Reasoning and Problem Solving
Step 1: Multiplication – Equal Groups

National Curriculum Objectives:

Mathematics Year 3: (3C6) Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables
Mathematics Year 3: (3C7) Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods

Differentiation:

Questions 1, 4 and 7 (Reasoning)
Developing Identify and explain the mistake made when sorting items into equal groups. Includes the use of the 3, 4 and 8 times table. Pictorial support for each question.
Expected Identify and explain the mistake made when sorting items into equal groups. Includes the use of 3, 4 and 8 times tables and some numbers written as words.
Greater Depth Identify and explain the mistake made when sorting items into equal groups. Includes the use of the 3, 4 and 8 times table. No pictorial support with some numbers written as words.

Questions 2, 5 and 8 (Problem Solving)
Developing Sort a given number of items into equal groups. Find three possibilities. Includes the use of the 3, 4 and 8 times table. Pictorial support for each question.
Expected Sort a given number of items into equal groups. Find three possibilities. Includes the use of the 3, 4 and 8 times tables and some numbers written as words.
Greater Depth Sort a given number of items into equal groups. Find three possibilities. Includes the use of the 3, 4 and 8 times table. No pictorial support with some numbers written as words.

Questions 3, 6 and 9 (Reasoning)
Developing Prove if a given number of items can be sorted into a given number of equal groups. Includes the use of the 3, 4 and 8 times table. Pictorial support for each question.
Expected Prove if a given number of items can be sorted into a given number of equal groups. Includes the use of the 3, 4 and 8 times tables and some numbers written as words.
Greater Depth Prove if a given number of items can be sorted into a given number of equal groups. Includes the use of the 3, 4 and 8 times table. No pictorial support with some numbers written as words.

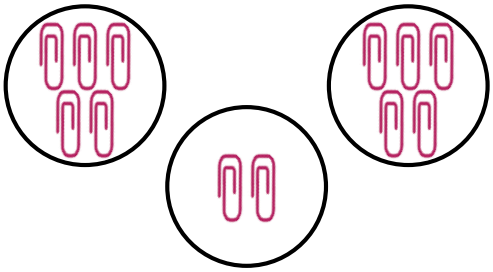
More Year 3 Multiplication and Division resources.

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

Multiplication – Equal Groups

1a. Mr Fyffe asks Ryan to sort 12 paperclips into equal groups.

He sorts them into the groups below.



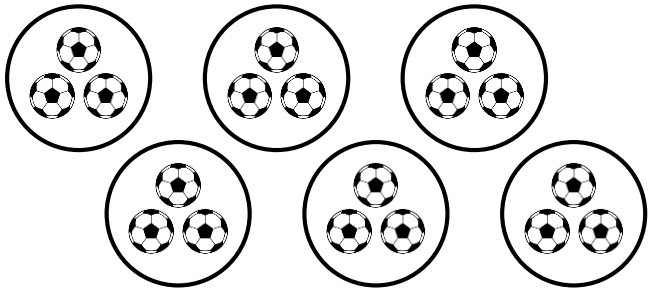
Explain and correct the mistake Ryan has made.

D R

Multiplication – Equal Groups

1b. Mrs Rouse asks Finlay to sort 21 footballs into equal groups.

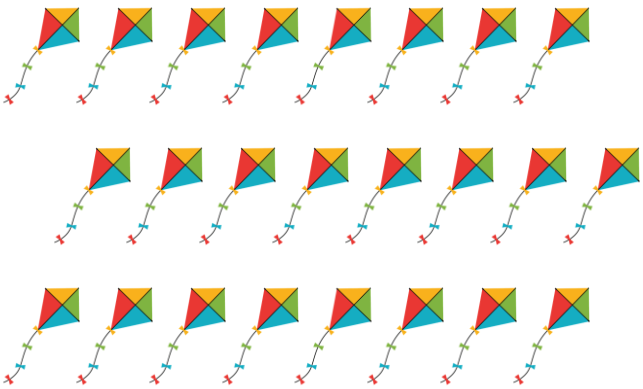
He sorts them into the groups below.



Explain and correct the mistake Finlay has made.

D R

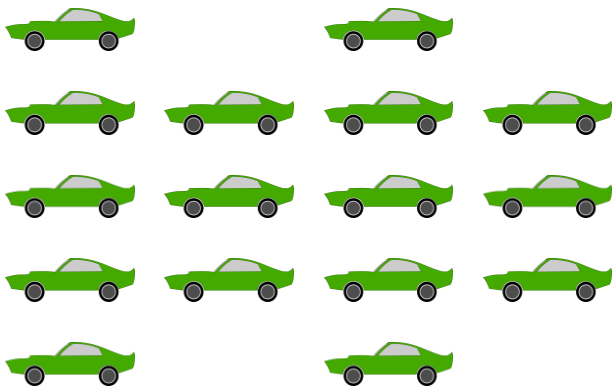
2a. Sort the kites into equal groups.



Find three ways.

D PS

2b. Sort the cars into equal groups.



Find three ways.

D PS

3a. Can 13 flowers be sorted into 4 equal groups?

Prove it.

D R

3b. Can 20 dice be sorted into 8 equal groups?

Prove it.

D R

Multiplication – Equal Groups

Multiplication – Equal Groups

4a. Mrs Jones asks Seth to sort fifteen donuts into equal groups.

He sorts them into the groups below.

four donuts

4 donuts

four donuts

3 donuts

Explain and correct the mistake Seth has made.

E

R

4b. Ms Stubbs asks Lily to sort twenty pencils into equal groups.

She sorts them into the groups below.

