

 Notes for parents.**The purpose of the activity is to help your child to:**

- Use multiplication to solve problems with equal sets.
- Record multiplication equations for word problems.

Here is what to do:

Read the problem with your child. Help them to clarify the meaning of the problem.

“What does ‘in each packet’ mean?” “What does ‘total cost’ mean?”

If you have tennis balls at home you might ask your child to make up a single bag. The intention is not to simply make the bags and count, but one bag can be used to support your child’s thinking.

Let your child solve the first problem in any way they can (*How many packets?*). This is a division problem, though your child may not solve it as such. Ask them to explain how they got the answer.

Look for your child to have used one of these methods, in order of sophistication:

- Counting up in ones, and tracking the number of threes, sometimes using fingers (1, 2, 3, 4, 5, 6, 7..., 16, 17 18).
- Skip counting in threes (3, 6, 9, 12, 15, 18) and keeping track of the number of threes, possibly with their fingers.
- Working from a fact they know, e.g. “I know $5 \times 3 = 15$ so $6 \times 3 = 18$. I need six packets”.
- Knowing $6 \times 3 = 18$ or $18 \div 3 = 6$

Ask them how you could write what they have just worked out as an equation. You may need to model writing $6 \times 3 = 18$ and $18 \div 3 = 6$. Discussing what the symbols mean is very important. “Six multiplied by three” means “six sets of three” and in this case “18 divided by three” means “How many sets of three can be made from 18?”

Move on to the second part of the problem, total cost. See if your child connects the previous answer to total cost.



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“Will the total cost be more or less than \$18. How do you know?”

Look for your child to realise that each ball must cost more than one dollar.

Skip counting in fives is likely to be a common strategy to solve the total cost problem. Your child might track the number of packets with their fingers as they count, i.e. 5 (1 packet), 10 (2 packets), 15 (three packets)..., 30 (six packets).

Encourage more sophisticated thinking which involves working from known facts. Ask questions like:

“What do two packets cost? (\$10) So what do four packets cost? (\$20) What is the cost of six packets?” (\$30)

“Do you know any of your five times facts that could help? What about five times five? If five times five equals 25, what will six lots of \$5.00 be?”

Points to note:

This activity involves co-ordinating division and multiplication since students need to work out the number of packets before they can solve the total cost problem. Division, which involves partitioning a set, tends to be more difficult than multiplication with the corresponding numbers. Children are usually more familiar with equal sharing scenarios for division than they are with measurement division.

In the first problem 18 is measured in sets of three (tennis packets). Usually children will attempt to build up threes in some way. The most primitive way is to double count, in ones for the individual tennis balls, and in lots of three for the packets. Skip counting in threes is also a common strategy though the sequence, “3, 6, 9, 12, 15, 18”, is hard to remember. A preferred strategy is to leverage off known facts, e.g. $5 \times 3 = 15$ so $6 \times 3 = 18$ (3 more), or simply know the relevant fact, $6 \times 3 = 18$.

The equation for the first problem is $18 \div 3 = 6$. Remember that your child is most likely to have solved the problem $\square \times 3 = 18$. It is important to be clear about what the numbers and other symbols refer to. 18 is the total number of tennis balls, 3 is the ‘number per packet’, and 6 is the ‘number of packets.’ So each number has a different measurement attached to it.

Similar clarity about the symbols is needed for the total cost problem which is represented by $6 \times 5 = 30$. In this case, the number 6 represents the number of packets, 5 represents the cost in dollars per packets, and 30 represents the total cost in dollars. Discussing the meaning of all the symbols in equations helps your child to decode and connect different situations.



Activity | Tennis balls

Y3

There are three balls in each packet.
A packet costs \$5.00. You need 18 tennis balls.

How many packets should you buy?

How much is the total cost?

