About How Much?

Overview

'*About how much will it be*?' is an important question to ask when calculating with any decimal quantity, whether it is related to money or measurement. Many adults recall that there were lot of rules to remember when multiplying or dividing with decimal quantities (often associated with counting of decimal places). Trying to remember which rule to use and when often gets in the way of a sensible approach. This activity is designed to encourage students to think of decimal quantities in terms of 'sensible' or 'friendly' whole numbers and to use them in order to estimate calculations involving decimals.

The activities '*Capital Cities of Australia'* and '*Estimate or Accurate*', both in the 'Exploring Numbers' section introduce the idea of estimation and the language associated with it: the first uses large whole numbers only, while '*Estimate or Accurate*' uses a mix of whole and decimal numbers and is a useful complement to this activity. Its Practice Sheet: '*Can I afford it*?' can also be used in conjunction with this activity.

The activity '*Is the Answer Reasonable?*' in this section, continues developing the skill of estimating answers when calculating with decimals, and in particular when using a calculator.

Skills and Knowledge

- Estimating numbers in decimal form
- Rounding decimals
- Language of estimation
- Estimating money calculations

Preparation and Materials

- Photocopy Activity Sheet 1: Fruit Price List (1 per student or small group)
  [Alternatively, compile a something similar with realistic local products and prices from local 'junk mail' or newspaper advertisements]
- Photocopy Practice Sheets 1, 2 & 3 (1 per student)

Suggested Procedure

Distribute Activity Sheet 1 or your own version as described above.

Ask:
- *How much would it cost you to buy 1 kg of these bananas?*
- *Assume you were shopping with cash not a card.*
- *If you handed the shopkeeper $5 what change would you get?*
- *Why?*

Discuss that even though the price is $2. 99 you would not get the one cent change, because we no longer have 1 cent coins to give.

Discuss the psychological reasons behind shops using amounts like $199 or $4.99 in their advertising.

Explain that the shop will 'round up' to the nearest amount. Emphasise that $2.99 is closest to $3.

Using the language of estimation

Referring to the Fruit Price List, explain:

- *If someone asked us the cost of bananas we are likely to say they are '**about** $3 a kilo'.*

Ask:

- *What other words might you use instead of 'about'?*

Encourage a collection of words such as 'almost', 'approximately', 'just under', 'nearly' 'a bit less than'.

Ask:

- *If my total at the shop was $25.02, what would I pay?*
- *Why?*
- *What would be the sensible number for this?*
- *What language could I use to describe it?*

This time encourage a collection of words such as 'about', 'approximately', 'just over', 'a bit more than', 'a bit over'.

Students can now **use Practice Sheet 1** to practise rounding to nearest sensible number and using the appropriate language.

Note: In number 4 the friendly number for $78.90 could be $79 but $80 might be a better way to describe the cost (an even more sensible way to think about the relative cost in comparing it to other jackets).

Calculating using sensible numbers

Return attention to the first Activity Sheet and the cost of bananas.

Ask:

- *What if you bought 2 kg of these?*
- *Is there a quick way to decide approximately what it would cost you?*
- *Do you need to work out the exact amount?*
- *Would you get any change this time?*

You are looking for responses like use the 'sensible' or 'friendly' number $3 for the calculation, or 'round up to the whole number and multiply by 2'.

Remind students that this 'sensible number' is the number we would use to describe as the cost of bananas if someone asked us how much they were.

With the group use a few more examples from the Activity Sheet, encouraging students to work out approximate answers and say them using a variety of words and phrases from the language of approximation.

For example:

- *Three kilos of bananas cost almost $9.*
- *Two punnets of strawberries cost about $4.*
- *Two pineapples cost just under $10.*
- *A passionfruit costs just over $1.*

> *You may want to write all of the alternative phrases on the board and tick them as they are used. Ask the next person to use a different expression.*

Retaining their copies of the '*Fruit Price List*', students can now attempt **Practice Sheet 1** which is a close exercise that focuses on the language as well as the skill of rounding calculations.

