Use Factor Pairs

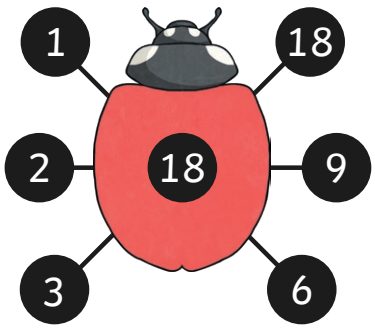
Previously, children learnt about factor pairs. They build on their knowledge of factor pairs and they use them to write equivalent calculations where three numbers are multiplied together.
For example, in the multiplication 7 × 12 = 84, we can split the 12 into factor pairs to create the calculations 7 × 3 × 4 = 84 or 7 × 6 × 2 = 84.

Remember, multiplication is **commutative** so can be done in any order.

Encourage children to see that some factor pairs will be easier to calculate than others and that they can change the order of the numbers being multiplied to create easier calculations.

6 × 15 = ? 5 × 3	18 × 7 = ? 2 × 9	16 × 7 = ? 2 × 8
6 × 5 × 3 = ? 30 × 3 = 90	2 × 9 × 7 = ? 63 × 2 = 126	2 × 8 × 7 = ? 56 × 2 = 112

Using different factor pairs

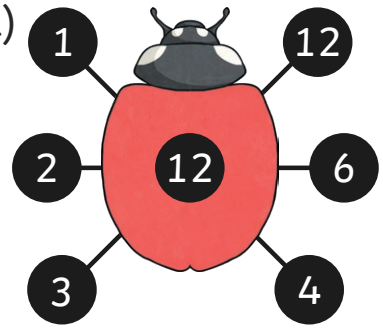


18 × 6 = 2 × 9 × 6
= 54 × 2 = 108
18 × 6 = 108

18 × 6 = 6 × 3 × 6
= 36 × 3 = 108
18 × 6 = 108

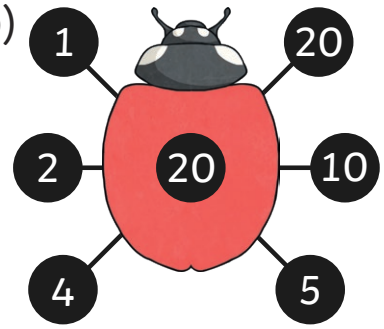
1) Use factor pairs to complete the multiplication calculations. You choose which factor pairs to use.

a)



12 × 8 = ☐ × ☐ × ☐
= ☐ × ☐ = ☐
12 × 8 = ☐

b)



$20 \times 7 = \square \times \square \times \square$

$= \square \times \square = \square$

$20 \times 7 = \square$

2) Solve the problems.

a) Find three equivalent calculations for **6 × 4 × 2** where only two numbers are multiplied together.

$\square \times \square = \square$

$\square \times \square = \square$

$\square \times \square = \square$

b) Use the clues to find the equivalent calculation for **3 × 4 × 6**.

- One of the numbers is a multiple of 4.
- One of the numbers is an odd number
- One of the numbers is greater than 15 but less than 25.

$\square \times \square = \square$

3) Selena has completed the calculation 21 × 5. Can you spot the mistake she has made? Explain your reasoning.

Selena

$21 \times 5 = 21 \times 2 \times 3$

$= 21 \times 6$

$= 126$

Use Factor Pairs **Answers**

1) a) Different possibilities. For example:

12 × 8 = 2 × 6 × 8
= 8 × 2 × 6
= 16 × 6 = 96
12 × 8 = 96

12 × 8 = 3 × 4 × 8
= 8 × 3 × 4
= 24 × 4 = 96
12 × 8 = 96

b) **20 × 7 = 2 × 10 × 7**
= 7 × 2 × 10
= 14 × 10 = 140
20 × 7 = 140

20 × 7 = 4 × 5 × 7
7 × 4 × 5
28 × 5 = 140
20 × 7 = 140

2) a) Possible answers: **24 × 2, 6 × 8, 12 × 4**
b) **3 × 24**

3) ***Selena has not used factor pairs. She has added 2 and 3 together. The only factor pairs of 5 are 1 and 5. The correct answer is 105.***