

## Yr6 Mostly Orange – resource overview

This Yr6 resource is a rich task that encourages learners to develop numerical reasoning skills through an engaging context. A wide range of literacy and numeracy skills are developed through this pack.

**The business plan** → learners develop a business plan to start the production of orange juice cartons. They practise percentages, simple fractions, profit, etc...

- Video stimulus (Show at the start) <http://goo.gl/4hA98A>
- Mostly Orange business plan
- Mostly Orange business plan (solution)

**Letter of acceptance** → practise using money and graph drawing. There is an opportunity to use a range of tools and literacy skills to create an advert and logo for the brand.

- Video stimulus (Pears are safe!) <http://goo.gl/QoTzCq>
- Mostly Orange letter of acceptance (Extension task)

### Main numerical reasoning skills for assessment

#### Identify

Identify the appropriate steps and information needed to complete the task or reach a solution

#### Communicate

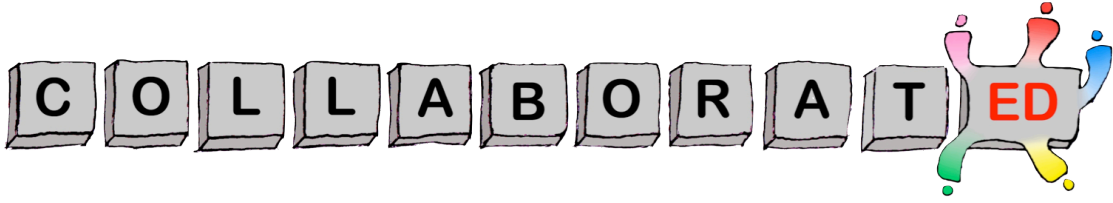
Select and construct appropriate charts, diagrams and graphs with suitable scales

#### Review

Interpret answers within the context of the problem and consider whether answers, including calculator, analogue and digital displays, are sensible

### Main procedural skills for assessment

- Multiplication and division
- Profit and loss
- Fractions and percentages



## Mostly Orange - business plan

### Production

1 Orange =  $\frac{1}{3}$  Glass/Carton

Number of oranges per carton =

Replacing  $\frac{1}{6}$  of juice with water has still good flavour  $\rightarrow$  How many oranges per carton?

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Each teaspoon of sugar added could allow you to replace an additional  $\frac{1}{6}$  of juice with water.

Each carton must still contain at least 50% orange juice, or the name Mostly Orange wouldn't be true.

### Costs

1 pack of 10 oranges costs £1.50

1kg of granulated sugar costs 79p and each teaspoon holds a mass of about 8g of sugar.

What will the cost per carton be? What is the quickest way to find out? (Hint: you need to decide what ingredients per carton/glass you need)

Number of oranges per carton = \_\_\_\_\_

$\frac{1}{6}$  of water added  $\rightarrow$  Yes / No

Number of teaspoons of sugar = \_\_\_\_\_

Explain how you calculated the quantities above in detail.

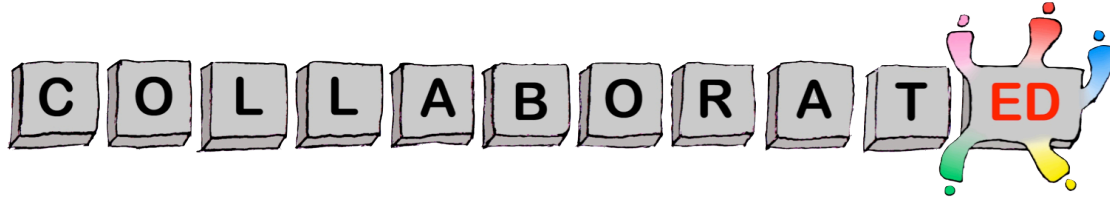
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The cost for a carton will be \_\_\_\_\_  
Show how you calculated it below.

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**Target profit**

Proposed price per carton/glass = £1.50

Desired profit per glass/carton = 82% or above

Will your choice of ingredients grant the desired profit? Show clearly how in the space below.

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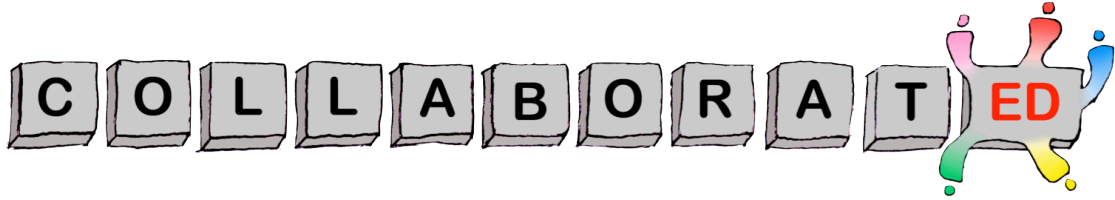
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## Mostly Orange - business plan (solution)

### Production

1 Orange =  $\frac{1}{3}$  Glass/Carton

Number of oranges per carton = 3

Replacing  $\frac{1}{6}$  of juice with water has still good flavour → How many oranges per carton?

*A whole orange fills  $\frac{1}{3}$  carton with orange juice, so  $\frac{1}{2}$  orange fills  $\frac{1}{6}$  of a carton. By replacing  $\frac{1}{6}$  of juice with water we save  $\frac{1}{2}$  an orange. Therefore, we now need only 2 and a half oranges per carton.*

Each teaspoon of sugar added could allow you to replace an additional  $\frac{1}{6}$  of juice with water.

