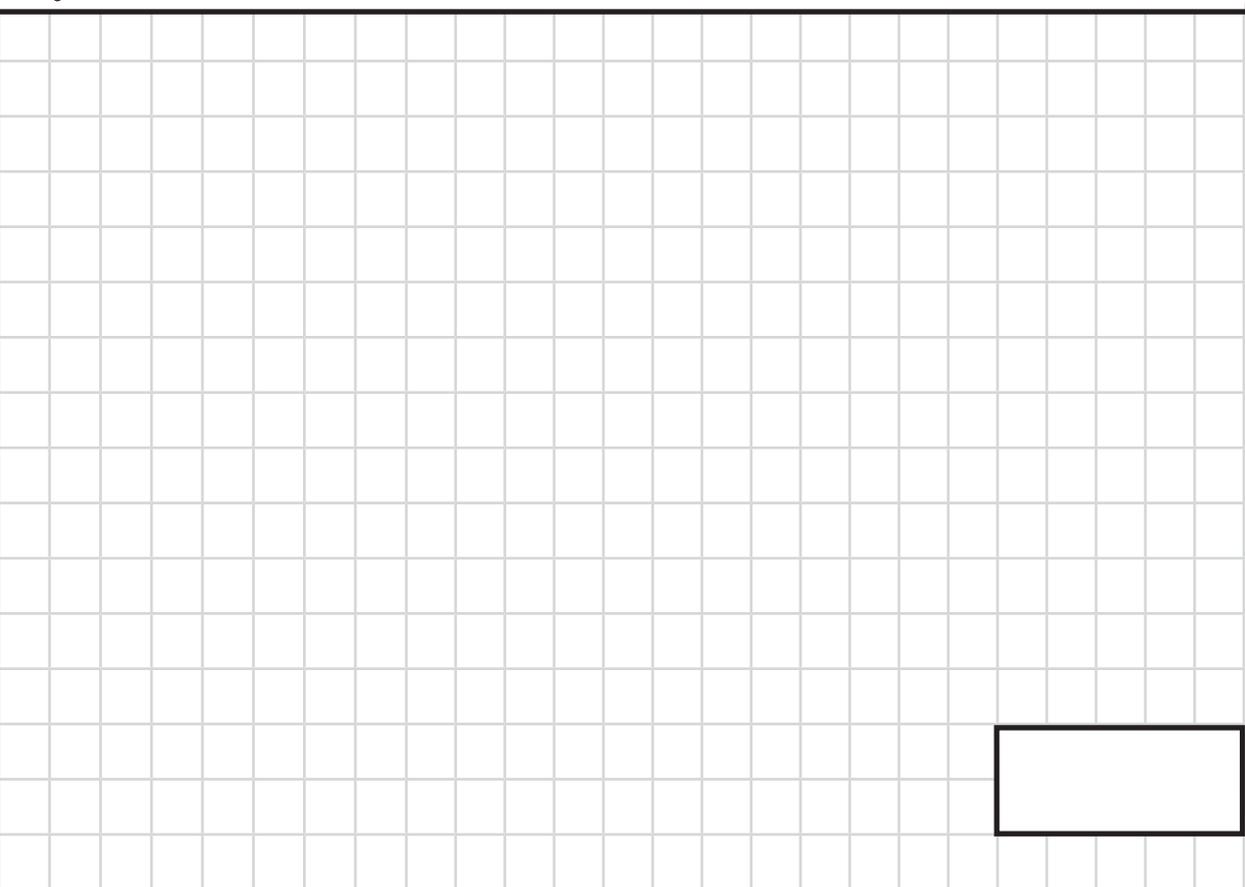
1 mark

22 $20\ 000 - 1600 =$



1 mark

23 $44.6 - 8.92 =$



1 mark

24 $18 \times 82 =$



2 marks

25 $210\,483 - 67\,928 =$



1 mark

26 $3146 \div 13 =$



2 marks

27 $\frac{1}{6} \times \frac{2}{3} =$



1 mark

28 $11 \times 4\frac{1}{2} =$



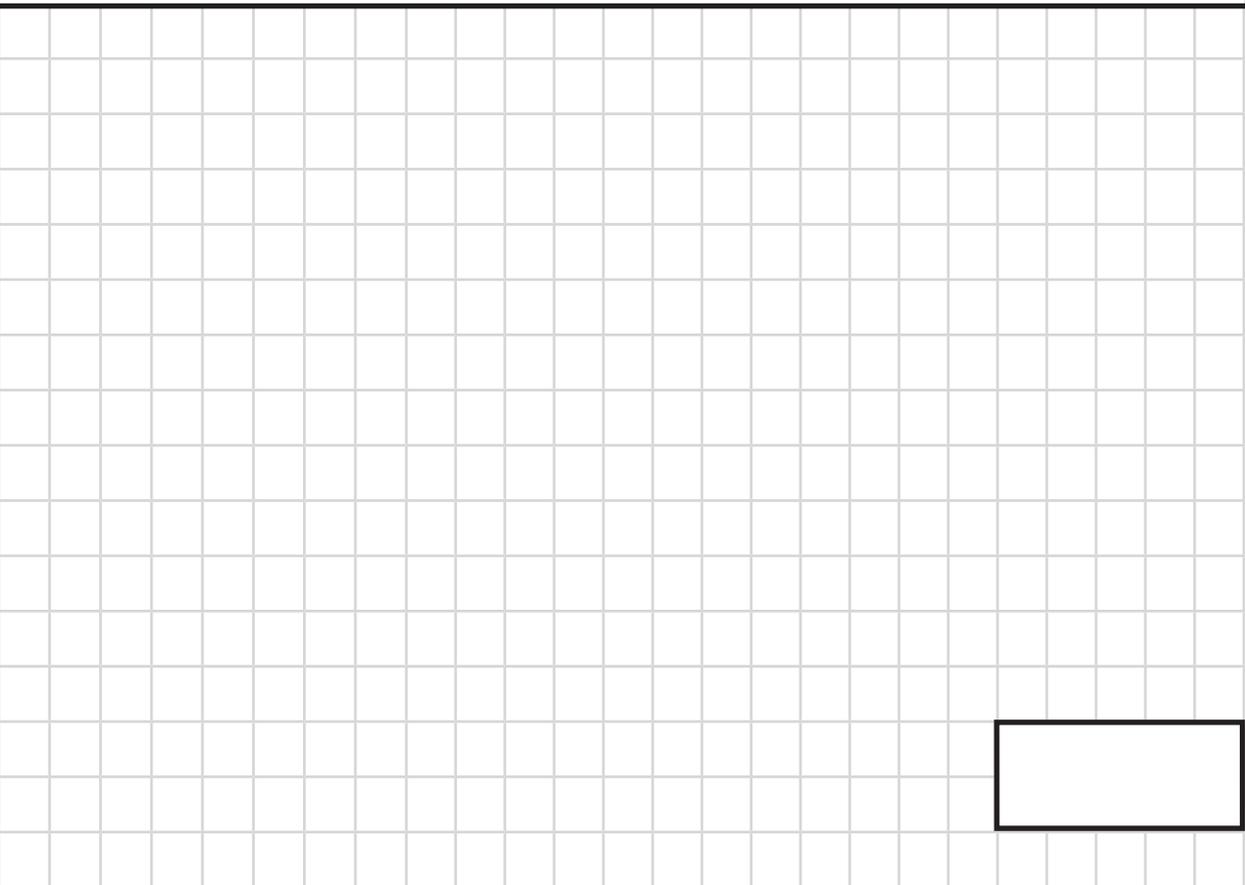
1 mark

