Ratio problems

Starter

Open page 2 of the 'Model cars' Notebook file. Explain that a number of coloured lollipops have been put into the box: four red, three green, two blue and one yellow lollipop. Highlight the key vocabulary: *likely, certain, unlikely, equal chance*. Ask: *If you were to pick a lollipop from the box, what is the most likely colour to be picked?* Agree it is red. Drag one out and see.

Ask the children to make statements about the probability of selecting the colour of lollipops using the words on the Notebook file. What other words might be added to the list? Ensure that *equally likely*, *even chance* and *some* are added. With each word, encourage the children to make a statement about the lollipops in the container.

Add or remove lollipops from the box at intervals to change the probability. Ask: *How many lollipops should we add to the box so that picking each colour is equally likely?* Ensure that the children understand the idea of equally likely outcomes.

Whole-class shared work

● Explain that the children are going to investigate proportion. Where would they use the word *proportion*? Collect answers, ascertaining that proportion is relative to an object's real size. Reveal the definition on page 3.
● Explain that you will be looking at the relationship between normal cars and model cars and that this is expressed as a ratio.
● Go to page 4. Explain that the ratio of the model car is 1:20. (The car is $\frac{1}{20}$ of the size of the original.)
● Draw attention to the equation for working out the original size:
    12cm × 20 = 250cm.
● Encourage the children to discuss if they think this is accurate.
● Ask what would happen if the model car was 8cm long. Explain that to increase the ratio size the number after the colon increases (so it would be 1:8). Compare and investigate the ratios 1:10 and 1:30. Which, can the children tell you, would be a realistic car size. Use a metre stick to demonstrate the agreed length.

Independent work

● Show the class the six different ratios and the cars with their sizes indicated, on page 5.
● Explain that the toy company have mixed up the ratios and have asked you to pair up cars with correct ratios.
● In mixed-ability groups ask the children to work out the answers on paper.
● Invite representatives from each group to come to the board to drag and drop one ratio alongside a car. Press the arrow to check the answers.

Plenary

● Share lists and discuss any disagreements. Ask the group representatives to show their workings out on pages 6 and 7.
● Agree that the larger the original object is, the larger the ratio is likely to be. Explain that the ratio can be found by dividing the size of the model by the original size of the object.
● Set the Plenary activity on page 8 as homework.