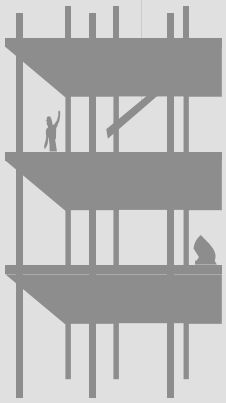


LEARNING PLANS

LEARNING AND ASSESSMENT FRAMEWORK ZONE 7

INTRODUCING TARGETED INTERVENTIONS

LIST OF TARGETED INTERVENTIONS

MULTIPLE PATTERNS

WORKING OUT VALUE FOR MONEY

PATTERNS AND SOLUTIONS

COMBINING SPEEDS

MULTIPLE PATTERNS

Specific Teaching Focus:

To develop **strategies to recognise and apply** multiplication and division in a broader range of situations including unfamiliar, multiple-step problems and how to **recognise and formally describe patterns.**

Materials/Resources Required:

- Use “Multiple Patterns” resource in the ‘Support Materials’ section of this CD-ROM

How to Implement:

1. Make enough copies of “Multiple Patterns” activity sheet for each student.
2. Students work individually to complete the first section of the task ie, circling a number in each row and each column without choosing more than one number from any row or any column, then multiplying these numbers together and recording the product.
3. Students then work in small groups to compare and discuss their results and study the table of numbers. Ask students, *“what patterns do they notice and is there an error and to justify and explain their response.”*
4. Groups present their responses to each other.

WORKING OUT VALUE FOR MONEY

Specific Teaching Focus:

To develop **strategies to recognise and apply** multiplication and division in a broader range of situations including ratio and proportion (in particular the use of proportion in determining value for money.

Materials/Resources Required:

- Supermarket shopping catalogues

How to Implement:

1. Provide students with a selection of shopping catalogues from various food outlets.

2. Students work in small groups to determine the best value for money for a selection of items in the catalogues.

3. Select an item that appears in a number of catalogues in a variety of sizes and prices. (Eg. at Outlet One 500g of Nodoz Coffee is $9.95, at Outlet Two 250g of Nodoz Coffee is $6.25 and at Outlet Three 750g of Nodoz Coffee is $12.50).

4. Pose the question, *"Which of these is the best value for money?"*

5. Groups discuss how they might solve the problem and record, justify and explain their solution.

6. Groups find other examples of 'value for money' in their catalogues and present their selection and solution to the other groups.

PATTERNS AND SOLUTIONS

Specific Teaching Focus:

To develop the **notion of variable** and how to **recognise and formally describe patterns** involving all four operations in particular the **notation to support general arithmetic** (simple algebra).

Materials/Resources Required:

- Use "Max's Pattern Problem" resource in the 'Support Materials' section of this CD-ROM
- Matchsticks

How to Implement:

1. Make enough copies of "Max's Pattern Problem" activity sheet for each student.

2. Students work in small groups to discuss the problem.

3. Students discuss in their groups if Max, Di, Sergio and Leanne have arrived at the same solution.

4. Students discuss in their groups how Max, Di, Sergio and Leanne arrived at their solutions. Groups record, justify and explain the strategies used (Eg. Max's Solution

was to count the outside matchsticks along the top and one side, 11, then double it and add the number of vertical matchsticks inside, 9, total 31 etc).

5. Pose the following, *"Using Max, Di, Sergio and Leanne's strategies how many matchsticks would be needed to make 5 cells, 12 cells and 27 cells."*

6. Encourage students to notice which numbers change and which stay the same for each of the strategies when the number of cells changes.

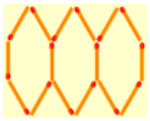
7. Ask students to suggest how Max's strategy (Eg. Max's Solution was to count the outside matchsticks along the top and one side, 11, then double it and add the number of vertical matchsticks inside, 9, total 31 etc.) can be explained in terms of the number of cells. Eg. 11 is one more than the number of cells and 9 is one less than the number of cells. This should lead to the general rule for Max's solution, the number of cells plus 1, multiplied by 2, add the number of cells minus one, (n+1)x2 + (n-1).

8. Suggest students try to determine the general rule for one other strategy.

   Note: Patterns represent different way of counting and can be described by a general rule.

Follow up suggestions:

- Show students the following patterns and ask them to describe the pattern they see. Encourage them to describe it in as many ways as possible. Ask students to write a general rule for each of the patterns below.

1. 

2. 

3. 

COMBINING SPEEDS

Specific Teaching Focus:

To develop **strategies to recognise and apply** multiplication and division in a broader range of situations and **strategies for dealing with more complex problems** involving derived measures in this case rate (speed).

Materials/Resources Required:

- Tallangatta to Wodonga Problem (written on board or overhead, see below)

How to Implement:

1. Pose the following problem to students:

> **Tallangatta and Wodonga are 40km apart. If a bicycle traveling at 30km/h leaves Tallangatta at the same time as a car leaving Wodonga traveling at 90km/h, where will they meet if they are traveling on the same road?**

2. Students may work in pairs or small groups to solve the problem. Encourage students to draw a picture showing the two towns and their distance apart (Eg. on a number line) to facilitate their thinking. Students should record, justify and explain their solutions.

3. It may also be necessary for students to think about the speed the vehicles are traveling that is, the car is traveling 3 times as fast as the bicycle, (therefore it will travel 3 times further in the same amount of time). Encourage student to show this, Eg. as a ratio, 3:1 for every 3 distances the car travels the bicycle will travel 1 distance. (This gives 4 distances in total – so divide the distance between the two towns, 40km, into 4 equal parts of 10km each. The bicycle would travel 10km and the car 30km in the same time, so the vehicles would meet 10km from Tallangatta).

Follow up suggestions:

- Pose another scenario: "*Melbourne and Sydney are about 900km apart. If a motorcycle traveling at 120km/h leaves Sydney at the same time as a bus leaving Melbourne traveling at 90km/h, where will they meet?*"