8 pencils

6 pencils

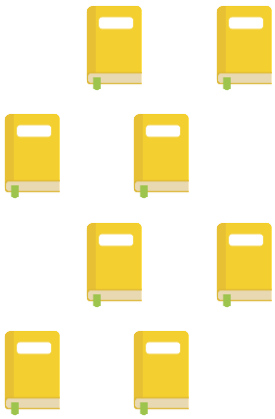
six pencils

Explain and correct the mistake Lily has made.

E

R

5a. Sort the notebooks into equal groups.



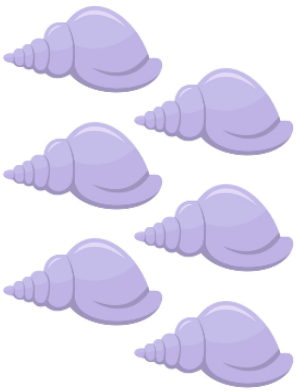
+ 16 notebooks

Find three ways.

E

PS

5b. Sort the shells into equal groups.



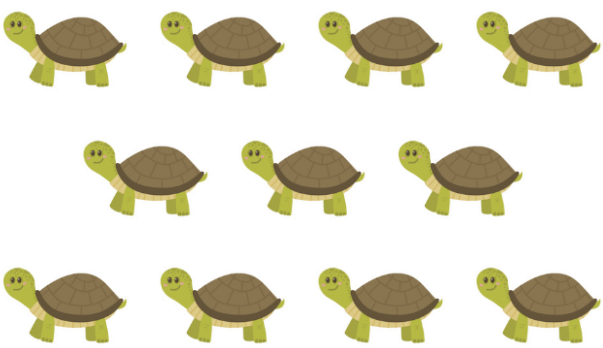
+ thirty shells

Find three ways.

E

PS

6a. Can eleven turtles be sorted into three equal groups?

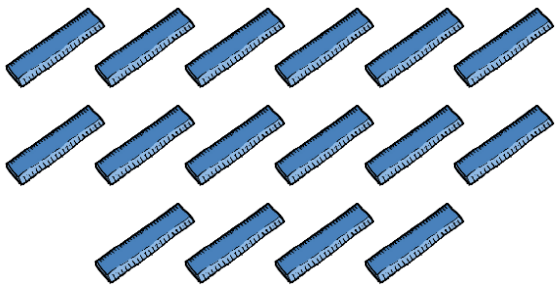


Prove it.

E

R

6b. Can 16 paperclips be sorted into 4 equal groups?



Prove it.

E

R

Multiplication – Equal Groups

7a. Miss Sajjid asks Henry to sort twenty-eight biscuits into equal groups.

Henry

I have sorted the biscuits into four groups of six and one group of four.

Explain and correct the mistake Henry has made.

GD

R

7b. Mr Smith asks Hira to sort thirty-two apples into equal groups.

Hira

I have sorted the apples into four equal groups of seven.

Explain and correct the mistake Hira has made.

GD

R

8a. Sort the contents of the box into equal groups.

Find three ways.

GD

PS

8b. Sort the contents of the cooler into equal groups.

Find three ways.

GD

PS

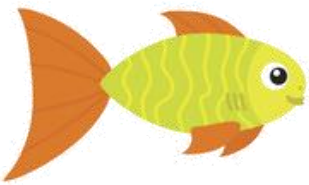
9a. Can twenty-nine paintbrushes be sorted into eight equal groups?

Prove it.

GD

R

9b. Can forty-eight fish be sorted into twelve equal groups?



Prove it.

GD

R

Reasoning and Problem Solving Multiplication – Equal Groups

Developing

1a. Ryan has not sorted the paperclips into equal groups. He could have sorted the 12 paper clips into 3 equal groups of 4.

2a. Various answers, for example: 4 equal groups of 6; 6 equal groups of 4; 8 equal groups of 3.

3a. No, 13 flowers cannot be sorted into 4 equal groups. 13 is not in the 4 times table.

Expected

4a. Seth has not sorted the donuts into equal groups. He could have sorted the 15 donuts into 5 equal groups of 3.

5a. Various answers, for example: 4 equal groups of 6; 6 equal groups of 4; 3 equal groups of 8.

6a. No, 11 turtles cannot be sorted into 3 equal groups. 11 is not in the 3 times table.

Greater Depth

7a. Henry has not sorted the biscuits into equal groups. He could have sorted the 28 biscuits into 7 equal groups of 4.

8a. Various answers, for example: 4 equal groups of 10; 10 equal groups of 4; 8 equal groups of 5.

9a. No, 29 paintbrushes cannot be sorted into 8 equal groups. 29 is not in the 8 times table.

Reasoning and Problem Solving Multiplication – Equal Groups

Developing

1b. Finlay has only sorted 18 footballs. He could have sorted the 21 footballs into 7 equal groups of 3.

2b. Various answers, for example: 4 equal groups of 4; 2 equal groups of 8; 8 equal groups of 2.

3b. No, 20 dice cannot be sorted into 8 equal groups. 20 is not in the 8 times table.

Expected

4b. Lily has not sorted the pencils into equal groups. She could have sorted the 20 pencils into 4 equal groups of 5.

5b. Various answers, for example: 3 equal groups of 12; 12 equal groups of 3; 6 equal groups of 6.

6b. Yes, 16 paper clips can be sorted into 4 equal groups of 4. 16 is in the 4 times table.

Greater Depth

7b. Hira has not used all the apples. She could have sorted the 32 apples into 4 equal groups of 8.

8b. Various answers, for example: 6 equal groups of 6; 4 equal groups of 9; 9 equal groups of 4.

9b. Yes, 48 fish can be sorted into 12 equal groups of 4. 48 is in the 4 times table.