## Step 9: How Many Ways?

## National Curriculum Objectives:

Mathematics Year 3: (3C8) Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects

## Differentiation:

Questions 1, 4 and 7 (Problem Solving)
Developing Find the missing combinations involving two groups. Includes pictorial representations or completed tables.
Expected Find the missing combinations involving two groups. Includes some pictorial representations or tables.
Greater Depth Find the missing combinations involving two or three groups.
Questions 2, 5 and 8 (Reasoning)
Developing Explain if the given number of possible combinations is correct involving two groups. Includes pictorial representations or completed tables.
Expected Explain if the given number of possible combinations is correct involving two groups. Includes some pictorial representations or tables.
Greater Depth Explain if the given number of possible combinations is correct involving two group or three groups.

Questions 3, 6 and 9 (Problem Solving)
Developing Find the possible combinations when given the total number and amount of groups, involving two groups. Includes pictorial representations or completed tables. Expected Find the possible combinations when given the total number and amount of groups, involving two groups. Includes some pictorial representations or tables. Greater Depth Find the possible combinations when given the total number and amount of groups, involving two or three groups.

## More Year 3 Multiplication and Division resources.

## Did you like this resource? Don't forget to review it on our website.

la. What are the missing combinations?


2a. Raya says she can make 6 different combinations from the list.

| Features | Colour |
| :---: | :---: |
| 8 | Blue |
|  | Green |
|  | Red |

$\square \times \square=\square$

Is she correct? Prove it.
lb. What are the missing combinations?


Db. Gareth says he can make 9 different combinations from the list.

| Shape | Colour |
| :---: | :---: |
|  | Purple |
|  | Yellow |
| $\square \times \square=\square$ |  |

Is he correct? Prove it.

3a. Anaya has found 16 combinations of different hats and scarves in her wardrobe.


How many different types of each piece of clothing could there be?

ib. Summer has seen 12 combinations of different dolphins and sharks at Ocean World.


How many species of each creature could there be?
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4a. What are the missing combinations?

| Place | Activity |
| :---: | :---: |
| Paris | Zoo |
| Berlin |  |
|  |  |
| Berlin |  |
|  |  |

5a. Kyle says he can have 18 different combinations from the menu.

| Main | Side |
| :---: | :--- |
| Steak pie | Chips |
| Fish | Peas |
| Pizza | Beans |
| Burger | Salad |

Is he correct? Prove it.

6a. Jules found 24 combinations of different butterflies and beetles at Insect World.


How many species of each insect could there be?


4b. What are the missing combinations?


5b. Ruzayynah says she can have 12 different combinations from the menu.

| Drink | Snack |
| :---: | :---: |
| Coke | Crisps |
| Juice | Chocolate |
| Lemonade | Fruit |

Is she correct? Prove it.

6b. Qassim found 20 combinations of different birds and frogs at Tropical World.


How many species of each creature could there be?

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7a. What are the missing combinations?


8a. Holly says she can create 6 different animal combinations from the list.

| Colour | Animal | Pattern |
| :---: | :---: | :---: |
| Green | Sheep | Spots |
| Purple | Lion | Stripes |

Is she correct? Prove it.

9a. Ashley made 18 combinations of 3 different bottles when mixing potions. Some were lumpy and some were smooth.

How many different colour potions in each bottle type could there have been?

7b. What are the missing combinations?


8b. Carlton says he can create 27 different combinations from the list.

| Colour | Vehicle | Wheels |
| :---: | :---: | :---: |
| Red | Car | 3 |
| Yellow | Van | 4 |
| Black | Lorry | 6 |

Is he correct? Prove it.

9b. There are 36 ride-on toys in the playground made up of 3 different types.

How many colours of each type of rideon toy could there be?

Reasoning and Problem Solving How Many Ways?

Developing
1 a .

| pet | Ioy |
| :---: | :---: |
| -n | (c) |
| -rn | 3 |
| 0 | (c) |
| 0 | 3 |

2a. Raya is incorrect because $3 \times 3=9$ so there are 9 combinations.
3a. Various answers, for example: 4 scarves and 4 hats; 2 scarves and 8 hats

## Expected

4a.

| Place | Activity |
| :---: | :---: |
| Paris | Zoo |
| Berlin | Zoo |
| Paris | Museum |
| Berlin | Museum |
| Paris | Concert |
| Berlin | Concert |

5a. Kyle is incorrect because $4 \times 4=16$ so there are 16 combinations.
6a. Various answers, for example: 6 butterflies and 4 beetles; 3 butterflies and 8 beetles.

## Greater Depth

7a.

| Main | Side | Dessert |
| :---: | :---: | :---: |
| Fish | Chips | Ice cream |
| Fish | Beans | Ice cream |
| Chicken | Chips | Ice cream |
| Chicken | Beans | Ice cream |
| Sausages | Chips | Ice cream |
| Sausages | Beans | Ice cream |

8a. Holly is incorrect. She has added rather than multiplied. There are 8 different combinations, as $2 \times 2=4$ and $4 \times 2=8$.
9 a . There are 3 different colours as $3 \times 2=$ 6 and $6 \times 3=18$.

Reasoning and Problem Solving How Many Ways?

## Developing

$1 b$.


2b. Gareth is correct because $3 \times 3=9$ so there are 9 combinations.
3b. Various answers, for example: 3
dolphins and 4 sharks; 6 dolphins and 2 sharks

## Expected

4b.

| Furniture | Cushion |
| :---: | :---: |
| Sofa | Stripy |
| Sofa | Zigzag |
| Sofa | Spotty |
| Armchair | Stripy |
| Armchair | Zigzag |
| Armchair | Spotty |
| Stool | Stripy |
| Stool | Zigzag |
| Stool | Spotty |

5b. Ruzayynah is incorrect because $3 \times 3$ $=9$ so there are 9 combinations.
6b. Various answers, for example: 5 birds and 4 frogs; 2 birds and 10 frogs.

## Greater Depth

7b.

| Pattern | Colour | Size |
| :---: | :---: | :---: |
| Spots | Blue | Large |
| Spots | Blue | Small |
| Spots | Red | Large |
| Spots | Red | Small |
| Stripes | Blue | Large |
| Stripes | Blue | Small |
| Stripes | Red | Large |
| Stripes | Red | Small |

8b. Carlton is correct. There are 27
different combinations because $3 \times 3=9$, and $9 \times 3=27$.
9 b. There are 12 different colours as $12 \times 3$ $=36$

