Reasoning in the classroom

Carnival

Support materials for teachers

Year 2

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Year 2 Reasoning in the classroom – Carnival

In these Year 2 activities, learners use a wide range of numerical skills within the context of a carnival procession and the particular delights of the Carnival King.

Activity 1

Carnival
Learners use different clocks to work out the route of the carnival procession.
Includes:
- Teachers' script
- PowerPoint presentation
- Carnival questions
- Markscheme

Activity 2

Magic carpet
They 'visit' places within that route to find numbers which they build into number sentences to help the king fly his magic carpet.
Includes:
- Explain and question – instructions for teachers
- Whiteboard – Carnival King
- Whiteboard – Map of the town
- Resource sheet – Map of the town
- Resource sheet – Magic carpet

Activity 3

The king's cakes
Using modelling dough, they make 'cakes', weighing to ensure accuracy, and use simple permutations to create different toppings.
Includes:
- Explain and question – instructions for teachers
- Whiteboard – The king also loves cakes

Reasoning skills required

Identify

Learners choose their own methods and strategies.

Communicate

They explain and discuss their responses.

Review

They review their own work and that of their peers.

Procedural skills

- **Time (reading clocks)**
- **Block graphs**
- **Number bonds (to 10)**
- **Addition, subtraction**
- **Multiplication, division**
- **Choosing operators**
- **Measuring (distances, using string)**
- **Weighing (grams)**

Numerical language

- **More**
- **Add, subtract, multiply**
- **Total**
- **Operator (if appropriate)**
- **Order**
- **Distance**
- **Weight**
- **Grams**

Carnival

Activity 1 – Carnival

Outline

In this activity learners work out the route of a carnival by reading times on clocks.

You will need

TS **Teachers' script**

PowerPoint presentation

Q **Carnival questions**
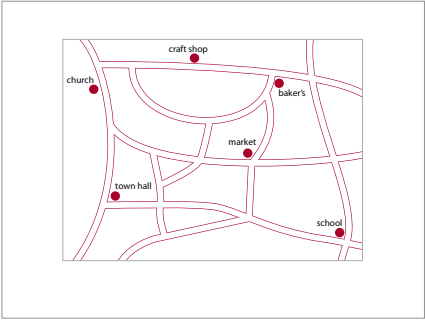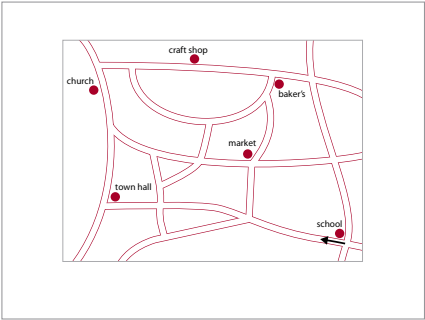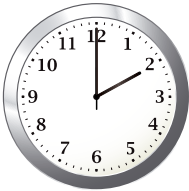Two pages for each learner, can be printed double-sided

