



Mathematics Scheme of Work Year 6 – Exemplar Unit 16 (Number 5)

Unit Objectives

Pupils will learn to:

- Recognise multiples up to 10×10 ; know simple tests of divisibility
- Identify factors of two-digit numbers; consolidate mental methods: find a difference by counting up; add or subtract a multiple of 10 then adjust; add and subtract mentally pairs of two-digit numbers
- Approximate first and use informal pencil and paper methods to support additions and subtractions; consolidate the rapid recall of number facts, including positive integer complements to 100
- Extend written methods to $\text{ThHTU} \times \text{U}$, $\text{U.t} \times \text{U}$, $\text{TU} \times \text{TU}$ and $\text{HTU} \div \text{U}$
- Round up or down after division, depending on context
- Recognise and use multiples, factors (divisors), common factor, highest common factor and lowest common multiple in simple cases
- Recognise and use primes (less than 100); use simple tests of divisibility
- Consolidate the rapid recall of number facts, including multiplication facts to 10×10 , and quickly derive associated division facts
- Extend mental calculations to squares and square roots
- Consolidate and extend mental methods to include decimals, fractions and percentages, accompanied where appropriate by suitable jottings; solve simple word problems mentally
- Make and justify estimates and approximations of calculations
- Understand where to position the decimal point by considering equivalent calculations
- Use standard column procedures to add and subtract whole numbers and decimals with up to two places
- Multiply and divide three-digit by two-digit whole numbers; extend to using decimals with one or two places and single-digit whole numbers
- Consider if an answer is realistic, and check it by working the problem backwards
- Carry out calculations with more than one step using brackets and calculator memory; use the square root and sign change keys on a calculator; interpret the display of a calculator in different contexts
- Recognise the equivalence of percentages, fractions and decimals; calculate percentages; use percentages to compare simple proportions
- Recall known facts, including fraction to decimal conversion



Teaching Resources

Level Up Maths (3–5), Longman Active Maths 6 Pupil Book (available from <http://pearson.vrvbookshop.com/>)

Mathematical language

decimal, tenth, hundredth, common factor, factor, multiple, highest common factor (HCF) lowest common multiple (LCM), divisible, divisibility, prime factor, product, squared, square root, square number, divisor, remainder, exactly, quotient, cancel, numerator, simplest form

