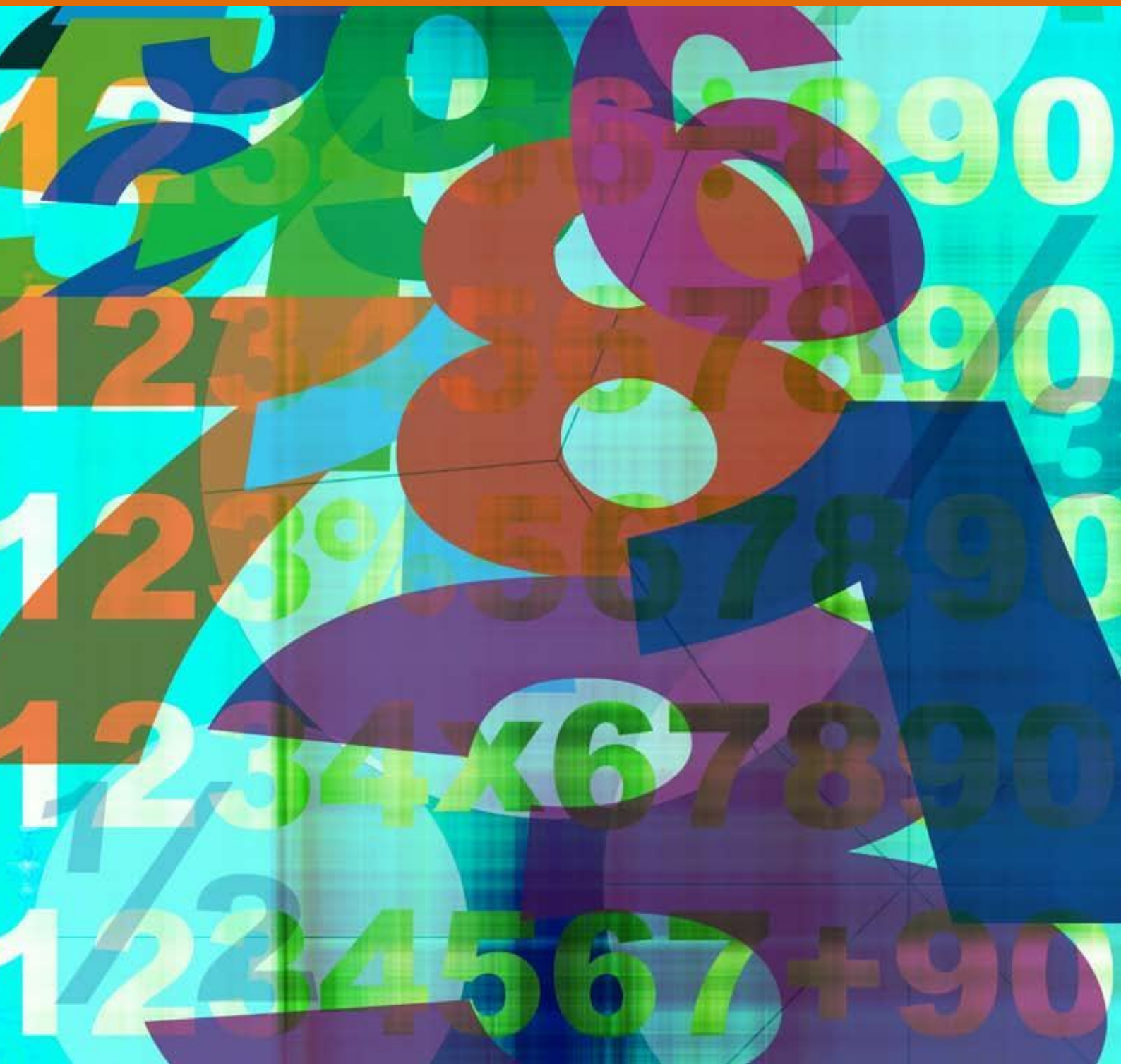
Answers to tasks in Learner Pack

Functional Mathematics

Level 3 Unit 1: Number



Acknowledgements

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Answers for Activity N1: Using the calculator

Activity Using the calculator N1

Task 1

a) On the calculator type in 173.20 followed by the multiplication sign (x) and then type 37 before pressing the equals button (=).
This will give you the cost of 37 8GB iPods
173.20 x 37 = €6408.40

b) On the calculator type 8,500 followed by the division sign (÷) and then type 173.20 before pressing the equals button (=).
This will allow us to see how many iPods can be purchased with the €8,500.
8500 ÷ 173.20 = 49.0762
Therefore we can conclude that they can afford 49 8GB iPods.

