Names (pair) _____ Date _____

Direct Proportion

Example

A recipe for **3 dozen** cookies: 360 g flour, 180 g butter, 150 g sugar, 3 eggs and 90 ml milk. How much flour is needed for **10 dozen**?

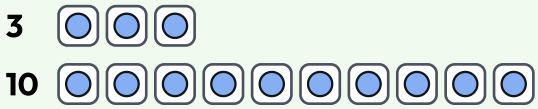
Way 1: first for 1 dozen: 360 : 3 = 120 g, then for 10 dozen: 10 × 120 = 1200 g.

Way 2: the ratio of dozens is 3 : 10, so we multiply each ingredient by $\frac{10}{3}$: $\frac{10}{3}$ × 360 = 1200 g.

Remember

Two quantities are in **direct proportion** if, when one becomes a number of times bigger (or smaller), the other changes by the same number of times. **Their ratio stays the same.**

Build it first



One cup of cubes stands for the ingredients for 1 dozen. Build 3 cups, then 10 cups. How many times more cups are there? You need that many times more of **every** ingredient.

1 ON YOUR OWN Complete the recipe.

Ingredient	3 dozen	1 dozen	6 dozen	10 dozen
flour	360 g	☐ g	☐ g	☐ g
butter	180 g	☐ g	☐ g	☐ g
sugar	150 g	☐ g	☐ g	☐ g
eggs	3	☐	☐	☐
milk	90 ml	☐ ml	☐ ml	☐ ml

Names (group) _____ Date _____

2 IN PAIRS **Are they in direct proportion?** Circle and explain to each other.

the number of pencils and their price	**yes**	/	**no**
a child's age and height	**yes**	/	**no**
the side of a square and its perimeter	**yes**	/	**no**
the number of workers and the time a job takes	**yes**	/	**no**
the number of cinema tickets and the total cost	**yes**	/	**no**

3 ON YOUR OWN Four notebooks cost 6 euros. Complete the table.

Build it first

One group is 4 cubes (notebooks) and 6 counters (euros). Split it into 2 equal groups: 2 notebooks and 3 euros. Then add more groups. Every group is the same, so the ratio stays the same.

Notebooks	4	2	1	10	14
Price (€)	6				

4 IN A GROUP **Problems.** Each member of the group solves one problem and explains it to the others. Write the calculation.

4 pancakes need 2 eggs and 300 ml of milk. How many eggs and how much milk are needed for 10 pancakes?

Answer: _____

A car uses 6 l of fuel per 100 km. How much does it use for 350 km?

Answer: _____

On a map, 2 cm stands for 5 km. How many kilometres does 7 cm stand for?

Answer: _____

★ ON YOUR OWN **Exit card.** 3 jugs of lemonade need 120 g of sugar. How much sugar is needed for 5 jugs? _____ g