Objectives	Teaching	Resources																																										
<p>Consolidate mental methods: find a difference by counting up; add or subtract a multiple of 10 then adjust</p> <p>Add and subtract mentally pairs of two-digit numbers</p> <p>Approximate first and use informal pencil and paper methods to support addition and subtraction</p> <p>Consolidate the rapid recall of number facts, including positive integer complements to 100</p> <p>Make and justify estimates and approximations of calculations</p>	<p>Write $38 + 87$ on the board. Discuss strategies used. Ensure partitioning, counting up and compensation are included in the discussion. Repeat with other examples, including subtractions. Focus on pupil explanation: ask volunteers to explain the techniques of partitioning, counting up and compensation.</p> <p><i>What estimate could you use to check the answers?</i></p> <p>Display and discuss the addition calculations: <i>Why are these calculations incorrect?</i></p> <table border="1" style="margin-left: 20px;"> <tr> <td></td><td>4</td><td>2</td><td>8</td><td></td><td></td><td></td><td>1</td><td>8</td><td>5</td> </tr> <tr> <td>+</td><td>5</td><td>1</td><td></td><td></td><td>+</td><td></td><td>2</td><td>1</td><td>7</td> </tr> <tr> <td></td><td>9</td><td>3</td><td>8</td><td></td><td></td><td>3</td><td>9</td><td>1</td><td>2</td> </tr> </table> <p>Ensure pupils understand the mistakes that have been made. Discuss the correct step-by-step method to rework the calculations correctly; use further examples if needed.</p> <p>Display and discuss the subtraction calculation:</p> <table border="1" style="margin-left: 20px;"> <tr> <td></td><td>3</td><td>7</td><td>4</td> </tr> <tr> <td>-</td><td>1</td><td>2</td><td>8</td> </tr> <tr> <td></td><td></td><td></td><td>4</td> </tr> </table> <p><i>What is wrong with the start of the calculation?</i></p> <p>Clarify that the bottom number is being subtracted from the top number: <i>Is $4 - 8 = 4$?</i> Use the concept of money to show the inaccuracy of the statement. Ask for a volunteer to complete</p>		4	2	8				1	8	5	+	5	1			+		2	1	7		9	3	8			3	9	1	2		3	7	4	-	1	2	8				4	<p><i>Level Up Maths (Levels 3–5) Unit 16 Teaching and Assessment Pack 16.1 Pupil Book 3–5</i></p> <p><i>LiveText CD-ROM</i></p> <p><i>Longman Active Maths 6 Pupil Book</i></p>
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	<p>the calculation correctly and explain each step of the method.</p> <p>Pupils work through further addition and subtraction calculations.</p>																	
<p>Make and justify estimates and approximations of calculations</p> <p>Use standard column procedures to add and subtract whole numbers and decimals with up to two places</p> <p>Consider if an answer is realistic, and check it by working the problem backwards</p>	<p>Consider adding and subtracting decimals.</p> <p><i>Can you suggest a step-by-step method for adding and subtracting decimals?</i></p> <p>Use the suggested methods on examples such as $23.4 + 43.2$ and $65.9 - 36.2$. Move on to consider $37.52 + 29.2$. Discuss any misconceptions that arise. Emphasise that when using the column method for decimals any 'missing' place values can be replaced with zeros.</p> <p>Use further examples to consolidate learning. Pupils, when dealing with decimals, may simply line up the digits without considering place value. Emphasise that decimal points need to be lined up. This will ensure that tenths are lined up with tenths, hundredths with hundredths, and so on.</p> <p>Play a game where the object is to enter numbers so that the final answer is 100. A pupil rolls a dice and then writes the number in any box. The winner is the pupil who gets, or is closest to, 100. For an additional challenge use decimals and set a target of 10.</p> <table border="1" data-bbox="622 804 840 1018"> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td>+</td><td></td><td></td><td></td></tr> <tr><td></td><td>1</td><td>0</td><td>0</td></tr> </table>									+					1	0	0	<p><i>Level Up Maths (Levels 3–5) Unit 16 Teaching and Assessment Pack 16.1</i></p> <p><i>Pupil Book 3–5</i></p> <p><i>LiveText CD-ROM</i></p> <p><i>Longman Active Maths 6 Pupil Book</i></p> <p><i>Dice</i></p>
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<p>Recognise multiples up to 10×10</p> <p>Identify factors of two-digit numbers</p> <p>Recognise and use multiples, factors (divisors), common factor, highest common factor and lowest common multiple in simple cases</p>	<p>Ask for a number between 1 and 10, eg 7. Count round the class in multiples of 7. When pupils start to struggle, ask for another starting number.</p> <p>Depending on the ability of the group, discuss factors, using counters if necessary. Hand out counters to each pupil. For a specific number, ask pupils to investigate how they can arrange the counters so they have the same number in each row. <i>How many different ways are there? What are the combinations?</i> Write pupil answers on the board as multiplication facts, eg $1 \times 8 = 8$, $2 \times 4 = 8$, $4 \times 2 = 8$, $8 \times 1 = 8$. Discuss how the counter arrangements relate to multiplication facts, i.e. factors. <i>If you did not have any counters to use, how could you work out the factors of a number?</i></p> <p>Emphasise that by using factor pairs, pupils are finding two factors at a time. Using a</p>	<p><i>Level Up Maths (Levels 3–5) Unit 16 Teaching and Assessment Pack 16.2</i></p> <p><i>Pupil Book 3–5</i></p> <p><i>LiveText CD-ROM</i></p> <p><i>Longman Active Maths 6 Pupil Book</i></p> <p><i>Optional: counters</i></p>																



