

# Reasoning and Problem Solving

## Step 6: Use Arrays

### National Curriculum Objectives:

Mathematics Year 2: (2C6) [Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers](#)

Mathematics Year 2: (2C7) [Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication \( \$\times\$ \), division \( \$\div\$ \) and equals \(=\) signs](#)

Mathematics Year 2: (2C8) [Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts](#)

Mathematics Year 2: (2C9b) [Show that multiplication of two numbers can be done in any order \(commutative\) and division of one number by another cannot](#)

### Differentiation:

Questions 1, 4 and 7 (Problem Solving)

**Developing** Draw arrays to match the given amount. Arrays used to solve multiplication, all arrays presented within a grid format.

**Expected** Draw arrays to match the given amount. Arrays used to solve multiplications.

**Greater Depth** Draw arrays to match the given amount. Arrays used to solve multiplications and make deductions from outside known multiplication facts.

Questions 2, 5 and 8 (Reasoning)

**Developing** Identify the odd one out. Arrays used to solve multiplication, all arrays presented within a grid format.

**Expected** Identify the odd one out. Arrays used to solve multiplications.

**Greater Depth** Identify the fact that is not related to the array. Arrays used to solve multiplications and make deductions from outside known multiplication facts.

Questions 3, 6 and 9 (Reasoning)

**Developing** Explain if a given statement is correct. Arrays used to solve multiplication, all arrays presented within a grid format.

**Expected** Explain if a given statement is correct. Arrays used to solve multiplications.

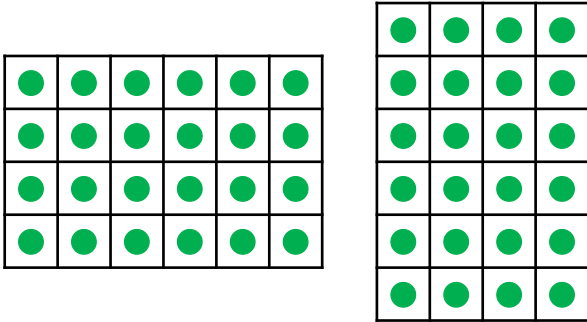
**Greater Depth** Explain if a given statement is correct. Arrays used to solve multiplications and make deductions from outside known multiplication facts.

More [Year 2 Multiplication and Division](#) resources.

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

## Use Arrays

1a. Luke has 24 counters and has used them to make the arrays below.



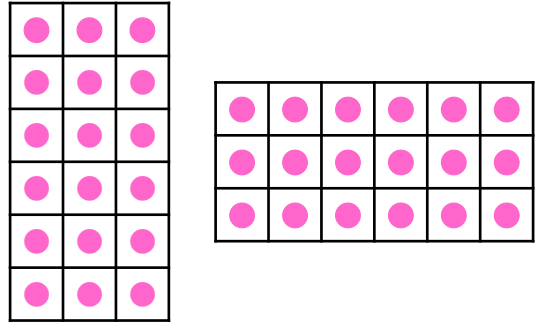
Draw 2 more arrays to match Luke's counters.



PS

## Use Arrays

1b. Holly has 18 counters and has used them to make the arrays below.

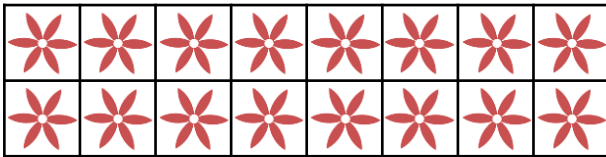


Draw 2 more arrays to match Holly's counters.



PS

2a. Use the array to find the odd one out.



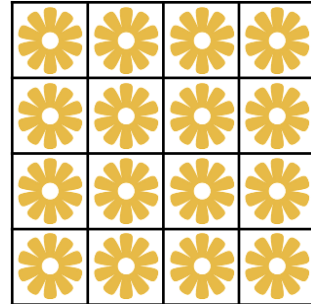
- A.  $8 \times 2$     B. 2 lots of 8    C.  $2 \times 9$

Explain your answer.



R

2b. Use the array to find the odd one out.



- A. 4 lots of 4    B.  $4 \times 5$     C.  $4 \times 4$

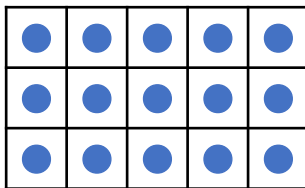
Explain your answer.



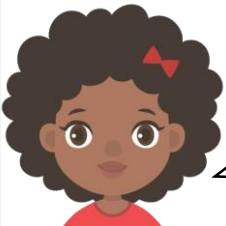
R

3a. Rose is making an array.

She says,



My array shows 5 lots of 2 and 2 lots of 5.



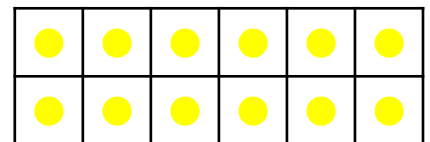
Is she correct? Explain your answer.



R

3b. Alex is making an array.

He says,



My array shows 3 lots of 6 and 6 lots of 3.



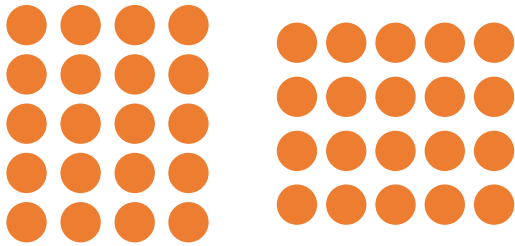
Is he correct? Explain your answer.



R

## Use Arrays

4a. Charlie has 20 counters and has used them to make the arrays below.



