

Use factor pairs

Notes and guidance

In this small step, children build on their knowledge of factor pairs from the previous step as they use them to write equivalent calculations. For example, as 3 and 4 are a factor pair of 12, this means that 5×12 is equivalent to $5 \times 3 \times 4$ or $5 \times 4 \times 3$.

Children explore equivalent calculations using different factors pairs, and then practise calculating with them to identify which factor pair produces the easiest calculation to complete mentally. The calculation that is deemed easiest will vary for different children, as they are likely to focus on using the times-tables they are most confident with.

Things to look out for

- Children may need support finding the appropriate factor pairs that will enable them to solve the calculation mentally.
- Children may partition a number rather than finding a factor pair.

Key questions

- How does knowing the factor pairs of 8 help you to find an equivalent calculation to 7×8 ?
- For which number are you going to find the factor pairs?
- Which factor pair is the most helpful to solve the calculation?
- In what order are you going to multiply these numbers?
- Does it matter which factor pair you use?

Possible sentence stems

- The factor pairs of _____ are _____
- $12 = \text{_____} \times \text{_____}$, so $\text{_____} \times 12 = \text{_____} \times \text{_____} \times \text{_____}$
- I can use the factor pairs of _____ to find an equivalent calculation because ...

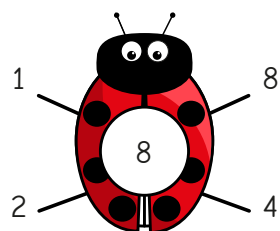
National Curriculum links

- Recognise and use factor pairs and commutativity in mental calculations

Use factor pairs

Key learning

- Rosie is working out 7×8



I can use
a factor pair of
8 to help me.



$7 \times 8 = 7 \times 4 \times 2 = 28 \times 2$
double 28 is 56,
so $7 \times 8 = 56$

Use Rosie's method to work out the multiplications.

$$6 \times 8$$

$$9 \times 8$$

$$12 \times 8$$

- Use your knowledge of factor pairs to complete the calculations.

▶ $7 \times 6 = 7 \times \underline{\quad} \times 2 = \underline{\quad} \times 2 = \underline{\quad}$

▶ $5 \times 12 = 5 \times \underline{\quad} \times 2 = \underline{\quad} \times \underline{\quad} = \underline{\quad}$

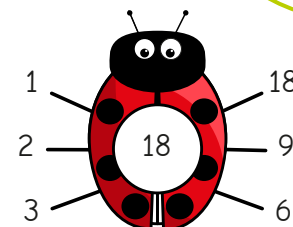
▶ $9 \times 12 = 9 \times \underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad} = \underline{\quad}$

▶ $6 \times 9 = \underline{\quad} \times \underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad} = \underline{\quad}$

Could you have used different factor pairs?

Which factor pairs are the most helpful for each calculation?

- Mo is working out 18×3



I can find
the factor pairs of 18
to help me.



1 and 18
2 and 9
3 and 6

Mo chooses to use the factor pair 3 and 6



I can multiply
in any order.

$18 \times 3 = 3 \times 6 \times 3$
 $= 3 \times 3 \times 6$
 $= 9 \times 6 = 54$
 $18 \times 3 = 54$

Use Mo's method to work out the multiplications.

$$18 \times 5$$

$$14 \times 3$$

$$16 \times 4$$

- There are 15 children in Class 4

Each child gets 3 sweets.

How many sweets are there altogether?

Use factor pairs

Reasoning and problem solving

Is the statement true or false?

$$15 \times 4 = 10 \times 5 \times 4$$

False

Explain your answer.



Is the statement true or false?

$$16 \times 4 = 8 \times 8$$

True

$$16 \times 4 = 8 \times 2 \times 4 \\ = 8 \times 8$$

Use factor pairs to explain your answer.



Whitney wants to use factor pairs to work out 13×8



The only factor pair of 13 is 1 and 13, so I cannot use factor pairs for this multiplication.

No

104

Is Whitney correct?

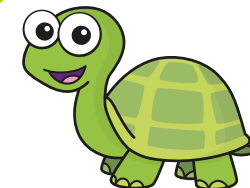
Explain your answer.

Work out the multiplication.



Tiny is working out 17×3

I am going to use factor pairs to help me.



No

Will Tiny's method help?

Explain why.