M **Markscheme**

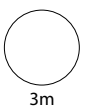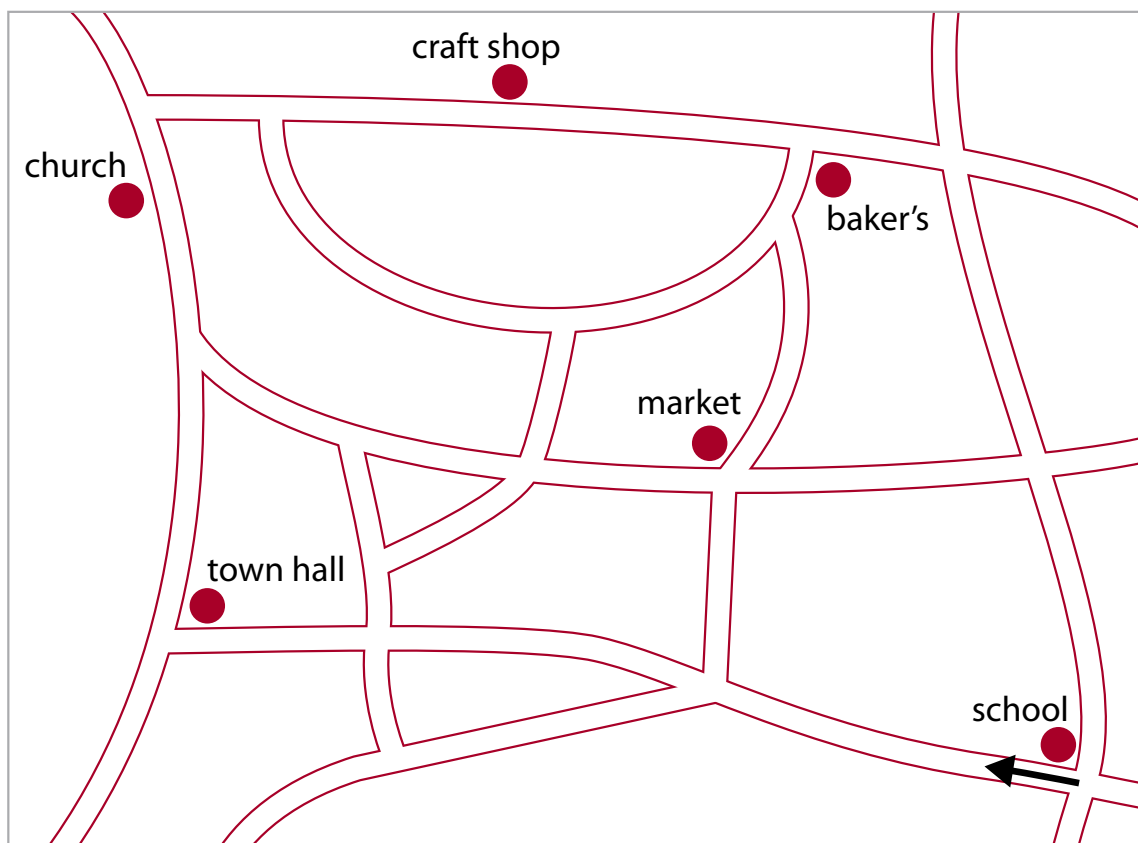# Presentation to be shown to learners before they work on Carnival

The text in the right-hand boxes (but not italics) should be read to learners. You can use your own words, or provide additional explanation of contexts, if necessary. However, if you are using this as an assessment item, no help must be given with the numeracy that is to be assessed.

Slide 1		*(Keep this slide on the screen until you are ready to start the presentation.)*
Slide 2		Can you tell me about this photograph? What do you think it is showing? *(Encourage discussion.)* That's right, it shows people dressed up in costumes like kings and queens. They have dressed up for a carnival. They are sitting on a small lorry that is called a float.
Slide 3		Here is a photograph of a bigger float that is in the carnival. Some of the floats are very big. Some are medium, and some are small.
Slide 4		And some of the floats have people who walk alongside them. All the floats go along the road so that people can watch them and admire the floats as they go past. The floats go really slowly, one after the other in a long line.

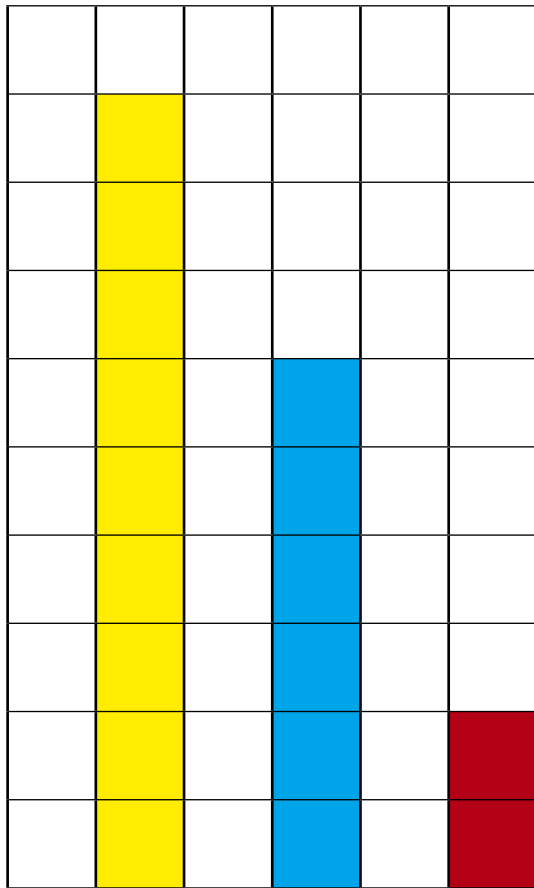|		
Slide 5		Here is a map of a town. The people that live in the town planned where the floats in their carnival would go. What are these red lines? That's right, they are roads. And what are the red circles? Well done, they show where different places are in the town. Can you show me where the town hall is? And where is the craft shop? Now show me the school.
Slide 6		The floats started here at the school. Which way did they go? That's right, they went this way *(point)* because the arrow is showing their direction.
Slide 7	 school clock	The clock shows the time when the carnival started and the first float left the school. What time was it? Well done, it was 2 o'clock. The floats went past other places at different times. Now you are going to use the clocks to find the route – which roads the floats went on. Remember to show your working so that someone else can understand what you are doing and why. *(If you are using this item for assessment purposes, you may wish to limit the time available, e.g. 15 minutes.)*