Task 2

a)

(i) There are 52 weeks in the year and so the total income will be his weekly income multiplied by 52.
To do this on the calculator we first type in 52 followed by the multiplication sign (x) and then type 490.40 before pressing the equals button (=).
Therefore in a year Brian takes home 490.40 x 52 = €25,500.80

(ii) We will assume that there are four weeks in a month and so to find his monthly pay we must multiply his weekly pay by 4.
To do this on the calculator we first type in 4 followed by the multiplication sign (x) and then type 490.40 before pressing the equals button (=).
Therefore in a month Brian takes home 490.40 x 4 = €1961.60

Answers for Activity N1: Using the calculator

In order to find his monthly pay, you could also divide the amount he earns in a year, €25,500.80, by 12 as there are 12 months in a year. This will work out differently to the previous calculation since there are not always 4 weeks in a month as some months have 5 weeks.
To do this on a calculator you first enter 25,500.80 and then press the divide sign (÷) and then enter 12 before pressing the = sign. This will give you 2,125.066666. This tells us that Brian earns €2,125.07 per month.

b) In order to calculate how much Brian has left after these expenses we must first calculate the total cost of these expenses on the calculator.
To do this type in 76.80 followed by the addition button (+) then type in 56.70 again followed by the addition button (+) next type in 175.69 again followed by the addition button and finally type in 66 and press the equals button (=).
Total expenses = 76.80 + 56.70 + 175.69 + 66 = €375.19.
If Brian spends this amount in February and we know his monthly income is 1961.60 then we subtract the expenses from this amount to see how much he has left once bills have been paid.
To do this on the calculator we type in 1961.60 followed by the subtraction sign (-) first and then type 375.19 before pressing the equals button (=).
In the month of February we know Brian has 1961.60 – 375.19 = €1,586.41 left over.

However, if we use the other figure for his monthly earnings, then Brian has €2,125.07-375.19 =1749.88 left. Use calculator as shown above.

Answers for Activity N2: Playing darts

Activity **Playing darts** **N2**

Task 1

a) To calculate the total score Mark threw we must add his three scores together.
Total score = 18 + 20 + 5
Total Score = 43

b) Again to calculate Adrian's score we must add the three scores together
Adrian's score = 1 + 20 + 20
Adrian's score = 41

c) To calculate the total number of games played by van Barneveld we must add the number of games he played between 1996 and 2000 to the number of games he played between 2001 and 2005 to the number of games he played between 2006 and 2011.
Total number of matches = 22 + 36 + 29
Total number of matches = 87

Task 2

We must remember:

- A natural number is any positive whole number.
- Zero is considered a natural number

13.2	214	-34	29	64.5	11 ½
0	-55	$34\frac{1}{4}$	234	-45	3568

Answers for Activity N2: Playing darts

Task 3

1. 12 + 15 + 13 = 40
2. 61 + 258 + 326 = 645
3. 1002 + 695 + 126 = 1823

Answers for Activity N3: Battle of the Provinces

Activity Battle of the Provinces N3

Task 1

First Ulster gained 24 metres before then losing nine of these metres. Therefore to calculate how much ground Ulster gained we must subtract 9 from 24.

Ground gained = 24 – 9

Ground gained = 15 metres.

Task 2

First Connaught gained 38 metres before then losing 11 of these metres. Therefore to calculate how much ground Connaught gained we must subtract 11 from 38.

Ground gained = 38 – 11

Ground gained = 27 metres.

Answers for Activity N4: Temperature

Activity **Temperature** **N4**

Task 1

We must remember:

- An integer is any positive or negative whole number.

