

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?

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Maths questions are often cloaked in words, particularly by the miserable folk who devise maths tests, and for many children this often conceals quite simple maths. We already have an activity to practice finding the maths: take a look at 'Which Function?' This activity is slightly different in that it encourages children to write their own wordy questions to try out on each other. Charmian Kenner and Mahera Ruby mentioned this activity in their new 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 are giving the activity a dusting down and a tidy up.

This activity was last updated 11th February 2016

The webaddress for this activity is;

<http://www.collaborativelearning.org/wordymaths.pdf>

COLLABORATIVE LEARNING PROJECT

Project Director: Stuart Scott

Supporting a cooperative network of teaching professionals throughout the European Union to develop and disseminate accessible teaching materials in all subject areas and for all ages.

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BRIEF SUMMARY OF BASIC PRINCIPLES BEHIND OUR TEACHING ACTIVITIES:

The project is a teacher network, and a non-profit making educational trust. Our main aim is to develop and disseminate classroom tested examples of effective group strategies across all phases and subjects. We hope they will inspire you to develop and use similar strategies in other topics and curriculum areas. We run teacher workshops, swapshops and conferences throughout the European Union. The project publishes a catalogue of activities plus lists in selected subject areas, and a newsletter available on the internet: "PAPERCLIP".

*These activities were influenced by current thinking about the role of language in learning. They are designed to help children learn through talk and active learning in small groups. They work best in mixed classes where children in need of language or learning support are integrated. They are well suited for the development of speaking and listening. They provide teachers opportunities for assessment of speaking and listening and other formative assessment.

*They support differentiation by placing a high value on what children can offer to each other on a particular topic, and also give children the chance to respect each other's views and formulate shared opinions which they can disseminate to peers. By helping them to take ideas and abstract concepts, discuss, paraphrase and move them about physically, they help to develop thinking skills.

*They give children the opportunity to participate in their own words and language in their own time without pressure. Many activities can be tried out in mother tongue and afterwards in English. A growing number of activities are available in more than one language, not translated, but mixed, so that you may need more than one language to complete the activity.

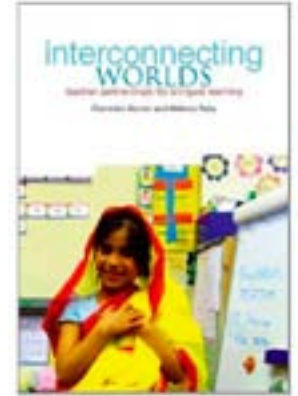
*They encourage study skills in context, and should therefore be used with a range of appropriate information books which are preferably within reach in the classroom.

*They are generally adaptable over a wide age range because children can bring their own knowledge to an activity and refer to books at an appropriate level. The activities work like catalysts.

*All project activities were planned and developed by teachers working together, and the main reason they are disseminated is to encourage teachers to work effectively with each other inside and outside the classroom. They have made it possible for mainstream and language and learning support teachers to share an equal role in curriculum delivery. They should be adapted to local conditions. In order to help us keep pace with curriculum changes, please send any new or revised activities back to the project, so that we can add them to our lists of materials.

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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 you children test proof without the pain of filling in boring worksheets.

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 have asked the children from "Interconnecting Worlds" to produce some with Bangla, Somali and Russian contexts so watch this space!

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 heavy gold bars from the vault to their lair. Two robbers are needed to carry each gold bar, and it takes twelve minutes to remove each bar from the vault. 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?

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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?

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P.S. Leeches are still used to clean wounds.



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18

54

4

24

6

72

6

30

10.5

28

14

20