| IM1 Problem Set 34 | | |
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| **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 34 | |
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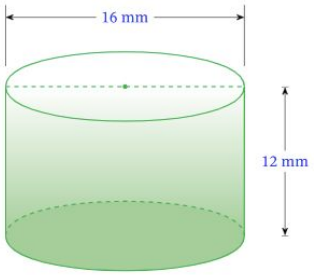
| **34.1** | Graph a triangle using the three points A(-5, -3), B(0, 6) and C(4, -1) using GEOGEBRA and then<br><br>a. Write down the lengths and slopes of the three sides of the triangle.<br>b. What type of triangle is this?<br>c. Find the midpoint of side AB and side BC and record these midpoints.<br>d. Draw the line segment between these 2 midpoints. This line is called a **midsegment**.<br>e. Find the slope and length of this midsegment.<br>f. Compare the slope and length of the midsegment to the length and slope of line AC. What do you notice? |
| **34.2** | Given the diagram of the following cylinder.<br><br>a. Find, to the nearest tenth, the total surface area of this cylinder.<br>b. Mr S will now double the height of the cylinder. Show whether or not the volume and the surface area are doubled as well.<br>c. Mr S will double the radius of the cylinder. Show whether or not the volume and the surface area are doubled as well.<br><br>  |
| **34.3** | Use the substitution method to find the point where the lines $-3x + 6y = 15$ and $x + 3y = 20$ intersect. Verify using your graphing calculator. |
| **34.4** | For the following pairs of lines, determine whether they are parallel, perpendicular or neither.<br><br>a. $y = 5x + 2$ and $y = -1 + 5x$<br>b. $y = 4 - \frac{3}{2}x$ and $y = \frac{2}{3}x - 7$<br>c. $x + 2y = 2$ and $6x - 3y = 21$<br>d. $y = -2 - 4x$ and $12x + 4y = 27$ |

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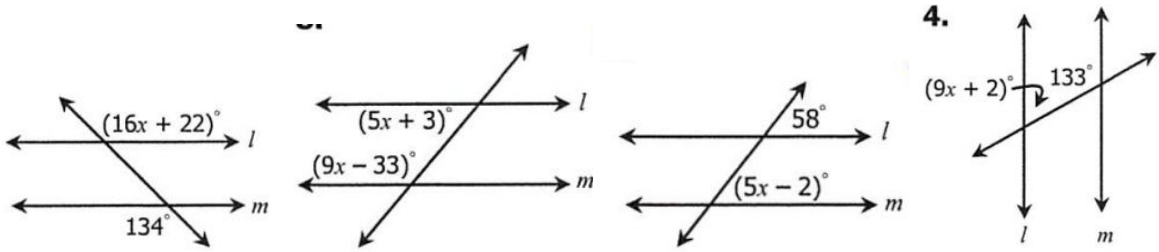
| **34.5** | A cellular company's revenue and cost functions for selling mobile phones can be modelled by the linear equations: $R = 500n$ and $C = 100n + 30\,000$, where $R$ represents the revenue in dollars, $C$ represents the cost, and $n$ represents the number of phones sold.<br><br>a. If the company sells 20 000 phones, what revenue do they make and what costs do they have?<br>b. At what point will this company have no profit? (Profit = Revenue – Cost)<br>c. However, in February, the supplier of phones has increased the cost of the phones to \$200 per phone. So, the company owner, Margherita, decides to increase the selling price of the phones to \$600. At what point will the company now have no profit? |
| **34.6** | Given the following diagrams involving parallel lines and the transversals that cut through the parallel lines, solve for the unknowns in each diagram.<br>  |
| **34.7** | Given the partial sequence of 3, -4, -11, -18, ……..,<br><br>a. determine what the pattern is<br>b. use your predicted pattern to find the 10th term in each sequence<br>c. How would you find the 100th term in this sequence?<br>d. Elek notices that the pattern looks very linear, so he decides to write a linear equation to represent this sequence of numbers. What equation could Elek use?<br>e. Now, determine the 1000th term of the sequence. |
| **34.8** | 120 coffee drinkers were asked whether they used cream or sugar in their coffee. The summary of the survey was as follows: 55 use sugar 36 use cream 16 use both.<br><br>a. Create a Venn diagram to summarize the information.<br>b. How many used cream in their coffee?<br>c. How many used sugar?<br>d. How probable is it that a randomly selected person used sugar but not cream?<br>e. How many used cream but not sugar?<br>f. How probable is it that a randomly selected person used cream and sugar?<br>g. How many used cream or sugar? |