13.2	214	-34	29	64.5	11 ½
0	-55	$34\frac{1}{4}$	234	-45	3568

Task 2

- The number – 3 is smaller than or less than -2 and so this statement is **false.**
- If we were to add three to -1 our answer would be 2 (+ 3 – 1 = 2) and so this statement is **true**.

Task 3

a) The highest temperature was 33° C (in June)

b) The lowest temperature recorded was - 19° C (in January, November and December)

c) -18° C was less than -17° C (i.e. it was colder)

d) False since if you add 6° C to -1° C the answer is 5° C.

Answers for Activity N5: Climate

Activity **Climate** **N5**

Task 1

The difference between the temperatures in Moscow and Dublin in July was 13 degrees Celsius (31 – 18 = 13).

Task 2

The difference between the temperatures in Moscow and Dublin in January was 7 degrees Celsius (19 – 12 = 7).

Answers for Activity N6: Calorie intake

Activity # Calorie intake **N6**

Task 1

We know that every ten minutes on the exercise machines resulted in Elaine losing 54 calories.
In total she did three sessions of ten minutes on the machines so to calculate the total calories burned we must multiply 54 by 3.
Calories burned = 54 x 3
Calories burned = 162

Task 2

The recommended calorie intake per day for women is approximately 2,000 calories.

Elaine's total calorie intake was 1,296 last Monday and so we must subtract this from 2,000.
2000 – 1296 = 704.
Therefore the difference between Elaine's calorie intake last Monday and the recommended intake was 704 calories.

Task 3

4 x 7 = 28
- 2 x 3 = - 6
6 x - 8 = - 48
- 9 x 2 = - 18
- 5 x - 6 = - 30

Answers for Activity N7: Winning money

Activity **Winning money** **N7**

Task 1

Joanne has decided to share the money equally between four people.
Total prize money = 8,000
To calculate everyone's share we must divide this prize money into four equal parts.
Share = 8000 ÷ 4 = 2000
Every member of Joanne's family will get €2,000.

Task 2

Before calculating how much each person will receive we must first see how much of the total winnings remain after the money has been given to charity.
As €3,000 was given to charity so the money that remains to be shared among the syndicate is €24,000 (27,000 – 3,000 = 24,000)
We must split this money in 8 even parts.
Each person's share = 24,000 ÷ 8 = 3,000
Each member of the syndicate will receive €3,000.

Answers for Activity N8: Circles

Activity **Circles** **N8**

Task 1

Colour of Circle	How many parts make the whole circle?	Each part is named….	Symbol for each part
Yellow	1	One	1
Green	2	One half	$\frac{1}{2}$
Blue	3	One third	$\frac{1}{3}$
Red	4	One quarter	$\frac{1}{4}$
Purple	5	One fifth	$\frac{1}{5}$
Orange	6	One sixth	$\frac{1}{6}$

Answers for Activity N8: Circles

Task 2

$\frac{3}{4}$ = Three quarters

$\frac{4}{5}$ = Four fifths

$\frac{6}{7}$ = Six sevenths

Answers for N9 SNAP are in the Learner Pack.

Answers for Activity N10: Wins and losses

Activity **Wins and losses** **N10**

Task 1

a) Ireland won six of a total of ten games therefore we can say that Ireland won $\frac{6}{10}$ of their games.

b) $\frac{6}{10} = \frac{3}{5}$ (We got this by dividing the numerator and the denominator by 2)

c) $\frac{3}{5}$ converts to 3 : 5

d) This ratio tells us that when qualifying for Euro 2012 Ireland won 3 out of every 5 matches played.

Task 2

a) If Munster won 3 games and drew none then they must also have lost 3 games (6 – 3 = 3)

Therefore we can say that Munster lost $\frac{3}{6}$ of their games.

b) $\frac{3}{6} = \frac{1}{2}$ (We got this by dividing the numerator and the denominator by 3)

c) $\frac{1}{2}$ converts to 1:2

d) This ratio tells us that in the 2010/2011 Heineken Cup Munster lost 1 out of every 2 games played.

Answers for Activity N11: How many slices?

