

### Identify common multiples, common factors and prime numbers

Find the highest common factor of 18 and 24

the lowest common multiple of 6 and 15

Identify whether 87 is a prime number

List the prime factors of 84 ( $84 = 2 \times 42 = 2 \times 2 \times 21 = 2 \times 2 \times 3 \times 7$ )

### Continue to recall multiplication and division facts up to 10x10 and derive associated facts

$38 + 4 = 42$

$48 + 4 = 52$

$3000 \div 60$  divide 0.12 by 6

$5800 \div 6$ , what is the quotient?

0.64 divided by 8

40 multiplied by 700     $0.18 \times 4$

the product of 0.06 and 9

0.4 multiplied by 0.5

Continue to use square and cube numbers    What is  $12^2$      $6^3$

Use factors to multiply

$1.5 \times 16 = 1.5 \times 2 \times 8 = 3 \times 8 = 24$

### Written methods for multiplication and division

$$\begin{array}{r} 3652 \\ \times 8 \\ \hline 16 \quad (2 \times 8) \\ 400 \quad (50 \times 8) \\ 4800 \quad (600 \times 8) \\ 24000 \quad (3000 \times 8) \\ \hline 29216 \end{array}$$



$$\begin{array}{r} 3652 \\ \times 8 \\ \hline 29216 \\ 5 \quad 4 \quad 1 \end{array}$$

$$\begin{array}{r} 15.76 \\ \times 3 \\ \hline 0.18 \quad (0.06 \times 3) \\ 2.10 \quad (0.7 \times 3) \\ 15.00 \quad (5 \times 3) \\ 30.00 \quad (10 \times 3) \\ \hline 47.28 \end{array}$$



$$\begin{array}{r} 15.76 \\ \times 3 \\ \hline 47.28 \\ 1 \quad 2 \quad 1 \end{array}$$

$$\begin{array}{r} 377 \\ 4 \overline{) 15308} \end{array}$$

$$\begin{array}{r} 372 \\ 24 \overline{) 891748} \end{array}$$

List the relevant multiples of 24  
24, 48, 72, 96, 120, 144, 168

### Posing Questions

*What do you notice?*

*What's the same and what's different?*

*Convince me.*

*Prove it.*

*How do you know?*

*Year 6*  
*Multiplication and Division*  
*(including fractions)*

### Order of operations

- Brackets
- Orders
- Division
- Multiplication
- Addition
- Subtraction

### Multiplying and Dividing Fractions

Fraction x whole number

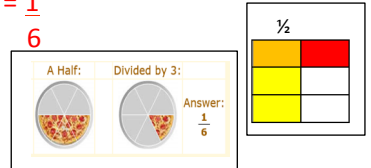
$\frac{2}{3} \times 5 = \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{10}{3} \text{ or } 3\frac{1}{3}$

Fraction x fraction

$\frac{3}{4} \times \frac{3}{5} = \frac{9}{20}$  (numerator x numerator)  
(denominator x denominator)

Fraction ÷ whole number

$\frac{1}{2} \div 3 = \frac{1}{6}$



### Understand the inverse relationship between x and ÷

$6 \times 0.7 = 4.2$      $4.2 = 0.7 \times 6$      $4.2 \div 0.7 = 6$   
 $0.7 = 4.2 \div 6$      $6 = 4.2 \div 0.7$   
 Know that x is *distributive* -  $6.04 \times 3$  is the same as  $(6 \times 3)$  plus  $(0.04 \times 3)$   
 Know that x is *commutative* -  $45 \times 9 = 9 \times 45$   
 Know that x is *associative* -  $18 \times 4 \times 10$  can be combined in any order

### Reasoning and Problem Solving

What is the missing number? Explain how you know.

$80 \times \underline{\quad} = 560000$     *I know that  $8 \times 7 = 56 \dots$*

Belle divides 8541 by 8. She says "I know there will be a remainder before I start." Is she correct? Explain how you know.

*Using my knowledge of the 8 times tables ...*

Nancy is double her sister's age. They are both older than 20 and younger than 50. They are both multiples of 7. How old are they?

*I can use the multiples of 7 ...*

Explain why a multiple of 80 is also a multiple of 8.

Which number is the odd one out? There could be many solutions. Explain why.    **12, 30, 54, 42, 32, 48**    *It could be 30 because ...*

If you know that  $273 \times 32 = 8736$ , use it to calculate

- a)  $27.3 \times 3.2$     b)  $2.73 \times 32,000$     c)  $873.6 \div 0.32$     d)  $8736 \div 16$

### Vocabulary

multiple, multiply, product, factor, prime number, prime factor, composite number, square number, cube number, common factor, common multiple, divide, divisible by, divided into, quotient, divisor, remainder, power of, inverse, highest common factor, lowest common multiple

### Fluency with fractions, decimals and percentages

Order these fractions  $\frac{2}{5}$ ,  $\frac{1}{10}$ ,  $\frac{3}{4}$ ,  $\frac{5}{6}$     What is  $\frac{1}{8} \times \frac{2}{5}$

*I could draw a diagram or use a common denominator*

40%,  $\frac{3}{5}$ , 0.45, 54%,  $\frac{5}{10}$ , 0.05

Which is greater?  $\frac{2}{3}$  or  $\frac{4}{7}$     How do you know?

### Linking fractions, decimals and percentages

Find 20% of £340    35% of 6m    75% of 2 hours

Rahima saves  $\frac{3}{5}$  of £20, then 0.4 of £10 and then 45% of £40. How much money has she saved altogether?

*I could change all amounts to the same format to make calculating easier*

Write 0.65 as a percentage and a fraction in its simplest form

### Scaling by fractions

Of the 90 students on a field trip to the zoo, two ninths want to go to see the bears. How many students want to see the bears?

$\frac{1}{9}$  of 90 = 10 so  $\frac{2}{9}$  of 90 = 20

A car travels 60 miles per hour. How far will it travel in 2 and a quarter hours?