

Y7 Maths – 60 minutes

Lesson plan

Curriculum link: Express one quantity as a percentage of another, compare two quantities using percentages.

Learning Objective: To explore job roles linked to percentages as part of the KS3 maths curriculum.

Learning Outcomes:

- To understand why knowledge of percentages is necessary for a restaurant owner
- To understand how knowledge of percentages can be useful on other job roles

Success Criteria:

1. **Describe** – what does a restaurant owner do?
2. **Understand** – why is knowledge of percentages necessary for a restaurant owner?
3. **Apply** – create a plan to change staffing and the menu based on data including percentages.
4. **Analyse** – how can different jobs and skills help in making these changes to the restaurant?
5. **Reflect** – were there opportunities or roles that interested you?

Timings	Activity	Details	Resources
3 mins	Starter – What do you see?	<p>Starter:</p> <ol style="list-style-type: none">1) Which fact do you find most surprising?2) What are some of the contributing factors to food waste? <p>Extension: How might this affect existing jobs or lead to new jobs?</p> <ol style="list-style-type: none">1) <i>There are lots of examples students could draw on here – from mass selling techniques by supermarkets, including ‘bogof’ (buy one get one free) and 3 for 2 offers, as well as the aesthetic standards that people expect in supermarkets.</i>2) <i>Other factors that aren’t mentioned here and that could be added by the facilitator include – high quantity of</i>	Slide 3



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		<p><i>perishable foods that are bought by households.</i></p> <p>3) <i>This is open for discussion in the classroom. Some ideas to add to the conversation – what kinds of jobs might you be affected when thinking about changing our culture around food waste. What industries could be affected – for example, school canteens, food supplies on cruises/planes as well as individual restaurants and restaurant chains. The kind of jobs that this could lead to include: waste management consultant or working in different purpose-led organisations like Winnow or Too Good To Go who have teams of people working to tackle the problem of food waste with restaurants etc.</i></p>	
3 mins	Introduction – What's the problem?	<p>The challenge</p> <p>Sara is a restaurant owner who wants to maximise her profits by:</p> <ol style="list-style-type: none"> 1) Hiring extra staff for busy periods 2) Tracking food wastage <p><i>'Help Sara make changes to staffing and the menu based on data she has collected.'</i></p> <p>So, who are the kinds of people who might want to tackle this exact problem in their day to day lives? Introduce the challenge for the students today and the role of a restaurant owner, Sara.</p>	Slides 4
3 mins	Describe – what does a restaurant owner do?	<p>Introduce the role of a restaurant owner.</p> <ul style="list-style-type: none"> • Students on slide 5 should think of through the main responsibilities of a restaurant owner (these should stretch beyond the images provided). • On slide 6, Show the video embedded in the PowerPoint (link here in case it doesn't work) and ask students to write ways that a restaurant owner would use maths. 	<p>Slides 5,6</p> <p>Video</p>



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		<p>True or false quiz about what a restaurant owner does. <i>Can be done with mini-white boards, hands up, standing in certain area of classroom etc</i></p> <ul style="list-style-type: none"> • AND/OR get students to summarise findings in a 280 character tweet. 	
7 mins	Understand - why is knowledge of percentages necessary for a restaurant owner?	<p>On slide 6, Show the video embedded in the PowerPoint (link here in case it doesn't work) and ask students to write ways that a restaurant owner would use maths.</p> <p>True or false quiz about what a restaurant owner does. <i>Can be done with mini-white boards, hands up, standing in certain area of classroom etc</i></p> <p>AND/OR get students to summarise findings in a 280 character tweet.</p>	<p>Slide 6, 7,8</p> <p>Mini whiteboards (optional)</p>
20 mins (roughly 5 mins per slide calculation slide)	Apply – create a plan to change staffing and the menu based on data including percentages.	<p>Slide 10 - create a plan to change staffing based on data, facilitator to outline how a restaurant manager would divide up income.</p> <p>Slide 11 – facilitator to explain that they need to work through what the percent (actual) is based on the data been given. $30\% \text{ of } 70000 = 21,000$, which means the actual percent is 29%. They should work through all the examples to complete the table.</p> <p>Slide 12 – with the £700 who can they hire? Person A – too expensive Person B – can pay in conditions outline Person C – can pay in minimum conditions outlined For the extension, clarify that on average there are 4.33 weeks in a year. So person B would earn $680/4.33 = 157.04$</p> <p>Slide 13 – Move to the plan to help Sara reduce waste at her restaurant.</p>	Slides 9 - 15



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		<p>Slide 14 –</p> <ol style="list-style-type: none"> 1) Work out the cost of wasted per month. <i>Meat – $3000 \times 0.1 = 300$</i> <i>Pasta – $500 \times 0.05 = 25$</i> <i>Vegetables – $1000 \times 0.25 = 250$</i> <i>Fish – $750 \times 0.2 = 150$</i> 2) Which ingredient is costing the most in waste? <i>Meat</i> 3) Where is most amount of waste happening? <i>Most amount of waste is happening in vegetables, because a higher percentage is being thrown away</i> <p>Extension: What would you advise Sara to do based on this complete data set? <i>Students could consider how they might limit wastage through freezing goods such as fish, or to substitute meals on the menu that contain ingredients with high waste percentage.</i></p> <p>Slide 15 - Students need to calculate the change in cost in waste if it switched to a pescatarian menu. <i>Answer = No she shouldn't change because the cost in waste is much higher in fish in a pescatarian menu ($6 \times £150 = £900$)</i> <i>Students could also provide the total cost in waste for the two menus and compare them.</i></p>	
10 mins	<p>Analyse – how can different jobs and skills help in making these changes to the restaurant?</p>	<p>Now students have helped Sara to decide to hire a new member of staff and that she won't be changing the menu to pescatarian. She wants to use the data you've analysed to form a business plan (a document created by a company that describes the company's goals, operations, and financial projections.)</p> <p>Students to look at the roles and discuss:</p> <ol style="list-style-type: none"> 1. Which three roles could help Sara? 	<p>Slides 16-21</p> <p>Slide 17-21 printed (optional)</p>



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		<p>2. How would they be involved? And why would it help them knowing about quantities and percentages?</p> <p>Give students the selection of job roles and descriptions. Focus is on how students justify inclusion of job role.</p> <p><i>Depending on the class this can be done in one of two ways. Either:</i></p> <ol style="list-style-type: none">1. <i>Teacher uses the accompanying slides to describe the different roles to the whole class. Have a class discussion to think about the answers to the questions, then students fill in the worksheet individually.</i>2. OR <i>if students are working at different paces within the class, then print slides 17-21 slides so students can use these to make their own decisions.</i>	
5 mins	Reflect – were there opportunities or roles that interested you?	Students should reflect on these questions individually and make a note of their answers in their exercise book.	Slide 22

