The waste we create: Seeing how far it stretches

In the UK, around seventeen billion cans of all shapes and sizes are thrown away each year.

Every year we throw away enough cans (mainly of steel and aluminium) so that, if placed end to end they would stretch to the Moon and back nearly three times! Add the cans to this diagram and then write a slogan below to point out to people what a waste this can be.

Answers, Notes, Background

Based on **pages 32 and 33** of *Caring for our Environment*

Answers

This depends on the drawing skills of the students.

Notes

As we continue to think about waste, we can also show how advertising the scale of the problem can be both interesting and useful.

Students can be asked to show the same thing another way.

For example, the Moon is nearly 390,000 km (390 million metres, 39,000,000,000 cm) from the Earth. If a can is on average 13 cm long, it would need 3 billion cans to reach to the Moon. (So, 17 billion cans is nearly 6 times this amount, and therefore nearly three times to the Moon and back.)

The Earth has a circumference of about 40,000 km, about a tenth of the distance to the Moon. So we can say approximately that the cans would wrap nearly 30 times around the Earth.

This is an excellent example of transforming dull numbers into something more meaningful.

Students might like to make a drawing of the cans wrapped thirty times around the Earth and write another caption for an advertisement to encourage recycling.

Extensions

You can also think about how long it would take a person to collect up all of these cans, assuming that they could collect the cans at about 3 km an hour.

Students could divide 40,000 by 3 and find an answer of 13,000 hours. Then they could say that, supposing a person walked for eight hours a day, they would need 13,000 hours divided by 8, which is approximately 1,700 days, or five years!

It is also a good time to point out that we do not need exact answers here because we are only making a point of principle. Students could therefore be made aware of how it is sometimes useful to round up figures, rather than ending up with unreal exact numbers from using their calculators.

You should be able to think of lots of other amusing transformations.

(Note that these calculations depend heavily on the average length of can and the figures shown here are chosen to make the mathematics easy, so it is best to treat the real result as simply 'very large'. Very able students could find the average length of their drink cans and recalculate the data above.)