school	craft shop	church
town hall	market	baker's

Use the clocks. Draw their route on the map.

craft shop

church

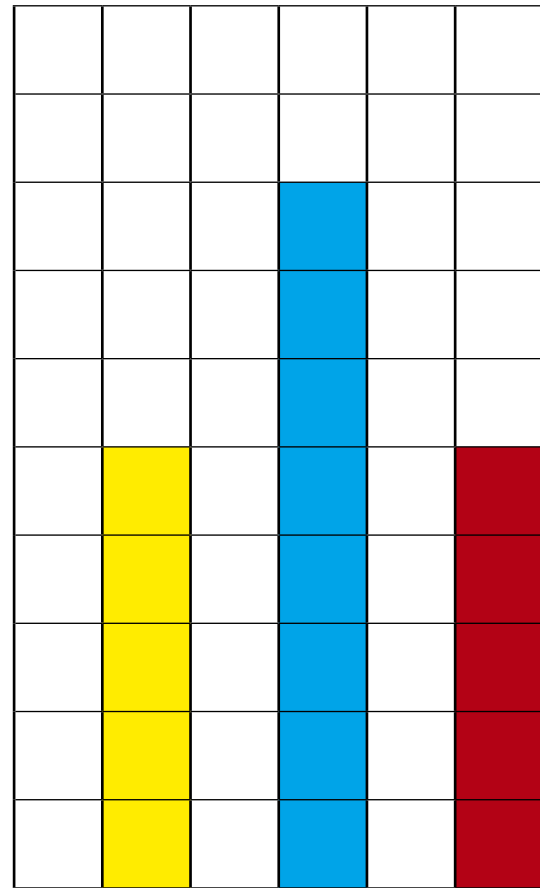baker's

market

town hall

school

3m

Floats last year   **Floats this year**

Key:

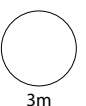| | **1 big** float | | **1 medium** float | | **1 small** float |
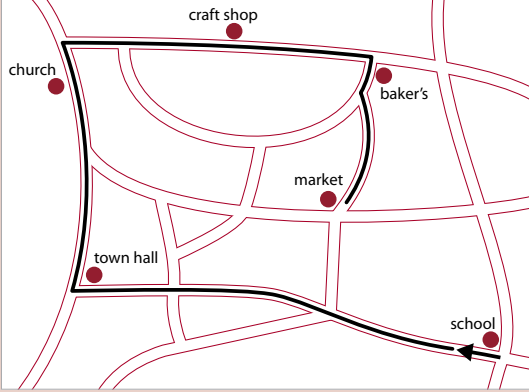
How many **more** floats this year than last year?

| more |

3m

Activity 1 – Carnival – Markscheme

| Q	Marks	Answer
i	3m	Shows the correct route:
	Or 2m	Starts by going from the school to the town hall to the church Or Finishes by going from the craft shop to the baker's to the market
	Or 1m	Starts by going from the school to the town hall Or Finishes at the market

Throughout, accept alternative routes that do not go past places identified on the map, e.g. from the school to the town hall accept

