

Spot the Maths

About this lesson

This resource has been developed to support scienceXart: spot the maths, a mathematics themed photography competition for school students. In this lesson, students think about the mathematics contained within a photograph.

Mathematical purpose

- Students will use thinking routines to look for the mathematics contained within pictures, making connections between mathematics in their everyday lives.

Learning intention

- To describe the mathematics contained in pictures from our everyday lives.



Time

A lesson of approximately 1 hour.



Resources

- 'Spot the maths' photographs (see [Teacher background information](#))
- Post-it notes

Teacher background information

This resource draws on Harvard University's [Project Zero's Thinking Routine Toolbox](#). Thinking routines are tools to help students think critically, creatively, and deeply. In this lesson, the students will be asked to think about the mathematics contained within a photograph.

This resource describes how three different thinking routines might be used to look critically, creatively, and deeply at the mathematics photos taken by students. The descriptions are designed to help students to look beyond the superficial, to 'spot the maths' in pictures, and to construct meaningful 240 character explanations of the maths they can see.

For each thinking routine below, students will need a their own 'spot the maths' picture. Examples of maths pictures are available on [Problem Pictures](#), which might be used as teaching examples and for students who do not have a picture. This is a resource that can be purchased, with some of the pictures available as examples on the website.

Individually

Ask students to write an explanation of the mathematics in their picture. At this stage, do not have students share their explanations.

In pairs

Have students swap their photograph (but *not* their explanation) with a partner. Have each student examine their partner's photograph and describe the mathematics that they can see, by using one of the following thinking routines and answering the corresponding questions:

See Think Wonder

- SEE: Look closely. What can you see in the photograph?
- THINK: What do you think is the mathematics in the photograph?
- WONDER: What do you wonder about the mathematics in the photograph?

What makes you say that?

- What is going on?
- What do you see that makes you say that?

Creative hunt

- What is the important mathematics in the photograph?
- What are the different parts of the photograph that show mathematics?
- What is especially smart or creative about the mathematics? Star them!
- Who would appreciate the mathematics that can be seen in the photograph?

Students share their observations with their partner, then share the explanations they wrote at the start of the lesson.

Have students consider: *How is the mathematics that my partner saw similar to the mathematics in my explanation? How is the mathematics different?*

Have students decide what is the most important information to be included in an explanation. Some considerations for students include:

- What is obvious in the photograph that does not need an explanation?
- What is more abstract and may need an explanation?
- What are important mathematical connections that should be explained?

Have students construct a new explanation for their pictures with a maximum length of 240 characters.

As a class

Display students' photos and explanations in the classroom.

Conduct a class gallery walk. Using post-it notes, have students leave comments and questions on each photograph.

Students use the questions and comments to refine their explanations.