Wordy maths questions

Five happy mice live in a cosy mousehole. They borrow a half kilo lump of cheese from the houseowner. Each mouse eats five grams a day. How long does the lump last?

Wordy maths

Maths problems are often cloaked in words, particularly by the folk who devise maths tests, and for many children (particularly bilingual learners) this often conceals quite simple maths. We already have an activity to practice finding the maths: please take a look at 'Which Function?' <www.collaborativelearning.org/whichfunction.pdf> This activity is slightly different in that it encourages children to write' their own wordy questions to try out on each other. Preparing these questions will, we hope, inspire children to share ideas and contexts to the extent that it will be to some extent an English, history or geography lesson. Charmian Kenner and Mahera Ruby mentioned this activity in their book 'Interconnecting Worlds; teacher partnerships for bilingual learning.' Trentham 2012 and examined other ways on dealing with cultural confusions. To celebrate the launch of their book, we gave the activity a dusting down and a tidy up. Now, ten years later we would like to thank Nigel Fearn for pointing out that one of our answers is incorrect! We have put this right and wonder how it stayed like that for so long!

This activity was first developed in 2010 and last updated 2nd February 2023
The webaddress for this activity is;
 http://www.collaborativelearning.org/wordymaths.pdf

Collaborative Learning = Oracy in Curriculum Context

makes challenging curriculum accessible.

improves social relations in the classroom.

provides scaffolding for exploratory talk.

Basic principles:

1. Build on children's prior knowledg.
2. Move from concrete to abstract.
3. Ensure everyone works with everyone else.
4. Extend social language into curriculum language.
5.Provide motivating ways to go over the same knowledge more than once.

Wordy maths

A quote from Charmian Kenner and Mahera Rubys' new book
"Interconnecting Worlds" quoting this activity:
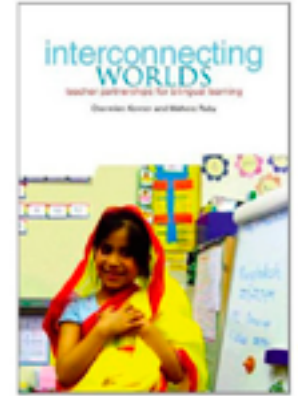
"We found the understanding of a concept can transfer not only when learning a new language but also when children are working with two languages already familiar to them. One striking example came when a group of Year 2 children were working on numeracy. Teachers had told us that children find it difficult to understand 'word problems' which describe an imaginary situation in which a calculation has to take place. An example of such a 'wordy maths problem' is highlighted by the Collaborative Learning Project.

Gregory, a Tudor doctor, needs six leeches to draw enough blood out of each patient. He has thirty nine leeches in his jar. How many patients can be bled successfully?

The cultural context of the activity and the vocabulary used may be so unfamiliar that children cannot follow what is happening. In order to tackle the task, you first have to find the mathematical information wrapped up in the description. You then have to decide what kind of operation you need to use: addition, subtraction, multiplication or division. All this is particularly hard for children learning English as an additional language. If the problem was presented in numbers only, they would be able to solve it much more easily. But since numeracy tests in the UK commonly include word problems, teachers have to find ways of helping their pupils understand them.

We agreed with the teachers to make two changes in how word problems were presented. The first was to devise problems based in experiences familiar to children from their everyday lives, so they would recognise the vocabulary and could imagine themselves participating in the activities described. The second was to encourage children to work bilingually so they could make maximum use of their ideas in both Bangla and English.

We would add that working collaboratively as well as bilingually will help children develop the confidence to approach any problem text with strange words and in strange contexts. They will realise that the maths can be sought out and solved even if all the meanings of the words are not understood. Maths problems presented in alien contexts are not going to go away and will continue to appear in national tests. Activities like this make your children test proof while improving social relations and clarifying understanding.

Wordy Maths

Teacher Instructions

We have provided some maths problems for children to work out in pairs or threes. Please, please do not give these cards to individuals to work at on their own. Each page has a different theme. We have also provided versions of the same problems with some picture clues and also a set of "answer" cards for matching to problems.

The problem cards and the problem cards with pictures can be used on their own. Children can see whether they can come up with an answer without knowing the meanings of some of the words. They may want to feed in questions about the contexts so make sure you have done your homework and know about leeches, pandas etc.

The answer cards come in two sets of six. You can either cut the cards up into twelve for matching to problems or you can keep the sets for a bingo game. If you do this you may need to enlarge the answer cards to A3 so that the problem cards fit on them or you could reduce the size of the problem cards.

Then it is time for children to work together to produce their own problems and matching answer cards. We would like to see them!

