Reasoning and Problem Solving
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.

How Many Ways?

How Many Ways?

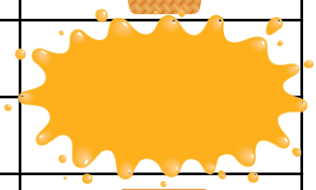
1a. What are the missing combinations?

Pet	Toy
	
	
	
	

D

PS

1b. What are the missing combinations?

Easter Egg	Basket
	
	
	
	
	
	

D

PS

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

Features	Colour
	Blue
	Green
	Red

☐ x ☐ = ☐

Is she correct? Prove it.

D

R

2b. Gareth says he can make 9 different combinations from the list.

Shape	Colour
	Purple
	Yellow
	Turquoise

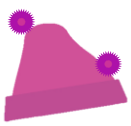
☐ x ☐ = ☐

Is he correct? Prove it.

D

R

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



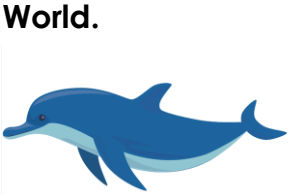
☐ x ☐ = 16

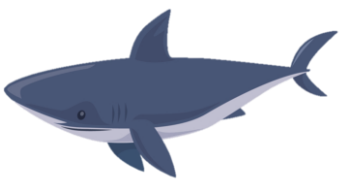
How many different types of each piece of clothing could there be?

D

PS

3b. Summer has seen 12 combinations of different dolphins and sharks at Ocean World.





☐ x ☐ = 12

How many species of each creature could there be?

D

PS

How Many Ways?

4a. What are the missing combinations?

Place	Activity
Paris	Zoo
Berlin	
	Museum
	Concert
Berlin	

E PS

4b. What are the missing combinations?

Furniture	Cushion
	Stripy
	Zigzag
Sofa	Spotty
Armchair	
Stool	Zigzag
Stool	Spotty

E PS

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.

E R

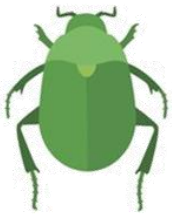
5b. Ruzayynah says she can have 12 different combinations from the menu.

Drink	Snack
Coke	Crisps
Juice	Chocolate
Lemonade	Fruit

Is she correct? Prove it.

E R

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



How many species of each insect could there be?

E PS

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

How many species of each creature could there be?

E PS

How Many Ways?

7a. What are the missing combinations?

Main	Side	Dessert
Fish	Chips	Ice cream
	Beans	
Chicken		
Sausages		
Sausages		

GD PS

7b. What are the missing combinations?

Pattern	Colour	Size
Spots	Blue	Large
Spots	Blue	Small
	Blue	Large
	Blue	Small
Stripes	Red	
Stripes	Red	

GD PS

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.

GD R

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.

GD R

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?

GD PS

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

How many colours of each type of ride-on toy could there be?

GD PS

Reasoning and Problem Solving
How Many Ways?

Developing

1a.

Pet	Toy
	
	
	
	

2a. Raya is incorrect because 3 x 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 x 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 x 2 = 4 and 4 x 2 = 8.

9a. There are 3 different colours as 3 x 2 = 6 and 6 x 3 = 18.

Reasoning and Problem Solving
How Many Ways?

Developing

1b.

Easter Egg	Basket
	
	
	
	
	
	

2b. Gareth is correct because 3 x 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 x 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 x 3 = 9, and 9 x 3 = 27.

9b. There are 12 different colours as 12 x 3 = 36