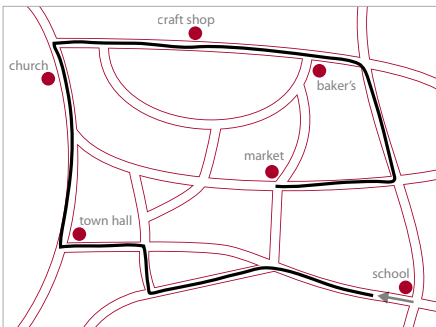| Q	Marks	Answer
ii	3m	**1** more
	Or 2m	Shows all three correct differences, e.g. • Down 4, up 2, up 3 • 4, 2, 3 Or Shows 17 **and** 18
	Or 1m	Shows any two correct differences Or Shows 17 **or** 18
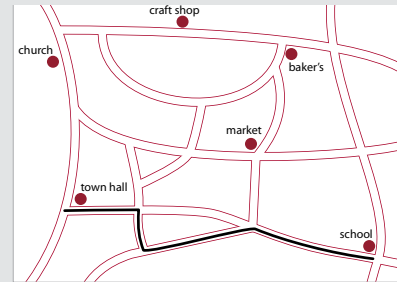
Activity 1 – Carnival – Exemplars

Part i
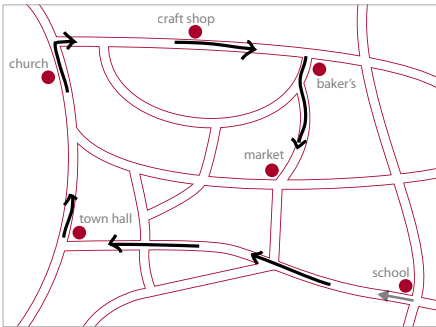
Correct; **3 marks**

Correct; **3 marks**

- Although this is not the most direct route, each of the places visited is in the correct order.
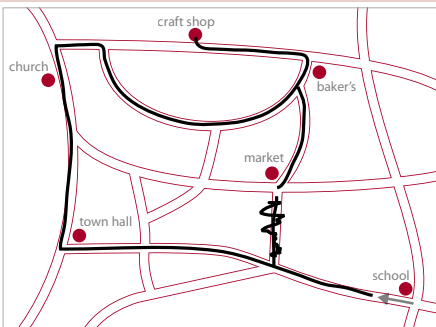
School to town hall to church; **2 marks**
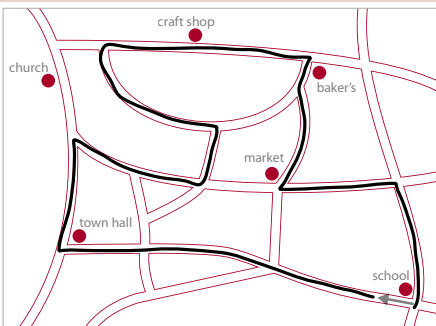
Craft shop to baker's to market; **2 marks**

- The first part of the route omits the church. However, the second part is correct – the continuation of the route from the market to the school can be ignored.
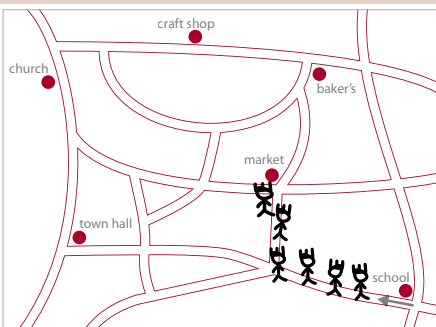
Finishes at the market; **1 mark**

- This learner has concentrated on drawing rather than answering the question. However, their route finishes at the correct place.

Magic carpet

Activity 2 – Magic carpet

Outline

In this activity, learners help the king to fly his magic carpet by collecting numbers and choosing operations. They use string to compare distances on a simple map.

You will need

WB   **Whiteboard – Carnival King**

WB   **Whiteboard – Map of the town**

R   **Resource sheet – Map of the town**
One sheet for each group/pair

R   **Resource sheet – Magic carpet**
One sheet for each group/pair

String

Activity 2 – Magic carpet

Explain

Show **Carnival King** on the whiteboard and tell learners that this king has a magic carpet. To make the carpet fly, the king needs to collect numbers to count down from 10 to 0 – then blast off! Sadly for him, however, all the numbers are stored at different places. Show **Map of the town** on the whiteboard and explain that, for example, all the 6's are stored at the school. The king needs their help!