	<p>systematic method means they are less likely to miss any out.</p> <p><i>What are the factors of these numbers: 6, 25, 8, 14? How many can you find?</i></p> <p>Ask pupils some true or false questions, eg '27 is a multiple of 3', '27 is a factor of 3', etc.</p> <p>Consider common factors. <i>What are the factors of 6? What are the factors of 16? Which factors are shared by 6 and 16?</i> Explain that these are known as common factors.</p> <p>Illustrate how the phrase 'highest common factor' should help pupils remember the method: list the factors of each number, highlight the common factors, and pick out the highest.</p> <p>Reinforce using examples such as 'find the highest common factor of 8 + 12', etc. Remind pupils to find the highest common factor, not just a common factor.</p> <p>Consider the lowest common multiple. <i>What are the multiples of 2? What are the multiples of 4?</i> Ask for the first five multiples. <i>Which multiples are shared by 2 and 4? What is the lowest common multiple?</i></p> <p>Display these numbers: 18, 3, 6, 24, 20, 9. <i>Which numbers are factors of 12? multiples of 2?</i> Repeat with another group of numbers.</p>																																	
<p>Recognise and use primes (less than 100); use simple tests of divisibility</p>	<p>Display 248, 4260, 286, 305. <i>Which of these are divisible by 2? How do you know? Which of these are divisible by 10? by 5? How do you know?</i></p> <p>Display the following table and ask pupils to complete it:</p> <table border="1" data-bbox="607 906 1245 1326"> <thead> <tr> <th>Number</th> <th>Divisible by 4?</th> <th>...by 6?</th> <th>...by 25?</th> </tr> </thead> <tbody> <tr> <td>34</td> <td></td> <td></td> <td></td> </tr> <tr> <td>96</td> <td></td> <td></td> <td></td> </tr> <tr> <td>1236</td> <td></td> <td></td> <td></td> </tr> <tr> <td>148</td> <td></td> <td></td> <td></td> </tr> <tr> <td>240</td> <td></td> <td></td> <td></td> </tr> <tr> <td>412</td> <td></td> <td></td> <td></td> </tr> <tr> <td>650</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Number	Divisible by 4?	...by 6?	...by 25?	34				96				1236				148				240				412				650				<p><i>Level Up Maths (Levels 3–5) Unit 16</i> <i>Teaching and Assessment Pack 16.3</i> <i>Pupil Book 3–5</i> <i>LiveText CD-ROM</i> <i>Longman Active Maths 6 Pupil Book</i></p>
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	<p><i>How can you check if a number is divisible by 3?</i> Illustrate the test: $4 + 2 + 6 + 0 = 12$, which is divisible by 3, so 4260 is divisible by 3. Allow pupils to check using their calculators.</p> <p><i>How can you check if a number is divisible by 9?</i> Ask pupils to give examples of numbers that are divisible by 9.</p> <p>Display the following: 112, 420, 228 are divisible by 4 but 113, 422, 208 are not divisible by 4. <i>Can you establish a pattern? How can you check if a number is divisible by 4?</i> Take pupil feedback to establish a rule. <i>Is 100 divisible by 4?</i> Discuss pupil responses. <i>Does this fit with the rule we have just established?</i></p> <p>Repeat the activity with the following: 702, 312, 288 are divisible by 6 but 225, 321, 207 are not divisible by 6. <i>Can you establish a pattern? What type of number is in the first group? How can you check if a number is divisible by 6?</i> Take pupil feedback to establish a rule.</p> <p>Examine divisibility test for multiples of 25.</p> <p>Consider prime numbers. Remind pupils that the factors of a number are the whole numbers that divide into it exactly. <i>How many factors does 1 have? What about 2?</i> Explain that a number greater than one always has at least two factors because you can always divide it by one and itself.</p> <p><i>What is the name given to numbers with exactly two factors?</i> Emphasise that 1 is not a prime number, because it only has one factor.</p> <p>Identify the prime numbers between 11 and 20. <i>Is 235 a prime number? Why?</i></p> <p><i>1245, 418, 123 and 316 are not prime numbers. How can you tell?</i></p> <p><i>Write down all the factors of 50. Write down the prime factor of 50.</i></p>	
<p>Consolidate the rapid recall of number facts, including multiplication facts to 10×10</p> <p>Extend written methods to: ThHTU \times U and U.t \times U; TU \times TU</p> <p>Multiply three-digit by two-digit whole numbers; extend to multiplying decimals with one or two places by single-digit whole numbers</p>	<p><i>What is 9×20? 3×7000?</i></p> <p><i>What is 0.4×10? 0.7×100?</i></p> <p>Revise mental multiplication. <i>What is 18×7? How did you work it out?</i> Discuss the methods proposed by pupils and highlight the use of partitioning. <i>What is 42×6?</i> Remind pupils that they can use approximation to check answers. <i>How could you estimate the answer to 42×6? What is a good approximation?</i></p> <p><i>There are 31 egg boxes on a shelf. There are 6 eggs in each box. How many eggs are there altogether?</i> Share answers as a class.</p> <p>Consider written methods. <i>What is the grid method? What is 3976×5?</i> Ask a volunteer to</p>	<p><i>Level Up Maths (Levels 3–5) Unit 16 Teaching and Assessment Pack 16.4 Pupil Book 3–5 LiveText CD-ROM Longman Active Maths 6 Pupil Book</i></p>