Each carton must still contain at least 50% orange juice, or the name Mostly Orange wouldn't be true.

### Costs

1 pack of 10 oranges costs £1.50

1kg of granulated sugar costs 79p and each teaspoon holds a mass of about 8g of sugar.

What will the cost per carton be? What is the quickest way to find out? (Hint: you need to decide what ingredients per carton/glass you need)

Number of oranges per carton = *1 and a half oranges*

$\frac{1}{6}$  of water added → **Yes** / No

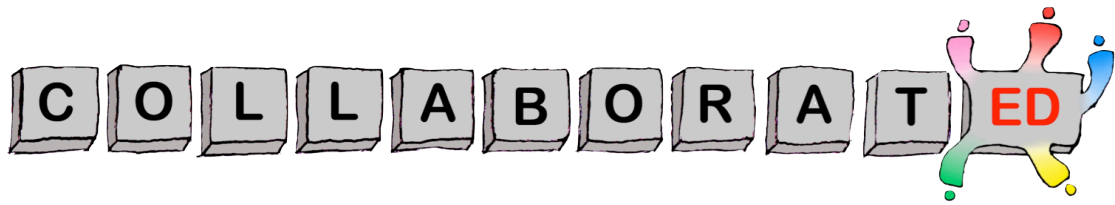
Number of teaspoons of sugar = 2

Explain how you calculated the quantities above in detail.

*We already established that  $\frac{1}{6}$  of carton volume equates to  $\frac{1}{2}$  orange, so adding  $\frac{1}{6}$  of water and two teaspoons of sugar would mean I can replace  $\frac{1}{6} + \frac{1}{6} + \frac{1}{6}$  of juice with water, i.e.  $\frac{3}{6}$  of water, which means  $\frac{1}{2}$  carton of water and  $\frac{1}{2}$  carton of juice.  $\frac{3}{6}$  of juice equates to 1 and a half oranges.*

The cost for a carton will be *about 24p, or £0.24*

Show how you calculated it below.



*In a pack of oranges there are 20 half oranges at a price of £1.50. We convert £1.50 to 150p and divide by 20  $\rightarrow 150/20 = 7.5p$*

*We need 3 half oranges per carton, so this will cost  $7.5p \times 3 = 22.5p$*

*A kg bag of sugar costs 79p, so the cost of 1g is  $79/1000 = 0.079p$  and for each teaspoon there are 8g of sugar, i.e. 16g for two teaspoons. So, the cost for the two teaspoons of sugar in each carton will be  $0.079 \times 16 = 1.26p$*

*$1.26p + 22.50p = 24p \rightarrow$  this is the cost of one carton/glass*

### **Target profit**

Proposed price per carton/glass = £1.50

Desired profit per glass/carton = 82% or above

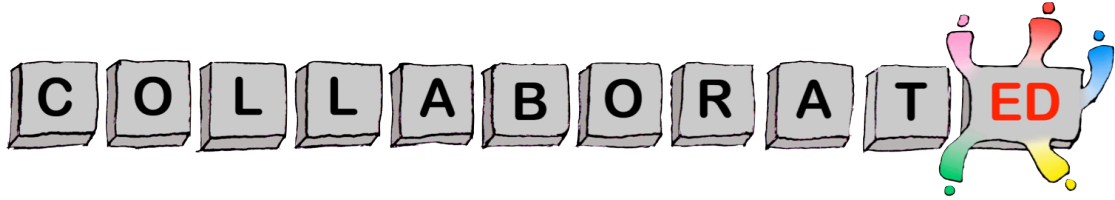
Will your choice of ingredients grant the desired profit? Show clearly how in the space below.

*Yes, it will! The cost of producing one glass/carton of juice is about 24p, which is 16% of the proposed price per carton, i.e. there is a profit of about 84% per carton.*

*$24p/150p \times 100\% = 16\% \rightarrow 100\% - 16\% = 84\%$  profit*

Note to teachers:

If learners choose to add only one teaspoon of sugar they cannot meet the target profit of 82%. In fact, using one less teaspoon of sugar would mean using an additional half orange, i.e. 2 whole oranges per carton. This brings the cost up to  $30p + 0.6p = 30.6p$  per carton, which is 20.4% of £1.50, i.e. a percentage profit of about 80%



## Mostly Orange – letter of acceptance

Dear Mr Juice,

The Directors of Tespo Supermarkets received your proposal with interest. The Board of Directors was particularly interested in your profit margin of more than 82% on each drink sold.

As the leading chain of supermarkets in Wales, Tespo would be delighted to sell your product.

Your product name, Mostly Orange, is very suitable for our target market, but it was felt that there also needs to be a logo that reflects your brand name. Would you be able to design a logo and send it to the Directors, please?

Tespo is always marketing its products at the right time in the year and through a range of media. The Directors believe your product would be really suitable to launch in the summer holidays and they request that you create an advert for your Mostly Orange juice. They have not specified the format of your advert, so this could be a paper advert, a viral video to launch on YouTube, or have any other style you like, as long as it is catchy and of really high quality.

Finally, the Board of Directors needs you to produce a projection of your sales and profits for the next three years. Your target for the first year is to sell 120000 units. In the second year the Board wants to see an increase in sales of 1.5 times the previous year's sales and in the third year they want your sales to have increased by 100%. Could you produce some tables and graphs to show this growth, please? You might want to consider the following.

- Gross sales
- Costs
- Profits
- A projection over a three year period according to the targets above

Tespo Supermarkets wishes you every success in your new business and are looking forward to working with you.

Yours truly,

Mr Sells Alot.