

Multiplication and Division

Ready to Progress

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
MD		<u>2MD-1</u> Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.	<u>3MD-1</u> Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.	<u>4MD-1</u> Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size. →	<u>5MD-1</u> Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.	For year 6, MD ready-to-progress criteria are combined with AS ready-to-progress criteria (please see above).
		<u>2MD-2</u> Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).		<u>4MD-2</u> Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication.	<u>5MD-2</u> Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.	
				<u>4MD-3</u> Understand and apply the distributive property of multiplication. →	<u>5MD-3</u> Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.	
					<u>5MD-4</u> Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.	

Example Assessment Questions

Taken from DFE Maths Guidance 2020

Multiplication and Division

2MD-1

3MD-1

4MD-1

5MD-1

*Please note ALL Y6 Multiplication and Division RtPs are linked with the Addition and Subtraction RtPs (4 operations) so are in the Addition and Subtraction document.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<u>2MD-1</u> Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.	<u>3MD-1</u> Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.	<u>4MD-1</u> Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size. →	<u>5MD-1</u> Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.	For year 6, MD ready-to-progress criteria are combined with AS ready-to-progress criteria (please see above).

Year 2 – Multiplication and Division

Ready to Progress Criterion:

2MD–1 Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.

2MD–1 Example assessment questions

1. Write these addition expressions as multiplication expressions. The first one has been completed for you.

$$5+5+5+5+5=5\times 5$$

$$2+2+2+2+2= \underline{\hspace{2cm}}$$

$$2+2+2= \underline{\hspace{2cm}}$$

$$10+10+10= \underline{\hspace{2cm}}$$

2. There are 7 year-groups in Winterdale School. Each year-group has 2 classes. How many classes are in the school?
3. Sally buys 3 cinema tickets. Each ticket costs £5. How much does Sally spend? Write the multiplication expression and calculate the cost.
4. There are 10 children sitting at each table in a dining hall. There are 8 tables. How many children are there?
5. The pictogram shows how many socks each child has. How many socks does Asif have?



represents 2 socks

Asif



Tom



Sandra



Essie



6. Write a story to go with this equation.

$$6\times 10=60$$

7. Complete the calculations.

$$7\times 5=\square$$

$$10\times 4=\square$$

$$9\times 2=\square$$

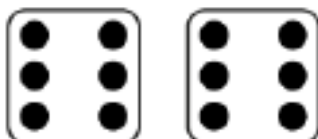
Year 3 – Multiplication and Division

Ready to Progress Criterion:

3MD–1 Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.

3MD–1 Example assessment questions

1. Circle the expressions that match the picture.



2×6

6×6

6×2

$2 + 6$

$6 + 2$

$6 + 6$

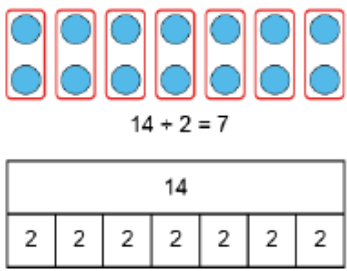
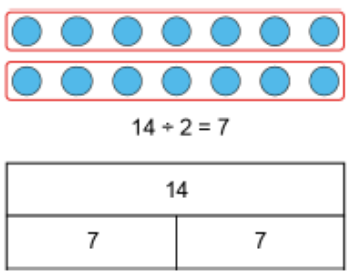
2. If one sweet costs 3p, how much do 8 sweets cost?
3. I need to buy 32 metres of fencing to go around my garden. The fencing is sold in 8-metre lengths. How many 8-metre lengths do I need to buy?
4. There are 24 strawberries in a tub. I share them equally between the 4 people in my family. How many does each person get?
5. A gardener has 5 plant pots. She plants 6 seeds in each pot. How many seeds does she plant altogether?

*Please see the following page for examples of quotitive and partitive division

Year 3 – Multiplication and Division (Continued)

Ready to Progress Criterion:

3MD–1 Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.