Tiger 14
Fruit 21
Eggs 18
Pants 24
Leeches 6
Bamboo 10.5
Rabbits 72
Cheese 20
Dolls 6
Gold bars 30
Windows 6
Robot oil 54

Wordy maths questions

Every robot drinks three cans of robot oil every week. The robot cook has to put enough cans in the drink machine for eighteen robots. How many cans does he need to put in the machine every week?

Freda, the school window cleaner, needs to clean twenty four very dirty school windows. She is allowed six buckets of soapy water. How many windows does she clean with each bucket?

Six robbers have dug a tunnel into a bank vault. They want to carry the heavy gold bars from the vault to their truck. Two robbers are needed to carry each gold bar, and it takes twelve minutes to take each bar from the vault to the truck. How many bars can they remove in two hours?

Grace has six Bratz dolls called: Chloe, Sasha, Jade, Yasmin, Megan and Dana. Grace went to the shop to buy two more Bratz dolls called: Nevra and Kate. She gave Yasmin to her friend Beryl and Megan to her cousin William. How many more does she need to buy to have a dozen?

Wordy maths questions

Five happy mice live in a cosy mousehole. They borrow a half kilo lump of cheese from the houseowners. Each mouse eats five grams a day. How long does the lump last?

Two rabbits decide to have a family. Every month for a year they produce six baby rabbits. How big is their family after a year?

Denise, a zookeeper, has to order bamboo shoots for Suky the panda. She eats 1.5kgs a day. How many kilos of shoots does she need to order every week?

Gregory, a Tudor doctor, needs six leeches to draw enough blood out of each patient. He has thirty six thirsty leeches in his jar. How many patients can he bleed successfully?

Wordy maths questions

Twelve Flungles from the planet Zog have been stealing pants from Mrs Strom's washing line. They have visited Earth four times this week and twice last week. Each time they took four pairs. How many does Mrs Strom now have to replace?

Rosie and the other red hens were chased by the fox again last week. They normally lay two dozen eggs a week, but because of the scare they only produced three quarters of their normal production. How many eggs did they lay?

The hungry caterpillar ate twice as many apples as he ate oranges and twice as many pears as he ate plums. He ate three plums and four oranges. How many pieces of fruit did he eat altogether?

A tiger came to tea yesterday. He was very polite and had good table manners, but he ate four kilos of biscuits, seven kilos of cake and three kilos of tiger food. How many kilos was that altogether?

Wordy maths questions

Every robot drinks three cans of robot oil every week. The robot cook has to put enough cans in the drink machine for eighteen robots. How many cans does he need to put in the machine every week?

Freda, the school window cleaner, needs to clean twenty four very dirty school windows. She is allowed six buckets of soapy water. How many windows does she clean with each bucket?

Six robbers have dug a tunnel into a bank vault. They want to carry the heavy gold bars from the vault to their truck. Two robbers are needed to carry each gold bar, and it takes twelve minutes to take each bar from the vault to the truck. How many bars can they remove in two hours?

Grace has six Bratz dolls called: Chloe, Sasha, Jade, Yasmin, Megan and Dana. Grace went to the shop to buy two more Bratz dolls called: Nevra and Kate. She gave Yasmin to her friend Beryl and Megan to her cousin William. How many more does she need to buy to have a dozen?

Wordy maths questions

Five happy mice live in a cosy mousehole. They borrow a half kilo lump of cheese from the houseowner. Each mouse eats five grams a day. How long does the lump last?

Two rabbits decide to have a family. Every month for a year they produce six baby rabbits. How big is their family after a year?

Denise, a zookeeper, has to order bamboo shoots for the panda. Suky, the panda, eats 1.5kgs a day. How many kilos of shoots does she need to order every week?

Gregory, a Tudor doctor, needs six leeches to draw enough blood out of each patient. He has thirty six leeches in his jar. How many patients can he bleed successfully?
P.S. Leeches are still used to clean wounds.

Wordy maths questions

Twelve flungles from the planet Zog have been stealing pants from Mrs Strom's washing line. They have visited Earth four times this week and twice last week. Each time they took four pairs. How many does Mrs Strom now have to replace?

Rosie and the other red hens were chased by the fox again last week. They normally lay two dozen eggs a week but because of the scare they only produced three quarters of their normal production. How many eggs did they lay?

The hungry caterpillar ate twice as many apples as he ate oranges and twice as many pears as he ate plums. He ate three plums and four oranges. How many pieces of fruit did he eat altogether?

A tiger came to tea yesterday. He was very polite and had good table manners, but he ate four kilos of biscuits, seven kilos of cake and three kilos of tiger food. How many kilos was that altogether?

54	6	30
6	20	72

| 10.5 | 6 | 24 |
| 18 | 21 | 14 |