1 Lesson Plan: 24th May

- Discussion/review of proportion
  - Standard approach
  - Problem sum type
  - Tougher variations: "particular values" values and differences
  - To be covered next week: "show" and graph type questions
- Error Analysis: 2 questions (in following pages in this file)
- Proportion Questions (separate file)
  - Q5, 10, 13, 18, 23, 24, 38, 40, 51, 52, 54, 55
- Bedok Town SS 2012
  - Paper 1 Q1-6, 8, 11
  - (If time permits) Paper 2 Q3, 5, 6 (graph)

2 Answers to proportion questions

5. (a) 93.5
   (b) 75
10. (a) $y = 0.3x$
    (b) 2500
    (c) 3.3
13. (a) $K = \frac{36}{(L+1)^2}$
    (b) 9
    (c) 0
18. (a) $y = 0.6x^3 - 1$
    (b) $m = 74, n = 8$
23. (a) $y = 4x \quad y = 52$
    (b) 12.5
24. (a) $xy = 210$
    (b) 21
    (c) $1\frac{41}{64}$
38. $k = \frac{64}{n^3} \quad m = 512.$
40. $k = 8\sqrt{q} \quad p = 4$
51. 12 hours
52. 15 days
54. (a) 700%
    (b) 2600%
55. 75%

3 Error analysis

Identify and explain the errors in the following solutions, and write out the correct solution instead.

3.1 Question 1

Simplify $\dfrac{1}{x^2+3x} \times \dfrac{x}{x+3}$.

Student's attempt

$$\frac{1}{x^2+3x} \times \frac{x}{x+3} = \frac{1}{x(x+3)} \times \frac{x}{x+3} \tag{1}$$

$$= \frac{1}{x(x+3)} \times \frac{x^2}{x(x+3)} \tag{2}$$

$$= \frac{x^2}{x(x+3)} \tag{3}$$

$$= \frac{x^2}{x^2+3x} \tag{4}$$

$$= \frac{1}{1+3x} \tag{5}$$

3.2 Question 2

y is directly proportional to the square root of x. It is given that $y = 6$ when $x = a$. Find the value of y when x is doubled.

Student's attempt

$$y = kx^2 \tag{1}$$

$$\text{When } x = a, y = 6: \quad 6 = ka^2 \tag{2}$$

$$k = \frac{6}{a^2} \tag{3}$$

$$y = \left(\frac{6}{a^2}\right) x^2 \tag{4}$$

$$\text{When } x = 2a, \tag{5}$$

$$y = \left(\frac{6}{a^2}\right) (2a^2) \tag{6}$$

$$y = \left(\frac{6}{a^2}\right) \left(\frac{2a^2}{1}\right) \tag{7}$$

$$y = \frac{12a^2}{a^2} \tag{8}$$

$$y = 12 \tag{9}$$