Quotitive division	Partitive division
I need 14 ping-pong balls. There are 2 ping-pong balls in a pack. How many packs do I need?  $14 \div 2 = 7$ Figure 88: using an array and bar model to show that 14 divided into groups of 2 is equal to 7 Language focus "7 times 2 is 14, so 14 divided by 2 is 7." "14 divided into groups of 2 is equal to 7." I need 7 packs of ping-pong balls.	£14 is shared between 2 children. How much money does each child get?  $14 \div 2 = 7$ Figure 89: using an array and bar model to show that 14 shared between 2 is equal to 7 Language focus "7 times 2 is 14, so 14 divided by 2 is 7." "£14 shared between 2 is equal to £7 each." Each child gets £7.

At this stage, pupils only need to be able to apply division facts corresponding to division by 5, 10, 2, 4 and 8 to solve division problems with the two different contexts. In year 4, pupils will learn, for example, that if they know that $2 \times 7 = 14$, then they know both $14 \div 2 = 7$ and $14 \div 7 = 2$.

When pupils are solving contextual problems, dividing into groups of 5, 10, 2, 4 or 8 (quotitive division) or sharing into 5, 10, 2, 4 or 8 parts (partitive division), they should calculate by recalling a known multiplication fact rather than by skip counting, as described in 3NF–2 and illustrated above.

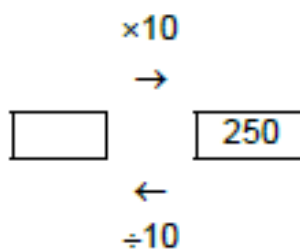
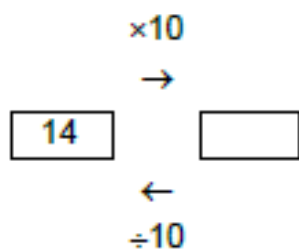
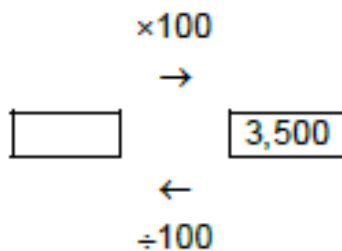
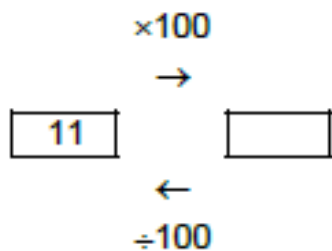
Year 4 – Multiplication and Division

Ready to Progress Criterion:

4MD–1 Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size.

4MD–1 Example assessment questions

1. Fill in the missing numbers.



2. Bethany has 15 marbles. Nasir has 100 times as many. How many marbles does Nasir have?
3. Sumaya's walk from her home to school is 130m. Millie's walk is 10 times as far. How far does Millie walk to get to school?
4. Fill in the missing numbers.

$$\boxed{} \times 100 = 600$$

$$1,500 = \boxed{} \times 10$$

$$\boxed{} \div 100 = 8$$

$$1,200 = \boxed{} \div 10$$

Until 4MD–1, pupils understood, for example, 23×100 to represent 23 groups of 100. Here pupils must relate the same equation to a completely different structure – the scaling of 23 by 100 (making 23 one hundred times the size). Pupils learn more about how one equation can represent different multiplicative structures in [4MD–2](#).

Year 5 – Multiplication and Division

Ready to Progress Criterion:

5MD–1 Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.

5MD–1 Example assessment questions

1. Fill in the missing numbers.

$$\begin{array}{ccc} & \times 10 & \\ & \rightarrow & \\ \boxed{4.03} & & \boxed{} \\ & \leftarrow & \\ & \div 10 & \end{array}$$

$$\begin{array}{ccc} & \times 10 & \\ & \rightarrow & \\ \boxed{} & & \boxed{0.2} \\ & \leftarrow & \\ & \div 10 & \end{array}$$

$$\begin{array}{ccc} & \times 100 & \\ & \rightarrow & \\ \boxed{21.7} & & \boxed{} \\ & \leftarrow & \\ & \div 100 & \end{array}$$

$$\begin{array}{ccc} & \times 100 & \\ & \rightarrow & \\ \boxed{} & & \boxed{5,806} \\ & \leftarrow & \\ & \div 100 & \end{array}$$

