**Student Activity – Savings**

**Tech-Toc Computer Company is advertising a limited offer on Laptops that will be available in the coming months:**

**2 laptops for the price of 1 for €500**

**The following expressions describe the daily savings/spending in € of pairs of brothers and sisters in 5 different families interested in the laptop offer.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **O’ Donnell** | **Harrington** | **Foley** | **Mc Carthy** | **Collins** |
| **Mary:** **2d + 1** | **Isabelle:** **300 – 2d** | **Cian:** **200** | **Fionn:** **5d** | **Avril:** **452 – d** |
| **John:** **3 + 2d** | **Sarah:** **4d + 30** | **Mark:** **-16 + 4d** | **Ellen:** **10** | **Mike:** **d + 40** |

1. **Match the expressions to their description in TABLE X. In some cases there is more than one description.**
2. **Find expressions as simple as possible to describe the combined savings/spending of the families:**

**Mary and John O’ Donnell: \_\_\_\_\_4d + 4\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Isabelle and Sarah Harrington: \_\_\_\_\_\_2d + 330\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Cian and Mark Foley: \_\_\_\_\_\_4d + 184\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Fionn and Ellen Mc Carthy: \_\_\_\_\_\_5d + 10\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Avril and Mike Collins: \_\_\_\_\_\_492\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **Explain the steps for simplifying these expressions using an example from the table:**

**I’ll use the Harrington expression 2d + 330 as my example:**

1. **300 + 30 = 330**

**You add these amounts together because that’s what they started with and that doesn’t change**

1. **-2d + 4d = 2d.**

**You add these together because Isabelle is spending €2 every day and Sarah is saving €4 every day so together they are saving €2 everyday**

1. **330 + 2d. I checked my answer with numbers in two ways:**

**For example 5 days:**

1. **330 + 2(5) =340. The rule BOMDAS says you have to multiply before you add.**
2. **Isabelle: 300 – 2(5) = 290**

**Sarah: 4(5) + 30 = 50**

**290 + 50 = 340**

1. **You can write the expression as 330 + 4d or 4d + 330 because you’re allowed to re-order terms when you are adding**

**Extension Questions:**

1. **If the laptop offer is available in 12 weeks from when the families start saving,**
2. **which family will be the first to reach €500? Explain how you arrived at your answer.**

**The Foleys because they have €184 (€200-€16) and they are saving €4 everyday which means it will take them 79 days(184**$÷$ **4) to get to €500 and the lap tops will be available in 84 days (12 weeks)**

1. **if the laptops at this price sell out in 2 weeks after they become available, what families fall short of the offer? Explain your answer:**
2. **The O’Donnells because they start with €4 so that means they have to save €496. They are saving €4 everyday but it will take them 124 days to get to €500 and all the laptops will be gone in 98days (84 days + 14 days = 98 days)**
3. **The Collins will never get to €500 because although they start with alot, €492, for each euro Mike is saving, Avril is spending a euro so they are never going to reach €500 .**
4. **What if they decided not to go by family, name the pairs that will be in a position to buy the laptops if they become available in 2 weeks. Explain your reasoning:**

**(1)Avril Collins and Cian Foley**

**start with €652 and spend €1 a day so in 2 weeks they will still have €638 and will be able to buy the laptops.**

**(2)Avril Collins and Fionn Mc Carthy**

**Avril starts with €452 and spends €1 everyday. Fionn doesn’t start with anything but he saves €5 everyday. If they put their savings together, €452 + 4d, they will have the money for the laptops in 12 days.**

1. **The O’ Donnell and Mc Carthy families decide to combine all their savings/spending to avail of the laptop offer:**
2. **Write an expression as simple as possible to describe their combined savings/spendings**

**9d + 14**

1. **John O’ Donnell decides to opt out:**
2. **Represent this situation using the expression from 5(a) and John’s expression:**

**9d + 14 – (2d +3) or 9d + 14 – (3+ 2d)**

**(ii) Students were asked to simplify this expression:**

**Student A wrote:** 7d + 17

**Student B wrote**: 7d +11

**Student C wrote: 11d + 11**

**Which student simplified the expression correctly?**

**Student B**

1. **What advice would you give to the students who didn’t simplify the expression correctly?**

**When you subtract you might think you’re only subtracting the first term of the expression. This is what you, Student A and C, did. It is best if you put a bracket around the expression so you don’t forget to subtract ALL of the terms.**

**Table X**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Starts with €1 and saves €2 every day** | **Starts with €452 and spends €1 every day** | **Starts with €200 and doesn’t save anything** | **Starts with €30 and saves €4 every day** | **Starts with €40 and saves €1 every day** |
| **Starts with €300 and spends €2 every day** | **Multiply d by 4 and add 30** | **Multiply d by 2 and then add 3** | **Starts with nothing and saves €5 everyday** | **Add 4 to 6, then multiply by 40 and divide by 2** |
| **Owes 16 and saves €4 everyday** | **Starts with €10 and doesn’t save anything** | **Subtract 4 from d and then multiply by 4** | **Subtract d from 150, then multiply by 2** | **Multiply d by two then add one** |