First, the king must collect three different numbers to make 10. Ask learners which three numbers he could collect. *(Using addition only, there are three possible answers, 6 + 3 + 1, 5 + 4 + 1, 5 + 3 + 2. Note that order does not matter, so 6 + 3 + 1, for example, is the same as 1 + 3 + 6.)*

Now give each group/pair a copy of the resource sheet **Map of the town** and a copy of the resource sheet **Magic carpet**. Make sure that learners understand that the king can use only the numbers 1, 2, 3, 4, 5 and 6 and that, for each number sentence, he can use each number only once. Say that when they have helped the king to make each of the numbers 10 to 0, he will be able to make his magic carpet fly!
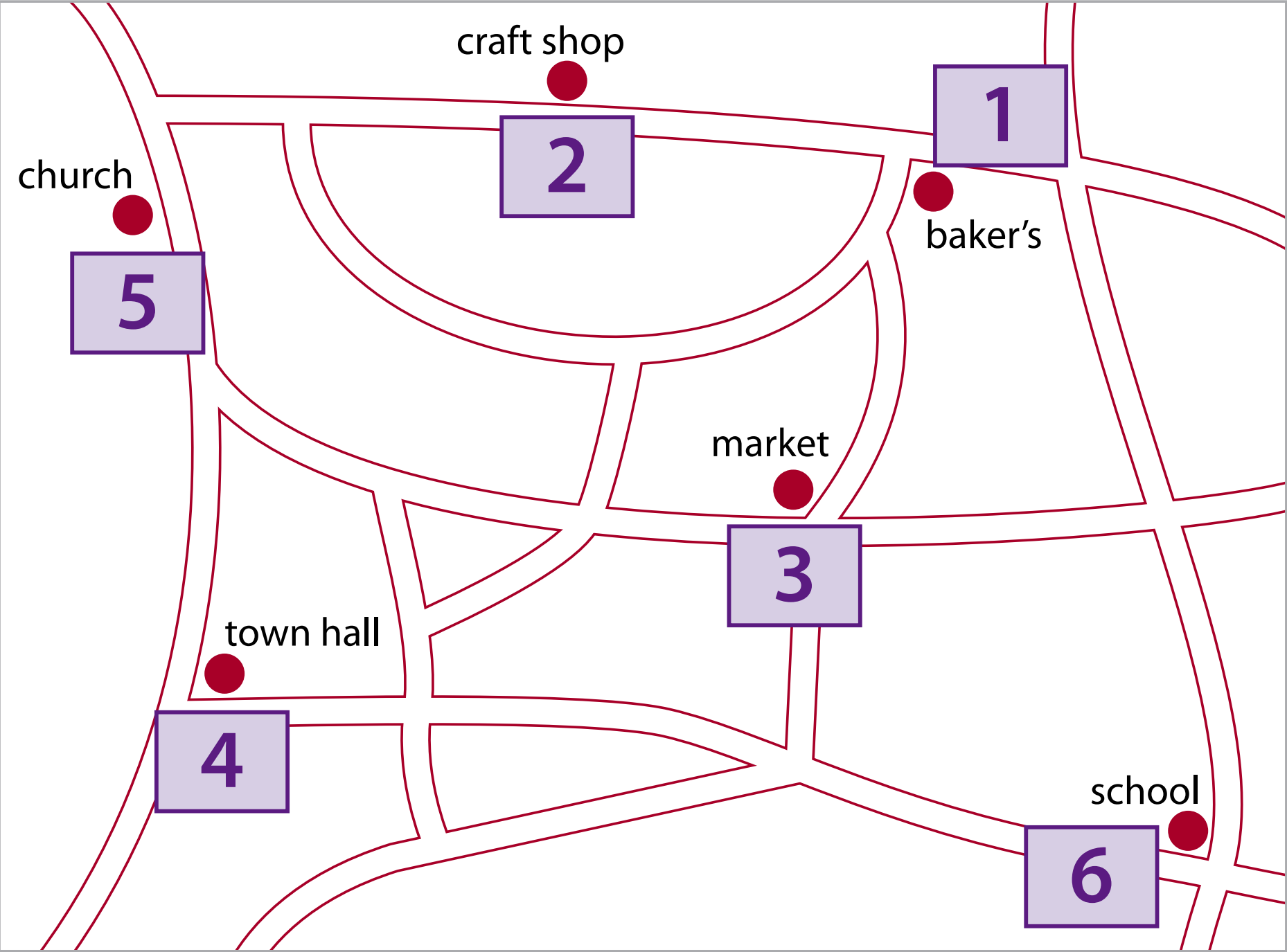
Make sure that learners understand that he can use only the numbers 1, 2, 3, 4, 5 and 6; and that, for each number sentence, he can use each number only once. Ask them to complete the number sentences so that the king can make his magic carpet fly.