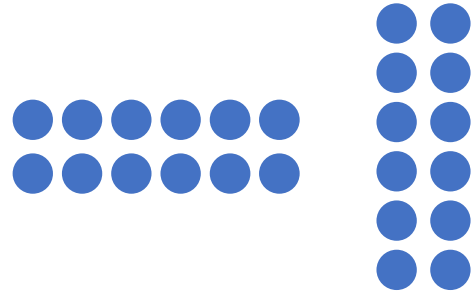
Draw 2 more arrays to match Charlie's counters.



PS

## Use Arrays

4b. Maisie has 12 counters and has used them to make the arrays below.

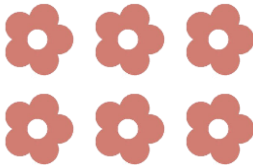


Draw 2 more arrays to match Maisie's counters.



PS

5a. Use the array to find the odd one out.



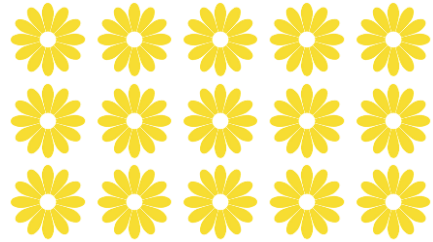
- A.  $2 \times 3$     B.  $3 \times 2$     C. 2 lots of 5

Explain your answer.



R

5b. Use the array to find the odd one out.



- A. 4 lots of 5    B.  $3 \times 5$     C.  $5 \times 3$

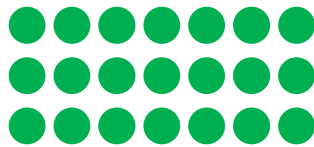
Explain your answer.



R

6a. Sam is making an array.

He says,



My array shows 6 lots of 3 and 3 lots of 6.

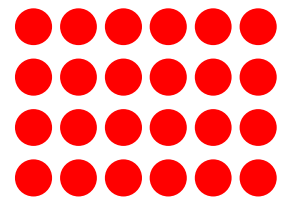
Is he correct? Explain your answer.



R

6b. Milo is making an array.

He says,



My array shows 4 lots of 5 and 5 lots of 4.

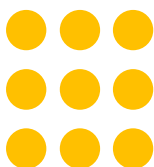
Is he correct? Explain your answer.



R

## Use Arrays

7a. Jada had 9 counters and has used them to make the array below.



Now Jada has 18 counters.

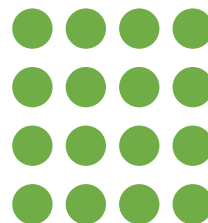
Draw 3 arrays she could make with 18 counters.



PS

## Use Arrays

7b. Harry had 16 counters and has used them to make the array below.



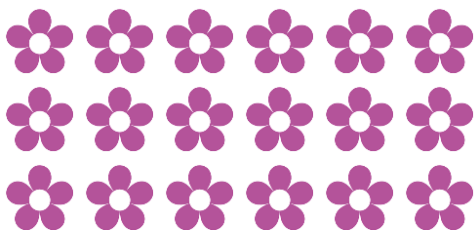
Now Harry has 32 counters.

Draw 3 arrays he could make with 32 counters.



PS

8a. Which fact is not related to the array below?



- A.  $3 \times 6$     B. 5 lots of 6    C.  $6 \times 6$

Explain your answer.



R

8b. Which fact is not related to the array below?



- A.  $8 \times 4$     B. 2 lots of 8    C.  $7 \times 5$

Explain your answer.



R

9a. Oscar is making an array.

He says,



I can use my array to solve  $6 \times 5$ .

Is he correct? Explain your answer.



R

9b. Jessica is making an array.

She says,



I can use my array to solve  $4 \times 7$ .

Is she correct? Explain your answer.



R

## Reasoning and Problem Solving Use Arrays

### Developing

- 1a. Various arrays can be drawn, for example:  $2 \times 12$ ,  $3 \times 8$ .  
2a. C because the array does not show  $2 \times 9$ .  
3a. Rose is incorrect because her array shows 3 lots of 5 or 5 lots of 3.

### Expected

- 4a. 2 arrays to be drawn showing  $2 \times 10$  and  $10 \times 2$ .  
5a. C because the array does not show 2 lots of 5.  
6a. Sam is incorrect because his array shows 3 lots of 7 and 7 lots of 3.

### Greater Depth

- 7a. Various arrays can be drawn, for example:  $2 \times 9$ ,  $6 \times 3$ ,  $3 \times 6$   
8a. B because there are  $3 \times 6$  which can be used to solve  $6 \times 6$ .  
9a. Oscar is correct because the array shows  $3 \times 5$  which can be doubled to make  $6 \times 5$ .

## Reasoning and Problem Solving Use Arrays

### Developing

- 1b. 2 arrays to be drawn showing  $2 \times 9$  and  $9 \times 2$ .  
2b. B because the array does not show  $4 \times 5$ .  
3b. Alex is incorrect because his array shows 2 lots of 6 or 6 lots of 2.

### Expected

- 4b. 2 arrays to be drawn showing  $3 \times 4$  and  $4 \times 3$ .  
5b. A because the arrays does not show 4 lots of 5.  
6b. Milo is incorrect because he has 4 lots of 6 or 6 lots of 4.

### Greater Depth

- 7b. Various arrays can be drawn, for example:  $8 \times 4$ ,  $4 \times 8$ ,  $2 \times 16$   
8b. C because there 2 lots of 8 which can be used to solve  $8 \times 4$ .  
9b. Jessica is correct because the array shows  $2 \times 7$  which can be doubled to make  $4 \times 7$ .