<p>Understand where to position the decimal point by considering equivalent calculations</p> <p>Make and justify estimates and approximations of calculations</p> <p>Consider if an answer is realistic, and check it by working the problem backwards</p>	<p>attempt the question, explaining each step to the class. Ensure any misconceptions are discussed and resolved.</p> <p><i>What approximate calculation could you do to check the answer? If the problem was changed to 3976×25, how would you adjust the grid? What is the answer?</i> Give pupils more examples to work out using the grid method.</p> <p><i>What is the standard method? What is 3352×8?</i> Again, ask for a volunteer to attempt the question, explaining each step they take. Allow pupils to question the volunteer. Ensure any misconceptions are discussed as a group.</p> <p><i>What is 237×18? What approximate calculation could you do to check the answer?</i> Pupils work through more examples.</p>	
<p>Extend mental calculations to squares and square roots</p> <p>Use the square root and sign change keys</p>	<p>Work on calculations involving squares and square roots. <i>What does 7^2 mean? What is 7^2? How many key presses are needed to do 7×7 on a calculator? What if you use the square button?</i> Tell pupils that finding the square root is the inverse of squaring. <i>If 7^2 is 49, what is $\sqrt{49}$?</i> Give pupils further calculations to complete using calculators.</p> <p><i>What is an approximate answer to 5.7×4? How could you use the grid method to work out the actual answer?</i> Demonstrate the method. <i>What if you were asked to use the standard method? Is there an equivalent calculation that you can use?</i> Show how 5.7×4 is equivalent to $(57 \times 4) \div 10$. Make sure all pupils understand that these two calculations are identical.</p> <p><i>What is an equivalent calculation for 2.67×2? $INR5.89 \times 9$?</i> Work through one of these examples as a group. Pupils then work through further examples individually.</p> <p>Consider mental calculations involving squares and square roots.</p> <p><i>If $x^2 = 36$, what is x? What is $\sqrt{144 - 5}$?</i></p> <p>Play the 'Who am I' game. Give pupils facts about a number to help them guess what it is. eg 'I am a square number. The sum of my digits is 7 and the difference is 5.'; 'I am the closest odd square number to 100', etc.</p>	<p><i>Level Up Maths (Levels 3–5) Unit 16 Teaching and Assessment Pack 16.4</i></p> <p><i>Pupil Book 3–5</i></p> <p><i>LiveText CD-ROM</i></p> <p><i>Longman Active Maths 6 Pupil Book Calculators</i></p>
<p>Consolidate the rapid recall of number facts, including multiplication facts to 10×10, and quickly derive associated division facts</p> <p>Extend written methods to $HTU \div U$</p>	<p>Display this multiplication grid. Ask pupils to write down or call out the answers to complete the grid.</p>	<p><i>Level Up Maths (Levels 3–5) Unit 16 Teaching and Assessment Pack 16.5</i></p> <p><i>Pupil Book 3–5</i></p> <p><i>LiveText CD-ROM</i></p>