Activity **How many slices?** **N11**

Task 1

We know that the pizza is divided up into eighths. Customer 1 buys $\frac{1}{8}$ of the pizza, customer 2 buys $\frac{2}{8}$ of the pizza and customer 3 buys $\frac{1}{8}$ of the pizza.

Therefore the total amount of the pizza sold was $\frac{1}{8} + \frac{2}{8} + \frac{1}{8} = \frac{4}{8}$

To find out how much was left we must subtract $\frac{4}{8}$ from the full pizza ($\frac{8}{8}$)

$\frac{8}{8} - \frac{4}{8} = \frac{4}{8}$

So we know that there was $\frac{4}{8}$ or $\frac{1}{2}$ of the pizza remaining.

Task 2

I would advise Helen to make 2 cakes again this Friday. My reason for this is because last Thursday she sold $\frac{3}{6}$ of one cake and $\frac{4}{6}$ of another so in total she sold $\frac{3}{6} + \frac{4}{6} = \frac{7}{6}$. Since the numerator is bigger than the denominator we know that she sold more than one full cake, in fact she sold $1\frac{1}{6}$ cakes. Therefore in order to make sure she does not run out of cake slices on Friday she will need to bake two cakes.

Answers for Activity N12: Pizza

Activity **Pizza** **N12**

Task 1

$\frac{1}{5}+\frac{1}{3}=\frac{3}{15}+\frac{5}{15}=\frac{8}{15}$

$\frac{2}{3}+\frac{1}{4}=\frac{8}{12}+\frac{3}{12}=\frac{11}{12}$

$\frac{1}{3}-\frac{1}{6}=\frac{2}{6}-\frac{1}{6}=\frac{1}{6}$

$\frac{1}{2}+\frac{2}{5}=\frac{5}{10}+\frac{4}{10}=\frac{9}{10}$

$\frac{1}{2}-\frac{2}{5}=\frac{5}{10}-\frac{4}{10}=\frac{1}{10}$

Task 2

a) Big Pizza Slice: $\frac{3}{4}$ of this pizza is left since only $\frac{1}{4}$ was sold.

Small Pizza Slice: $\frac{5}{6}$ of this pizza is left since only $\frac{1}{6}$ was sold.

b) In total we know that there is $\frac{3}{4}+\frac{5}{6}$ of pizza remaining.

$\frac{3}{4}+\frac{5}{6}=\frac{9}{12}+\frac{10}{12}=\frac{19}{12}$

Therefore we know that there is $1\frac{7}{12}$ pizza remaining.

Answers for Activity N13: Recipes

Activity **Recipes** **N13**

Task 2

First we must remember that real numbers include:

- Positive and negative whole numbers.
- Positive and negative fractions and decimals.

13.2	214	-34	29	64.5	11 ½
0	-55	$34\frac{1}{4}$	234	-45	3568

Therefore from our definition we know that **YES** all these numbers are real numbers.

Answers for Activity N14: Swimming records

Activity **Swimming records** **N14**

Task 1

a) In 2004 it took Michael Phelps 51 seconds and 2 tenths and 5 hundredths of a second to complete the 100 metre butterfly.

b) Phelps new record was 6 tenths and 7 hundredths of a second quicker than the original record that he set in Athens.

Task 2

a) Other sports that may use thousandths of seconds include sprinting, motor – racing and cycling.

Answers for Activity N15: Discover Northern Ireland

Activity Discover Northern Ireland N15

Task 1

a) According to AA route planner the distance from Limerick to Belfast is 364.68 km, the distance from Belfast to Galway is 372.40 km and the distance from Galway to Limerick is 100.74.

b) Total distance is calculated by adding these three distances together.
Total distance = 364.68 + 372.40 + 100.74
Total distance = 837.82 kilometres.

Answers for Activity N16: Ingredients

Activity **Ingredients** **N16**

Task 1

Prior to going to the suppliers, the head baker had 0.17 kg of flour and 1.55 kg of caster sugar in stock. To find the total amount of flour and caster sugar in stock after the trip to the suppliers we must add what was in stock to what the head baker purchased from the supplier.

Total amount of flour = 0.17 + 2.8 = **2.97** kilograms.

Total amount of caster sugar = 1.55 + 1.4 = **2.95** kilograms.