2. Ruby ran 2.3km. Her mum ran 10 times this distance. How far did Ruby's mum run?
3. A zookeeper weighs an adult gorilla and its baby. The adult gorilla has a mass of 149.3kg. The baby gorilla has a mass one-tenth times that of the adult gorilla. How much does the baby gorilla weigh, in kilograms?
4. The length of a new-born crocodile is about 0.25m. The length of an adult female crocodile is about 2.5m. Approximately how many times as long as a new-born crocodile is an adult female crocodile?
5. Fill in the missing numbers.

$$\boxed{} \times 100 = 5$$

$$273 = \boxed{} \times 100$$

$$\boxed{} \times 10 = 6$$

$$42 = \boxed{} \times 10$$

$$\boxed{} \div 100 = 0.79$$

$$1.35 = \boxed{} \div 100$$

$$\boxed{} \div 10 = 0.75$$

$$16.2 = \boxed{} \div 10$$

6. Use the following to complete the equations:

$\times 10$

$\times 100$

$\div 10$

$\div 100$

Use each term only once.

$$543 \boxed{} = 5.43$$

$$0.12 \boxed{} = 1.2$$

$$51.5 \boxed{} = 5,150$$

$$40.3 \boxed{} = 4.03$$

Multiplication and Division

2MD-2

4MD-2

5MD-2

	<u>2MD-2</u> Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotative division).		<u>4MD-2</u> Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication.	<u>5MD-2</u> Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.	
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Year 2 – Multiplication and Division

Ready to Progress Criterion:

2MD–2 Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).

2MD–2 Example assessment questions

1. Miss Robinson asked Harry to get 60 apples from the kitchen. The apples come in bags of 10. How many bags does Harry need to get?
2. Diego has some 5p coins. He has 40p altogether. How many 5p coins does Diego have?
3. The pictogram shows how many socks each child has.



represents 2 socks

Asif



Tom



Sandra



Essie



Lena has 8 socks. How would this be represented on the pictogram? Draw it.

4. There are 5 balloons in a pack. I need 15 balloons for my party. How many bags should I buy?
5. Fill in the missing numbers.

$$\square \times 5 = 30$$

$$50 \div 10 = \square$$

$$2 \times \square = 14$$

Year 4 – Multiplication and Division

Ready to Progress Criterion:

4MD–2 Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication.

4MD–2 Example assessment questions

- Using pictures of vases of flowers, draw two pictures which can be represented by the equation $5 \times 4 = 20$.
- Write as many multiplication and division equations as you can to represent each picture.

a.

1,000			
250	250	250	250

b.



- Write a story that could be represented by this equation $3 \times 7 = 21$.
- Using pictures of apples in bowls, draw 2 pictures which can be represented by the equation $18 \div 3 = 6$.
- Use $15 \times 16 = 240$ to write 3 other related multiplication and division equations.
- 45kg of animal feed is shared between some horses. They each get 5kg. How many horses were there?
- 1m 40cm of ribbon was cut into equal pieces. Each piece is 14cm long. How many pieces of ribbon are there?
- Fill in the missing numbers.

$$\boxed{} \div 20 = 5$$

$$3,000 \div \boxed{} = 250$$

$$\boxed{} \times 100 = 5,400$$

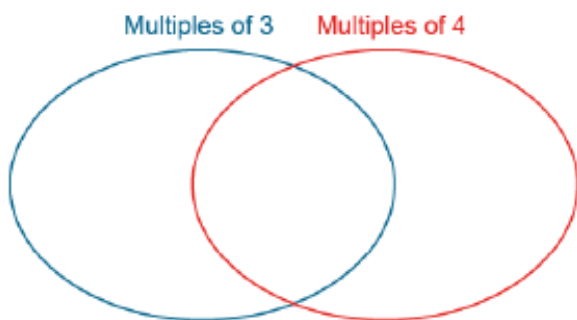
Year 5 – Multiplication and Division

Ready to Progress Criterion:

5MD–2 Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.

