

## Multiplication and Division



Maths | Year 5 | Multiplication and Division | Problem Solving Equals Sign | Lesson 2 of 5: The Distributive Law



#### Aim

• I can use my understanding of the distributive law to help me to solve problems.

#### Success Criteria

- I can explain what the distributive law is.
- I can solve equations with brackets in them by writing an equivalent calculation.



## Arrays



How many different calculations can you write to describe these arrays? You can use the ×, ÷ and + signs.





The equals sign means that the numbers or calculations on either side of the sign must have the same value. They have to balance.





Do these scales balance?





Does  $3 \times (4 + 5)$  equal  $(3 \times 4) + (3 \times 5)$ ?





#### Make It Balance

Are these equations correct? Would the see-saws balance?





#### **Banish the Brackets**

Can you write an equivalent calculation to make these equations correct?





#### Subtraction

Does the distributive law work if the calculation in the brackets involves subtraction instead of addition?

Use these calculations to test your prediction.

a) 3 × (14, s, B) does wark. 3 × ?

b)  $2 \times (6 - 3) = 2 \times 6 - 2 \times ?$ b)  $2 \times (6 - 3) = 2 \times 6 - 2 \times ?$ TOP TIP TO in the second secon



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#### **Distributive Dilemma**



Use your marvellous maths skill to complete these activities:

I can use my understanding of the distributive la Write out the equivalent calculation and then fine The first one is completed as an example.		I con use my understanding of the distributive la     Write out the equivalent calculation and then fine     The first one is completed as an example.				I can us	e my understanding of t	distributive law to help me to solve problems.	
						You will need a set of <b>Distributive Law Cards</b> . Match up the calculation with brackets, calculation without brackets, array and answer.			
Calculation (with brackets)	Equivalent Calculati (without brackets)	Calculation (with brackets)	Equivalent Calculati (without brackets)			Check your answ Write them in thi	ers with a partner. s table		
4 × (6 + 2)	4×6+4×2	4 × (6 + 2)	4×6+4×2				Faultralant		
12 × (3 + 5)		4 × (3 + 5)				Calculation (with brackets)	Calculation	Array	Answe
9 × (9 - 2)		2 × (6 - 2)			_	(	(without brackets)		
8 × (7 + 7)		5 × (7 + 7)						***** 202	
	7 × 9 + 7 × 3	7 × (6 + 3)				6216021	6860682	*****	22
8 × (8 - 2)		8 × (9 - 2)							
4 × (12 - 2)		4 × (4 - 2)						REAL REAL PARTY	
9 × (7 + 4)		9 × (7 + 1)							
	3 × 12 - 3 × 12		3 × 12 - 3 × 7						
4 × (45 - 0)		4 × (20 - 0)							
	12 × 14 + 12 × 2	12 × (4 + 2)							
Write a calculation to g a) Eric has 16 packets a each containing 8 bi 	o with each of these problem 2 f biscuits, each containing 8 scuits. How many biscuits de f ribbon, each one is 6cm b	<ol> <li>Write a calculation to go</li> <li>a) Eric has 4 packets of l each containing 9 bis</li> <li></li> <li>b) Liu gets 5 pieces of ril</li> </ol>	with each of these problem biscuits, each containing 9 k cuits. How many biscuits de bion, each one is 6cm long.						
one is also 6cm long. If they lay them end-to-en c) Khalil and Corina have 24 packets of 6 sweets Khalil is greedy and eats 6 of the packets befor are left for them to share now?		also 6cm long. If they lay them down end-to-en (Khalil and Corina have 12 packets of 3 sweets Khalil is greedy and eats 5 of the packets befor are left for them to share now?						STR.	



# Algebra



The distributive law states that  $3 \times (4 + 5) = 3 \times 4 + 3 \times 5$ We can use algebra (where letters represent numbers) to explain this:





$$a(b+c) = a \times b + a \times b + a \times ar$$

$$a(b+c) = ab + ac$$

We don't have to use the multiplication sign here. When the letters are next to each other, it means that we multiply them together, e.g. ab means  $a \times b$ .

What does a represent in these equations?

$$a(2+3) = a2 + a3 = 20$$

$$a(10-5) = a10-a5 = 5$$

Can you write some of your own equations and test your friends to see if they can solve them?



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