Question

- Can you tell me a different way to make . . . ? If the king is in a hurry, which of these groups should he collect and why? *(Learners can use string to find the group that is closest together.)*

- How do you know that 3 + 2 + 5 gives the same answer as 5 + 2 + 3? *(Learners can use multilink cubes, or similar, to show that the outcomes are the same.)*

- Why is it not possible to add three of the king's numbers to make 5? *(The smallest total is 1 + 2 + 3 = 6.)* So why do you think the bottom half of the worksheet has no + signs? What else can you use other than +? *(Learners are likely to use subtraction, e.g. 4 + 3 − 2 = 5, but if they use multiplication, encourage them to write the multiplication first, e.g. $2 \times 4 - 3 = 5$.)*

- 2 + 3 gives the same answer as 3 + 2. Does 3 − 2 give the same answer as 2 − 3? Why not?

- Which do you find harder, addition or subtraction? Why?

I need help!

craft shop

1

2

church

baker's

5

market

3

town hall

4

school

6

craft shop

1

2

church

baker's

5

market

3

town hall

4

school

6
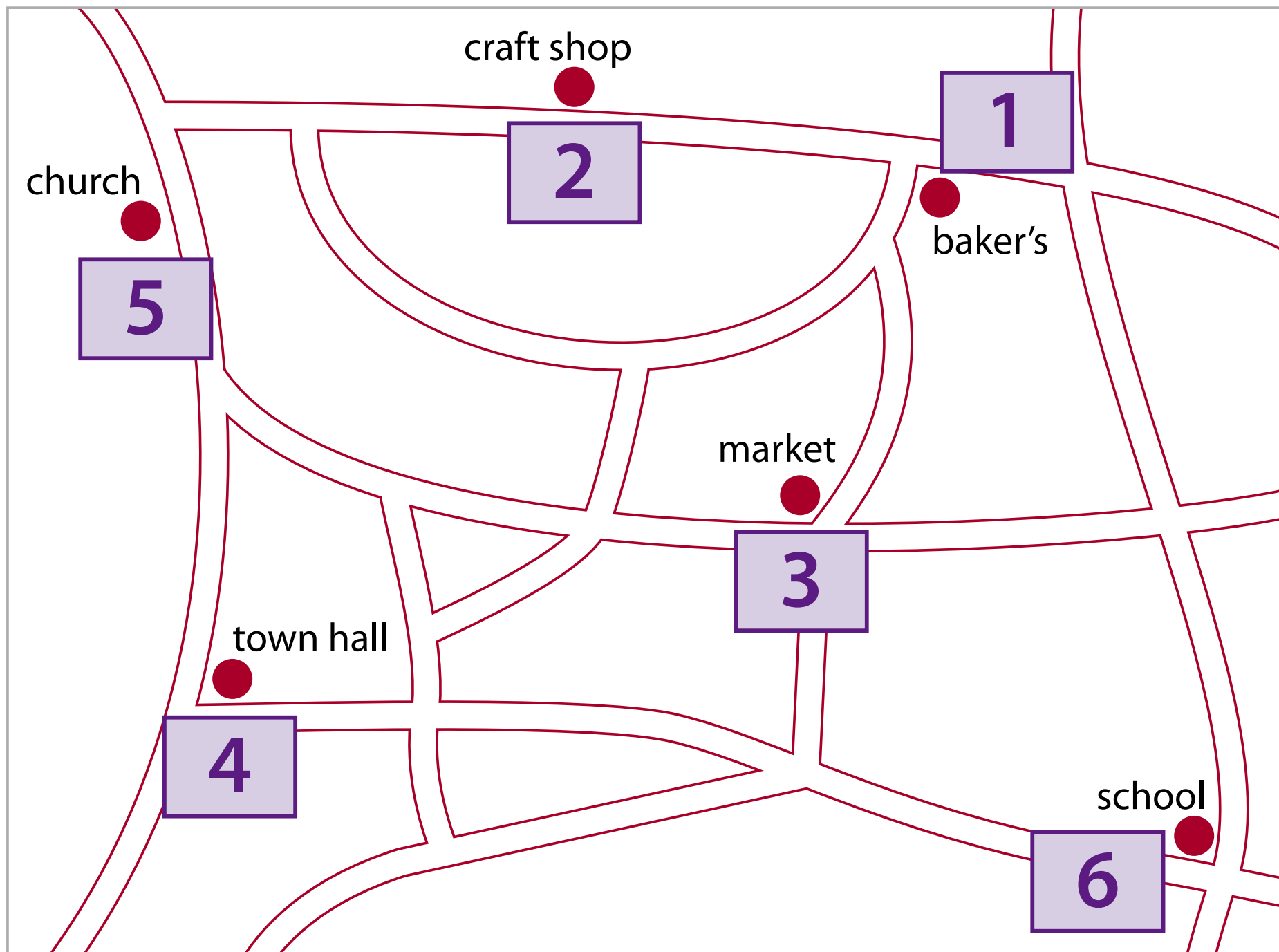
6	+	**3**	+	**1**	=	**10**

$$6 + 3 + 1 = 10$$

$$\square + \square + \square = 9$$

$$\square + \square + \square = 8$$

$$\square + \square + \square = 7$$

$$\square + \square + \square = 6$$

$$\square \quad \square \quad \square = 5$$

$$\square \quad \square \quad \square = 4$$

$$\square \quad \square \quad \square = 3$$

$$\square \quad \square \quad \square = 2$$

$$\square \quad \square \quad \square = 1$$

$$\square \quad \square \quad \square = 0$$

Blast off!

The king's cakes

Activity 3 – The king's cakes

Outline

This activity continues the context of the Carnival King introduced within **Activity 2 – Magic carpet**.

It is a practical task where learners use modelling dough to create 'cakes' of equal weight, then find different permutations for the icing and candles.

If the resources, including weighing scales, are in short supply, you may wish to work with just a few pairs of learners at a time.
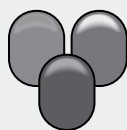
You will need

WB

Whiteboard – The king also loves cakes

For each pair:

Modelling dough
100g (exactly) of colour 1 (preferably cake colour)
A ball of colour 2 (for icing)
A ball of colour 3 (for icing)

Cake candles
Three of colour A
Three of colour B
