

# E3



**Estimate** mathematical processes needed, reasonable solutions & ways of modelling or applying the question.

## Explore

**Explore** multiple ways of answering a question.



**Explain** the processes to the solution strategy.

purpose

This routine helps learners understand the mathematical problems they are being asked to explore, develop multiple solution strategies and build explanations about their solutions.

Synthesising  
& Organising  
Ideas

## PURPOSE

### *What kind of thinking does this routine encourage?*

This routine helps learners understand mathematical problems being explored, develop multiple solution strategies and build explanations about their solutions.

## APPLICATION

### *When and where can it be used?*

Use this routine:

- ❑ When exploring and unpacking a range of mathematical concepts

## ASSESSMENT

### *How can I use this routine as an assessment?*

Look for how students:

- ❑ Estimate how to draw or model the problem. Do they break the problem down into smaller pieces?
- ❑ Estimate a reasonable solution to the problem.
- ❑ Explore multiple solution strategies to discover the depth of connectivity a problem presents
- ❑ Explore the potential of multiple answers to the problem.
- ❑ Explain the processes used in solving the problem to a peer in order to articulate the 'why' behind the Maths.
- ❑ Explain if there are multiple solution strategies and ways the Maths connect.

Adapted by Alice Vigors 2018

## LAUNCH

### *What are the steps needed for starting and using this routine?*

1. **Set up** → Display or present the problem to be explored by the learners.
2. **Estimate** → Invite learners to estimate reasonable solution(s) and estimate ways of modelling or applying the question. Encourage students to estimate:
  - a reasonable solution to the question;
  - ideas for a solution strategy;
  - how to draw or model the problem;
  - what the answer could be close to;
  - how to break the problem down into smaller pieces
  - the type of maths processes needed
3. **Explore** → Learners explore multiple ways of answering the question and the 'why' behind the Maths. Encourage students to explore:
  - how to model the problem using manipulatives or pictures/diagrams;
  - multiple solution strategies to discover the depth of connectivity a problem presents;
  - potential multiple answers
4. **Explain** → Learners explain multiple solution strategies and the 'why' behind the Maths they've used to peers. Encourage students to explain:
  - The process in solving the problem and the 'why' behind the applied Maths so a partner can articulate why the solution(s) are correct;
  - If there are multiple solution strategies
5. **Share the thinking** → Discuss the process of the routine with students.