

Key Vocabulary:

- multiply
- lots of
- product
- factor
- multiple
- common multiple
- prime number
- prime factor
- factor pair
- long multiplication
- composite number

WRITTEN METHOD

Key learning: multiply numbers up to 4-digits by a 2-digit whole number using long multiplication

$$\begin{array}{r}
 x32 \\
 45 \\
 \hline
 1610 \\
 1280 \\
 \hline
 1440
 \end{array}$$

This calculation is the same as calculating $32 \times 5 = 160$ and $32 \times 40 = 1280$ then adding them together to make **1440**

The green zero is a placeholder which shows that in the second half of the calculation, we are multiplying by 40, not 4.

WRITTEN METHOD

Key learning: Multiply one-digit numbers with up to two decimal places by whole numbers:

Example: 4.92×3

T U . t h		
4.92		
x 3		
0.06	(0.02 x 3)	
2.7	(0.9 x 3)	
+ 12	(4 x 3)	
14.76		

becomes

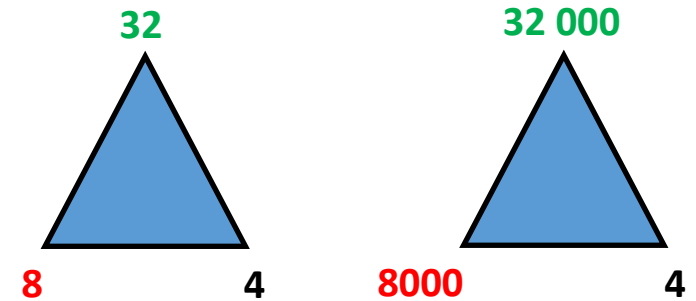
T U . t h
4.92
x 3
14.76

MENTAL METHOD

Key learning: use related facts to multiply

Look at the numbers carefully—can you spot a known fact?

Example: 8000×4



Because 8000 is a thousand times greater than 8, the answer to 8000×4 will be a thousand times greater than 32

Using Factor Pairs:

$8000 \times 40 =$

Becomes...

$8000 \times 4 \times 10 =$ (using knowledge of factor pairs)

$8000 \times 4 = 32\ 000$

$32\ 000 \times 10 = 320\ 000$

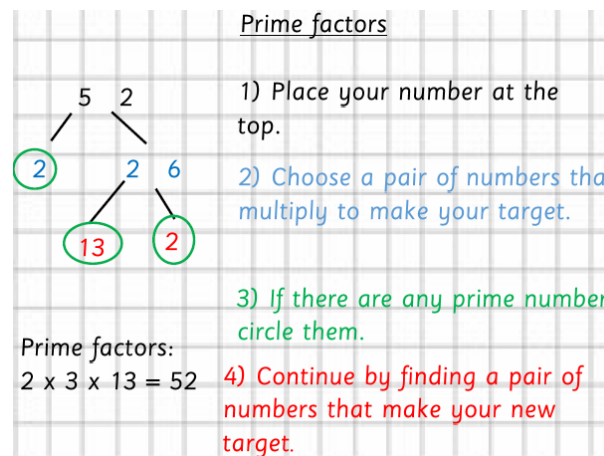
Key learning: identify prime factors

Remember, a prime number is a number which can only be divided by itself and 1 (a number that has precisely two factors)

Example:

7 is a prime number because it's only factors are 1 and 7

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



A number which has more than two factors is called a composite number

Example:

12 is not a prime number because you can divide it by 1, 2, 3, 4, 6 and 12. It is therefore a composite number.

Key learning: identify common factors

Remember, a factor is a number which divides exactly into another number.

Example: the factors of 8 are 1, 2, 4, and 8

Factors can be shown in pairs.

The factor pairs of 8 are 1×8 and 2×4

Common factors

1) Find the factor pairs of both numbers.

4	8	3	6
1 x 4	8	1 x 3	6
2 x 2	4	2 x 1	8
3 x 1	6	3 x 1	2
4 x 1	2	4 x 1	9
6 x 1	8	6 x 1	6

2) Circle the numbers that appear in both lists. The common factors of 48 and 36 are 1, 2, 3, 4, 6 and 12

Key learning: identify common multiples

Remember, a multiple is the product result of multiplying one number by another

Example:

Multiples of 2 are all the numbers in the 2 times table and so on.

Common multiples

- 1) Write out multiples of the first number.
- 2) Write out multiples of the next number.
- 3) Look for the numbers that appear in both. These will be the common multiples.

Multiples of 3: 3, 6, 9, 12, 18, 21, 24

Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32

12 and 24 appear in both sets so are common multiples of 3 and 4.