Year 5 Learning Outcomes

Autumn

Decimal fractions

1   Pupils identify tenths as part of a whole
2   Pupils describe and represent tenths as a decimal fraction
3   Pupils count in tenths in different ways
4   Pupils describe and write decimal numbers with tenths in different ways
5   Pupils compare and order decimal numbers with tenths
6   Pupils explain that decimal numbers with tenths can be composed additively
7   Pupils explain that decimal numbers with tenths can be composed multiplicatively
8   Pupils use their knowledge to calculate with decimal numbers within and across one whole
9   Pupils use their knowledge to calculate with decimal numbers using mental methods
10 Pupils use their knowledge to calculate with decimal numbers using column addition and subtraction
11 Pupils use representations to round a decimal number with tenths to the nearest whole number
12 Pupils identify hundredths as part of a whole
13 Pupils describe and represent hundredths as a decimal fraction
14 Pupils describe and write decimals numbers with hundredths in different ways
15 Pupils compare and order decimal numbers with hundredths
16 Pupils explain that decimal numbers with hundredths can be partitioned in different ways
17 Pupils use their knowledge of decimal place value to convert between and compare metres and centimetres
18 Pupils explain that different lengths can be composed additively and multiplicatively
19 Pupils use their knowledge of decimal place value to solve problems in different contexts
20 Pupils use their knowledge to calculate with decimal numbers up to and bridging one tenth
21 Pupils use their knowledge to calculate with decimal numbers using column addition and subtraction
22 Pupils round a decimal number with hundredths to the nearest tenth
23 Pupils round a decimal number with hundredths to the nearest whole number
24 Pupils read and write numbers with up to 3 decimal places
25 Pupils compare and order numbers with up to 3 decimal places

Money

1   Pupils explain and represent whole pounds as a quantity of money

2   Pupils explain and represent whole pounds and pence as a quantity of money

3   Pupils explain how to compare amounts of money

4   Pupils convert quantities of money between pounds and pence

5   Pupils use their knowledge of addition to efficiently add commonly used prices

6   Pupils use their knowledge of subtraction to calculate the change due when paying whole pounds or notes

7   Pupils use and explain the most efficient strategies when adding quantities of money

8   Pupils use and explain the most efficient strategies when subtracting quantities of money

9   Pupils find the change when purchasing several items

10 Pupils use the most efficient and reliable strategy to find the change when purchasing several items

Negative numbers

1 Pupils represent a change story using addition and subtraction symbols

2 Pupils interpret numbers greater than and less than zero in different contexts

3 Pupils read and write negative numbers

4 Pupils explain how the value of a number relates to its position from zero

5 Pupils identify and place negative numbers on a number line

6 Pupils interpret sets of negative and positive numbers in a range of contexts

7 Pupils use their knowledge of positive and negative numbers to calculate intervals

8 Pupils explain how negative numbers are used on a coordinate grid

9 Pupils use their knowledge of positive and negative numbers to interpret graphs

Short multiplication and short division

1   Pupils multiply a two-digit number by a single-digit number using partitioning and representations (no regroups)

2   Pupils multiply a two-digit number by a single-digit number using partitioning and representations (one regroup)

3 Pupils multiply a two-digit number by a single-digit number using partitioning and representations (two regroups)

4 Pupils multiply a two-digit number by a single-digit number using partitioning

5 Pupils multiply a two-digit number by a single-digit number using expanded multiplication (no regroups)

6 Pupils multiply a two-digit number by a single-digit number using short multiplication (no regroups)

7 Pupils multiply a two-digit number by a single-digit number using expanded multiplication (regrouping ones to tens)

8 Pupils multiply a two-digit number by a single-digit number using short multiplication (regrouping ones to tens)

9 Pupils multiply a two-digit number by a single-digit number using expanded multiplication (regrouping tens to hundreds)

10 Pupils multiply a two-digit number by a single-digit number using short multiplication (regrouping tens to hundreds)

11 Pupils multiply a two-digit number by a single-digit number using both expanded and short multiplication (two regroups)

12 Pupils use estimation to support accurate calculation

13 Pupils multiply a three-digit number by a single-digit number using partitioning and representations

14 Pupils multiply a three-digit number by a single-digit number using partitioning

15 Pupils multiply a three-digit number by a single-digit number using expanded and short multiplication (no regroups)

16 Pupils multiply a three-digit number by a single-digit number using expanded and short multiplication (one regroup)

17 Pupils multiply a three-digit number by a single-digit number using expanded and short multiplication (multiple regroups)