29 $758 \times 87 =$



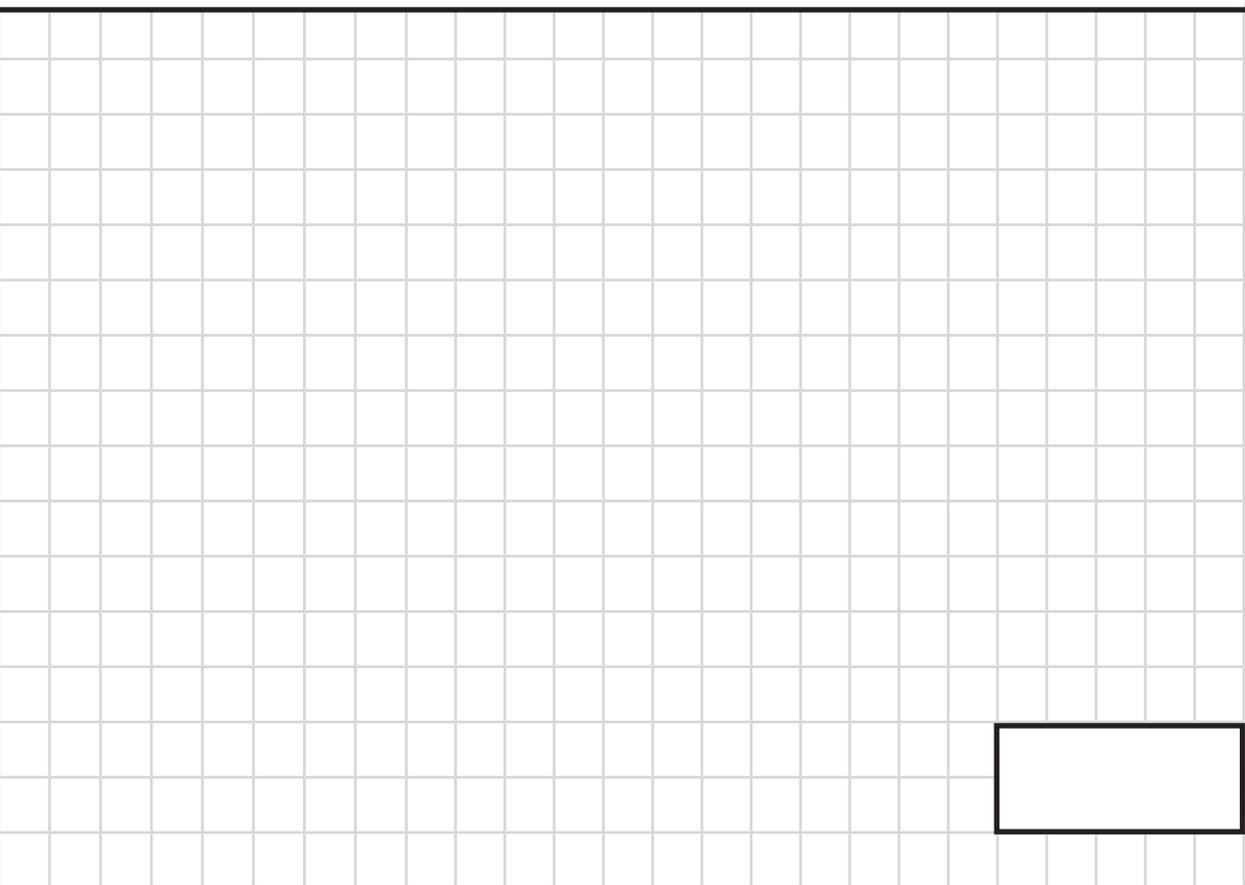
2 marks

30 $\frac{4}{10} \div 3 =$



1 mark

31 $9 + 3 \times 7 =$



1 mark

32 $3598 \div 14 =$



2 marks

33 $1\frac{3}{4} + 2\frac{9}{10} =$



1 mark

34 $\frac{3}{4} \div 5 =$


1 mark

35 95% of 380 =


1 mark

37 $\frac{7}{8} - \frac{1}{3} =$


1 mark

 /40
TOTAL

ARITHMETIC CODEBREAKER

Solve the arithmetic calculations and use the codebreaker to spell out the mystery words.

A	B	C	D	E	F	G	H	I
8212	749	$\frac{9}{10}$	64	110	5.45	90.8	$\frac{3}{8}$	$\frac{2}{9}$
J	K	L	M	N	O	P	Q	R
1.65	634	7020	0.42	72	48.3	1056	5586	240
S	T	U	V	W	X	Y	Z	
39	$2\frac{1}{4}$	600	76	50.9	900	548	$\frac{6}{9}$	

Write your mystery words here:



1 $7^2 - 10 =$

Answer	Letter

2 $1\frac{1}{2} + \frac{3}{4} =$

Answer	Letter

3 $\frac{2}{3}$ of 900 =

Answer	Letter

4

$$29 + (5 \times 7) =$$

Answer

Letter

5

$$83 + 465 =$$

Answer

Letter

6

$$32.75 + 6.25 =$$

Answer

Letter

7 $38 \times 147 =$

Answer	Letter

8 What is the lowest common multiple of 300 and 200?

Answer	Letter

9 $9023 - 811 =$

Answer	Letter

10 $4^3 =$

Answer	Letter

11 $6 \times 0.07 =$

Answer	Letter

12 $5835 + 2377 =$

Answer	Letter

13

$7\frac{1}{8} - 4\frac{7}{8} =$

Answer**Letter****14**

$\frac{1}{2} \times \frac{3}{4} =$

Answer**Letter****15**

$1638 \div 42 =$

Answer**Letter**

16 $\frac{3}{4} \div 2 =$

Answer	Letter

17 20% of 550 =

Answer	Letter

18 $2.4 \times 100 =$

Answer	Letter

HELP PAGE — TIMES TABLES MAT

1× table	2× table	3× table	4× table	5× table	6× table
$1 \times 1 = 1$ $2 \times 1 = 2$ $3 \times 1 = 3$ $4 \times 1 = 4$ $5 \times 1 = 5$ $6 \times 1 = 6$ $7 \times 1 = 7$ $8 \times 1 = 8$ $9 \times 1 = 9$ $10 \times 1 = 10$ $11 \times 1 = 11$ $12 \times 1 = 12$	$1 \times 2 = 2$ $2 \times 2 = 4$ $3 \times 2 = 6$ $4 \times 2 = 8$ $5 \times 2 = 10$ $6 \times 2 = 12$ $7 \times 2 = 14$ $8 \times 2 = 16$ $9 \times 2 = 18$ $10 \times 2 = 20$ $11 \times 2 = 22$ $12 \times 2 = 24$	$1 \times 3 = 3$ $2 \times 3 = 6$ $3 \times 3 = 9$ $4 \times 3 = 12$ $5 \times 3 = 15$ $6 \times 3 = 18$ $7 \times 3 = 21$ $8 \times 3 = 24$ $9 \times 3 = 27$ $10 \times 3 = 30$ $11 \times 3 = 33$ $12 \times 3 = 36$	$1 \times 4 = 4$ $2 \times 4 = 8$ $3 \times 4 = 12$ $4 \times 4 = 16$ $5 \times 4 = 20$ $6 \times 4 = 24$ $7 \times 4 = 28$ $8 \times 4 = 32$ $9 \times 4 = 36$ $10 \times 4 = 40$ $11 \times 4 = 44$ $12 \times 4 = 48$	$1 \times 5 = 5$ $2 \times 5 = 10$ $3 \times 5 = 15$ $4 \times 5 = 20$ $5 \times 5 = 25$ $6 \times 5 = 30$ $7 \times 5 = 35$ $8 \times 5 = 40$ $9 \times 5 = 45$ $10 \times 5 = 50$ $11 \times 5 = 55$ $12 \times 5 = 60$	$1 \times 6 = 6$ $2 \times 6 = 12$ $3 \times 6 = 18$ $4 \times 6 = 24$ $5 \times 6 = 30$ $6 \times 6 = 36$ $7 \times 6 = 42$ $8 \times 6 = 48$ $9 \times 6 = 54$ $10 \times 6 = 60$ $11 \times 6 = 66$ $12 \times 6 = 72$
7× table	8× table	9× table	10× table	11× table	12× table
$1 \times 7 = 7$ $2 \times 7 = 14$ $3 \times 7 = 21$ $4 \times 7 = 28$ $5 \times 7 = 35$ $6 \times 7 = 42$ $7 \times 7 = 49$ $8 \times 7 = 56$ $9 \times 7 = 63$ $10 \times 7 = 70$ $11 \times 7 = 77$ $12 \times 7 = 84$	$1 \times 8 = 8$ $2 \times 8 = 16$ $3 \times 8 = 24$ $4 \times 8 = 32$ $5 \times 8 = 40$ $6 \times 8 = 48$ $7 \times 8 = 56$ $8 \times 8 = 64$ $9 \times 8 = 72$ $10 \times 8 = 80$ $11 \times 8 = 88$ $12 \times 8 = 96$	$1 \times 9 = 9$ $2 \times 9 = 18$ $3 \times 9 = 27$ $4 \times 9 = 36$ $5 \times 9 = 45$ $6 \times 9 = 54$ $7 \times 9 = 63$ $8 \times 9 = 72$ $9 \times 9 = 81$ $10 \times 9 = 90$ $11 \times 9 = 99$ $12 \times 9 = 108$	$1 \times 10 = 10$ $2 \times 10 = 20$ $3 \times 10 = 30$ $4 \times 10 = 40$ $5 \times 10 = 50$ $6 \times 10 = 60$ $7 \times 10 = 70$ $8 \times 10 = 80$ $9 \times 10 = 90$ $10 \times 10 = 100$ $11 \times 10 = 110$ $12 \times 10 = 120$	$1 \times 11 = 11$ $2 \times 11 = 22$ $3 \times 11 = 33$ $4 \times 11 = 44$ $5 \times 11 = 55$ $6 \times 11 = 66$ $7 \times 11 = 77$ $8 \times 11 = 88$ $9 \times 11 = 99$ $10 \times 11 = 110$ $11 \times 11 = 121$ $12 \times 11 = 132$	$1 \times 12 = 12$ $2 \times 12 = 24$ $3 \times 12 = 36$ $4 \times 12 = 48$ $5 \times 12 = 60$ $6 \times 12 = 72$ $7 \times 12 = 84$ $8 \times 12 = 96$ $9 \times 12 = 108$ $10 \times 12 = 120$ $11 \times 12 = 132$ $12 \times 12 = 144$

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HELP PAGE — PLACE VALUE CHART

th	thousandths 0.001	
h	hundredths 0.01	
t	tenths 0.1	
O	Ones 1	
T	Tens 10	
H	Hundreds 100	
Th	Thousands 1000	
Tth	Ten Thousands 10 000	
Hth	Hundred Thousands 100 000	
M	Millions 1 000 000	
Tm	Ten Millions 10 000 000	