Divide three-digit by two-digit whole numbers; extend to dividing decimals with one or two places by single-digit whole numbers

Round up or down after division, depending on context

Make and justify estimates and approximations of calculations

Check a result by considering whether it is of the right order of magnitude

×		9	5	2
3				
			40	
				12
7	28			

A bus holds 48 people. How many buses are needed to hold 209 people? Work through the problem and emphasise the importance of considering the context of the problem when giving the solution to a worded problem. Provide other word problems for pupils to solve.

Consider mental methods for division. What is $36 \div 6$? What is a , if $45 \div a = 9$? How did you work it out? Discuss pupil responses and explain that if they know, for example $3 \times 4 = 12$, they also know $12 \div 4 = 3$ and $12 \div 3 = 4$. Pupils must be aware that remembering the multiplication facts is important, and that these can be used to derive division facts.

There are 54 children at a soccer academy. How many six-a-side teams can they make?

Discuss written methods for division. What is $642 \div 5$? Ask a volunteer to attempt the question, explaining each step they take to the whole class. Ensure any misconceptions are discussed and resolved. Discuss remainders. Why is there a remainder? How do you include the remainder in an answer? How could you write the remainder as a fraction?

Complete the problem by discussing how pupils should check their answers.

What approximate calculation could you do to check the answer?

Repeat this exercise with $582 \div 16$. Provide other calculations for pupils to practise, eg $528 \div 4$, $497 \div 7$, $670 \div 9$, $349 \div 6$, etc.

Consider the division of decimals. What is $243.6 \div 7$? How would you set out the calculation? Discuss the methods proposed by pupils. Work through the problem step by step, illustrating division of a decimal by a single digit. Consider other methods that may have been suggested, particularly that of using an equivalent calculation. What is an equivalent calculation for $243.6 \div 7$? Illustrate the equivalent calculation $2436 \div 70$. Why is this calculation equivalent? Ask for a volunteer to attempt the question, explaining each step of the process. What approximate calculation could you use to check the answer?

Longman Active Maths 6 Pupil Book



<p>Recognise the equivalence of percentages, fractions and decimals</p> <p>Recall known facts, including fraction to decimal conversions</p>	<p>Begin with revision work on simple fraction, decimal and percentage equivalents by asking a series of questions in different formats.</p> <ul style="list-style-type: none"> • <i>What is meant by equivalent? What is $\frac{50}{100}$ as a percentage? Why?</i> • <i>What is 25% as a decimal? What is $\frac{3}{4}$ as a decimal? As a percentage?</i> • <i>What is $\frac{9}{10}$ as an equivalent percentage?</i> • <i>Jaima got 22 out of 50 in a test. He said he got about 50% correct. Is that true? Why?</i> • <i>Antonella got 81 out of 100 questions wrong. She said she got about one fifth of the questions correct. Is that true? Why?</i> <p>Revise equivalent fractions. <i>How can you find an equivalent fraction? What is an equivalent fraction for $\frac{2}{3}$? Why?</i> Emphasise the fact that whatever is done to the numerator must be done to the denominator.</p> <p><i>Find an equivalent fraction for $\frac{25}{35}$ with a denominator of 5. Write on the board $\frac{12}{18} = \frac{*}{3}$. What is the missing number? What have you done to the starting fractions?</i> Emphasise that when finding an equivalent fraction pupils may also use division.</p> <p><i>What is meant by simplifying fractions? How do you simplify $\frac{36}{48}$?</i> Discuss pupil responses. Demonstrate simplifying in stages and simplifying in one step through use of the highest common factor (HCF). <i>What is the HCF?</i> Pupils work out some more equivalent fractions and write the fractions in their simplest form.</p> <p>Consider using equivalent fractions to convert a fraction to a decimal. <i>What is $\frac{4}{25}$ as a decimal? What is $\frac{6}{100}$ as a decimal? What is $\frac{3}{50}$ as a decimal? What is $\frac{16}{100}$ as a decimal? What is $\frac{1}{10}$ as a decimal? How can you use this fact to convert $\frac{1}{20}$ to a decimal?</i></p> <p>Discuss with pupils the relative sizes of fractions. <i>Is $\frac{1}{4}$ bigger or smaller than $\frac{1}{8}$? Is $\frac{1}{50}$ bigger or smaller than $\frac{1}{100}$? Why?</i></p> <p>Use decimal equivalents to aid discussion.</p>	<p><i>Level Up Maths (Levels 3–5) Unit 16 Teaching and Assessment Pack 16.6</i></p> <p><i>Pupil Book 3–5</i></p> <p><i>LiveText CD-ROM</i></p> <p><i>Longman Active Maths 6 Pupil Book</i></p>
<p>Consolidate and extend mental methods to include percentages, accompanied where appropriate by suitable jottings;</p>	<p>Work on mental methods for finding percentages.</p> <p><i>What is 50% of 50? What is 10% of 330? What is 5% of 330?</i></p>	<p><i>Level Up Maths (Levels 3–5) Unit 16 Teaching and Assessment Pack 16.8</i></p>