5MD–2 Example assessment questions

1. Write all of the numbers from 1 to 30 in the correct places on this Venn diagram.



2. Circle any number that is a multiple of both 3 and 7.

42 43 47 49

3. Find a common factor of 48 and 64 that is greater than 6.

4. How many common multiples of 4 and 6 are there that are less than 40?

5. Circle any number that is a factor of both 24 and 36.

2 4 6 8 10 12

6. a. Find a multiple of 30 that is between 200 and 300.

- b. Find a multiple of 40 that is between 300 and 400.

- c. Find a multiple of 50 that is between 400 and 500.

7. Show that 3 is a factor of 231.

8. Fill in the table with examples of 2-, 3- and 4-digit numbers that are multiples of 9, 25 and 50.

	2-digit number	3-digit number	4-digit number
Multiples of 9			
Multiples of 25			
Multiples of 50			

9. Give two 2-digit factors of 270.

10. Find 3 numbers which are multiples of 25 but not multiples of 50.

11. Fill in the missing numbers.

$$6 \times 32 = 6 \times 4 \times \boxed{}$$

$$6 \times 5 \times 4 = 5 \times \boxed{}$$

$$480 = 8 \times 10 \times \boxed{}$$

$$72 = 2 \times 6 \times \boxed{}$$

$$\boxed{} \times 5 \times \boxed{} = 105$$

$$7 \times \boxed{} \times \boxed{} = 140$$

Multiplication and Division

4MD-3

5MD-3

			<u>4MD-3</u> Understand and apply the distributive property of multiplication. →	<u>5MD-3</u> Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.	
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Year 4 – Multiplication and Division

Ready to Progress Criterion:

4MD–3 Understand and apply the distributive property of multiplication.

4MD–3 Example assessment questions

1. I had 6 flowers, each with 8 petals. If I get one more flower, how many petals do I have altogether?
2. Jordan buys 10 packs of soft drinks for a party. Each pack contains 6 cans. One pack is lemonade and the rest are cola. How many cans of cola are there?
3. I have a 65cm length of string. How many 5cm lengths can I make from it?
4. Fill in the missing symbols (<, > or =).

$$4 \times 6 \bigcirc 5 \times 6 - 6$$

$$4 \times 6 \bigcirc 3 \times 6 + 3$$

$$4 \times 6 \bigcirc 3 \times 6 + 6$$

$$4 \times 6 \bigcirc 6 \times 4$$

$$4 \times 6 \bigcirc 5 \times 6$$

$$6 \times 5 \bigcirc 4 \times 6$$

5. Fill in the missing numbers.

$$4 \times 7 = 3 \times 7 + \square$$

$$16 \times 4 = 10 \times 4 + \square \times 4$$

$$16 \times 4 = 8 \times 4 + \square \times 4$$

6. A box of chocolates costs £7. How much do 16 boxes cost?
7. Felicity is putting flowers into bunches of 5. So far she has made 4 bunches. She has 15 more flowers.
 - a. How many bunches will she make altogether?
 - b. How many flowers does she have altogether?
8. $3 \times 72 = 216$

Explain how you can use this fact to calculate:

 - a. 3×73
 - b. 4×72

Year 5 – Multiplication and Division

Ready to Progress Criterion:

5MD–3 Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.