Three of colour C

Cake cases (optional)

Plastic knife for cutting modelling dough

Weighing scales

Camera (optional) to record different combinations of icing/coloured candles

Activity 3 – The king's cakes

Explain

Show **The king also loves cakes** and explain that the Carnival King doesn't just love magic numbers, he loves cakes too.

Give each pair of learners a 100g ball of modelling dough *(not a roll)*, together with a knife and paper cake cases *(optional – makes the cakes more cupcake-like)*. Tell them the king wants five cakes but he is fussy – all of them must be exactly the same. Learners then decide for themselves how to achieve this *(do not offer scales until asked)*. When completed, they swap with another pair and check that each cake is exactly the same weight *(20g)*.

Then tell learners that the king thinks the cakes look boring – on each cake he would like one colour of icing and one candle. Give each pair two different-coloured balls of modelling dough *(need not be weighed)* and tell them this is the icing. Then give them six candles, three of colour A and three of colour B.

The king would like the colours on each cake *(the icing and the candle)* to be different. Is this possible? *(No – there are only four permutations.)*

Once learners realise it is not possible, give them three candles of colour C and ask them to make the king's cakes as he wants them.

Learners then prepare their cakes, making sure each one is different, then review each other's work, as before. A photographic record could be taken of learners' cakes for display in the classroom.

Question

- How can you make sure your five cakes are exactly the same? Can you do this just by guessing?

- If you had 50 grams and you made five cakes all the same, how much would each one weigh? How can that help you know how to share 100 grams so that all five cakes are the same weight?

- In the real world, why might a baker need to make sure the cakes are the same weight?

- Why can't you make five different cakes with two sets of icing and two sets of candles? How many can you make that are different? *(4)*

- How many cakes could you make that are different with two sets of icing and three sets of candles? *(6)*

Extension

- Increase the number of sets of candles and investigate the number of cakes that can be made.