Practice Sheet 2 is a blank template which can be used by students to create their own version of a close activity, similar to that on Practice Sheet 1. This exercise could be done individually or in pairs. When completed it should be given to another pair of students to try out

Practice Sheet 3 provides further practice with the language and rounding in a variety of contexts.

Extension

Students could be asked to return to each of the items on the practice sheet and decide whether or not they would get change in a cash transaction.

Fruit Price List

PASSIONFRUIT
$1.20 each

PEARS
$3.98 a kilo

PINEAPPLES $4.98 each

NEW SEASONS APPLES
$5.98 a kilo

RASPBERRIES

$7.98 a kilo

BANANAS

$2.99 a kilo

$0.98 a kilo

MANDARINES 4.98 a kilo

STRAWBERRIES
$1.98 a punnet

ORANGES
$1.99 a kilo

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About How Much?

Use prices from the Fruit Price List.

Finish these sentences using one number and one phrase from the box below.

Try to use each phrase once only.

1. 3 kilograms of watermelon costs:

   _____

2. 2 kilograms of apples costs _____

3. 4 kilograms of oranges costs _____

4. 2 passionfruit costs _____

5. 3 kg of mandarins costs _____

6. 1 pineapple and a kilogram of pears costs _____

   _____

7. 1 punnet of strawberries and a kilo of bananas costs _____

   _____

8. 2 kg of watermelon and 1 kg of oranges costs _____

   _____

a bit under	a bit less than	just over	nearly
about	approximately	just under	almost
$8	$4	$5	$3
$15	$2	$12	$9

About How Much?

Use prices from the Fruit Price List.

Create your own exercise using Practice Sheet 1 as a model. Remember to use words like 'almost', 'just over' etc as well as prices.
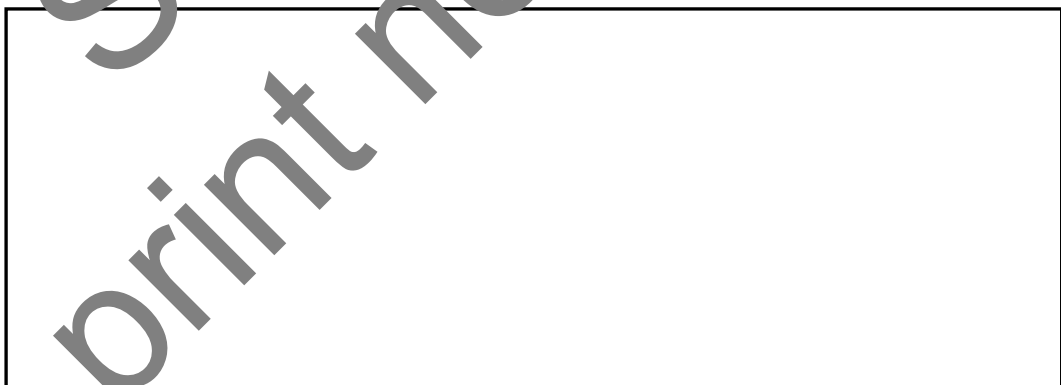
Give it to another person to try out.

1. _____ costs _____ $_____

2. _____ costs _____ $_____

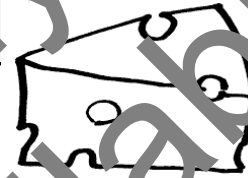3. _____ costs _____ $_____

4. _____ costs _____ $_____

Make a new sentence for each of these using whole numbers – no decimals.

Choose words from the box.

> about　　　　　nearly　　　　　almost
>
> approximately　　　　　just over
>
> just under　　　　　a bit over

1. Swiss cheese cost $17.99 a kilo.

   A kilo of Swiss cheese was _____

2. Carlos weighs 71.6 kilograms.

   Carlos weighs _____

3. My trip meter showed 25.2 kilometres.

   My trip was _____

4. Michelle's new jacket cost $78.90.

   The jacket cost _____

5. The stop watch showed 38.3 second to swim a lap.

   It takes _____