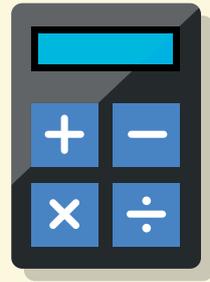




Percentages and income



This sequence is intended as a framework to be modified and adapted by teachers to suit the needs of a class group.

Resources needed

- Calculating commission – Tiered worksheet
- Calculating commission game – Visualiser
- Stack of scrap paper, half A4 size (15 sheets per group)
- Masking tape and a rubbish bin
- Calculator for each student

Suggested activity sequence

Part A: Calculating commission

- 1 Introduce the concept of commission.

Commission is a way of earning income based on the value of items you have sold. Salespeople, such as real estate agents and car salespeople, are often paid a commission. Real estate agents earn a commission on the value properties they have sold. Car salespeople earn a commission based on the value of cars they have sold. The amount of the commission is usually expressed as a percentage.

People who earn a commission often also get a '**retainer**', which is a smaller amount that is paid regularly like a wage or salary and is not related to how much they have sold.

- 2 Explicitly teach students how to calculate commission using a gradual release of responsibility model.

To calculate a commission:

$$\text{Commission} = \text{percentage} \times \text{total value of sales}$$

To calculate the pay of a salesperson:

$$\text{Pay} = \text{commission} + \text{retainer}$$

$$\begin{aligned} \text{Retainer} &= \text{hours} \times \text{rate} \\ \text{(Earnings from hours)} &= 120 \times \$20.09 \\ &= \$2,410.80 \end{aligned}$$

$$\begin{aligned} \text{Commissions} &= \text{percentage} \times \text{total value of sales} \\ &= 1\% \times (365\,000 + 795,000) \\ &= 1\% \times 1,160,000 \quad (1\% = \frac{1}{100} = 0.01) \\ &= \$11,600 \end{aligned}$$

$$\begin{aligned} \text{Total earnings} &= \text{retainer} + \text{commission} \\ &= 2,410.80 + 11,600 \\ &= \mathbf{\$14,010.80} \end{aligned}$$

- 3 Explain the *Worksheet* and provide the following instructions:

- Each problem has a points value attached. The problems in the left hand column aren't as challenging as those in the right hand column and so have a smaller point value.
- Students are to complete 15 points worth of problems.



- 4 Students may work in small groups to discuss the problems and how they might tackle them, troubleshoot and compare ideas, but each student is to write their own solution in their own notebook.
- 5 Provide feedback to students on their learning by marking the problems in the left hand column fairly quickly, working through the remaining 6 problems in a more detailed way, gathering student input about their approaches and their final answers. This task is suitable as an assessment item.

Part B: Crumple and shoot

This is a low tech game that gives students the opportunity to practice a maths skill collaboratively. It will take at least half an hour, up to 50 minutes if you haven't played the game before.

- 1 Organise students in teams of 3 or 4 – make sure they're mixed ability groups.
- 2 Use the *Visualiser* to explain the game and the rules to students.
- 3 Give each team a stack of half A4 size scrap paper. Each team appoints one scribe.
- 4 Read out the question from the visualiser. Each team works out and agrees on their answer before the scribe writes it (legibly) on their piece of paper.
- 5 When you think they've had enough time call out 'Answers up', and one member of each team holds their answer in the air.
- 6 Quickly go around and check the answers. If the answer is wrong –take the group's paper. If the answer is right, the group gets to keep their paper and send a team member to the spot where they're going to crumple it and shoot it into the wastepaper basket to get a point.

Note the answers are included on the *Visualiser*

- 7 To get a point teams have to answer the question correctly and shoot their paper into the bin.
- 8 Crumple and shooters line up and take their turn to crumple their answer sheet and shoot it into the bin (put a line of tape on the floor for shooters, and a tape X marking the spot where the bin should be).
- 9 Keep a tally on the board.

Do a practice question before you start if you haven't played this game previously.

You can accept answers to the nearest whole dollar or tens if you like.

Some questions are worth 2 points, so will need to be written on 2 pieces of paper. Think about your willingness to consider carry through errors ahead of time and be ready to defend your policy.

You could make it compulsory to rotate shooters amongst the team or make the rule that everyone must shoot at least once if you need to level the playing field.

Add a 2 point shooters line if a leader emerges too soon and other teams need to catch up.

You might like to add prizes for winning teams.

Room layout

