

A Guide to Working with Conversions and Time

Teaching Approach

It is vital that the content covered in grade 10 and 11 has been mastered before the integration of content and skills required in grade 12 can be achieved. A solid knowledge of ratio and the calculations involved as well as different time formats and units such as 60 seconds in a minute and 60 minutes in an hour is required. The conversion section will be used in conjunction with among others maps and other representations in the physical world.

Video Summaries

Some videos have a 'PAUSE' moment, at which point the teacher or learner can choose to pause the video and try to answer the question posed or calculate the answer to the problem under discussion. Once the video starts again, the answer to the question or the right answer to the calculation is given.

Mindset suggests a number of ways to use the video lessons. These include:

- Watch or show a lesson as an introduction to a lesson
- Watch or show a lesson after a lesson, as a summary or as a way of adding in some interesting real-life applications or practical aspects
- Design a worksheet or set of questions about one video lesson. Then ask learners to watch a video related to the lesson and to complete the worksheet or questions, either in groups or individually
- Worksheets and questions based on video lessons can be used as short assessments or exercises
- Ask learners to watch a particular video lesson for homework (in the school library or on the website, depending on how the material is available) as preparation for the next days lesson; if desired, learners can be given specific questions to answer in preparation for the next day's lesson.

1. Working with a Recipe

In this video the conversion of a recipe using ratio is explained and weight conversions are used to compare prices of items that have different weights. We will look at conversions to help us determine the best value for money in a supermarket.

2. Using Public Transport Timetable

Area conversions are used to find out how many of an item is needed. We will look at tiling a floor in an office. It is important to work out how many tiles you will need before going to a store to buy them. The areas are in cm^2 and m^2 .

3. Comparing Speed

A trip to Cape Town from Johannesburg is planned using a bus, a train and an airplane. This video deals with elapsed time and the planning that needs to go into making sure you arrive on time.

Resource Material

Resource materials are a list of links available to teachers and learners to enhance their experience of the subject matter. They are not necessarily CAPS aligned and need to be used with discretion.

<p>1. Working with a Recipe</p>	<p>http://www.ilovecooking.co.za/ http://www.food.com/recipes/beginner-cook</p>	<p>When converting a recipe is it recommended that the recipe actually works and if possible contains multiple forms of measurements such as grams, cups, teaspoons etc. Recipes containing imperial and/or metric units may also be used. These links will be helpful.</p>
<p>2. Using Public Transport Timetable</p>	<p>http://www.citysightseeing.co.za/timetableJHB.php http://www.travelstart.co.za/lp/book-cheap-flights?gclid=CJ7VtYXvmroCFbQetAodIm0AVw http://www.aa.co.za/on-the-road/calculator-tools/rates-calculator.html</p>	<p>Planning a trip has several components but it is vital that the information be real and relevant to your teaching context. Make sure that the times are given in different units and different formats where possible. Planning a school tour or holiday may be worthwhile. These links will be helpful.</p>
<p>3. Comparing Speed</p>	<p>http://en.wikipedia.org/wiki/List_of_world_records_in_athletics</p>	<p>When teaching speed it is important to keep the values relevant. Several world records can be used especially since the distances are in m and the times in minutes and seconds. This requires conversion to determine speed in km/h. This link will be helpful.</p>

Task

Question 1

Sugar is sold in size bags. Work out which weight is better value for money if the prices are:

Price of bags of sugar

R5,40 for 250g

R6,49 for 500g

R12,49 for 1 kg

R25,99 for 2,5 kg

Question 2

Sally needs to be at the train station at 14:15. She needs to catch two buses to get there. The first bus takes 19 minutes and the second takes 27 minutes. What time should she catch the first bus if it leaves every 20 minutes starting from 12 o'clock?

Question 3

The new world record for the marathon is 2 hours 3 min 23 sec. Calculate the speed this race was run at in km/h if the distance is 42,2km.

Question 4

Convert the recipe for a cake to serve ten people:

Serves four:

500g of flour

1 cup of milk

2 eggs

5ml of vanilla essence

1 Tbsp of baking powder

125ml of oil

Task Answers

Question 1

$$\frac{250\text{g}}{1000\text{g}} = 0,25\text{kg}$$

$$\frac{500\text{g}}{1000\text{g}} = 0,5\text{kg}$$

$$\frac{\text{R}5,40}{0,25\text{kg}} = \text{R}21,60/\text{kg}$$

$$\frac{\text{R}6,49}{0,5\text{kg}} = \text{R}12,98/\text{kg}$$

$$\frac{\text{R}12,49}{1\text{kg}} = \text{R}12,49/\text{kg}$$

$$\frac{\text{R}25,99}{2,5\text{kg}} = \text{R}10,40$$

Therefore the 2,5kg of sugar is the cheapest per kilogram. Sugar does not spoil so it is worthwhile buying the larger weight.

Question 2

$$19 \text{ min} + 27 \text{ min} = 46 \text{ min}$$

$$2:15 - 15\text{min} = 2 \text{ o' clock}$$

$$46 - 15 = 31 \text{ min left}$$

$$60 - 31 = 29 \text{ min}$$

$$2:00 - 29 \text{ min} = 1:31 \text{ min}$$

This means you have to be on the bus at the latest by 1:31 pm.

The bus leaves every twenty minutes which means you have to catch the bus leaving at 1:20 pm.

Question 3

$$2\text{hrs } 3\text{min } 23\text{sec} = 2\text{hrs} + \frac{3}{60} + \frac{23}{60 \times 60}$$

$$= 2,056388888\dots\text{hrs}$$

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$= \frac{42,2\text{km}}{2,0563888\dots\text{hrs}}$$

$$= 20,52\text{km/h}$$

Question 4

$$\frac{10}{4} = 2,5$$

$$500g \times 2,5 = 1250g = 1,25kg$$

$$1 \text{ cup} \times 2,5 = 2,5 \text{ cups}$$

$$2 \text{ eggs} \times 2,5 = 2,5 \text{ eggs (will need to use weight of eggs)}$$

$$5ml \times 2,5 = 12,5ml$$

$$1 \text{ Tbsp} \times 2,5 = 2,5 \text{ Tbsp}$$

$$125ml \times 2,5 = 312,5ml$$

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