Task 2

First we will look to see the total amount of caster sugar used.

Caster sugar used = 0.66 + 1.4 + .73 = **2.79**

There was 2.79 kilograms of caster sugar used on Saturday.

Now we will look to calculate the total amount of flour used.

Flour used = 0.44 + 1.72 + 0.6 = **2.72**

There was 2.72 kilograms of caster sugar used on Saturday.

To calculate how much caster sugar and flour was left over we must subtract what was used from the amount we had on to begin with on Saturday morning.

Caster sugar left over = 2.95 – 2.79 = **0.16** kilograms of caster sugar remaining

Flour left over = 2.97 – 2.72 = **0.25** kilograms of flour remaining.

Answers for Activity N17: January Sales

Activity **January Sales** **N17**

Task 1

% Percentage	Fraction	Decimal
20%	$\frac{20}{100}$	0.2
30%	$\frac{30}{100}$	0.3
45%	$\frac{45}{100}$	0.45
65%	$\frac{65}{100}$	0.65
85%	$\frac{85}{100}$	0.85

Task 2

a) In order to calculate total cost we must add the original price of both items together.

Total cost at original price = 27 + 24

Total cost at original price **= € 51**

b) To calculate the discount we must find 24% of €27.00

24% = $\frac{24}{100}$ = 0.24

Therefore 24% of 27 = 0.24 x 27 = 6.48

In the sale you would save **€6.48** on the hoodie.

Answers for Activity N17: January Sales

c) To calculate the discount we must find 19% of €24.00

24% = $\frac{19}{100}$ = 0.19

Therefore 19% of 24 = 0.19 x 24 = 4.56

In the sale you would save **€4.56** on the tracksuit bottoms.

d) To calculate the cost of the items in the sale we must first calculate the sale price by subtracting the discount from the original price.

Sale price of hoodie = 27 – 6.48 **=** €20.52

Sale price of tracksuit bottoms = 24 – 4.596 **=** €19.44

Total cost in the sale = 20.52 + 19.44 = **€39.96**

Answers for Activity N18: Maths results

Activity **Maths results** **N18**

Task 1

a) In order to calculate this we must convert the fractions and decimals outlined in the question to percentages. This is done in the table below:

Grade	Fraction/Decimal in Question	Percentage
B	$\frac{7}{25}$	$\frac{7}{25} \times \frac{100}{1} = 28\%$
C	0.29	$0.29 = \frac{29}{100} \times \frac{100}{1} = 29\%$
D	0.22	$0.22 = \frac{22}{100} \times \frac{100}{1} = 22\%$
E/F	$\frac{9}{100}$	$\frac{9}{100} \times \frac{100}{1} = 9\%$

To calculate the percentage of students who got an A grade we must subtract the other grades from 100% (the total number of students who sat the Ordinary Level paper.

Percentage that got an A = 100 – 28 – 29 – 22 – 9 = 12

12% of the 2010 cohort **got an A.**

b) In order to calculate the difference we subtract the percentage that got a B grade from the percentage that got a C grade.

Difference = 29 – 28

Difference = 1%

Answers for Activity N18: Maths results

Task 2

% Percentage	Fraction	Decimal
40%	$\frac{2}{5}$	0.4
55%	$\frac{11}{20}$	0.55
32%	$\frac{8}{25}$	0.32
56%	$\frac{14}{25}$	0.56
35%	$\frac{7}{20}$	0.35

Answers for Activity N19: The weekly shop

Activity The weekly shop N19

Task 1

In order to calculate how much Ciara spends on each food type we must first convert the fractions and percentages to decimals.

She spends $\frac{2}{5}$ on dairy. $\frac{2}{5} = \frac{40}{100} = 0.4$

She spends 25% on carbohydrates. 25% = $\frac{25}{100} = 0.25$

She spends 0.35 on red meat.

In total we know Ciara spends €75 on her weekly shop.

Amount spent on **dairy** = 0.4 of 75 = 0.4 x 75 = **€30**

Amount spent on **carbohydrates** = 0.25 of 75 = 0.25 x 75 = €**18.75**

Amount spent on red **meat** = 0.35 of 75 = 0.35 x 75 = **€26.25**

Answers for Activity N19: The weekly shop

Task 2

In order to calculate how much Tom and Margaret spend on each food type we must first convert the fractions and percentages to decimals.

