Reasoning in the classroom

Buying a scooter

Support materials for teachers

Year 4

Llywodraeth Cymru
Welsh Government

Year 4 Reasoning in the classroom – Buying a scooter

These Year 4 activities offer opportunities to work with money and calendars.

Activity 1

Buying a scooter
Learners use a calendar to decide how many weeks it will take to save enough money to buy a scooter.

Includes:
- Buying a scooter question
- Markscheme

Activity 2

Save to buy
They then decide how long it would take them to save enough money to 'buy' an item of their own choice.

Includes:
- Explain and question – instructions for teachers
- Teachers' sheet – Pocket money

Activity 3

Friday 13th
Learners investigate how many Friday 13ths there are in any one year.

Includes:
- Explain and question – instructions for teachers

Reasoning skills required

Identify	Communicate	Review
Learners make their own savings plan, working logically and keeping track of every step.	They decide what information to write down and present their work to other pairs/groups.	They review their plan to make sure it is realistic, and check their work to ensure it makes sense.

Procedural skills

- **Interpreting calendars**
- **Adding and subtracting money**
- **Use of multiplication and division when problem solving**

Activity 1

Buying a scooter

Activity 1 – Buying a scooter

Outline

Learners use a calendar to identify when Jane will have saved enough money to buy a scooter. They decide for themselves how to use the calendar and how to show their working.

You will need

Buying a scooter question
One page for each learner

Markscheme

Jane wants to buy this scooter.

Today is **1st September**.

I have saved **£12** so far.

Every **Saturday** Jane saves another **50p**.

On what date can she buy the scooter?

September

Mon	Tues	Wed	Thur	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October

Mon	Tues	Wed	Thur	Fri	Sat	Sun
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

3m

Activity 1 – Buying a scooter – Markscheme

Marks	Answer
3m	Gives the answer **11**(th) **October**, **12**(th) **October** or **13**(th) **October** (ignore any day of the week written alongside)
Or 2m	Gives the answer **11**(th), **12**(th) or **13**(th) but without October (do not accept an incorrect month for 2m) Or Shows or implies that it will take her **6 weeks** to save, e.g. • Any 6 consecutive Saturdays ringed on the calendar
Or 1m	Gives the answer **4**(th) **October**, **5**(th) **October** or **6**(th) **October** Or Gives the answer **18**(th) **October**, **19**(th) **October** or **20**(th) **October** Or Shows or implies that there are **six 50ps** in **£3**, e.g. • 6 seen • 50 + 50 + 50 + 50 + 50 + 50 • 6 consecutive days ringed on the calendar

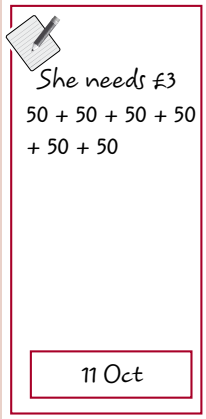
Some learners assume that if she gets the money on the 11th she cannot buy until the 12th

And some also assume that the relevant shop is closed on Sundays so she cannot buy until the 13th

One too few weeks

One too many weeks

Activity 1 – Buying a scooter – Exemplars



September

Mon	Tues	Wed	Thur	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
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October

Mon	Tues	Wed	Thur	Fri	Sat	Sun
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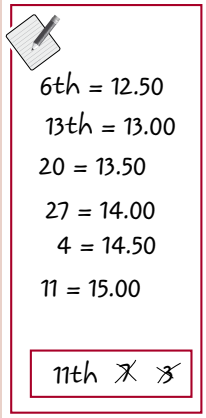
Correct; **3 marks**

- This learner shows effective numerical communication.



September

Mon	Tues	Wed	Thur	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October

Mon	Tues	Wed	Thur	Fri	Sat	Sun
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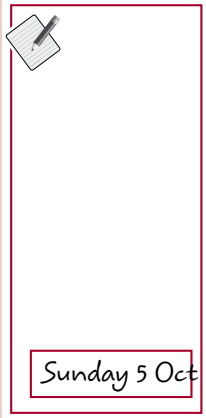
11th but no month; **2 marks**

- This learner chooses an effective strategy of building up the money by 50p each week. However, the month is omitted.



September

Mon	Tues	Wed	Thur	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
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October

Mon	Tues	Wed	Thur	Fri	Sat	Sun
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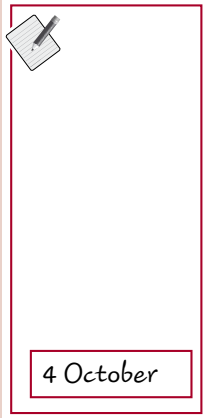
5th October; **1 mark**

- This learner has assumed the purchase cannot be made until the day after the money is saved. Why there is one week too few would be a useful discussion point after the test.