18 Pupils use estimation to support accurate calculation

19 Pupils divide a two-digit number by a single-digit number using partitioning and representations (no remainders, no exchanging)

20 Pupils divide a two-digit number by a single-digit number using partitioning and representations (with exchanging)

21 Pupils divide a two-digit number by a single-digit number using partitioning and representations (with exchanging and remainders)

22 Pupils divide a two-digit number by a single-digit number using short division (no exchanging, no remainders)

23 Pupils divide a two-digit number by a single-digit number using short division (with exchanging)

24 Pupils divide a two-digit number by a single-digit number using short division (with exchanging and remainders)

25 Pupils divide a three-digit number by a single-digit number using partitioning and representations (no exchanging, no remainders)

26 Pupils divide a three-digit number by a single-digit number using partitioning and representations (one exchange, no remainders)

27 Pupils divide a three-digit number by a single-digit number using partitioning and representations (with exchanging and remainders)

28 Pupils divide a three-digit number by a single-digit number using short division

29 Pupils divide a three-digit number by a single-digit number using short division (with exchanging and remainders)

30 Pupils solve short division problems accurately when the hundreds digit is smaller than the divisor

31 Pupils will use efficient strategies of division to solve problems

Spring

Area and scaling

1 Pupils explain what area is and can measure using counting as a strategy (1)

2 Pupils explain what area is and can measure using counting as a strategy (2)

3 Pupils explain how to make different shapes with the same area

4 Pupils explain how to compare the area of different shapes

5 Pupils measure the area of flat shapes area using square centimetres

6 Pupils measure the area of flat shapes area using square metres

7 Pupils calculate the area of a rectangle using multiplication

8 Pupils calculate the area of rectilinear shapes

9 Pupils use their knowledge of area to solve problems

10 Pupils compare and describe lengths by using their knowledge of multiplication

11 Pupils use their knowledge of multiplication to solve comparison and change problems

12 Pupils compare and describe lengths by using their knowledge of division

13 Pupils use their knowledge of division to solve comparison and change problems

14 Pupils compare and describe measurements by using their knowledge of multiplication and division (mass/capacity/time) (1)

15 Pupils compare and describe measurements by using their knowledge of multiplication and division (mass/capacity/time) (2)

16 Pupils describe the changes in measurements using their knowledge of multiplication and division

17 Pupils use their knowledge of multiplication and division to solve comparison and change problems

Calculating with decimal fractions

1 Pupils explain the effect of multiplying and dividing a number by 10, 100 and 1,000 (1)
2 Pupils explain the effect of multiplying and dividing a number by 10, 100 and 1,000 (2)
3 Pupils explain how to multiply and divide a number by 10, 100 and 1,000 (first 'number' two or more non-zero digits)
4 Pupils use their knowledge of multiplication and division by 10/100/1,000 to convert between units of measure (length)
5 Pupils use their knowledge of multiplication and division by 10/100/1,000 to convert between units of measure (mass and capacity)
6 Pupils explain how to use known multiplication facts and unitising to multiply decimal fractions by whole numbers (tenths)
7 Pupils explain how to use known multiplication facts and unitising to multiply decimal fractions by whole numbers (hundredths)
8 Pupils use their knowledge of multiplying decimal fractions by whole numbers to solve measures problems
9 Pupils explain the relationship between multiplying by 0.1 dividing by 10

10 Pupils explain the relationship between multiplying by 0.01 dividing by 100

11 Pupils explain how to use multiplying by 10 or 100 to multiply one-digit numbers by decimal fractions (1)
12 Pupils explain how to use multiplying by 10 or 100 to multiply one-digit numbers by decimal fractions (2)
13 Pupils explain how to use the size of the multiplier to predict the size of the product compared to the multiplicand
14 Pupils explain how to use multiplying by 10 or 100 to divide decimal fractions by one-digit numbers (1)

