Online practice assessment task for AS91026 (1.1)

From Level 1 Mathematics and Statistics Learning Workbook, published by ESA Publications (NZ) Ltd, ISBN 978-1-927194-23-2

Apply numeric reasoning in solving problems

Chapter 1

Practice assessment task

A bakery makes brown and white loaves each weekday. In both years, the ratio of brown loaves to white loaves on each weekday is 3:2. Brown and white loaves cost the same to make, and are sold for the same price, with equal profit per loaf. All loaves are sold each day.

1. An incomplete table of the daily numbers of loaves made on weekdays for 2010 and 2011 is shown below.

	Mon	Tue	Wed	Thu	Fri
2010	240 loaves	210 Ioaves	180 brown white	250 Ioaves	320 Ioaves
2011	loaves	loaves	brown	loaves	brown white

Use the following information to complete the numbers in the table. Explain all steps in your working.

Between 2010 and 2011:

- the number of loaves made on Mondays increased by 25%.
- the number of loaves made on Tuesdays decreased by $\frac{1}{2}$.
- the number of brown loaves made on Wednesday increased by 30. The number of white loaves also increased (keeping the ratio of brown loaves to white loaves at 3:2).
- the number of loaves made on Thursdays decreased by 6%.

Internally assessed 4 credits

- the number of white loaves made on Fridays in 2011 increased by 32. The number of brown loaves increased proportionally.
- The total number of white and brown loaves made on weekdays in 2010 was an increase of 20% over the total number made in 2009.

The total number of white and brown loaves made on weekdays in 2009 was a decrease of

 $\frac{1}{5}$ over the total number made in 2008.

By what percentage did the total number of loaves made on weekdays change between 2008 and 2010?

 The cost of ingredients increased between 2010 and 2011, so that the profit on each loaf decreased by a certain percentage in 2011. However, since more loaves were sold in 2011, the bakery was able to keep its total profit in 2011 the same as its total profit in 2010, without changing its selling price per loaf.

By what percentage did the profit per loaf decrease in 2011 compared to the profit per loaf in 2010?

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Answers

Outline solution follows – working may vary. 1. Mondays 2011: 240 × 1.25 = 300 loaves **Tuesdays 2011**: $\frac{2}{3}$ of 210 = 140 loaves

Wednesdays

- **2010**: Solving 180:*x* = 3:2 gives *x* = 120 white loaves
- 2011: Number of brown loaves is now 180 + 30 = 210. Let x = number of white loaves. Solving 210:x = 3:2gives x = 140 white loaves, a total of 350 loaves

Thursdays 2011: 250 × 0.94 = 235 loaves

Fridays

- 2010: Sharing 320 in the ratio 3:2 gives $\frac{2}{5}$ of 320 = 128 white loaves.
- 2011: Number of white loaves is now 128 + 32 = 160. Let *x* = number of brown loaves. Solving x:160 = 3:2gives x = 240 brown loaves

	Mon	Tue	Wed	Thu	Fri
2010	240 loaves	210 Ioaves	180 brown <u>120</u> white	250 Ioaves	320 Ioaves
2011	<u> </u>	140 loaves	210 brown 140 white	235 Ioaves	240 brown 160 white

Total number of loaves in 2010 2. = 1 320

> Total number of loaves in 2009 $= 1320 \div 1.2 = 1100$

> Total number of loaves in 2008 $= 1\ 100 \div 0.8 = 1\ 375$

Decrease in number of loaves from 2008–2010 = 55 loaves

% decrease in number of loaves from

$$2008-2010 = \frac{55}{1\,375} \times 100\% = 4\%$$

Let *p* be the profit per loaf in 2010. 3. Total number of loaves in 2010 = 1320

Total profit in 2010 is 1 320 $\times p$

Let *k* be the factor by which profit per loaf is reduced in 2011 after increase in cost of ingredients.

Profit per loaf in 2011 is $p \times k$. Total number of loaves in 2011 = 1 425 Total profit in 2011 is 1 425 \times *p* \times *k* Require 1 320 \times p = 1 425 \times $p \times$ kDividing by *p* then rearranging $k = \frac{1320}{1425}$ k = 0.9263 (4 dp)So decrease in profit per loaf in 2011

compared to 2010 was:

100 - 92.63 = 7.4% (1 dp)