They spend $\frac{1}{4}$ on carbohydrates. $\frac{1}{4} = \frac{25}{100} = 0.25$

They spend 15% on protein enriched foods. $15\% = \frac{15}{100} = 0.15$

They spend 0.1 on snacks.

They spend $\frac{1}{10}$ on dairy products. $\frac{1}{10} = \frac{10}{100} = 0.1$

They spend $\frac{3}{20}$ on fruit and vegetables. $\frac{3}{20} = \frac{15}{100} = 0.15$

They spend 0.25 on red meat.

In total we know Tom and Margaret spend €140 on their weekly shop.

Amount spent on carbohydrates = 0.25 of 140 = 0.25 x 140 = €35

Amount spent on protein enriched foods = 0.15 of 140 = 0.15 x 140 = €21

Amount spent on snacks = 0.1 of 140 = 0.1 x 140 = €14

Amount spent on dairy products = 0.1 of 140 = 0.1 x 140 = €14

Amount spent on fruit and vegetables = 0.15 of 140 = 0.15 x 140 = €21

Amount spent on red meat = 0.25 of 140 = 0.25 x 140 = €35

Answers for Activity N20: Dividing your winnings

Activity Dividing your winnings N20

Task 1

Ricky wants to divide the money in the ratio of 4:3:1.

The first step is to convert the ratios to fraction form

Add up the ratios: 4 + 3 + 1 = 8 (this is the denominator)

Put each fraction over the denominator $\frac{4}{8}: \frac{3}{8}: \frac{1}{8}$

Ricky gives the largest sum to his eldest daughter which is $\frac{4}{8}$ of 1500

$\frac{4}{8}$ of 1500

0.5 x 1500 = 750

Ricky gives €750 to his eldest daughter.

Task 2

Alan wants to divide the money in the ratio of 3:2:1.

The first step is to convert the ratios to fraction form

Add up the ratios: 3 + 2 + 1 = 6 (this is the denominator)
Put each fraction over the denominator $\frac{3}{6}: \frac{2}{6}: \frac{1}{6}$

The daughter gets $\frac{2}{6}$ of 22,000

$\frac{2}{6}$ of 22000

0.33 x 22000= 7333.33

The daughter gets €7333.33.

Answers for Activity N20: Dividing your winnings

Task 3

$\frac{17}{5}$: $\frac{11}{5}$: $\frac{24}{5}$

This can be written as 17: 11: 24.

Task 4

$\frac{7}{3}$: $\frac{8}{3}$: $\frac{10}{3}$

This can be written as 7: 8: 10.

Answers for Activity N21: Croke Park

Activity **Croke Park** **N21**

Task 1

a) 81,200

b) $\frac{81214}{82300} \times \frac{100}{1}\%$

= 98.68%

c) 20,061 + 81,214 = 101,275

To the nearest thousand: 101,000

Task 2

a) 25,400

b) 25,000

c) $\frac{25442}{82300} \times \frac{100}{1}\%$

= 30.9137%

= 30.91%

Answers for Activity N22: Bus timetables

Activity Bus timetables N22

Task 1

13:40 = 1.40pm

22.09 = 10.09pm

03.25 = 3.25am

Task 2

Elaine should get the 09.45 bus on Wednesday morning.

On a Thursday evening Elaine should get the 17.15 bus. If she gets this bus she will be back in Merrion Square at 18.30.

She arrives at work at 5.55pm.

Answers for Activity N22: Bus timetables

Task 3

(i) 11.45 – 11.20 = 25 minutes

(i) Speed = Distance ÷ Time

25 minutes can be expressed as $^{25}/_{60} = {}^{5}/_{12} = 0.4167$

Speed = 24 ÷ 0.4167

Speed = 57.60 km/hour

Task 4

(i) 10.25 – 08.45 = 1 hour 40 minutes

(ii) Distance = Speed x Time

1 hour 40 minutes can be expressed as $1^{40}/_{60} = 1^{2}/_{3} = 1.67$

Distance = 50 x 1.67

Distance = 83.50 km

Answers for Activity N23: Winter Sales

Activity **Winter Sales** **N23**

Task 1

(i) First we must round every item off to the nearest euro.