<p>solve simple word problems mentally</p> <p>Calculate simple percentages and use percentages to compare simple proportions</p> <p>Check a result by working the problem backwards</p>	<p><i>How can you find 15% of an amount? What is 15% of INR450?</i></p> <p><i>What is 25% of 820 kg? Why?</i> Discuss the methods suggested by pupils and ensure any misconceptions are discussed and resolved.</p> <p><i>An item costs INR800. The price is reduced by 25%. How much is the item reduced by? What is the sale price?</i></p> <p><i>What is 10% as a fraction? How can you find 10% of an amount? What is 1% as a fraction? How do you find 1% of an amount? What is 1% of INR500? How do you find 11% of an amount? What is 11% of INR500?</i></p> <p>Pupils practise answering more calculations as appropriate. Remind them to check their answers by working the calculations backwards.</p>	<p><i>Pupil Book 3–5</i></p> <p><i>LiveText CD-ROM</i></p> <p><i>Longman Active Maths 6 Pupil Book</i></p>
<p>Carry out calculations with more than one step using brackets and the memory function</p> <p>Interpret the display of a calculator in different contexts (decimals, percentages)</p>	<p>Move on to using a calculator to find percentages. <i>How would you find 50% of INR34.50 using a calculator?</i> Most pupils will simply convert the 50% to $\frac{1}{2}$. <i>What is 18% of INR565?</i></p> <p>Work through by converting the percentage to a fraction. Emphasise to pupils the importance of correctly interpreting the calculator display. <i>When finding a percentage of an amount in rupees, what would 36.5 on the calculator display mean? When finding a percentage of an amount in metres, what would 36.5 on the display mean?</i></p> <p><i>Alex takes out a loan of INR482 from the bank. The bank charges 15% interest each year. Use your calculator to work out the interest of INR482. How much will Alex owe the bank after one year?</i></p> <p>Explain that in problems where pupils are asked to compare proportions, it may be useful to convert the quantities to percentages. Remind pupils that dividing by 10 gives $\frac{1}{10}$ of the amount, which is 10%, but dividing by 5 gives $\frac{1}{5}$ of the amount, which is 20%.</p> <p>Pupils work through further examples as appropriate.</p> <p>Return to the use of calculators to find percentages. <i>What is 18% of INR565?</i> Explain another method for working this out is to convert the percentage into a decimal. <i>What is 18% as a decimal? What is 0.18×565 on your calculator? What is 8% of 34.5 g?</i></p> <p>Provide pupils with more examples to calculate as necessary.</p>	<p><i>Level Up Maths (Levels 3–5) Unit 16</i></p> <p><i>Teaching and Assessment Pack 16.8</i></p> <p><i>Pupil Book 3–5</i></p> <p><i>LiveText CD-ROM</i></p> <p><i>Longman Active Maths 6 Pupil Book</i></p> <p><i>Calculators</i></p>



End of Unit Test

Number 5

(Year 6 Unit 16)

Answer the questions below.