15 Pupils explain how to use multiplying by 10 or 100 to divide decimal fractions by one-digit numbers (2)

Factors, multiples and primes

1 Pupils explain what 'volume' is using a range of contexts

2 Pupils describe the units used to measure volume

3 Pupils explain how to calculate the volume of a cuboid

4 Pupils explain what a cube number is

5 Pupils use their knowledge of calculating volume to solve problems in a range of contexts

6 Pupils explain how to calculate the volume of compound shapes

7 Pupils explain the use of the commutative and distributive laws when multiplying three or more numbers

8 Pupils explain the reasons for changing two-factor multiplication calculations to three-factor multiplications

9 Pupils explain what a factor is and how to use arrays and multiplication/division facts to find them

10 Pupils explain how to systematically find all factors of a number and how they know when they have found them all

11 Pupils use a complete list of factors to explain when a number is a square number

12 Pupils explain how to identify a prime number or a composite number

13 Pupils explain how to identify a common factor or a prime factor of a number

14 Pupils explain how to identify a multiple or common multiple of a number

15 Pupils use knowledge of properties of number to solve problems in a range of contexts

16 Pupils explain how to use the factor pairs of '100' to solve calculations efficiently

Summer

Fractions

1 Pupils explain the relationship between repeated addition of a proper fraction and multiplication of fractions (unit fractions)

2 Pupils explain the relationship between repeated addition of a proper fraction and multiplication of fractions (non-unit fractions)

3 Pupils multiply a proper fraction by a whole number (within a whole)

4 Pupils multiply a proper fraction by a whole number (greater than a whole)

5 Pupils multiply an improper fraction by a whole number

6 Pupils multiply a mixed number by a whole number (product is within a whole)

7 Pupils multiply a mixed number by a whole number (product is greater than a whole)

8 Pupils find a unit fraction of a quantity

9   Pupils explain the relationship between finding a fraction of a quantity and multiplying a whole number by a unit fraction

10 Pupils explain the relationship between dividing by a whole number and multiplying a whole number by a unit fraction

11 Pupils use their knowledge of multiplying a whole number by a unit fraction to solve problems

12 Pupils find a non-unit fraction of a quantity (mental calculation)

13 Pupils find a non-unit fraction of a quantity (written calculation)

14 Pupils multiply a whole number by a proper fraction

15 Pupils explain when a calculation represents scaling down and when it represents repeated addition

16 Pupils find the whole when the size of a unit fraction is known

17 Pupils find a unit fraction when the size of a non-unit fraction is known

18 Pupils find the whole when the size of a non-unit fraction is known

19 Pupils find the unit fraction when the size of a non-unit fraction is known

20 Pupils use representations to describe and compare two fractions (1/4 and 3/12)

21 Pupils use representations to describe and compare two fractions (1/5 and 5/10)

22 Pupils use representations to describe and compare two fractions (pouring context)

23 Pupils correctly use the language of equivalent fractions

24 Pupils explain the vertical relationship between numerators and denominators within equivalent fractions (1/5, 1/3 and equivalent)

25 Pupils use their knowledge of the vertical relationship to solve equivalent fractions problems

26 Pupils explain the horizontal relationship between numerators and denominators across equivalent fractions (1/5, 1/3 and equivalent)

27 Pupils explain the relationship within families of equivalent fractions

28 Pupils use their knowledge of equivalent fractions to solve problems

29 Pupils explain and represent how to divide 1 into different amounts of equal parts

30 Pupils identify and describe patterns within the number system

31 Pupils use their knowledge of common equivalents to compare fractions with decimals

32 Pupils practise recalling common fraction-decimal equivalents

Converting units

1. Pupils apply memorised unit conversions to convert between units of measure (larger to smaller units - whole number conversions)

2. Pupils apply memorised unit conversions to convert between units of measure (smaller to larger units - whole number conversions)

3. Pupils convert from and to fraction and decimal fraction quantities of larger units

4. Pupils derive common conversions over 1

5. Pupils carry out conversions that correspond to 100 parts

6. Pupils solve measures problems involving different units

7. Pupils understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints

8. Pupils convert between miles and kilometres

9. Pupils solve problems involving converting between units of time

Angles

1. Pupils compare the size of angles where there is a clear visual difference

2. Pupils use the terms acute, obtuse and reflex when describing the size of angles or amount of rotation with relation to right angles

3. Pupils use a unit called degrees (°) as a standard unit to measure angles

4. Pupils estimate the size of angles in degrees using angle sets

5. Pupils measure the size of angles accurately using a protractor