5MD–3 Example assessment questions

1. Fill in the missing numbers.

$$278 \times 6 = \boxed{}$$

$$\boxed{} = 7 \times 1,297$$

$$\boxed{} \div 2,854 = 3$$

$$\boxed{} \div 6 = 372$$

2. Draw a line to match each multiplication expression with the correct addition expression.

$$48 \times 3$$

$$120 + 18$$

$$6 \times 23$$

$$80 + 4$$

$$26 \times 4$$

$$120 + 24$$

3. Josh cycles 255 metres in 1 minute. If he keeps cycling at the same speed, how far will he cycle in 8 minutes?
4. A factory packs biscuits into boxes of 9. The factory produces 1,350 packets of biscuits in a day. How many biscuits is that?
5. Ellen has 1 large bag of 96 marbles, and 4 smaller bags each containing 76 marbles. How many marbles does she have altogether?
6. There are 6 eggs in a box. If a farmer needs to deliver 1,275 boxes of eggs to a supermarket, how many eggs does she need?
7. Aryan's grandmother lives 235 kilometres away from Aryan. His aunt lives 3 times that distance away from Aryan. How far away does Aryan's aunt live from him? How far is this to the nearest 100 kilometres?
8. Felicity can make 5 hairbands in 1 hour. A factory can make 235 times as many. How many hairbands can the factory make in 1 hour?

Year 5 – Multiplication and Division (continued)

Ready to Progress Criterion:

5MD–3 Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.

9. Fill in the missing numbers.

$$\begin{array}{r} \square 16 \\ \times \quad \square \\ \hline 2,864 \\ 2 \end{array}$$

$$\begin{array}{r} \square 5\square 7 \\ \times \quad 4 \\ \hline 6,108 \\ 212 \end{array}$$

10. Liyana writes:

$$9,565 \div 7 = 1,365$$

Use short multiplication to check whether Liyana's equation is correct.

Assessment guidance: Pupils need to be able to identify when multiplication is the appropriate operation to use to solve a given problem. Assessment of whether a pupil has mastered multiplication sufficiently to progress to year 6 should also include questions which require other operations to solve.

Multiplication and Division

5MD-4

				<u>5MD-4</u> Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.	
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Year 5 – Multiplication and Division

Ready to Progress Criterion:

5MD–4 Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.

Pupils must be able to use short division to solve contextual division problems with:

- the quotitive structure (see [5MD–4 Example assessment questions](#), questions 5 and 8)
- the partitive structure (see [5MD–4 Example assessment questions](#), questions 2, 6 and 7)

Pupils should also be able to use short division to find unit fractions of quantities, and to solve missing-factor problems (for example, $? \times 5 = 1,325$) and missing-divisor problems (for example, $952 \div ? = 7$).

Pupils must be able to carry out short division calculations that involve a remainder and, for contextual problems, interpret the remainder appropriately as they learnt to do in year 4 ([4NF–2](#)).

5MD–4 Example assessment questions

1. Fill in the missing numbers.

$$4,728 \div 8 = \boxed{}$$

$$952 \div \boxed{} = 7$$

$$\boxed{} \times 5 = 1,325$$

$$176 = 4 \times \boxed{}$$

2. I have $1\frac{1}{2}$ litres of juice which I need to share equally between 6 glasses. How many millilitres of juice should I pour into each glass?
3. A school fair raises £5,164. The school keeps $\frac{1}{4}$ of the money for new playground equipment and gives the rest to charity. How much money does the school keep?
4. Fryderyk has saved 4 times as much money as his sister Gabriel. If Fryderyk has saved £348, how much has Gabriel saved?
5. A farmer has 3,150 eggs to pack into boxes of 6. How many boxes does she need?
6. Sharif wants to walk a long distance, for charity, over 6 weekends. The total distance Sharif wants to walk is 293km. Approximately how far should he walk each weekend?
7. Maria makes 1,531g of cake mix. She puts 250g into a small cake tin and wants to share the rest equally between 3 large cake tins. How many grams of cake mix should she put in each large cake tin?

Year 5 – Multiplication and Division (continued)

Ready to Progress Criterion:

5MD–4 Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.

8. 174 children are going on a trip. 4 children can fit into each room in the hostel. How many rooms are needed?
9. Fill in the missing numbers.

$$\begin{array}{r} 543 \\ \square \overline{) 2,715} \end{array}$$

$$\begin{array}{r} 21\square \\ 7 \overline{) 1,\square256} \end{array}$$

10. David writes:

$$785 \times 9 = 7,065$$

Use short division to check whether David's calculation is correct.

Assessment guidance: Pupils need to be able to identify when division is the appropriate operation to use to solve a given problem. Assessment of whether a pupil has mastered division sufficiently to progress to year 6 should also include questions which require other operations to solve.