- Use the column method to do these additions. (2 marks)
 - $317 + 142$
 - $\text{INR}467 + \text{INR}245$
- Use the column method to do these subtractions. (2 marks)
 - $749 - 326$
 - $531\text{cm} - 248\text{cm}$
- Use the column method to work out these calculations. (2 marks)
 - $136.2\text{g} + 24.97\text{g}$
 - $309.3\text{km} - 68.45\text{km}$
- Find the common factors of these numbers. (2 marks)
 - 15 and 20
 - 18 and 27
- Find the highest common factor (HCF) of these numbers. (2 marks)
 - 8 and 12
 - 6 and 30
- Find the lowest common multiple (LCM) of these numbers. (2 marks)
 - 4 and 7
 - 6 and 9
- List the factors of each number and say whether or not it is a prime number. (3 marks)
 - 17
 - 29
 - 49



8. Circle the two numbers that are the prime factors of 30. (1 mark)
- 1 and 30 1 and 3 2 and 3 1 and 2 5 and 6
9. Use partitioning to mentally work out the answer to this problem:
There are 31 egg boxes on a supermarket shelf. There are 6 eggs in each box. How many eggs are there altogether? (1 mark)
10. Use the grid method to work out these multiplications. (3 marks)
- a) 3416×5
b) 26×45
c) 8.4×6
11. Use the standard method to work out these multiplications. (3 marks)
- a) 1576×9
b) 227×13
c) 2.32×7
12. Use the x^2 and $\sqrt{\quad}$ keys on your calculator to work out these calculations. (2 marks)
- a) $17 \times 17 =$
b) $\underline{\quad}^2 = 196$
13. Use a written method to work out these divisions. Write any remainders as fractions. (3 marks)
- a) $479 \div 7 =$
b) $912 \div 31 =$
c) $117.6 \div 4 =$
14. Write each of these fractions in its simplest form. (2 marks)
- a) $\frac{30}{36}$
b) $\frac{63}{81}$
15. Use equivalent fractions to convert these fractions to decimals. Use a calculator to check your answers. (3 marks)
- a) $\frac{9}{20}$
b) $\frac{31}{50}$
c) $\frac{2}{5}$



16. Convert these decimals to fractions. Write each fraction in its simplest form. (2 marks)
- a) 0.56
 - b) 0.025
17. Work these percentages out in your head. (3 marks)
- a) 10% of INR87
 - b) 5% of INR9
 - c) 15% of 60 litres
18. Use a calculator to work these calculations out by changing the percentage to an equivalent decimal. (2 marks)
- a) 12% of 360
 - b) 27% of INR46

[Total 40 marks]



Mark Scheme for End of Unit Test

Number 5

(Year 6 Unit 16)

This test should be set as soon as possible after pupils have finished their work on the unit. They should work independently and should need about 30 minutes to complete the test.

The aim of the test is to find out what pupils have learnt and understood as a result of their experience of studying the unit. The test is based on information and experiences they should have met during their work on the unit, so they should approach the test with confidence.

The teacher should be looking in their marking to award marks, not withhold them. The purpose at this stage is to give pupils the confidence that they can recall and understand mathematical knowledge and concepts.

Marking Guide

1. Use the column method to do these additions. (2 marks)

Award 1 mark for each calculation. Ensure all columns are correctly aligned.

a) $317 + 142$

$$\begin{array}{r} 317 \\ +142 \\ \hline 459 \end{array}$$

b) $\text{INR}467 + \text{INR}245$

$$\begin{array}{r} 467 \\ + 245 \\ \hline \text{INR } 712 \end{array}$$

2. Use the column method to do these subtractions. (2 marks)

Award 1 mark for each calculation. Ensure all columns are correctly aligned.

a) $749 - 326$

$$\begin{array}{r} 749 \\ - 326 \\ \hline 423 \end{array}$$

b) $531\text{cm} - 248\text{cm}$

$$\begin{array}{r} 531 \\ - 248 \\ \hline 283 \end{array}$$

3. Use the column method to work out these calculations. (2 marks)

Award 1 mark for each calculation. Ensure all columns are correctly aligned.

