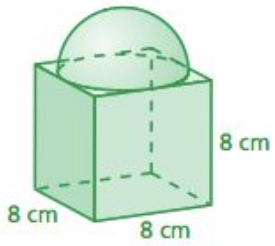
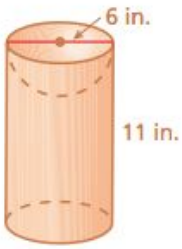
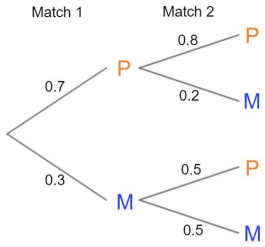
IM1 Problem Set 38		
Task 1	**Task 2**	**DC**
Put solutions to problems from the previous Problem Set on the board	Discuss all problems and come to a consensus. Record solutions in your notebooks and present solutions.	DC

Problem Set 38	
38.1	Use your knowledge of exponent rules to simplify the following expressions: 1. $3 \cdot 4^3$ 2. $4x^3 \cdot 2x^3$ 3. $x^5 \cdot x^3$ 15. $\frac{x^5y^6}{xy^2}$ 16. $\frac{x^2y^5}{xy^4}$ 27. $\frac{x^{-1}}{x^{-8}}$ 28. $\frac{52x^6}{13x^{-7}}$
38.2	Find the volume of the following solids. Round your final answers to the nearest tenth. 14.  16. 
38.3	Two towns have been growing in their populations over the past 20 years. The population of Margheritaville is modeled by the equation $P(t) = 100{,}000 + 5{,}000t$, where t represents the time in years since 1990. The population of Mackton is modeled by $P(t) = 200{,}000(0.95)^t$, where t represents the years since 1990. a. Graph both equations on your calculator. b. Which town is growing in population and which town is decreasing in population? c. What was the population of both towns in the year 1990? d. What was the population of both towns in the year 2000? e. What was the population of both towns in the year 2010? f. What was the population of both towns in the year 1970? g. When will the two towns have the same population?
38.4	Use your calculator to graph the equation $y = 200(1.25)^x$. Use the graph and your data table on the calculator to answer prepare a sketch of the graph in your notes and then label (i) the y-intercept, (ii) the asymptote and (iii) three additional data points

38.5

Penny will play 2 games of badminton against Monica. The probability that Penny wins the first game is 0.7, but the probability of her winning the second game depends upon whether or not she wins the first game. Penny's chances of winning each game are outlined in the tree diagram below, where P denotes a Penny win and M denotes a Monica win. Work out the probability of Penny winning exactly one match.



38.6

Markos' mark in SEM 2 started at 40% but has been increasing by 4% every week.

a. Complete this table of values for this relationship between Markos' mark and the number of weeks since the start of the semester.

Week number	0	1	2	3	4	5
Mark	40					

b. Determine his mark: (i) in week 7 (ii) in week 10 (iii) in week 15

38.7

The probability of Samir completing his Maths homework on any night is ⅓. The probability that he completes his English homework is ¼. These are both independent events. By drawing a tree diagram in the space below, calculate the probabilities that:

a. Samir completes both pieces of homework.
b. Samir completes exactly one piece of homework.

38.8

A new computer was initially valued at $1500 but its value, V in dollars, over time, t in years, is modelled by the equation $y = 1500(0.82)^t$.

a. BEFORE you graph the function on your calculator, explain how you should know that this is equation models a DECAY situation?
b. Graph the function on your calculator, sketch the graph in your notes and use the TABLE feature on your calculator to record the value of the computer in the first 4 years.
c. How much will your computer be worth in 6 years?
d. How long will it take before the value of your computer is half of its original value?