1 punnet of mushrooms = 99 cent = €1
2 cartons of milk = 2 x 1.09 = €2.18 = €2
1 box of Weetabix = €3.45 = €3
Fairy Liquid = €2.75 = €3
1 pack of Chipsticks = €2.25 = €2
4 Corner Crunch Yogurts = 4 x 69 = €2.76 = €3
Ariel Washing Powder = €10.50 = €11

Therefore we can estimate the total cost of the shopping to be:
1 + 2 + 3 + 3 + 2 + 3 + 11
Estimated total = **€25.**

(ii) Savings were made on 4 different items:

Weetabix = A discount of 25%
To calculate this we must find 25% or 0.25 of 3.45
0.25 x 3.45 = 0.8625 therefore we made a saving of **86 cent.**

Chipsticks = A discount of 10%
To calculate this we must find 10% or 0.1 of 2.25
0.1 x 2.25 = 0.225 therefore we made a saving of **23 cent**

Answers for Activity N23: Winter Sales

4 Crunch Corners = Buy one get one free.
This means if we buy 4 we will get 2 free (i.e. we don't have to pay for 2) so we make a saving of **1.38** (0.69 x 2)

Ariel = Half price
To calculate this we must find ½ of 0.5 of 10.50
0.5 x 10.50 = 5.25 therefore we made a saving of **€5.25**
Total savings = 0.86 + 0.23 + 1.38 + 5.25
Total savings = €7.72

(iii) First we must write down the price of the reduced items
Weetabix = 3.45 – 0.86 = 2.59
Chipsticks = 2.25 – 0.23 = 2.02
Crunch Corners = 2.76 – 1.38 = 1.38
Ariel = 10.50 – 5.25 = 5.25

Total Cost = 0.99 + 2.18 + 2.59 + 2.75 + 2.02 + 1.38 + 5.25
Total Cost = €17.16

(iv) Cost of entire shopping is equal to four times our previous answer.
Total Shopping Bill = 17.16 x 4 = 68.64
When we round this to the nearest ten cent we get an answer of **€68.60**

Answers for Activity N24: Furnishing a room

Activity Furnishing a room N24

Task 1

a) We know 1 m = 100 cm = 1000 mm

Therefore we know 1.8 m = (1.8 x 100) cm = (1.8 x 1000) mm

1.8 m = 180 cm

1.8 m = 1800 mm

b) (i) We know 1 l = 100 cl

240 l = (240 x 100) cl

240 l = 24,000 cl

(ii) We know 1,000 mm = 1 m

2,000 mm = (2 x 1) m

2,000 mm = 2 m

c) We know 1 l = 100 cl

Therefore 1.5 l = (1.5 x 100) cl = 150 cl.

If each cup can hold 30 cl then we can calculate how many cups can be filled by dividing 150 by 30.

150 ÷ 30 = 5 cups.

Answers for Activity N24: Furnishing a room

Task 2

(i) In total five 2-litre bottles were ordered by “Snip-It” and so we know that they ordered 10 litres of shampoo.
We know 1 l = 1,000 ml and therefore 10 l = (10 x 1,000) ml
Snip –It ordered 10,000 millilitres or shampoo.

(ii) In order to solve this problem we must first convert the litres to centilitres as the dispensers give out shampoo by centilitres.
1 l = 100 cl and therefore 10 l = (10 x 100) cl = 1,000 cl.
Each wash uses (20 x 2) cl = 40 cl.
Therefore the number of washes that can be done using the five bottles ordered is 25 (1,000 ÷ 40).

(iii) First we will convert the height of the room to centimetres.
1 m = 100 cm therefore we know 2.15 m = (2.15 x 100) cm = 215 cm.
The total height of seven boxes = 45 x 7 = 315 cm.
We see the total height of the two boxes exceeds the total height of the room by 100 cm or 1 metre and so it would not be possible to stack all these boxes on top of each other in the store room.

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