

IM1 Problem Set 17

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 17

17.1	<p>Given the following:</p> <p>a. solve: i.) $6 - 3(2x + 3) = 4(x + 3)$ ii.) $\frac{1}{2}(x + 4) = -\frac{1}{3}(x + 9)$</p> <p>b. evaluate $x^3 - 2xy - 12y^2$ if $x = -2$ and $y = -\frac{1}{2}$.</p>	
17.2	<p>Hannah is going to play one badminton match and one tennis match. The probability that she will win the badminton match is $\frac{9}{10}$ and the probability that she will win the tennis match is $\frac{2}{5}$.</p> <p>a. Complete the probability tree diagram.</p> <p>b. Work out the probability that Hannah will win both matches.</p> <p>c. Work out the probability that Hannah wins one match.</p>	
17.3	<p>Mr. S has a dog kennel that has the following shape. He needs to fence the kennel (which costs \$40/m) and needs to put some sand in the kennel (at \$50/m³) The depth of the sand is to be 0.20 m.</p> <p>a. Determine the perimeter of the kennel.</p> <p>b. Determine the area enclosed by the kennel</p> <p>c. Determine the total cost of preparing the kennel with the fence and the sand.</p>	<p>4)</p>
17.4	<p>Given the following 2 linear functions, change both equations to the form of $y = mx + b$. State the slope of each line. Then use your TI-84 to determine the point at which the two lines intersect. Do the same using DESMOS - find the point at which the 2 lines intersect.</p> <p>a. LINE #1 $\Rightarrow 4x - 8y = 32$ b. Line #2 $\Rightarrow y + 5 = -3(x + 2)$</p>	

17.5

Niamh and Olivia make bead jewellery in their spare time. Their income for 10 consecutive months is shown in the table. To visualize the trend in their income as a function of time, they have prepared the following scatterplot.

Month	1	2	3	4	5	6	7	8	9	10
Income (\$)	20	25	45	55	80	90	110	105	135	155

- Determine the equation of the line of best fit (or the trend line as graphed already)
- Use the line to predict their income in the 12th month of their business.
- Use the line to predict when in which month their income first exceeded \$190.
- How confident are you about your predictions in Qb and Qc?
- Use DESMOS to determine the equation for the line of best fit.



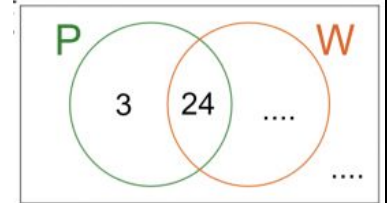
17.6

Ken's Kanine Kennel provides luxury dog houses for boarding dogs (say when their owners go on holidays). They charge a room fee plus an additional amount for every dog. One day's costs for boarding 2 dogs is \$128 and for boarding 5 dogs, the cost is \$263.

- Determine an equation that models the relationship between the number of dogs and the cost of boarding the dogs.
- What do the slope and y -intercept mean?
- How much would it cost you board 8 dogs?

17.7

Mack collected data on 40 people's enjoyment of sport. P is the set of people who play sports regularly, and W is the set of people who watch sports regularly. 32 of the people she asked watch sports regularly. An incomplete Venn diagram for her data is shown below.



- How many play a sport?
- Complete the Venn diagram.
- Work out $P(W \cup B)$ for someone picked at random.
- Work out the probability that someone picked at random watches sports regularly given that they play sports regularly.

17.8

Samuel is trying to determine the average height of high school male students. Because he is on the basketball team, he uses the heights of the 14 players on the team, which are given below in inches.

69, 70, 72, 72, 74, 74, 74, 75, 76, 76, 76, 77, 77, 82

- Calculate the mean, median, mode and range for this data set. Round any non-integer answers to the nearest tenth.
- Is the data set above a fair sample to use to determine the average height of high school male students? Explain your answer.
- Determine the values of Q_1 (first quartile) and Q_3 (third quartile) and hence, determine the interquartile range of this data set.