

Magic coins



Learning objectives

- **Using and applying:** Describe relationships involving numbers; decide whether examples satisfy given conditions
- **Counting and understanding number:** Compare and order numbers using the related vocabulary

Problem-solving strategies

Trial and improvement
Estimation

Setting the scene

This activity is suitable for the whole class, groups or paired workers. It will help children with vocabulary relating to numbers such as higher/lower or larger/smaller. It will also give children some practice in adding money amounts to 20p.

The aim is to find out how much money Astrid has in her bag by guessing a number between 1p and 20p. Each time a guess is made, players are told whether the number to be found is higher or lower. The children's ability to use the information given provides a good understanding of their number capability at this stage. When the correct amount is given, the bucket of water will be tipped over the dragon!

Solving the problem

Encourage the children to use the information they are given about the number, and trial-and-improvement methods, to work out the amount. A good strategy for solving this type of problem, however, is to guess a number 'halfway between' the highest and lowest options known so that the range of the unknown number is always minimised.

Key questions

Representing: Can you show where the number might be, using a number line?

Reasoning: If 8 is too high, why can the number we are guessing not be 9? If 4 is too low, why can the number we are guessing not be 3? If 4 is too low and 8 is too high, what numbers could the next guess be?

Communicating: Can you show how much money Astrid had? What different ways can you show to make the same amount?

Differentiation

Less confident: Use a number line to show children the order of the numbers so they are not just making wild guesses. Explain that if 4p is too low and 8p is too high, then the number to be guessed must lie between these two.

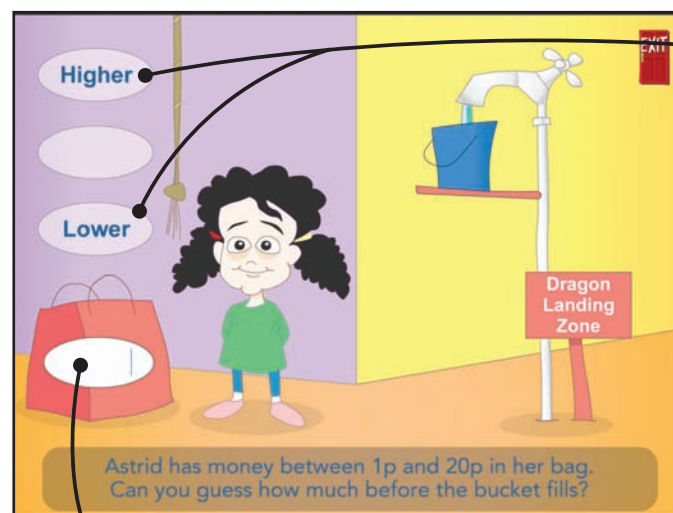
More confident: Encourage more confident learners to use the 'halfway between' strategy in order to reach the answers more quickly.

Follow up

Encourage the children to play the 'Magic coins' game with a partner, using numbers between 1 and 10. It may help if the child with the hidden number writes this down so they do not forget it, and the child guessing makes a note of the highest and lowest each time so they are not guessing randomly. Use page 23 to reinforce vocabulary relating to numbers.

Problems bank

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1. Enter first guess between 1 and 20.

2. Find out whether correct number is higher or lower.