a) $136.2\text{g} + 24.97\text{g}$

$$\begin{array}{r} 136.20 \\ + 24.97 \\ \hline 161.17 \end{array}$$



$$\begin{array}{r} \text{b) } 309.3\text{km} - 68.45\text{km} \\ 309.30 \\ - 68.45 \\ \hline 240.85 \end{array}$$

4. Find the common factors of these numbers. (2 marks)
- a) 15 and 20
1, 5
- b) 18 and 27
1, 3, 9
5. Find the highest common factor (HCF) of these numbers. (2 marks)
- a) 8 and 12
4
- b) 6 and 30
6
6. Find the lowest common multiple (LCM) of these numbers. (2 marks)
- a) 4 and 7
28
- b) 6 and 9
18
7. List the factors of each number and say whether or not it is a prime number. (3 marks)
- a) 17
1, 17 – Yes, it is a prime number
- b) 29
1, 29 – Yes, it is a prime number
- c) 49
1, 7, 49 – No, it is not a prime number
8. Circle the two numbers that are the prime factors of 30. (1 mark)
- 1 and 30 1 and 3 2 and 3 1 and 2 5 and 6
9. Use partitioning to mentally work out the answer to this problem:
There are 31 egg boxes on a supermarket shelf. There are 6 eggs in each box. How many eggs are there altogether? (1 mark)
Award 1 mark for the correct answer with partitioning shown.
 $30 \times 6 = 180, 1 \times 6 = 6 \text{ so } 31 \times 6 = 186$



10. Use the grid method to work out these multiplications. (3 marks)

Award 1 mark for each calculation. Ensure all cells of the grid are correctly filled out and final addition is correctly set out

a) 3416×5

×	3000	400	10	6
5	15000	2000	50	30

15000

2000

50

b) 26×45

×	20	6
40	800	240
5	100	30

800

240

100

c) 8.4×6

×	8	0.4
6	48	2.4

48.0

2.4

50.4

11. Use the standard method to work out these multiplications. (3 marks)

Award 1 mark for each calculation. Ensure all columns are correctly aligned.

a) 1576×9

$$\begin{array}{r} 1576 \\ \times \quad 9 \\ \hline 14184 \end{array}$$

b) 227×13

$$\begin{array}{r} 227 \\ \times \quad 13 \\ \hline 2951 \end{array}$$

c) 2.32×7

$$\begin{array}{r} 2.32 \\ \times \quad 7 \\ \hline 16.24 \end{array}$$

12. Use the x^2 and $\sqrt{\quad}$ keys on your calculator to work out these calculations. (2 marks)

a) $17 \times 17 = 289$

b) $14^2 = 196$

13. Use a written method to work out these divisions. Write any remainders as fractions. (3 marks)

a) $479 \div 7 = 71$

b) $912 \div 31 = \frac{13}{31}$

c) $117.6 \div 4 = 29.4$



14. Write each of these fractions in its simplest form. (2 marks)

a) $\frac{30}{36}$ $\frac{5}{6}$

b) $\frac{63}{81}$ $\frac{7}{9}$

15. Use equivalent fractions to convert these fractions to decimals. Use a calculator to check your answers. (3 marks)

a) $\frac{9}{20}$ 0.45

b) $\frac{31}{50}$ 0.62

c) $\frac{2}{5}$ 0.4

16. Convert these decimals to fractions. Write each fraction in its simplest form. (2 marks)

a) 0.56 $\frac{56}{100} = \frac{14}{25}$

b) 0.025 $\frac{25}{1000} = \frac{1}{40}$

17. Work these percentages out in your head. (3 marks)

a) 10% of INR87
INR8.70

b) 5% of INR9
45p

c) 15% of 60 litres
9 litres

18. Use a calculator to work these calculations out by changing the percentage to an equivalent decimal. (2 marks)

a) 12% of 360
43.2

b) 27% of INR46
INR12.42

[Total 40 marks]