September

Mon	Tues	Wed	Thur	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	32	33	34	35

October

Mon	Tues	Wed	Thur	Fri	Sat	Sun
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
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4th October; **1 mark**

Common error

This learner shows their unfamiliarity with calendars by inserting dates that do not exist. Because of 34 September, an additional week has been inserted, hence the answer 4(th) October. This is a common error.

Activity 2

Save to buy

Activity 2 – Save to buy

Outline

This activity is designed to carry on from **Activity 1 – Buying a scooter**.

Working in pairs or small groups, learners choose from a catalogue an item they would like to 'buy'.

They then work out when they will have saved enough to buy that item, using 'their' pocket money, the amount of which is randomly allocated.

Learners present their workings to the rest of the class who review the savings plan and its feasibility.

You will need

Calendars for the current year
These are freely available online, e.g.
www.calendarlabs.com/online-calendar.php

Catalogues showing items for learners to 'buy'

Teachers' sheet – Pocket money
Cut into cards: each pair/group chooses one

Scissors

Glue

Activity 2 – Save to buy

Explain

Discuss with learners whether they have ever saved up for anything.

Explain that in their pairs/small groups, they are going to be given some pretend pocket money. They will then choose something they would like to 'buy', before working out the number of weeks it would take them to save up the money they need.

Let each pair/small group choose randomly from the cards showing how much pocket money they will get each week *(making sure they understand what this means, and that issues relating to learners who do not receive pocket money are handled sensitively)*.

From catalogues, or similar, they choose something they would like to save up for.

Hand them a calendar (current year), and ask them to work out how long it will take them to save enough money to buy their chosen item.

Encourage them to consider how realistic it is for them to save for that item: for example, if they have only been allocated 10p a week, and they have chosen a computer, it will take far too long to save enough, so they might be better changing their item.

Ask them to present their working by cutting out the image of their chosen item *(if this is appropriate)* and the calendar, sticking them on their paper/card, and then showing their workings in any way they choose.

The activity can end with pairs/small groups presenting their 'plan' to the rest of the class, who check its accuracy and also feasibility in terms of 'real-life' saving.

Or

Prepare a worksheet full of toy choices, with their prices.

Question

- Is it realistic for you to save for your chosen item? In real life, do you think you would be able to stick to your plan?
- What is the best *(most effective)* way of working out how many weeks it will take you to save? Why is multiplication quicker than repeated addition?
- How can you present your work so other people find it interesting and it makes sense?

Extension

- What if the item you want to buy is for someone else for Christmas (or for their birthday)? Can you work out how many weeks you would have from now, and how much you would have to save each week?

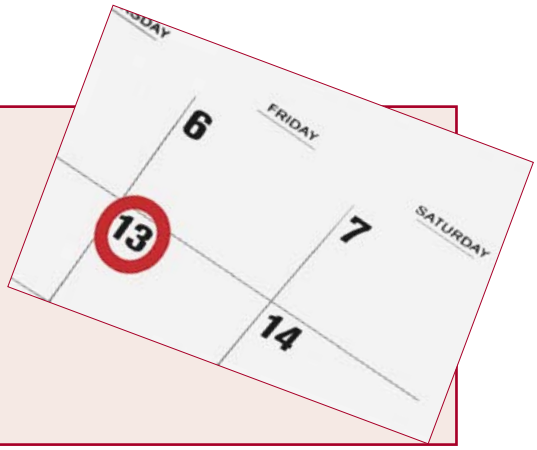
10p	20p	50p	£1
10p	20p	50p	£1

Before the activity, cut the cards and place them in a hat (or similar).
Each pair/group then chooses one of the cards. This tells them how much weekly pocket money they have to 'save'.

Activity 3

Friday 13th

Activity 3 – Friday 13th



Outline

This activity is designed to carry on from **Activity 1 – Buying a scooter**, but could readily be used as a stand-alone activity.

Learners investigate how frequently the 13th of a month is on a Friday and whether the number of Friday 13ths is the same each year.

They present their findings orally or on a poster.

You will need

Calendars for the different years
These are freely available online, e.g.
www.calendarlabs.com/online-calendar.php

Activity 3 – Friday 13th

Explain

Discuss the fact that some people think that Friday 13th is an unlucky day. *(Lots of people don't! And in Italy, the number 13 is considered lucky, whereas Friday 17th is thought to be unlucky.)*

But how often is the 13th of a month on a Friday?

And is the number of Friday 13ths the same each year?

Give learners access to calendars for different years and ask them to investigate how many times in each year the 13th of a month lands on a Friday.

Learners then present their findings orally and/or on a poster.

Or

Learners visit designated websites to find this information for themselves.

Question

- Is the number of Friday 13ths the same each year? How do you know?
- What about your birthday? Is that on the same day each year? How does it change?
- What do you know about leap years? How often do they happen? Why do we have leap years?
- How many leap years will you have lived through when you are 60 years old?

Extension

- How many days have passed since you were born?